Final
Remedial Investigation at the Kenilworth Park South Landfill N.E. Washington, D.C.

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Prepared for:

NATIONAL PARK SERVICE

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List of Abbreviations and Acronyms

ADI	average daily intake
AMSL	above mean sea level
ARARs	applicable or relevant and appropriate requirements
AT	averaging time
ATSDR	Agency for Toxic Substances and Disease Registry
BERA PF	baseline ecological risk assessment problem formulation
BGS	below ground surface
BHC	benzene hexachloride
BNA	base/neutral acid extractable organics
BTAG	Biological Technical Assistance Group
CDI	chronic daily intake
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	U.S. Code of Federal Regulations
CFS	cubic feet per second
CH_4	methane
CO	carbon monoxide
COC	contaminant of concern
COPC	contaminant of potential concern
COPEC	contaminant of potential ecological concern
CT	central tendency
DABS	dermal absorption factor

List of Abbreviations and Acronyms (cont.)

DCSEC	District of Columbia Sports and Entertainment Commission
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethylene
DOT	United States Department of Transportation
DPT	direct push technology
DW	Derived Waste
E & E	Ecology and Environment, Inc.
ED	exposure duration
EF	exposure frequency
EPC	exposure point concentrations
ERA	ecological risk assessment
ERT	Environmental Response Team
ET	exposure time
FEMA	Federal Emergency Management Agency
FS	Feasibility Study
ft/ft	feet per foot
GI	gastrointestinal
GPS	global positioning system
GSA	General Services Administration
H_2S	hydrogen sulfide
HASP	Health and Safety Plan
HEAST	Health Effects Assessment Summary Tables
HHEM	Human Health Evaluation Manual
HHRA	Human Health Risk Assessment
HI	hazard index
HQ	hazard quotient

List of Abbreviations and Acronyms (cont.)

HSA	hollow stem auger
HSL	Hazardous Substances List
IDW	investigation-derived waste
IEUBK	Integrated Exposure Uptake Biokinetic (model)
IN	inhalation rate
IRIS	Integrated Risk Information System
IR-S	ingestion rate
IR-Sa	adult ingestion rate
IR-Sc	child ingestion rate
K	hydraulic conductivity
KPN	Kenilworth Park North Landfill
KPS	Kenilworth Park South Landfill
kV	kilovolt
L	liter
LADI	lifetime average daily intake
LEL	lower explosive level
LOAEL	lowest-observed-adverse-effect level
Log K_{ow}	octanol-water partition coefficient
µg/dL	micrograms per deciliter
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
m^3/yr	cubic meters per year
MCL	maximum contaminant level
mg/cm^2	milligrams per square centimeter
mg/kg	milligrams per kilogram
mg^3/day	cubic milligrams per day

List of Abbreviations and Acronyms (cont.)

mg^3/hr	cubic milligrams per hour
mL	milliliter
mS/cm	milliSiemens per centimeter
NACE	National Capital Parks-East
NCEA	National Center for Environmental Assessment
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
ND	not detected
NOAEL	no-observed-adverse-effect level
NOV	Notice of Violation
NPS	National Park Service
NTU	nephelometric turbidity units
OERR	Office of Emergency and Remedial Response
ORD	Office of Research and Development
OSWER	Office of Solid Waste and Emergency Response
PA/SI	Preliminary Assessment/Site Investigation
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PEF	particulate emission factor
ppm	parts per million
PRG	preliminary remediation goal
QA/QC	quality assurance/quality control
RAGS	Risk Assessment Guidance for Superfund
RAWP	Risk Assessment Work Plan
RBC	risk-based concentration
RCRA	Resource Conservation and Recovery Act
RfD	reference dose

List of Abbreviations and Acronyms (cont.)

RI	remedial investigation
RME	reasonable maximum exposure
SA	skin surface area
SDI	subchronic daily intake
SF	slope factor
SGCN	species of greatest conservation need
SLERA	Screening-level Ecological Risk Assessment
SOW	Scope of Work
SSAF	soil-to-skin adherence factor
STL	Severn Trent Laboratories
SVOC	semi-volatile organic compound
TAL	Target Analyte List
TCL	Target Compound List
TPH	total petroleum hydrocarbon
TPH-DRO	total petroleum hydrocarbon – diesel range organics
TRPH	total recoverable petroleum hydrocarbon
UCL	upper confidence limit
UF	uncertainty factor
USDA	United States Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VOC	volatile organic compound

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Executive Summary

The National Park Service (NPS), under General Services Administration (GSA) contract GS-10F-0160J, directed Ecology and Environment, Inc. (E & E) to perform a Remedial Investigation (RI) at the Kenilworth Park South (KPS) Landfill (Site) in N.E. Washington, D.C. (Task No. T2420060400). The RI was performed in a manner consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

Kenilworth Park and Aquatic Gardens are part of the Anacostia Park unit of National Capital Parks-East (NACE), itself part of the National Park System. The Site, which comprises a portion of Kenilworth Park and Aquatic Gardens, is bounded by Anacostia Avenue to the east, Watts Branch to the north, and the Anacostia River to the west (see Figure ES-1). North of Watts Branch is the Kenilworth Park North (KPN) Landfill, which has a history and conditions similar to the Site. The KPN Landfill and the Site have been investigated separately because of land title legislation transferring KPN from NPS to the District of Columbia. Depending upon the resolution of legal and procedural issues, it is possible that the two projects, KPN and KPS will be merged under a single feasibility study and remediated as one site.

This RI was conducted in accordance with the guidelines set forth in *Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA* (USEPA 1988) and *Conducting Remedial Investigations/Feasibility Studies for CERCLA Municipal Landfill Sites* (USEPA 1991c).

Site History and Description

From 1942 until 1968, the District of Columbia (the District) used the KPN Landfill as a municipal waste dump (Phillips and Shadel July 1980). During this period, the KPN Landfill received municipal waste and incinerator ash. Up until 1968, open burning of the municipal waste was conducted, and waste was landfilled without open burning for two months during 1968, before operations were moved south of Watts Branch (i.e., to the KPS Landfill). By the 1970s, the entire landfill was closed and capped, and the land had been converted for use as a park. Additional materials from excavations in the District were deposited within the Site in 1997 and 1998.

The Kenilworth Park South Landfill area is comprised of four major layers: the underlying natural sediments composed of fine sand, silt, and clay; the municipal waste disposed in the late 1960s that constitutes the landfill; the cap on the landfill, composed of imported fill soil; and the 1997/1998 deposited material placed on top of the cap, which is composed of excavation material and some construction debris. These layers do not extend over equal areas (see Figures 4-2 through 4-4). The underlying sediments extend across the entire Site. The cap covers landfill material and extends beyond the edges of the landfilled material to the underlying sediments and partially into the surrounding surface water bodies--the Anacostia River, Watts Branch, and the unnamed stream/ditch along the eastern edge of the Site. The 1997/1998 deposited material covers a portion of the cap with between 2 to more than 20 feet of material. This material covers much of the west side of the Site with approximately 20 acres west of Deane Avenue and much of the southeast corner of the Site comprising approximately 7 acres east of Deane Avenue. The cap is not covered by the 1997/1998 deposited material in the northeast corner of the Site nor in the heavily vegetated outer edges of the Site.

RI Field Activities

The RI fieldwork for the Kenilworth Park South Landfill was conducted in 2001 and consisted of the investigation of soils and groundwater to characterize the Site and assess risks to human health and the ecological receptors.

Summary of Findings

Although the landfill contains groundwater, it is not hydraulically connected to the underlying Patuxent aquifer. Due to the higher hydraulic head of the Patuxent aquifer, groundwater within the landfill travels laterally from the landfill to the adjacent water bodies, rather than percolating downwards.

During the RI and previous investigations of the Site, VOCs, SVOCs, pesticides, PCBs, and metals were detected at concentrations above screening levels. The analytical results indicate that both the cap and landfilled materials are heterogeneous. The same contaminants exist in all media, but there is no clear relationship between contaminant concentrations in the surface soils, subsurface soils, groundwater, and sediments. Contaminant migration pathways are limited based on limited infiltration, impermeability of the underlying clays, and vegetative cover, which limits runoff.

Surface and subsurface soils did not show a clear pattern of contamination. Subsurface soil contamination did not reflect the contamination found in nearby surface soils. Groundwater contamination within the landfill material is most strongly influenced by contact with the contents of the landfill because the groundwater remains in contact with the fill for long periods. Both the tidal nature of the water bodies surrounding the landfill and the inputs from the storm drains are likely to be contributing most of the contamination seen in sediment samples. However, some sediment contamination could result from surface runoff in isolated locations where vegetation has been removed.

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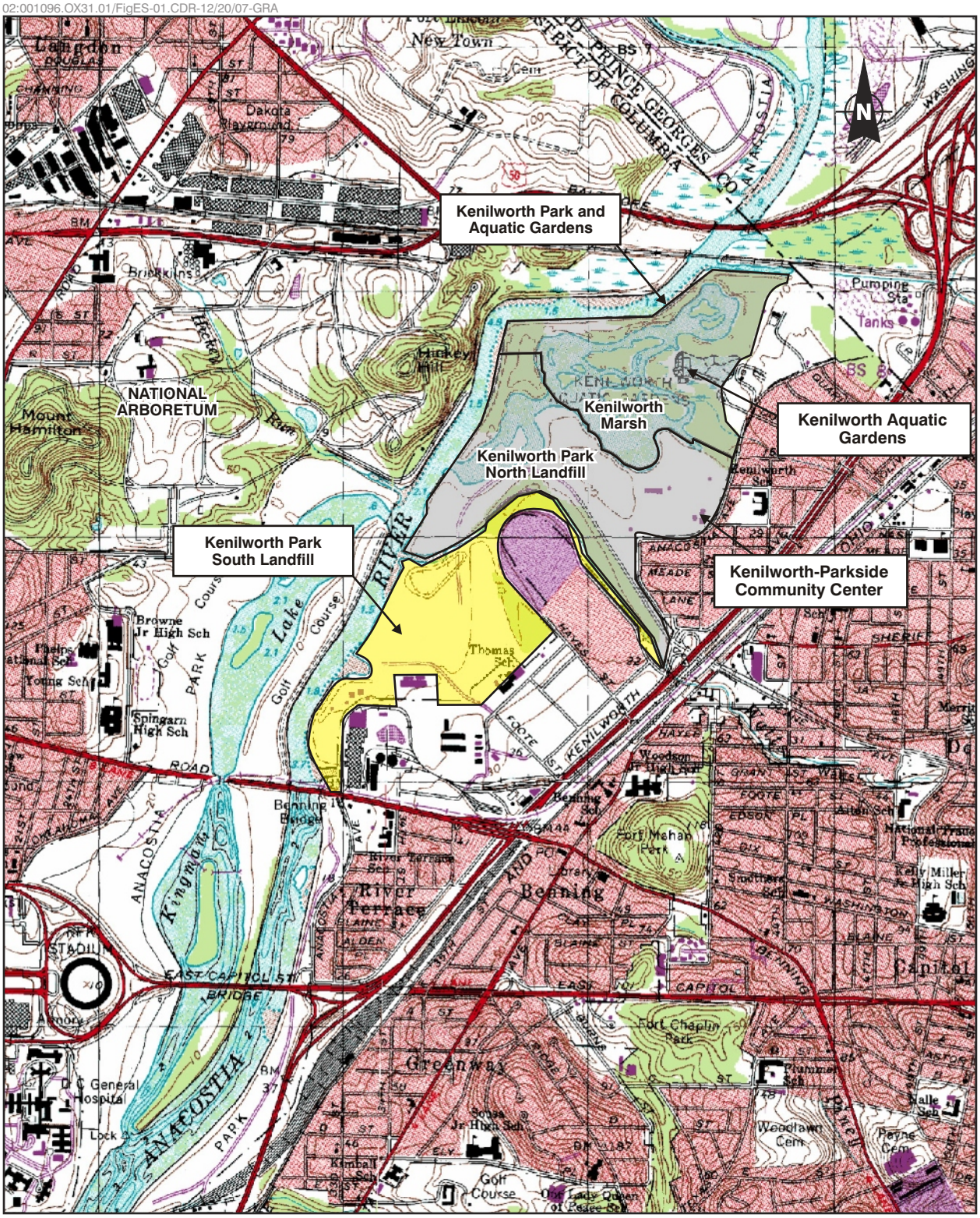

SOURCE: USGS 7.5 Minute Series (Topographic-Bathymetric) Quadrangle: Washington East, D.C., MD, 1965; Photorevised 1979.

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0 ½ 1 Mile

0 .5 1 Kilometer

Figure ES-1 Site Location Map, Kenilworth Park South Landfill

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In general, there is little evidence of migration of wastes and waste components from the Site. The presence and levels of contamination within the landfill material and on its surface appear to reflect the content of materials brought to and deposited in or on the landfill.

Risk Evaluation

Human Health Risk Assessment Results. Based on the risk assessment conducted for the Site, the estimates of potential risks from direct contact with contaminants in on-site soils and sediments under existing and expected future conditions, assuming the land use remains as a unit of the National Park System, are 2.6 x 10^{-5} for Site Visitors and 4.5 x 10^{-7} for Site Workers (i.e., utility or construction workers). The hazard index from potential exposure to noncarcinogenic compounds ranges from 0.2 to 2.3. When separated by target organ, no hazard index exceeds unity. The risks and hazard indices are primarily driven by exposure to heavy metals, PCBs, and PAHs in soils and sediment.

The quantitative risk estimates do not include possible health effects from lead because lead has no approved toxicity values. Based on comparison of the recommended residential screening level of 400 mg/kg for lead in soil with lead levels reported in site surface soils, these soils and sediment do not pose a risk to recreational visitors. The adult lead model was used to calculate a screening level for lead in surface soils, subsurface soils, and sediment, which a utility/construction worker may directly contact. The average lead concentration is below the calculated preliminary remediation goal (PRG) of 455 mg/kg for a utility/construction worker, indicating that lead in soils and sediment does not pose a risk to utility/construction workers at the site. However, although the average site concentrations of lead are below the calculated PRG, the presence of much higher lead concentrations in subsurface soils in some areas suggests that excavation activities in those areas could potentially lead to elevated worker blood lead levels and cause adverse health effects (see Section 6 for a detailed discussion on the HHRA).

In October 2002, the District of Columbia Department of Health requested a public health consultation for the Site from the ATSDR. In 2006, the ATSDR finalized the *Public Health Consultation – Kenilworth Park Landfill – South Side*. ATSDR identified the compounds of concern as PCBs, PAHs, metals, and methane. ATSDR reached the following conclusions:

- The Site does not pose a public health hazard for recreational use.
- Methane gas is an indeterminate hazard.
- Chemical contamination at the Site does not pose a present or future public health hazard to adjacent communities.

- Uncertainty as to the limits of the landfill area presents an indeterminate public health hazard due to the proximity of the elementary school.

Ecological Risk Assessment Results

Most of the chemicals detected in the surface soil and sediment at the Site exceeded the Biological Technical Assistance Group (BTAG) screening benchmarks, which are based upon the lowest screening value from a combination of sources and are considered to be protective of the most sensitive organism in a given ecological media, e.g., surface water, soil, and sediment.

The results of the screening-level ecological risk assessment (SLERA) suggest that wildlife that forage on-site and in the river and drainage ditches on and near the Site may be adversely affected by site-related contamination in surface soil and sediment. The potential ecological risks are largely driven by the estimated exposure from diet and, to a lesser extent, by the estimated exposure from incidental ingestion of sediment and/or soil.

To be conservative, the maximum concentrations in water, sediment, and soils were used to estimate wildlife risks at the Site. Also, the maximum concentrations used for screening were selected from surface and subsurface soil samples. In reality, however, wildlife receptors at the Site are exposed to a range of concentrations and, if the Site is not disturbed, would not encounter soils below the depth of the receptors' activities.

The BTAG screening evaluation for benthic invertebrates, pelagic aquatic life, soil invertebrates, and plants suggests that these receptor groups potentially could be adversely affected by site-related contaminants. Most contaminants of potential concern detected in the soil and sediment at the Site exceeded the BTAG screening benchmarks.

Recommendations for Future Work

Based on the results of the RI and previous site investigations, the following activities should be completed to support the feasibility study (FS):

- Given the conclusions of the SLERA, a Baseline Ecological Risk Assessment Problem Formulation Report was prepared to further evaluate ecological risks. Preliminary Remediation Goals (PRGs) will be developed as part of the Feasibility Study for contaminants of concern related to ecological receptors.

- Given the conclusions of the Human Health Risk Assessments (HHRA), appropriate target risk levels for Site contaminants should be selected and PRGs calculated for contaminants of concern related to human health.

- In order to establish remedial action goals, an analysis of applicable or relevant and appropriate requirements (ARARs) should be completed as part of the FS.

- Because of the ubiquitous presence of methane in existing and former landfills and the detection of levels of landfill gases above the lower explosive limit during the installation of monitoring wells, a methane survey should be conducted prior to, or as part of, the Feasibility Study in order to evaluate the potential impacts of future activities and inform the alternatives evaluation process, if the surface material is to be disturbed and the fill materials are to be exposed..

The conclusions of the HHRA and the findings of the RI indicate that remedial alternatives evaluated in the FS should address, among other things, the following issues:

- Reduction/elimination of contact with contaminated soil by human and ecological receptors;
- Reduction/elimination of water infiltration through the landfill cap; and
- Attainment of ARARs.

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1 Introduction

This report contains the following sections:

- Section 2: Site Location, Description, and History. This section describes the Site's physical characteristics, environmental setting, history, regulatory history, and history of previous investigations.

- Section 3: Remedial Investigation (RI) Field Activities. This section describes the field investigations of each medium, including sediment, surface soil, subsurface soil, and groundwater; aquifer testing; groundwater elevation surveying, electromagnetic landfill boundary survey delineation; deviations from the work plan; and the quality assurance and quality control procedures.

- Section 4: Analysis of Physical Site Characteristics. This section analyzes the results of the geophysical investigations and other available data to draw conclusions as to the landfill volume and the characteristics of surface water and groundwater at the Site.

- Section 5: Nature and Extent of Contamination. This section presents the analytical results of the field investigation and integrates these findings with the results of previous investigations to describe the nature and extent of contamination in each medium.

- Section 6: Human Health Risk Assessment. This section includes discussions on contaminant screening/data gap evaluation; exposure assessment; toxicity assessment; risk characterization; and uncertainty analysis.

- Section 7: Screening Level Ecological Risk Assessment. This section describes how contaminants detected at the Site were screened against ecological screening criteria and benchmarks to provide a preliminary evaluation of contaminants of potential ecological concern.

- Section 8: Conclusions. This section summarizes the findings of all of the previous field investigations, the human health risk assessment, and the screening level ecological risk assessment.

This RI was conducted in general accordance with the guidelines set forth in *Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA* (USEPA [1988]) and *Conducting Remedial Investigations/Feasibility Studies for CERCLA Municipal Landfill Sites* (USEPA [1991c]).

2 Site Location, Description, and History

2.1 Site Location and Layout

Kenilworth Park South (KPS) Landfill is part of the 700-acre Kenilworth Park and Aquatic Gardens and is located in the most northern part of Anacostia Park. Anacostia Park is situated along both sides of a 5.5-mile stretch of the Anacostia River shoreline extending from Buzzard Point in southeast Washington, D.C. (the District) to the northeast boundary of the District. Kenilworth Park and Aquatic Gardens extends from Benning Bridge to the boundary of the District (Figure 2-1). National Capital Parks-East (NACE), a unit of the National Park System, administers the park.

The former Kenilworth Park Landfill is separated into 2 areas: the Kenilworth Park North (KPN) Landfill and the KPS Landfill (the Site), both of which are on the east bank of the Anacostia River. Watts Branch, a tributary to the Anacostia River, separates the KPN Landfill from the KPS Landfill. The Anacostia River is west of the KPS Landfill, and there is a residential area to the east. The KPS Landfill lies north of the District's Solid Waste Reduction Center and the Potomac Electric Power Company (PEPCO) electricity generating plant. Southeast of the Site is Thomas Elementary School (Thomas School).

2.2 Site Description

The KPS Landfill consists of approximately 50 acres of land within Kenilworth Park and Aquatic Gardens (see Figure 2-1). The area surrounding the Site was previously mostly industrial but currently is predominantly urban and recreational. The Site includes an open field with vegetation ranging from grassy in some areas to sparse to no grass in other areas, while other areas are heavily vegetated with shrubs and trees. The latitude and longitude of the approximate center of the Site are latitude 38° 54' 12" N and longitude 76° 57' 20" W. Entrance to the Site can be made from Deane Avenue off Burroughs Road or from Foote Street off Kenilworth Avenue. Both entrances are blocked to vehicular traffic, but access to the Site is uncontrolled from the river, as is pedestrian access from the roads.

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SOURCE: USGS 7.5 Minute Series (Topographic-Bathymetric) Quadrangle: Washington East, D.C., MD, 1965; Photorevised 1979.

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SCALE 1:24,000

0 ½ 1 Mile

0 .5 1 Kilometer

Figure 2-1 Site Location Map, Kenilworth Park South Landfill

Photograph #1: Willow thicket in the middle of the west side of the Site

Photograph #2: Vegetation on east side of Deane Avenue, looking south

The KPS Landfill area is composed of 4 primary layers of materials: the underlying natural sediments, which are composed of fine sand, silt, and clay; the municipal waste disposed of in the late 1960s that constitutes the former District landfill; the cap to the former District landfill, composed of imported fill soil; and the 1997/1998 material placed on top of the cap, which is composed of excavation material and some construction debris.

Deane Avenue traverses the Site. On the west side of Deane Avenue is a thick wedge of landfill material that is vegetated with grasses, forbs, and shrubs. A willow thicket is present in the middle of the west side of the Site (see Photograph #1). On the east side of Deane Avenue, the 1997/1998 deposited fill material is mainly confined to the southern half of the Site. The eastern side of the Site is an overgrown grassy area that grades to shrubs and then trees to the unnamed stream that borders the Site. On the southern, western, and northern perimeters of the

Site, drainage ditches carry runoff to 2 silt ponds located to the south and north of the Site, adjacent to the Anacostia River and Watts Branch, respectively (see Figure 2-2). A zone of trees and shrubs is located along the banks of Watts Branch and the river and varies from 40 to 140 feet wide.

Along the east side of the Site, a drainage ditch leads to a silt pond about 120 feet north of the Thomas Elementary School fence line (see Figure 2-2). Between Hayes Road and the Site is an unnamed stream that originates from storm drain discharge. The storm drain discharge point is located adjacent to the Thomas Elementary School yard but originates at Grant Street and the discharge flows north to Watts Branch. Along the unnamed stream is a grassy, wooded wetland area located within the 100-year floodplain. The remainder of the Site is above the 100-year floodplain. The utility map of the area indicates that the stream is at an elevation of approximately 2 feet above sea level, so it is running across filled land but is well below the 100-year floodplain.

The area not covered by the 1997/1998 deposited material is heavily overgrown. A hedgerow screens Thomas Elementary School from the Site, and a wooded wetland along the stream screens the Hayes Street neighborhood, known as Mayfair Terrace, from the Site. A swath of trees and shrubs was also retained along the banks of Watts Branch and the Anacostia River and varies from 40 to 140 feet wide. Located on the south side of the Site is a tree-lined berm.

2.3 Environmental Setting

2.3.1 Soils, Geology, and Hydrology

The Site lies in the Coastal Plain geologic province approximately 3 miles southeast of the Fall Line marking the boundary between the Piedmont and the Coastal Plain provinces (U.S. Department of Agriculture 1976). Major fieldwork for this USDA soil survey was carried out in 1974-1975, after the District ceased to dispose of municipal waste at the Site. The soil survey consequently shows the Site underlain by U118 Udorthents, deep, with 0 to 8% slopes. Udorthents consist of "very heterogeneous, earthy fill materials that have been placed on poorly drained to somewhat excessively drained soils on terraces and floodplains." (U.S. Department of Agriculture 1976).

Beneath the U118 Udorthents is alluvium and, below this, low-permeability Arundel Clay belonging to the Potomac group of the Cretaceous Age. Below the Arundel clay is the Patuxent formation, a regional aquifer the top of which is at 150 to 200 feet below the Site. Below the Patuxent formation is the bedrock, a layer of metamorphic and igneous rocks. The base of the Cretaceous rocks is approximately 400 feet below sea level at this location and slopes to the southeast at approximately 150 feet per mile.

Because of the low-permeability clays underlying the Site and the proximity of surface water, as well as the upwards hydraulic gradient from the underlying Patuxent aquifer, rainfall infiltrating into the Site does not percolate through the

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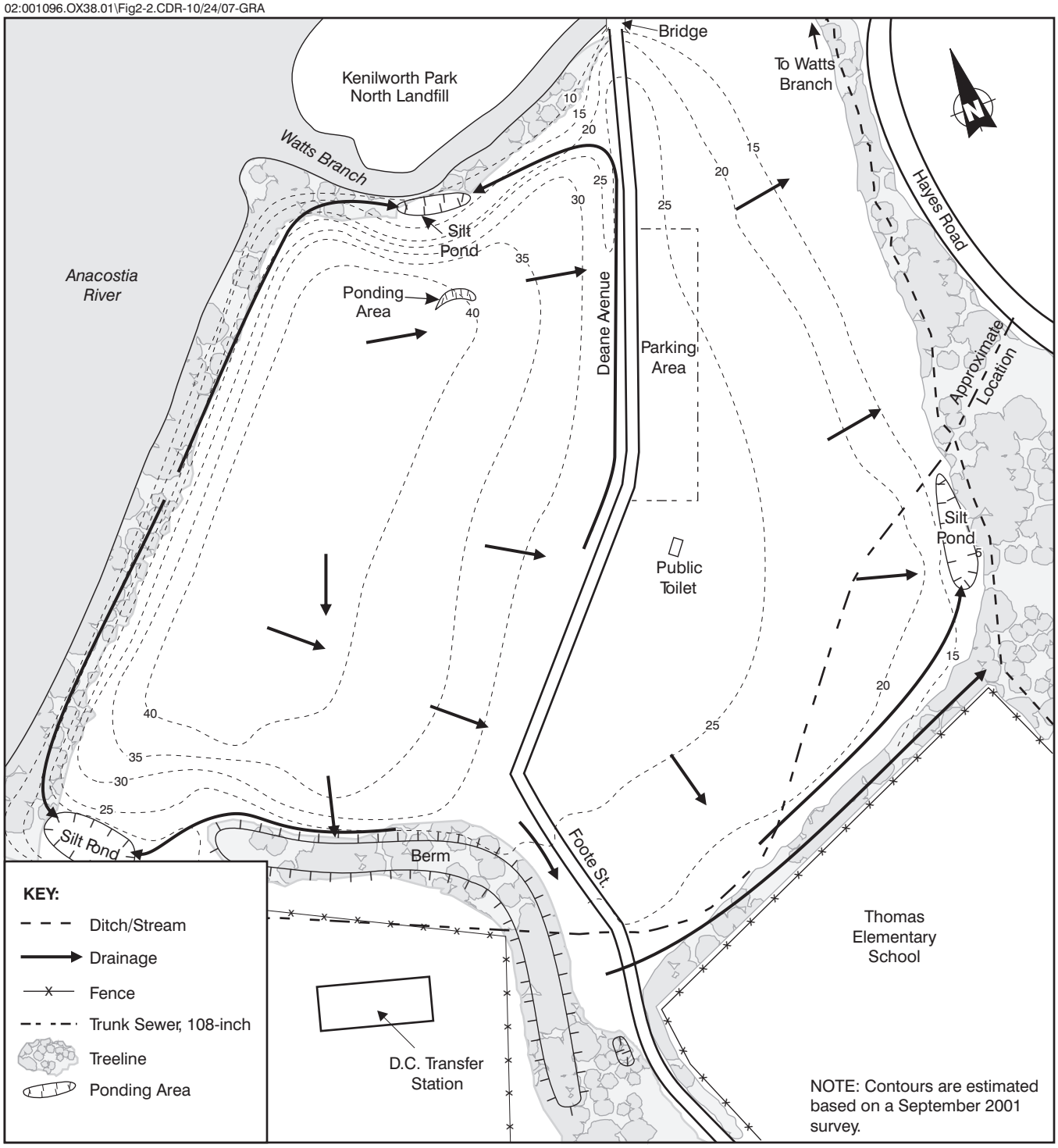

SOURCE: Ecology and Environment, Inc. 2001

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APPROXIMATE SCALE IN FEET

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Figure 2-2 Sketch Map of Site with Surface Contours and Drainage, Kenilworth Park South Landfill

Arundel clay and discharges to surrounding surface water around the perimeter of the Site.

2.3.2 Surface Water

The Anacostia River and its banks have been altered from their original condition (i.e., before European settlement). Many marshes and mudflats along the river have been filled and all tributaries have been channeled or their flows have been modified. Flows measured upstream in Riverdale, Maryland (northeast branch of the Anacostia River) and at Hyattsville, Maryland (northwest branch) averaged 85.2 cubic feet per second (CFS) and 47.8 CFS, respectively (Manning April 12, 1995). These locations are at least 4 miles upstream from the Site. Additional flow from the area below the measurement locations but above the Site indicates that average flows are probably 150 CFS opposite the Site. This value is based on the watershed area downstream of the measurement locations and upstream of the Site, which includes the Beaverdam Creek, Hickey Run, and Watts Branch watersheds. These areas total approximately 15 to 18 square miles. Runoff at the nearby Patuxent River watershed is estimated to be 1 CFS per square mile, and that value has been applied to the Site because of its proximity and similarity to the Patuxent River watershed. Approximately 5 to 6 miles downstream from the Site, the Anacostia River joins the Potomac River which has an average annual flow of 11,967 CFS, or many times the flow of the Anacostia River (Van der Leeden, Troise, and Todd 1990).

The Anacostia River is not used as a drinking water source. It is used for boating and fishing, although fish advisories have been issued based on levels of polychlorinated biphenyls (PCBs) found in fish caught in District of Columbia waters (District of Columbia Department of Health 2006).

Swimming in the river is unlikely, given the muddy bottom, lack of access, and large quantities of trash in the river. The Anacostia River is tidal in this reach of the river with an average tidal range of close to 3 feet.

The U.S. Department of the Navy has researched the movement of sediments within the Anacostia River and has not been able to definitely determine the extent of tidal reversals or consequent potential sediment transport reversals (Coffin, Polhman, and Mitchell 1999).

A portion of the Site is within both the 100-year floodplain and the 500-year floodplain of the Anacostia River. The natural portion of the floodplain is only a narrow strip around the Site.

2.3.3 Species of Concern

2.3.3.1 Federally Listed Endangered or Threatened Species

According to the United States Department of the Interior Fish and Wildlife Service (USFWS), although there may be transient individuals, no federally listed or proposed endangered or threatened species are known to exist within the Site boundary (Ratnaswamy 2007 [see Appendix H]). Previously, the only

endangered or threatened species known to occur within 4 miles of the Site was the Peregrine falcon (*Falco peregrinus*), which used to be on the endangered list but has now been delisted.

2.3.3.2 District of Columbia Species of Greatest Conservation Need

The Government of the District of Columbia, Department of the Environment, has identified 2 species of greatest conservation need (SGCN) at the Kenilworth Park North and South Landfills (Appendix H). Recent recordings of eastern meadowlark (*Sturnella magna*) and the red-shouldered hawk (*Buteo lineatus*) have been documented. Both birds use the football fields or meadows adjacent to the former landfill area. The American robin and the red-tailed hawk were used in the screening level ecological risk assessment (SLERA) and baseline ecological risk assessment (BERA) analysis as surrogates for the eastern meadowlark and the red-shouldered hawk, respectively. No other confirmed or identified SGCN occur at the Site; however, the Site contains habitat suitable for other SGCN species (see Appendix H).

2.3.4 Critical Habitats

Wetlands and similar critical habitats potentially impacted by the Site were cataloged for 1 mile upstream and 15 miles downstream of the Site in the Preliminary Assessment/Site Investigation (PA/SI), based on the United States Department of the Interior National Wetland Inventory Maps (Appendix B, Figures 3-2 through 3-5). Figure 2-3 shows the wetlands surrounding the Site.

On-site wetlands include the unnamed stream located to the east of the Site and a strip of mudflats within the Anacostia River. The closest wetlands to the Site include Kenilworth Aquatic Gardens with a wetland frontage of approximately 4,500 feet. Opposite the Site on either side of Kingman Lake is Langston Golf Course, with a total wetland frontage of more than 19,000 feet (on the east bank of the Anacostia River).

2.4 Site History

Historically, the District used parts of an area known as “Section G” of Anacostia Park for disposal of municipal waste. Section G includes Langston Golf Course, Kenilworth Park, and Kenilworth Aquatic Gardens. Kenilworth Park became a District waste dump and this area was filled and modified from the 1950s up until the early 1970s.

Aerial photographs (Appendix A) show that initial patches of fill appeared in 1957. By October 15, 1963, the fill area extended nearly 700 feet north-to-south from the inlet of Kenilworth Aquatic Gardens to the inlet south of the park receiving the discharge of Piney Run just north of the PEPCO plant. Watts Branch bisects the fill area. The landfill material was placed directly into the river without any barrier, and landfill wastes mixed with soil still extend into the water. Philips and Shadel (July 1980) estimated the amount of waste disposed from 1942 to 1968 within both the KPN and KPS landfills:

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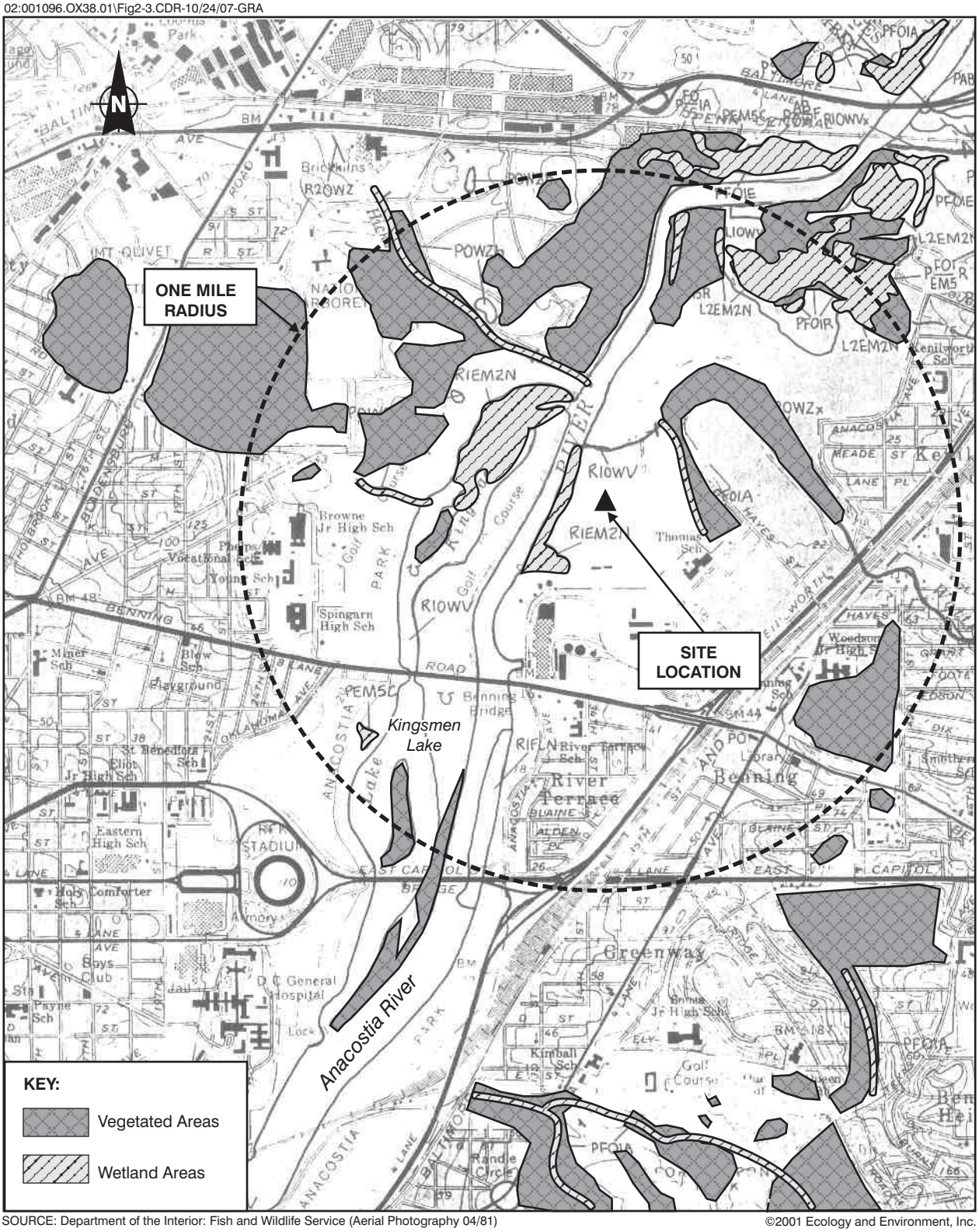

SOURCE: Department of the Interior: Fish and Wildlife Service (Aerial Photography 04/81)

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0 ½ 1 Mile

0 .5 1 Kilometer

Figure 2-3 Map of Ecological Features, Kenilworth Park South Landfill

> *The District produced approximately 9,900,000 tons of refuse. An estimated 5,600,000 tons of this refuse was incinerated, and the resulting 1,100,000 tons of ash (assuming 80% reduction) was disposed of at Kenilworth Park Landfill. The remaining 4,300,000 tons of waste was burned on site. Assuming a 50% reduction of material for open burning results in a total of 3,300,000 tons of burned residue and incinerator ash deposited at Kenilworth before 1968.*
>
> *Starting in February 1968, sanitary landfill operations were used at Kenilworth to dispose of the District's waste. For two months, refuse was land-filled in the area north of Watts Branch Creek* [KPN Landfill]. *In April, the landfill operation was moved to the area south of Watts Branch* [KPS Landfill].
>
> *During this time, an estimated 499,500 tons of raw refuse and an additional 316,500 tons of incinerator ash were deposited. The final cover for the landfill was required to be 3 feet of soil or earthy material. In addition, an estimated 50,000 cubic yards of sewage sludge was combined with the surface soil to aid in developing the grass turf on the completed landfill. Thus, at completion, Kenilworth Park Landfill had approximately 4 million tons of raw refuse, incinerator ash, and other burned residue in place; had an average depth of 25 feet; and covered an area of approximately 145 acres*.

Note that Phillips and Shadel did not conduct a survey and made no attempt to correlate their estimates of waste disposal with the actual volume of the landfill. The changes to the Site can be seen in the aerial photographs and historic topographic maps in Appendix A.

By September 1, 1970, filling was almost complete, the landfill was closed and largely capped, and the land was converted for use as a park and ball fields. A waste transfer station was constructed across Piney Run and the inlet south of the park. During 1977 and 1978, a major trunk sewer 108 inches in diameter was laid through the Site (D.C. Utility Map LM-5-6-NE Sewer 2-7-98). The invert elevation of this sewer is below sea level (Figure 2-4). Reclamation of the Site was completed by May 1980.

1997/1998 Deposited Material

Following the closure and reclamation of the Site and until 1997, the Site was a grassy area served by a road, with public toilets, a parking lot, and a set of exercise stations around the periphery; a fringe of trees and shrubs stood between the Site and both the river and Watts Branch. The center of the Site had a maximum elevation of approximately 28 feet above mean sea level (AMSL), as shown on Figure 2-5. A berm planted with trees, created to screen the waste

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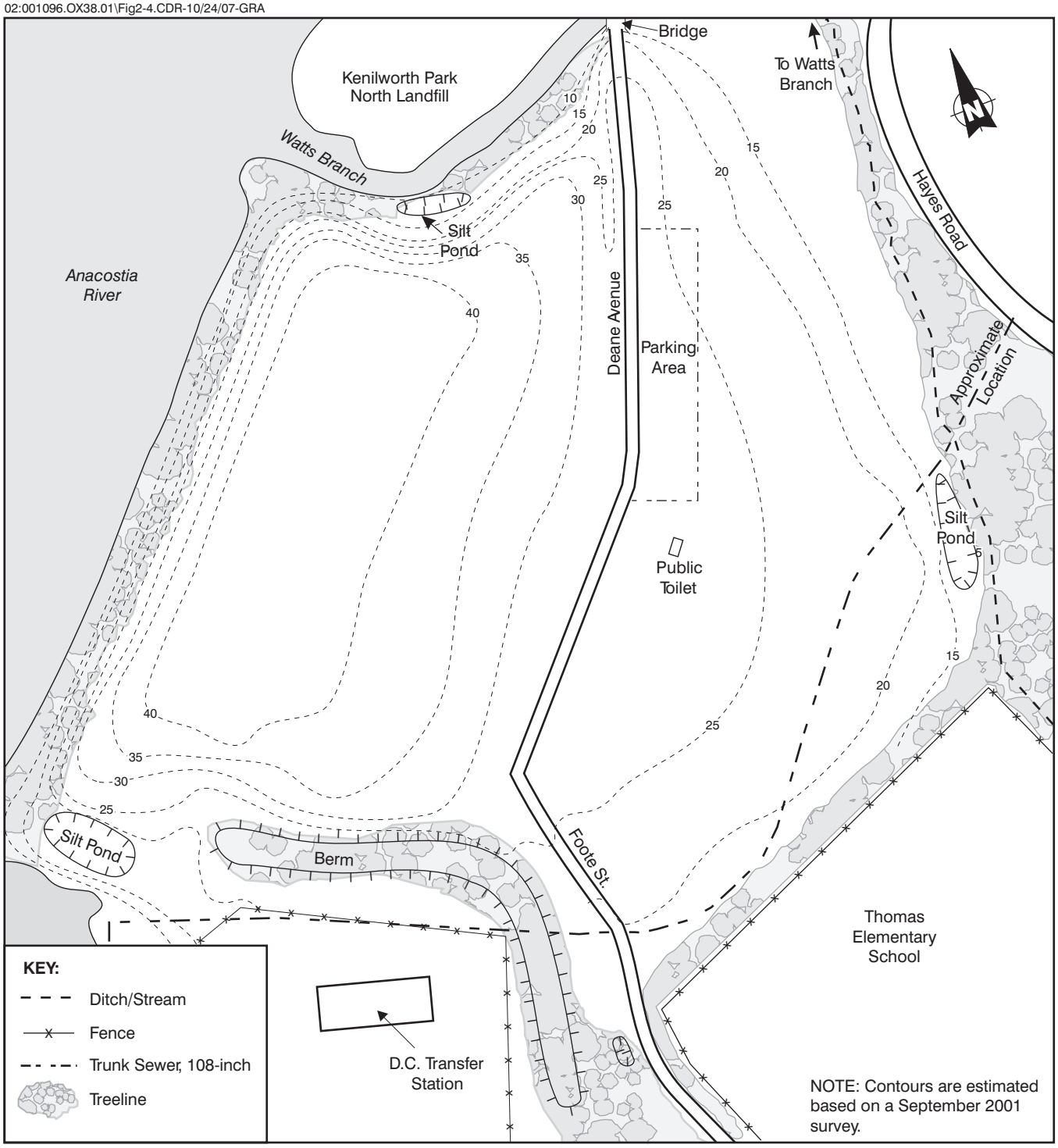

SOURCE: Ecology and Environment, Inc. 2001

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APPROXIMATE SCALE IN FEET

0 250 500 Feet

Figure 2-4 Kenilworth Park South Landfill Sketch Map of Site with Surface Contours

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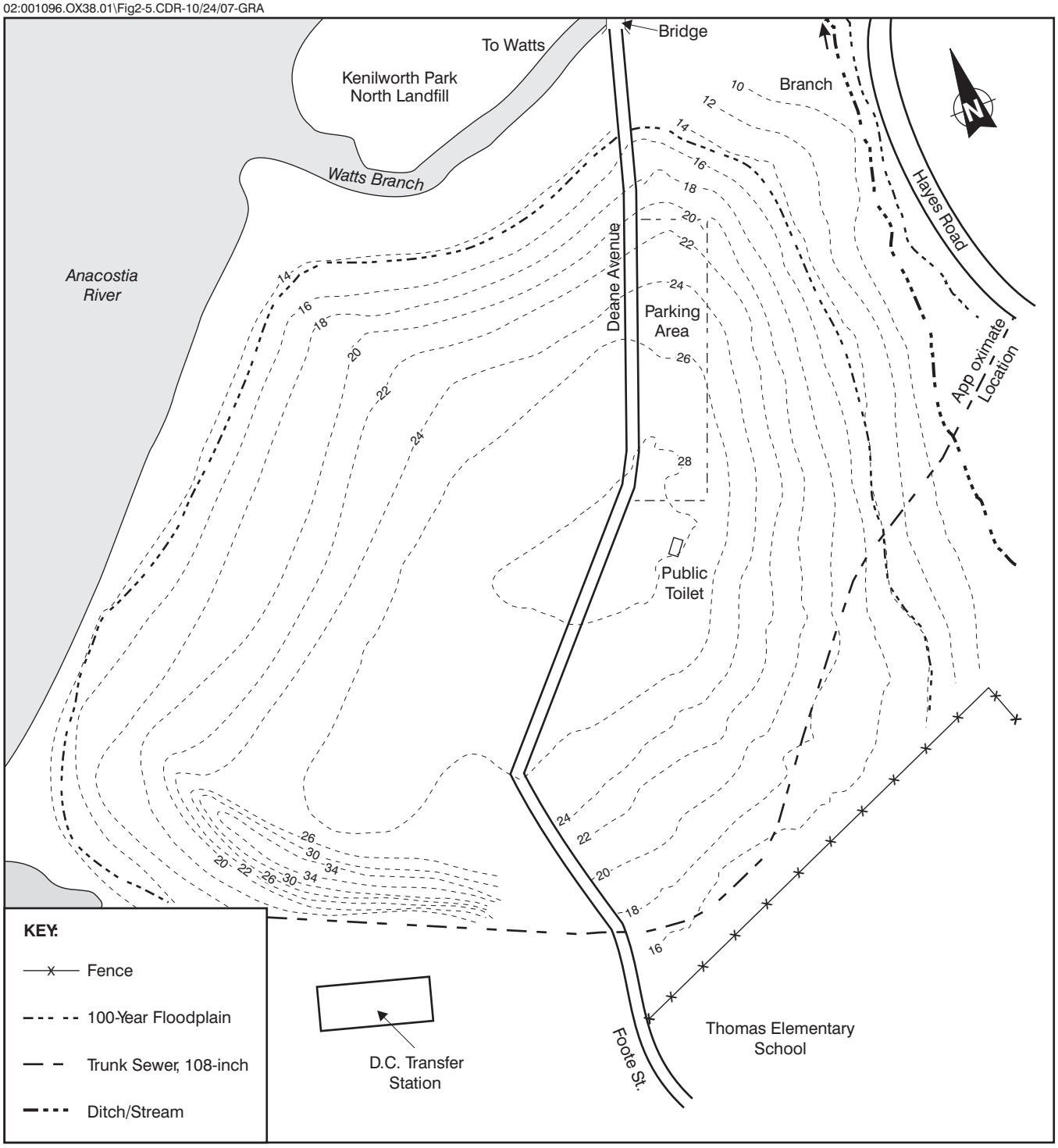

SOURCE: Based on Woodburn 1996.

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APPROXIMATE SCALE IN FEET

0 250 500 Feet

Figure 2-5 Sketch Map of Site with Contours prior to 1997/1998 Deposited Material, Kenilworth Park South Landfill

reduction center to the south end, rose to 36 feet AMSL. Part of the Site along the east side was a grassy, wooded wetland within the 100-year floodplain.

Beginning in early 1997, the Barrett Tucker Corporation and the Driggs Corporation deposited demolition debris and excavation materials on part of the former Kenilworth landfill south of Watts Branch (i.e., the current KPS landfill), a practice that continued through much of 1998.

Initially, Driggs stockpiled soil at the north end of the landfill. This area was found to have unacceptably wet and soft soils, so Driggs confined their filling activities to the southern half of the east side. The thickness of 1997/1998 deposited material ranged up to 14 feet on the east side of Deane Avenue and up to 25 feet on the west side of Deane Avenue near the river (Woodburn 1996). The NPS directed the Driggs Corporation to suspend operation on August 20, 1998, and gave a similar directive to the Barrett Tucker Corporation not long afterwards (Wilderman 1999).

Based on the results of the PA/SI survey, the volume of this material is estimated at 400,000 cubic yards (yd^3) (Smith 1999). The 1997/1998 deposited material is in 2 sections, on either side of Deane Avenue. Material on the east side was placed by the Driggs Corporation, and material on the west side was placed by the Barrett Tucker Corporation.

After this operation was completed, the west side of Deane Avenue was covered by a thick wedge of unvegetated material sloping up from Deane Avenue to the west to a height of more than 40 feet above the river. The surface dropped off sharply at up to a 33% slope toward the north, south, and west to a drainage ditch along the toe of the recent fill, behind a berm. The drainage ditch drained south and north around the toe of the slope to silt ponds north and south of the Site, adjacent to the Anacostia River and Watts Branch, respectively.

The material east of Deane Avenue was much thinner than that west of Deane Avenue and sloped down to the east. Slopes were low except for a small but steep 2- to 5-foot drop-off at the east edge of 1997/1998 deposited material, part of which extended into the 100-year floodplain. The 1997/1998 deposited material contained construction debris and had little vegetative cover. A drainage ditch along the southeast side led to a silt pond approximately 120 feet north of the Thomas Elementary School fence line. The pond was designed to overflow to the unnamed stream that runs between Hayes Street and the Site.

The maximum dimensions of the 1997/1998 deposited material are approximately 1,500 feet north to south and 1,800 feet east to west. The volume is estimated as approximately 350,000 yards west of Deane Avenue and less than 50,000 yards east of Deane Avenue, based on elevation contours prior to and after the material was added. The eastern part of the 1997/1998 deposited material is lower than or equal in elevation to Deane Avenue and covers approximately 28 acres. The estimated thickness is less than 10 feet and as little as 2 to 3 feet in places. West

of Deane Avenue the former District landfill extends to the river, and covers an area of approximately 38 acres. The 1997/1998 material does not extend completely to the river or to Watts Branch; it comprises approximately 23 acres in extent and reaches a thickness of more than 27 feet in places. A ditch and an 8-foot high wooded berm lies between this material and the transfer station to the south. Figure 2-6 shows the locations of the 1997/1998 deposited materials.

Post-Deposition of the 1997/1998 Material

Lack of both adequate grading and vegetative cover initially resulted in erosion problems for the 1997/1998 deposited materials at the Site. Uncovered, protruding construction debris was posing a continuing physical hazard to trespassers because pedestrian access to the Site was uncontrolled.

Heavy rainfall in 1998 breached the berm located near the southwest corner of the landfill, and storm water discharged to the river. With the concurrence of the District, NPS subsequently modified the Site to improve runoff control by re-grading the 1997/1998 deposited material (west of Deane Avenue), creating or modifying ditches and berms, adding silt fence and rip-rap material in runoff swales, modifying slopes, and seeding and fertilizing. NPS also brought in rip-rap to armor some drainage.

The NPS had most of the surface construction debris removed to reduce the physical hazards. Driggs Corporation crushed and sorted concrete, extracting reinforcing wire and rebar and other metal waste, excavating accessible asphalt, and stockpiling material for removal. Driggs backfilled with material from the 100-year floodplain. Driggs removed a total of 74 truck loads of asphalt, 12 truck loads of concrete, approximately 10 truck loads of metal (5 roll-off boxes), and stabilized the access road with crushed stone.

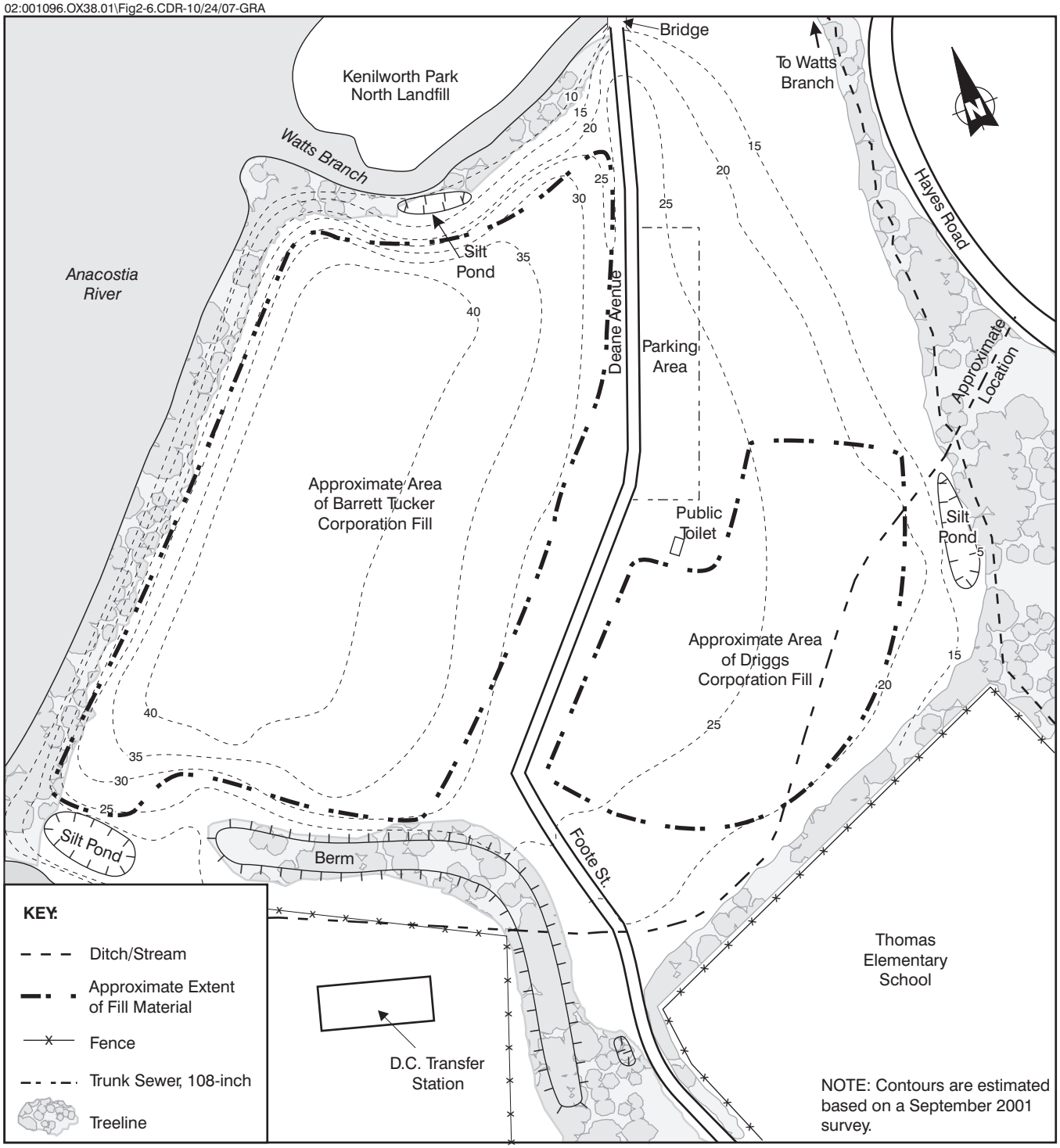
The NPS then employed Farm Service, Inc., to remove a total of 54 truck loads of concrete, primarily from the Driggs site. Silty material had eroded from the Barrett-Tucker site and accumulated at the south end of Deane Ave. It was moved onto parts of the Driggs area by park maintenance staff to provide cover that would support vegetation.

Most of the Site was already above the 100-year floodplain elevation determined by the Federal Emergency Management Agency (FEMA), at 14.7 feet above District Datum, before the 1997/1998 deposited material was added. Any new material within the 100-year floodplain was pulled back above the 100-year floodplain in 1999 (Wilderman 2001).

2.5 Previous Investigations

The following is a brief description of the previous site investigations conducted at the Site by the NPS since 1998. Figures 2-7, 2-8, and 2-9 identify locations of samples collected prior to the RI.

02:001096.OX38.01\Fig2-6.CDR-10/24/07-GRA



SOURCE: Ecology and Environment, Inc. 2001

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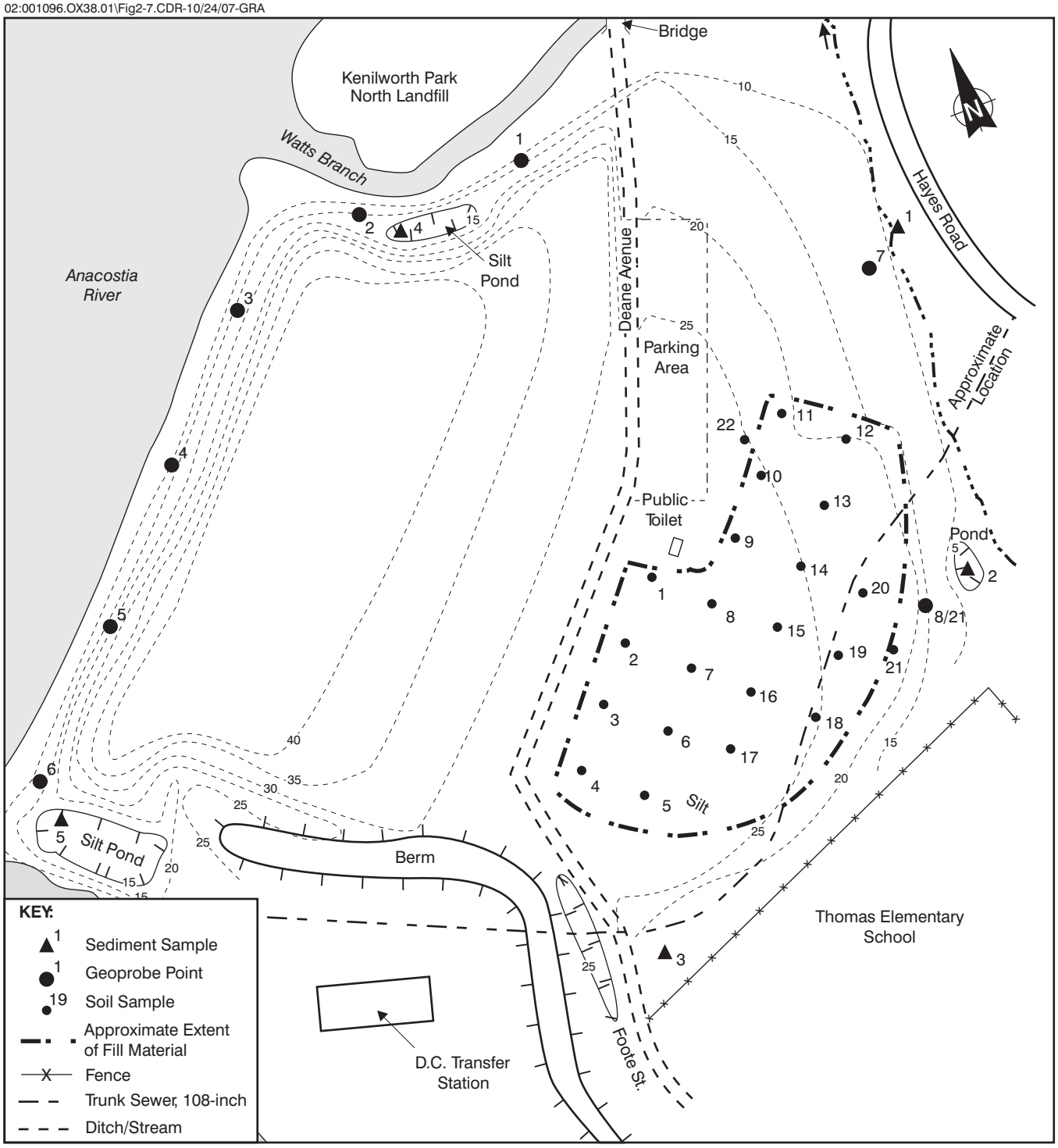
APPROXIMATE SCALE IN FEET

0 250 500 Feet

Figure 2-6 Site Feature Locations
Kenilworth Park South Landfill

02:001096.OX38.01\Fig2-7.CDR-10/24/07-GRA



SOURCE: Based on Smith 1999.

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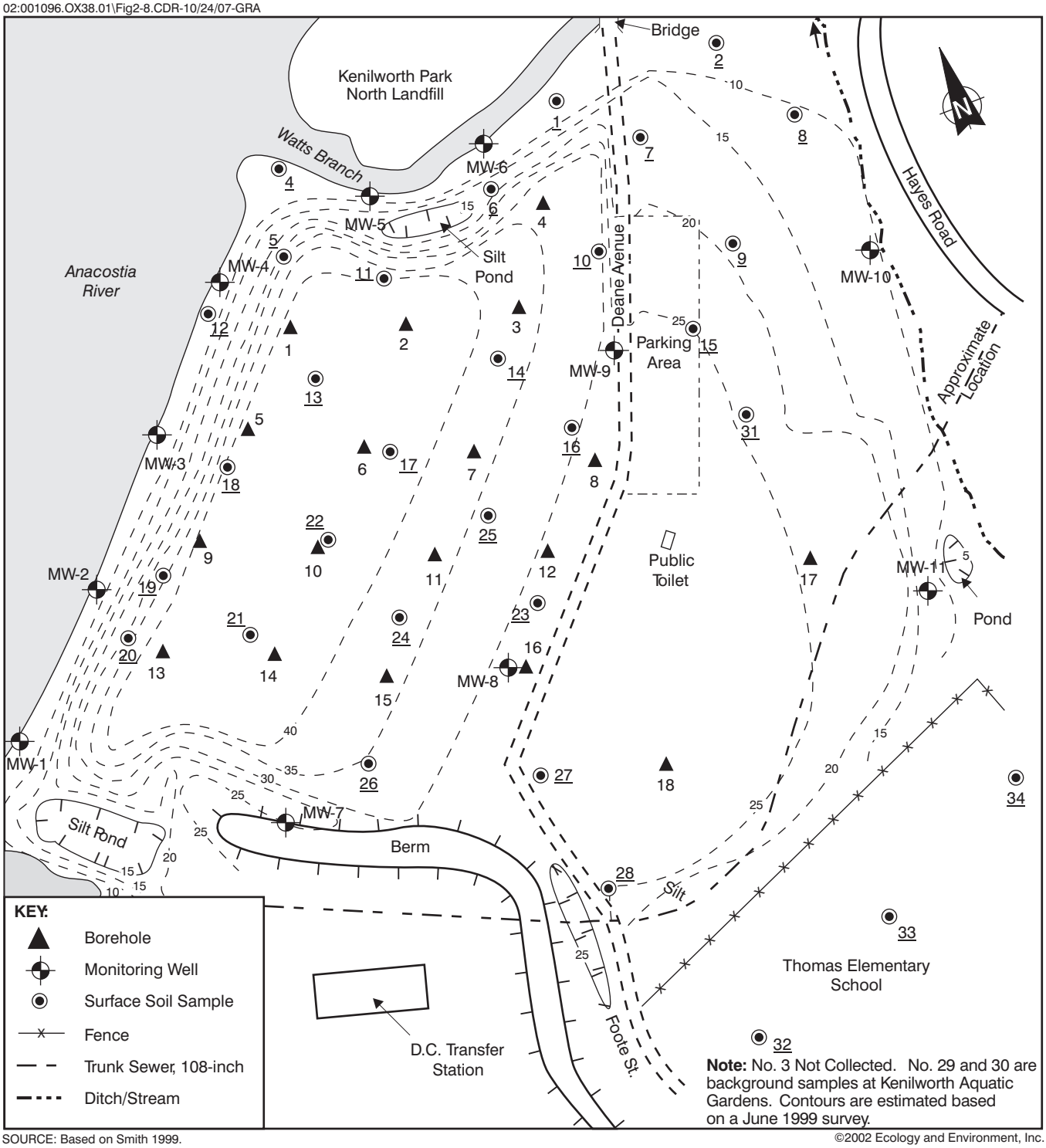
APPROXIMATE SCALE IN FEET

0 250 500 Feet

Figure 2-7 Sampling Location Map for the 1998 Sampling Event, Kenilworth Park South Landfill

02:001096.OX38.01\Fig2-8.CDR-10/24/07-GRA



SOURCE: Based on Smith 1999.

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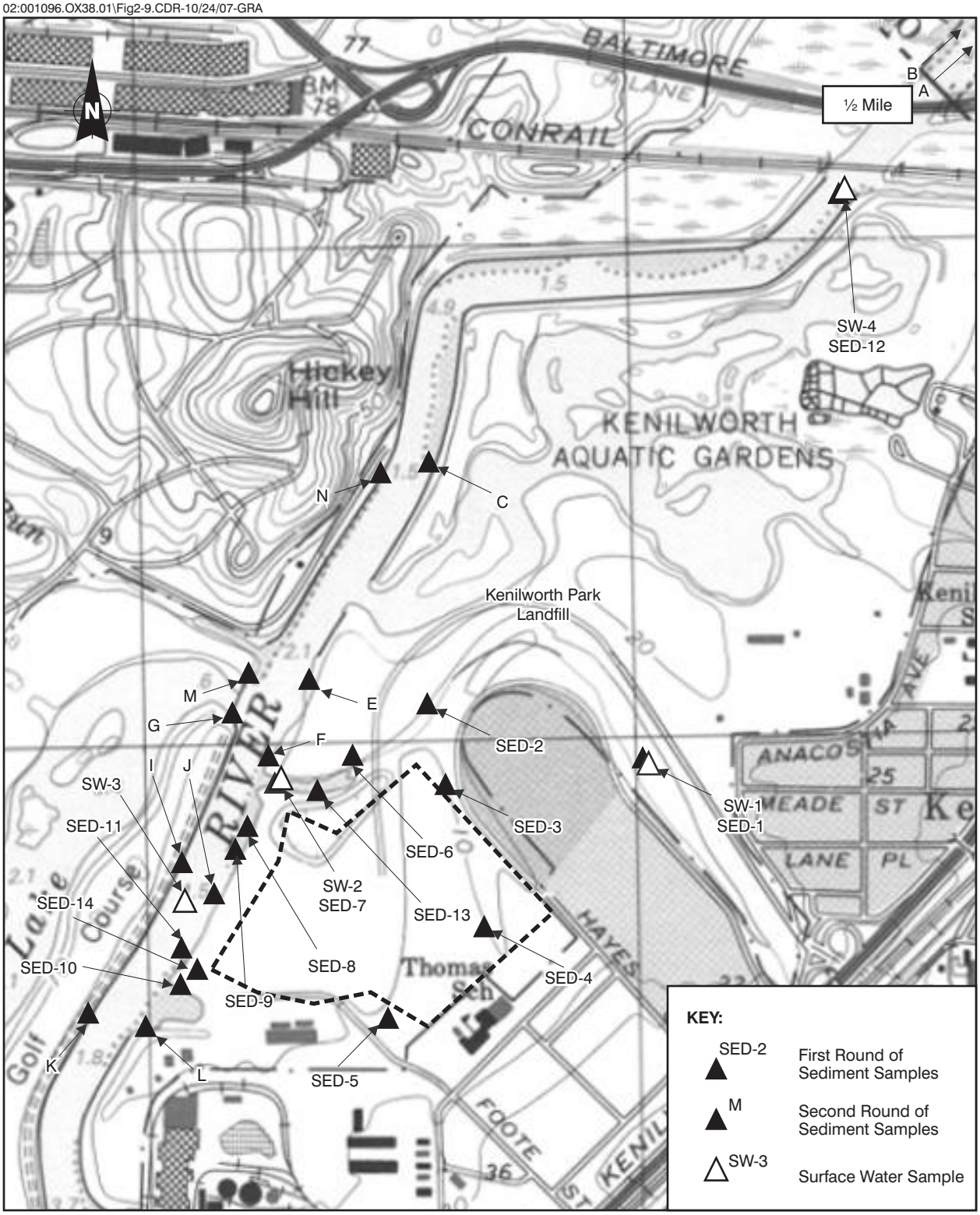
APPROXIMATE SCALE IN FEET

0 250 500 Feet

Figure 2-8 Surveyed Locations of Wells, Boreholes and Surface Soil Samples for the PA/SI 2000 Sampling Event, Keniloworth Park South Landfill

02:001096.OX38.01\Fig2-9.CDR-10/24/07-GRA



SOURCE: USGS 7.5 Minute Series (Topographic-Bathymetric) Quadrangle: Washington East, D.C., MD, 1965, Photorevised 1979.

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APPROXIMATE SCALE

0 500 1000 2000 Feet

Figure 2-9 Surface Water and Sediment Sampling Locations for the PA/SI 2000 Sampling Event, Kenilworth Park South Landfill

2.5.1 1998 Investigation

In 1998, E & E was directed by NPS to sample the 1997/1998 deposited material east of Deane Avenue, the historic fill from the landfill, and the sediments around the Site, and to collect samples of groundwater from Geoprobe® boreholes around the Site (see Appendix B). Sampling locations are presented in Figure 2-7 and the results of this sampling are presented in Appendix B.

Eight groundwater samples (1 duplicate) were collected and analyzed for total recoverable petroleum hydrocarbons (TRPHs), base/neutral acid extractable organics (BNAs), RCRA metals, and volatile organic compounds (VOCs). Twenty-four surface soil samples (2 duplicates), 5 sediment samples (1 duplicate), and 8 subsurface soil samples were collected and analyzed for TRPH, semi-volatile organic compounds (SVOCs), and RCRA metals.

2.5.2 Preliminary Assessment/Site Investigation

In 2000, E & E conducted a PA/SI of the Site. Samples were collected during 2 different sampling events. During the first round of sampling 49 (1 duplicate) subsurface samples were collected and analyzed for Target Compound List (TCL) organics, Target Analyte List (TAL) metals, and total petroleum hydrocarbons (TPHs) Thirty-five (2 duplicate) surface soil samples were collected and analyzed for semivolatile organic compounds (SVOCs) and RCRA metals. Four of the surface soil samples were also analyzed for PCBs. Fourteen sediment samples were collected and analyzed for SVOCs, pesticides, PCBs, and metals. Twelve (1 duplicate) groundwater samples and 4 surface water samples were collected and analyzed for SVOCs, pesticides, PCBs, TAL metals, TPH, cyanide, and VOCs.

During the second round of sampling, 12 sediment samples were collected and analyzed for PAHs, PCBs, and TAL metals. Seven groundwater samples were collected and analyzed for RCRA metals.

Sampling locations are presented in Figures 2-8 and 2-9 and results of the sampling are presented in Appendix B.

3 Remedial Investigation Field Activities

3.1 Introduction

The RI fieldwork for the Site was conducted in 2001 and consisted primarily of the investigation of soils and groundwater to supplement the PA/SI and to obtain additional data regarding the nature and extent of contamination needed to fully characterize the Site. Investigation activities are described below, along with the corresponding analyses. Figure 3-1 shows the surface and subsurface soil on-site sample locations and the groundwater monitoring well sample locations at the Site, and Figure 3-2 shows the off-site soil and sediment background sample locations.

The PA/SI used TCL organics and TAL metals with TPH as the initial set of analytes. These comprehensive sets of analytes were developed by the EPA to cover the most common types of contaminants likely to be found at former landfill sites. The PA/SI concluded that there was no detectable impact on surface water or on the sediments sampled that could be attributed to the Site. As a result no further samples of surface water were collected during the RI, although 1 sediment sample was collected in an upstream location on a watercourse to provide a background sample (see Appendix B).

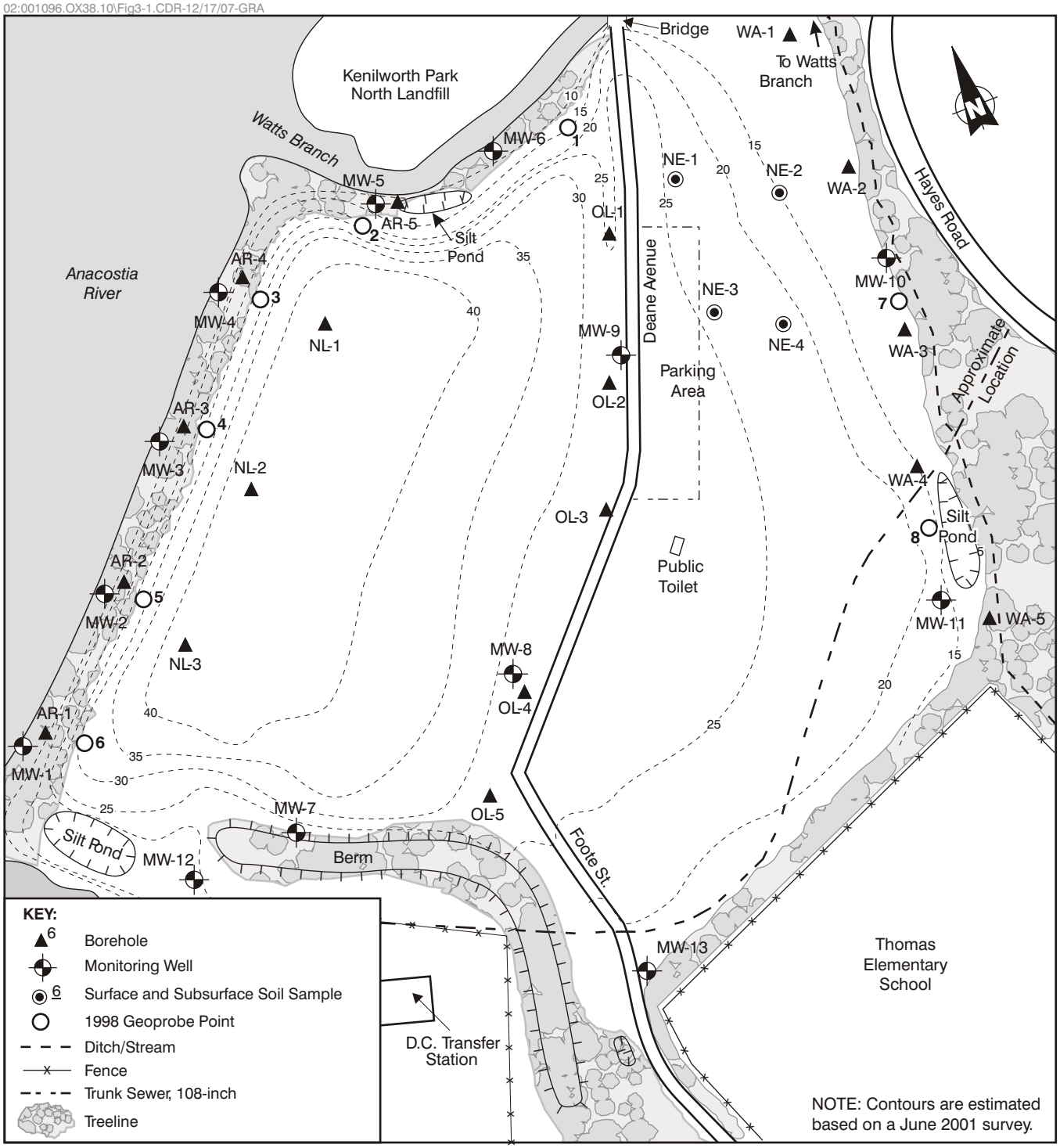
Analyses were restricted to those analytes found to be of concern during the PA/SI (i.e., metals, PAHs, and PCBs) or to confirm that the materials encountered were not RCRA hazardous waste (i.e., waste failing the Toxicity Characteristic Leaching Procedure (TCLP) test).

Tables 3-1, 3-2, and 3-3 summarize the sampling and analysis at the Site.

Specific activities performed during the RI field activities consisted of:

- Determining if the wastes beneath the former District landfill cap or the 1997/1998 deposited materials were hazardous;
- Installing two new monitoring wells south of the Site, including one well downgradient of MW-7, between the Site and the Anacostia River, in order to characterize groundwater quality downgradient of the Site.

02:001096.OX38.10\Fig3-1.CDR-12/17/07-GRA



SOURCE: Ecology and Environment, Inc. 2001

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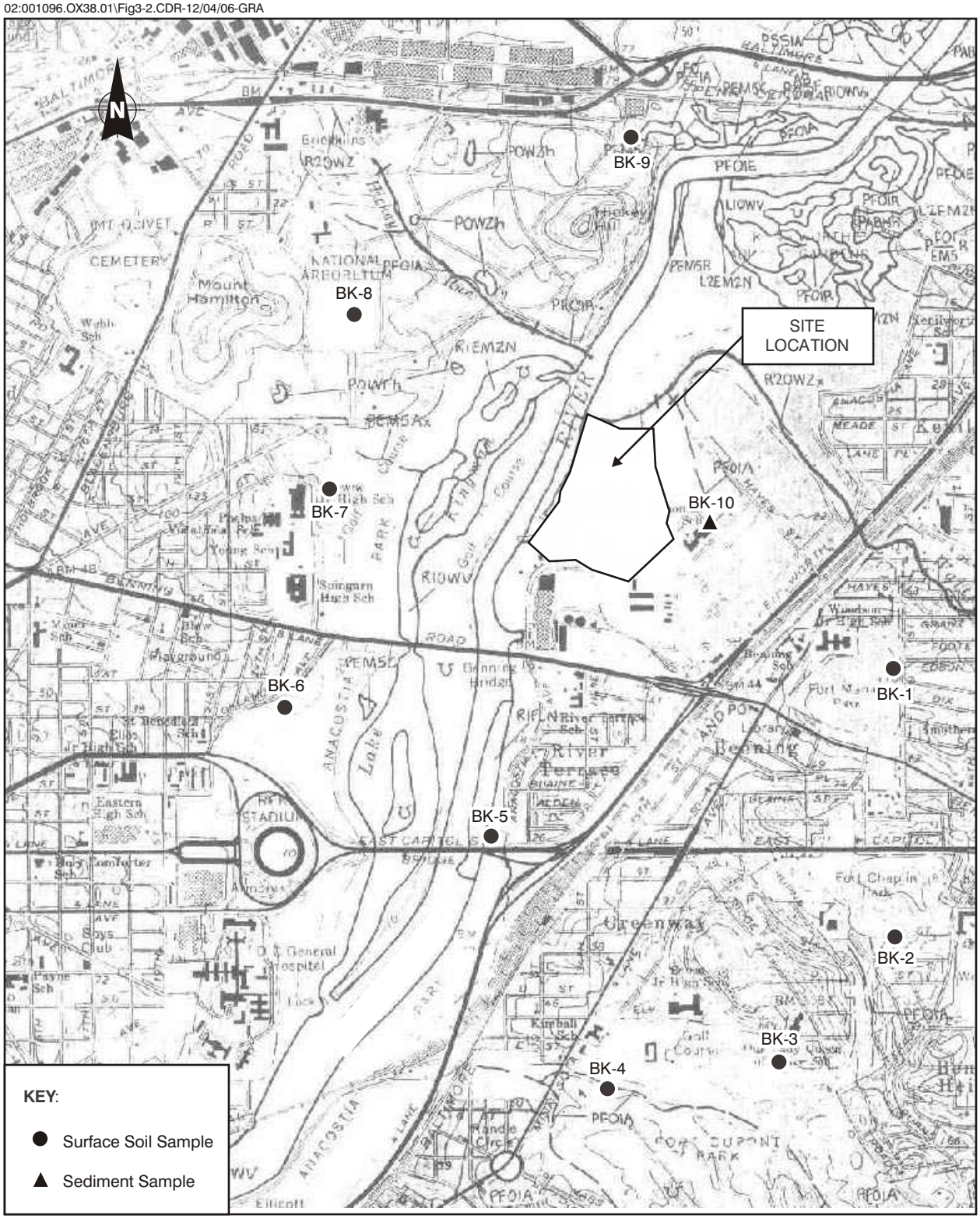
APPROXIMATE SCALE IN FEET

0 250 500 Feet

Figure 3-1 Surveyed Location of Wells, Boreholes, and Surface Soil Samples for the June 2001 and 1998 Geoprobe Locations Kenilworth Park South Landfill

02:001096.OX38.01\Fig3-2.CDR-12/04/06-GRA



SOURCE: Department of the Interior: Fish and Wildlife Service (Aerial Photography 04/81)

SCALE 1:24,000

0 ½ 1 Mile

0 .5 1 Kilometer

Figure 3-2 Location of Off–site Soil and Sediment Background Samples, June 2001, Kenilworth Park South Landfill

Table 3-1 Surface Soil and Sediment Sample Summary, Kenilworth Park South Landfill

Sample Location	Date	Analyses	Matrix	Description
KWS-SU-NE-1	6/19/2001	PCBs, PAHs, TAL Metals	Soil	Located in north east section of Site
KWS-SU-NE-2	6/19/2001	PCBs, PAHs, TAL Metals	Soil	Located in north east section of Site
KWS-SU-NE-3	6/19/2001	PCBs, PAHs, TAL Metals	Soil	Located in north east section of Site
KWS-SU-NE-4	6/19/2001	PCBs, PAHs, TAL Metals	Soil	Located in north east section of Site
KWS-SU-NE-5	6/19/2001	PCBs, PAHs, TAL Metals	Soil	Duplicate of KWS-SU-NE-4
KWS-SU-BK-1	6/20/2001	PCBs	Soil	Reference sample at Fort Mahon Park
KWS-SU-BK-2	6/20/2001	PCBs	Soil	Reference sample at Fort Chaplin Park
KWS-SU-BK-3	6/20/2001	PCBs	Soil	Reference sample at Fort Dupont Park and E street
KWS-SU-BK-4	6/20/2001	PCBs	Soil	Reference sample at Fort Dupont Park, maintenance yard
KWS-SU-BK-5	6/20/2001	PCBs	Soil	Reference sample at Anacostia Park and Blaine street
KWS-SU-BK-6	6/20/2001	PCBs	Soil	Reference sample at Anacostia Park and Oaklahoma street
KWS-SU-BK-7	6/20/2001	PCBs	Soil	Reference sample at Langston Golf Course
KWS-SU-BK-8	6/20/2001	PCBs	Soil	Reference sample at the National Arboretum, Capitol columns
KWS-SU-BK-9	6/20/2001	PCBs	Soil	Reference sample at the National Arboretum, NE fence
KWS-SU-BK-10	6/20/2001	PCBs	Sediment	Reference sample at the Grant street storm sewer outlet

Key:

PAH = Polycyclic aromatic hydrocarbons.
PCB = Polychlorinated biphenyl.
TAL = Target Analyte List.

Table 3-2 Subsurface Soil Sample Summary, Kenilworth Park South Landfill

Sample Location	Date	Sample Depth (ft BGS)	Analyses	Description
KWS-SS-NE-1	6/19/2001	6-8	PCBs, PAHs, TAL Metals	In old landfill
KWS-SS-NE-2	6/19/2001	10-12	PCBs, PAHs, TAL Metals	In old landfill
KWS-SS-NE-3	6/19/2001	5-6	PCBs, PAHs, TAL Metals	In old landfill
KWS-SS-NE-4	6/19/2001	6-7	PCBs, PAHs, TAL Metals	In old landfill
KWS-SS-AR-1	6/18/2001	2.5	PCBs, PAHs, TAL Metals	In old landfill
KWS-SS-AR-2	6/18/2001	1	PCBs, PAHs, TAL Metals	In old landfill
KWS-SS-AR-3	6/18/2001	1.25	PCBs, PAHs, TAL Metals	In old landfill
KWS-SS-AR-4	6/18/2001	2	PCBs, PAHs, TAL Metals	In old landfill
KWS-SS-AR-5	6/18/2001	1.5	PCBs, PAHs, TAL Metals	In old landfill
KWS-SS-AR-6	6/18/2001	1.5	PCBs, PAHs, TAL Metals	Duplicate of AR-5
KWS-SS-WA-1	6/19/2001	2-3	PCBs, PAHs, TAL Metals	Above old landfill
KWS-SS-WA-2	6/19/2001	1.5-2.5	PCBs, PAHs, TAL Metals	Above old landfill
KWS-SS-WA-3	6/19/2001	6.5-7.5	PCBs, PAHs, TAL Metals	In old landfill
KWS-SS-WA-4	6/19/2001	6-7	PCBs, PAHs, TAL Metals	In old landfill
KWS-SS-WA-5	6/19/2001	2.5-4	PCBs, PAHs, TAL Metals	In old landfill
KWS-SS-OL-1	6/19/2001	8-9.5	Full TCLP	In old landfill
KWS-SS-OL-2	6/19/2001	8-12	Full TCLP	In old landfill
KWS-SS-OL-3	6/19/2001	4-12	Full TCLP	In old landfill
KWS-SS-OL-4	6/19/2001	4-8	Full TCLP	In old landfill
KWS-SS-OL-5	6/19/2001	4-8	Full TCLP	In old landfill
KWS-SS-OL-6	6/19/2001	4-8	Full TCLP	Duplicate of OL-5
KWS-SS-NL-1	6/18/2001	1	Full TCLP	In 1997/98 material fill
KWS-SS-NL-2	6/18/2001	1	Full TCLP	In 1997/98 material fill
KWS-SS-NL-3	6/18/2001	1	Full TCLP	In 1997/98 material fill

Key:

BGS = Below ground surface.
ft = Feet.
PAH = Polycyclic aromatic hydrocarbons.
PCBs = Polychlorinated biphenyls.
TAL = Target Analyte List.
TCLP = Toxicity characteristic leaching procedure.

Table 3-3 Groundwater Sample Summary and Field Chemistry Measurements, Kenilworth Park South Landfill

Sample Location	Date	Analyses	pH (s.u.)	Conductivity (mS/cm)
KWS-MW-1	6/18/2001	TAL Metals	NA	NA
KWS-MW-2	6/18/2001	TAL Metals	6.77	1.488
KWS-MW-3	6/18/2001	TAL Metals	6.94	1.964
KWS-MW-4	6/19/2001	TAL Metals	NA	NA
KWS-MW-5	6/19/2001	TAL Metals	6.89	2.202
KWS-MW-6	6/21/2001	TAL Metals	7.16	1.671
KWS-MW-7	6/22/2001	TAL Metals	8.19	1.212
KWS-MW-8	6/22/2001	TAL Metals	7.76	2.574
KWS-MW-8D	6/22/2001	TAL Metals	NA	NA
KWS-MW-9	6/22/2001	TAL Metals	6.63	1.623
KWS-MW-10	6/21/2001	TAL Metals	6.98	1.056
KWS-MW-11	6/22/2001	TAL Metals	7.00	1.027
KWS-MW-12	6/27/2001	TCL Organics, TAL Metals	7.39	1.053
KWS-MW-12D	6/27/2001	TCL Organics, TAL Metals	NA	NA
KWS-MW-13	6/29/2001	TCL Organics, TAL Metals	6.53	0.945

Key:

D = Duplicate.
mS/cm = Milli-Siemens per centimeter.
NA = Not available.
s.u. = Standard units.
TAL = Target Analyte List.
TCL = Target Compound List.

- Sampling surface soils in the northeast sector of the Site that had not been previously sampled in order to further delineate the nature and extent of surface contamination;

- Sampling subsurface soils from the former District landfill in areas outside the 1997/1998 deposited materials to further determine the extent of subsurface contamination;

- Sampling additional soils for PCBs in areas not directly affected by the Site in order to identify potential off-site sources of PCB contamination; and

- Confirming groundwater quality within all portions of the Site using existing wells.

Additional data were incorporated into the evaluation of background levels of metals, and off-site concentrations of PAHs and PCBs in surface soils, which are a primary source of potential exposure. These data were derived from supplemental sampling in the yard of the Thomas Elementary School used to provide the basis for an Agency for Toxic Substances and Disease Registry (ATSDR) Health Consultation of the exposures of pupils and staff. Since the soils were found to be unaffected by their proximity to the Site, the data is used in this RI as off-site reference information, as is the data from the three samples collected in the school yard during the PA/SI.

3.2 Surface Soil Investigation

Surface soils were sampled for two purposes. The primary purpose was to characterize the nature and extent of contamination of areas not previously sampled for all contaminants of potential concern or those not sampled at all on the Site. No surface soils had been collected previously from the northeast area of the Site. These soils (4 samples and 1 duplicate sample) were collected during the RI and analyzed for TAL metals, PAHs, and PCBs.

The other surface soils collected during the RI were from areas outside the Site's influence. These soil samples (KWS-SU-BK-1 through KWS-SU-BK-9) were used to establish the reference data for PCBs. The sample locations were Anacostia Park, the National Arboretum, Langston Golf Course (outside the former District landfill area), Fort Chaplin Park, Fort Mahan Park, and Fort Dupont Park.

Table 3-1 presents the RI surface soil sample summary. The sampling locations are indicated on Figures 3-1 and 3-2.

The surface soil samples were collected with dedicated stainless steel spoons and placed in appropriate sample containers. The samples were placed in a cooler maintained with ice at 4°C and shipped to the laboratory via overnight delivery with chain-of-custody documents prepared in accordance with procedures specified in the work plan.

3.3 Subsurface Soil Investigation

3.3.1 Soil Borings

Subsurface soils were collected for a number of purposes. Samples were collected to characterize areas of the Site that were not sampled during the PA/SI. Five samples and a duplicate (KWS-SS-AR-1 through KWS-SS-AR-6) were collected along the Anacostia River outside the 1997/1998 deposited material in order to determine the level of contamination in the former District landfill waste. Five samples (KWS-SS-WA-1 through KWS-SS-WA-5) were collected along the wetland east of the 1997/1998 deposited material in order to determine whether discharge of groundwater and runoff from the landfill and independent storm water discharge from the Grant Street storm water drain contributed contaminants to the wetland. Four additional samples (KWS-SS-NE-1 through KWS-SS-NE-4) were collected from the northeast quadrant of the Site in order to characterize possible contaminants in the cap material. All samples were analyzed for TAL metals, PAHs, and PCBs.

An additional eight samples were collected and analyzed by TCLP in order to determine if landfill material samples KWS-SS-OL-1 through KWS-SS-OL-6) (5 samples and a duplicate sample) and the 1997/1998 deposited material (KWS-SS-NL-1 through KWS-SS-NL-3) could be characterized as hazardous waste according to RCRA.

All but five of the subsurface soils were collected by direct push technology (DPT) using Geoprobe® equipment. Five subsurface soils were collected in areas inaccessible to the Geoprobe®, and for this reason they were collected by using a hand auger.

Table 3-2 presents the subsurface soil sample summary and the boring locations are indicated on Figure 3-1.

Geoprobe® equipment forces a hollow tubular steel sampler with a plastic liner into the ground using a hydraulic hammer. The liner is extracted and cut open to expose the cylindrical core. Recovery was variable since coarse material such as cobbles and gravel could block the sampler, and saturated finer grained material could flow out of the core while it is being withdrawn from the ground. A new liner was used for each sample and the steel corer was decontaminated after each use.

The hand auger was advanced into the ground with a screwing action that collected soil between the broad semicircular blades, which were then withdrawn, creating a 4-inch hole. Soil was collected from between the blades once the sampling depth was reached. The auger was then decontaminated before being used at a new location.

Each Geoprobe® soil core was laid on sheet plastic for extraction from the sampling device. A general description of the soil core was noted in the logbook.

The grab sample was collected at the designated depth, and a portion was used to fill the appropriate sample container.

The samples were collected using dedicated stainless steel spoons and placed in appropriate sample containers. The jar was labeled and submitted for analysis. The filled sample containers were placed on ice.

Boreholes were backfilled as far as practicable with any excess sample material and the hole plugged with bentonite and flagged for future surveying.

3.3.2 Air Monitoring

An explosimeter was used during drilling and Geoprobe® activities to determine if air in and around the boreholes contained explosive gas levels. Combustible gases were not found in ambient air. However, the two wells and Geoprobe® boreholes drilled into the former District landfill west of Deane Avenue and in the northeast section of the Site showed explosive levels of landfill gases, indicating that landfill gases are present at least in some areas in the subsurface.

3.4 Groundwater Investigation

The focus of the RI groundwater investigation was to confirm the results of the PA/SI by re-sampling all of the existing wells (MW-1 through MW-11) and analyzing the samples for metals. In addition, two wells, MW-12 and MW-13, were installed on the south side of the Site to fill a gap in the data around the Site perimeter. These wells were intended to characterize groundwater on the south side of the Site.

MW-12 and MW-13 were sampled and analyzed for the same parameters as the original wells: TCL organics, TAL metals, and TPHs.

3.4.1 Monitoring Well Installation

MW-12 and MW-13 were placed to intercept groundwater flow migrating from well MW-7 and from the general southern area of the Site, respectively.

Wells were advanced by a truck-mounted drill rig using hollow-stem auger (HSA) technology through the cap and were screened across the water table. The screen was 10 feet long to avoid mixing landfill leachate with other groundwater.

Wells were installed by a licensed driller under the supervision of a qualified geologist, who prepared a well log based on split spoon samples and consultation with the driller on variations in drilling resistance, indicating the nature of layers within the fill. Once the drill had clearly reached the water table, the geologist determined the depth for setting the screen.

Each well was completed with a sand pack approximately 2 feet above the top of the screen, a bentonite seal above the sand pack, and concrete to the surface. The driller constructed the wells and the geologist noted the type and quantity of

materials used. The driller then developed the wells and completed the wells with a lockable steel surface casing.

The well locations are shown on Figure 3-1, well construction information is presented in Table 3-4, and monitoring well borehole logs are located in Appendix D.

3.4.2 Monitoring Well Development

Following construction of the new wells, MW-12 and MW-13 were developed using a low-flow submersible pump. Both wells were developed to yield clear water. The wells were initially purged in order to draw fine sediments out of the sand pack and into the well for removal. Data on groundwater monitoring well development is presented in Table 3-5.

3.4.3 Groundwater Sampling

Groundwater samples were collected from MW-12 and MW-13 and the 11 previously existing groundwater monitoring wells at the Site (MW-1 to MW-11). The new wells were sampled more than 48 hours after development had been completed to allow the well to refill with groundwater representative of the adjoining materials in the immediate vicinity of the well.

MW-12 and MW-13 were sampled for the full range of TCL compounds and for both TAL metals and TPHs. This enables comparison of results from these wells to those of the first round of sampling from the existing wells.

During the RI, the previously existing wells (MW-1 to MW-11) were sampled for TAL metals only, since these were the only contaminants of potential concern identified previously.

Before purging, static water levels were measured to within ±0.01 foot in each well with a water-level indicator.

A low-flow peristaltic pump was used to purge the wells. The field team attempted to purge all the existing 11 wells and the 2 new wells of at least 3 times the volume of water standing in the screen and sand pack. However, wells MW-1 through MW-6 temporarily ran dry and were allowed to recharge several times, but with little success because of the low recharge rate; samples were collected although the wells did not yield clear water. This may have biased the analytical results of the metals data because metals could be bound to the suspended material.

Specific conductance and pH were measured and recorded during purging. Turbidity at the time of sampling was noted on the field logbook. No field filtering was performed.

Table 3-5 presents data on groundwater monitoring well purging, and Table 3-3 presents the groundwater sample summary and field chemistry measurements.

Table 3-4 Groundwater Monitoring Well Construction Summary, Kenilworth Park South Landfill

Well Location	Depth of Well (ft BGS)	PVC Well Casing Diameter (in)	Screen Length (ft)	Screen Interval (ft BGS)	Screen Type	Sand Pack Interval (ft BGS)	Bentonite Seal Interval (ft BGS)	Protection
KWS-MW-12	20	2	10	10-20	#10 (.01ft)	8-20.2	6-8	3 ft Projecting Protective Casing, Lock
KWS-MW-13	20	2	10	10-20	#10 (.01ft)	8-20.2	6-8	Flush Mount Casing, Lock

Key:

BGS = Below ground surface.
ft = Feet.
IN = Inches.
PVC = Polyvinyl chloride.

Table 3-5 Groundwater Monitoring Well Development and Purging Summary, Kenilworth Park South Landfill

Well Location	Depth of Well (ft)	Depth to Water (ft)	Depth of Water (ft)	Volume of Water (gal)	Volume Pumped – Well Development (gal)	Volume Pumped – Well Purging before Sampling (gal)
KWS-MW-1	7.9	3.6	4.3	2.8	N/A	1.5
KWS-MW-2	7.9	2.8	5.1	3.3	N/A	2
KWS-MW-3	7.9	3.9	4	2.6	N/A	1
KWS-MW-4	7.9	3	4.9	3.2	N/A	1.5
KWS-MW-5	7.9	4.8	3.1	2	N/A	0.75
KWS-MW-6	7.9	4.8	3.1	2	N/A	0.5
KWS-MW-7	31.5	22.5	9	5.9	N/A	17.5
KWS-MW-8	27.3	14.4	12.9	8.4	N/A	17
KWS-MW-9	24.1	17.7	6.4	4.1	N/A	12
KWS-MW-10	17.5	10.1	7.4	5.2	N/A	15.6
KWS-MW-11	17.5	10.5	7	4.6	N/A	16.5
KWS-MW-12	22.2	17.3	4.9	3.1	30	10
KWS-MW-13	20.2	13.2	7	4.6	25	12

Key:

ft = Feet.
gal = Gallons.
N/A = Not applicable.

3.4.4 Aquifer Testing

Aquifer testing was performed in the 2 new wells, MW-12 and MW-13, to determine hydraulic conductivity and on existing wells MW-6 and MW-10 to evaluate tidal influence on groundwater.

The tests on wells MW-12 and MW-13 consisted of rising head slug tests to determine the hydraulic conductivity of the material in the vicinity of each well. The test was performed by removing a previously submerged slug and recording changes in water elevation on a Hermit 2000 data logger. In the 2 wells tested, water level was back to its static level within a few minutes. Data interpretation was completed using the Bouwer-Rice solution for an unconfined aquifer on Aqtesolv® software (Appendix E). (Hydraulic conductivity results are presented in Section 4, Table 4-1.)

The tests on wells MW-6 and MW-10 consisted of simultaneous logging of changes in water elevation in the 2 wells to evaluate the influence the tide might have on groundwater at the Site. MW-10 was selected for its location on the east side of the Site, more than 1,200 feet from the tidally influenced Anacostia River. MW-6 was selected for its location next to the tidal Watts Branch as the location with a high probability of seeing some tidal influence. The test was performed over a 12-hour period. Data was automatically recorded on 2 Hermit 2000 data loggers; results are presented graphically in Appendix F and discussed in Section 4.3.2

3.5 Sediment Investigation

One sediment sample was collected at the outlet of the Grant Street storm water drain as a reference sample for the unnamed stream flowing on the east side of the Site. This sample was analyzed for PCBs. Table 3-1 contains the sediment sample summary and the sampling location is indicated on Figure 3-2.

3.6 Site Survey

A topographic base map of the Kenilworth Park South Landfill and its immediate surroundings was developed in 1999 as part of the PA/SI. Some material on-site was removed or re-graded and the contours have changed after 1999, necessitating the completion of a new survey for the RI.

The post-1999 RI survey included horizontal GPS positioning of all the soil sampling locations and a topographic survey of the top of inner casing elevation of the new groundwater monitoring wells installed during this RI and the elevation of other key points for the update of the Site topographic contours. Soil sampling locations along the river were referenced by compass and tape to existing monitoring wells.

The groundwater elevation summary is presented in Table 3-6 and the sample locations were plotted on the base map (Figure 3-1).

Table 3-6 Groundwater Elevation Summary, Kenilworth Park South Landfill (June 2001)

Well Location	TOIC Elevation (ft AMSL)	Depth of Well (ft)	Depth to Water (ft)	Depth of water (ft)	Groundwater Elevation (ft AMSL)
KWS-MW-1	5.31	7.9	3.6	4.3	1.71
KWS-MW-2	5.86	7.9	2.8	5.1	3.06
KWS-MW-3	5.04	7.9	3.9	4	1.14
KWS-MW-4	5.48	7.9	3	4.9	2.48
KWS-MW-5	6.28	7.9	4.8	3.1	1.48
KWS-MW-6	5.35	7.9	4.8	3.1	0.55
KWS-MW-7	27.30	31.5	22.5	9	4.80
KWS-MW-8	30.54	27.3	14.4	12.9	16.14
KWS-MW-9	28.48	24.1	17.7	6.4	10.78
KWS-MW-10	14.36	17.5	10.1	7.4	4.26
KWS-MW-11	17.04	17.5	10.5	7	6.54
KWS-MW-12	21.75	22.2	17.3	4.9	4.45
KWS-MW-13	19.78	20.2	13.2	7	6.58

Key:

AMSL = Above mean sea level.
ft = Feet.
TOIC = Top of inner casing.

3.7 Quality Assurance/Quality Control Procedures

This section summarizes the quality assurance/quality control (QA/QC) procedures used and results for the QA/QC samples collected and analyzed during RI activities. All sampling and analytical procedures were consistent with the QA/QC requirements described in the RI Work Plan.

QA/QC concerns that may affect data usability and a discussion of potential impacts are presented below.

3.7.1 Decontamination Procedures

Sampling methods and equipment were chosen to minimize decontamination requirements and prevent the possibility of cross-contamination. All drilling and soil boring equipment were decontaminated prior to drilling or boring, after drilling each monitoring well or installation of each boring, and after the completion of all drilling and soil boring. Special attention was given to items coming into contact with the sample. Non-disposable sampling equipment was decontaminated by the following procedure:

- Initially cleaned of all foreign matter;
- Scrubbed with brushes in trisodium phosphate solution;
- Rinsed with deionized water;

- Allowed to air dry.

A temporary decontamination area was established on-site using heavy plastic sheeting as a pad.

3.7.2 Field QC Samples

Field QC samples check ways that sample quality is not compromised in the field or through shipping and documents overall sampling precision. The following sections describe field QC samples collected during the RI.

3.7.2.1 Trip Blanks

Trip blanks check for the possible introduction of VOCs from the time the samples are collected to the time they are analyzed. Trip blanks were prepared in the field by filling 40 milliliter (mL) glass vials with organic-free deionized water. They were handled as field samples. One trip blank sample accompanied each shipment containing samples to be analyzed for VOCs.

All trip blank sample results were non-detect. Overall, the trip blank results indicate acceptable sample shipment and handling procedures both in the field and the laboratory.

3.7.2.2 Duplicate Samples

Consistency in both sample collection and sample analysis is checked through analysis of duplicate samples. Duplicate samples consist of aliquots of sample media placed in separate sample containers and labeled as separate samples. Duplicate samples were collected at a rate of approximately 1 per 10 field samples.

In general, the field duplicates indicated good precision for all parameters (see Appendix J).

3.7.2.3 Rinseate Sample

Rinseate blanks check for the possible introduction of contaminants from the inadequate decontamination of non-disposable sampling equipment. One rinseate sample was collected in the field by filling containers with organic-free deionized water used for rinsing non-disposable equipment.

All PCB rinseate sample results were non-detect. However, results of PAH analysis showed benzo(a)pyrene at 0.196 micrograms per liter (μg/L) (J-qualified), and dibenz(a,h)anthracene at 0.594 μg/L (N-qualified); results of metal analyses showed aluminum at 245 μg/L, calcium at 639 μg/L (J-qualified), copper at 12.7 μg/L (J-qualified), iron at 79.8 μg/L (J-qualified), manganese at 2.99 μg/L (J-qualified), potassium at 34.4 μg/L (J-qualified), selenium at 7.85 μg/L (J-qualified), and zinc at 7 μg/L (J-qualified). These results indicate the possibility of very low-level cross-contamination during soil sampling events but not at levels that affect data interpretation for soils samples.

3.7.3 Laboratory QC Samples

Laboratory QC samples are used to check analytical precision. This is accomplished by routinely performing several internal QC checks. QC procedures used during the RI sample analyses included method and calibration blanks and matrix spike/matrix spike duplicate analysis.

Results and quantitation limits are considered to be estimated values when flagged *J* or *UJ* and unusable when flagged *R* and *UR*. Any *J* qualifier not explained in the case narrative report (see Appendix J) indicates that the level detected is below the quantitation limit but above the method detection limit and is an estimated value. An N-qualified sample indicates that the result was not confirmed by a second column. None of the field data were rejected as unusable.

4 Analysis of Physical Site Characteristics

This section presents the results of the physical investigations conducted during the RI field investigation and previous investigations.

4.1 Topography

Upon closure, the landfill was capped and seeded. The landfill slopes upwards from the Anacostia River and Watts Branch, plateaus, and then extends to a ridge along Deane Avenue. The landfill reached a maximum height of 28 feet AMSL near the public toilets. A sketch of the Site contours following closure is shown in Figure 2-5.

Currently, the Site slopes off gently to the east until it reaches a 3 to 4 foot sharp drop off at the edge of the Driggs material. Further to the west, the 1997/1998 deposited material is much thicker, beginning in a sharp rise near Deane Avenue and then sloping gently upwards to the west. It culminates at approximately 43 feet AMSL and slopes sharply downwards at an approximate 1:3 slope to a shallow ditch and berm on the west, north, and south.

NPS slightly modified the shape of the 1997/1998 deposited material by removing large concrete and asphalt pieces and rebar projecting from the surface on the east side of Deane Avenue and modifying the west side by re-grading to re-direct runoff.

On the west side of Deane Avenue, low berms and swales direct runoff from the top of the mound into a semi-permanent pond. The highest elevations of the landfill remain above 40 feet AMSL, and the slopes to the west, south, and north are still steep.

Based on the 2001 survey and previous survey results (Smith 1999), elevations were interpolated between measured points to create a Site contour map, which is presented in Figure 2-2.

4.1.1 KPS Landfill Cap

As discussed in Section 2.4.2, the landfill was capped after its closure in 1970 and additional materials were deposited on top of the cap in 1997 and 1998. The current ground surface elevations were compared with the ground elevations prior to 1997-1998 (Woodburn 1996) to estimate the thickness of the 1997/1998

deposited material. Figure 4-1 presents the estimated thickness of the deposited material. Figures 4-2 through 4-4 provide cross-sections of the landfill and the cap to show the elevation and thickness of the cap.

4.1.2 Soil/Landfill Waste Volumes

Historical records indicate that the Site was placed on mudflats, marshes, and open water. These marshes and mudflats were at or close to sea level. The wastes and cap placed before 1970 closure represent a volume of approximately 1.5 million cubic yards based on the survey by Woodburn (1996).

Based on the elevations from the 1999 (Smith 1999) and 2001 (Appendix C) surveys, the greatest volume of 1997/1998 deposited material was placed west of Deane Avenue. From the cross sections shown in Figures 4-2, 4-3, 4-4, and 4-5 and thickness of the new material shown in Figure 4-1, it is estimated that the Barrett Tucker Corporation placed approximately 350,000 cubic yards (yd^3) of material west of Deane Avenue, and the Driggs Corporation placed approximately 50,000 yd^3 or less east of Deane Avenue.

Since the PA/SI, the NPS removed 74 truckloads (approximately 888 yd^3) of asphalt and an additional 66 truckloads and 5 roll-off boxes of concrete and metal debris (approximately 892 yd^3) to an off-site landfill. The approximate 1,800 yd^3 of material were removed from areas where the material appeared to represent a physical hazard to trespassers, mainly on the east side of the Site. The amounts removed do not significantly alter the total amounts deposited or the profiles of the cross-sections, which are discussed in the following section.

4.2 Site Soils and Geology

This section describes the soils and underlying geology of the Site.

As discussed in Section 2.3.1, the Site lies in the Coastal Plain geologic province approximately 3 miles southeast of the fall line marking the boundary between the Piedmont and the Coastal Plain provinces (U.S. Department of Agriculture [USDA] July 1976). Major fieldwork for this USDA soil survey was carried out from 1974 to 1975 after the landfill was closed. Consequently, the soil survey shows the Site underlain by U118 Udorthents, deep, with 0% to 8% slopes. Udorthents consist of "very heterogeneous, earthy fill materials that have been placed on poorly drained to somewhat excessively drained soils on terraces and floodplains." However, this classification is misleading because the slopes on the surface of the landfill, as modified by the placement of the 1997/1998 deposited materials, are often much greater than 8%, especially around the edges of the Site.

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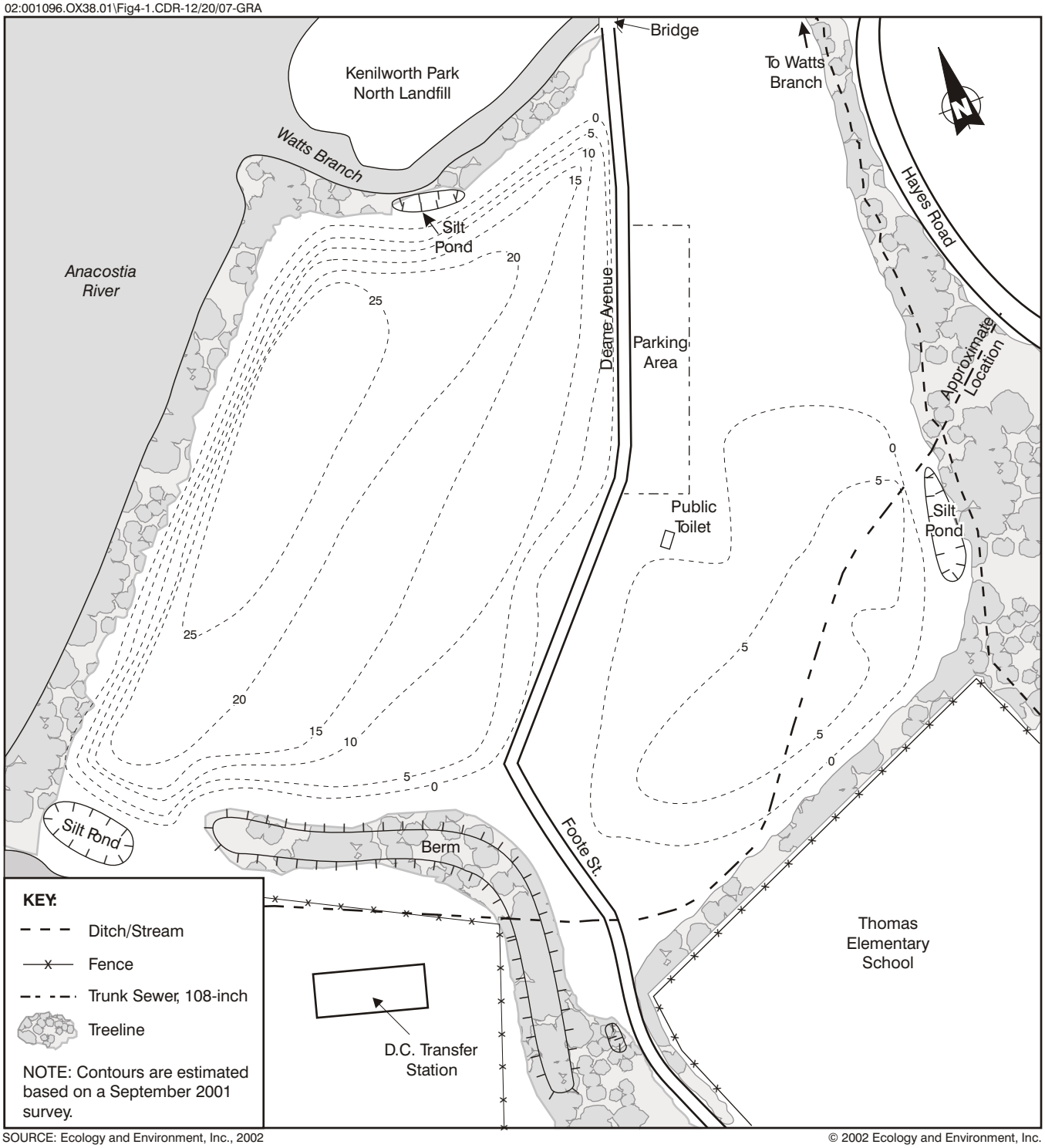

SOURCE: Ecology and Environment, Inc., 2002

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APPROXIMATE SCALE IN FEET

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Figure 4-1 Estimated Thickness of the New Fill Contour Map, Kenilworth Park South Landfill

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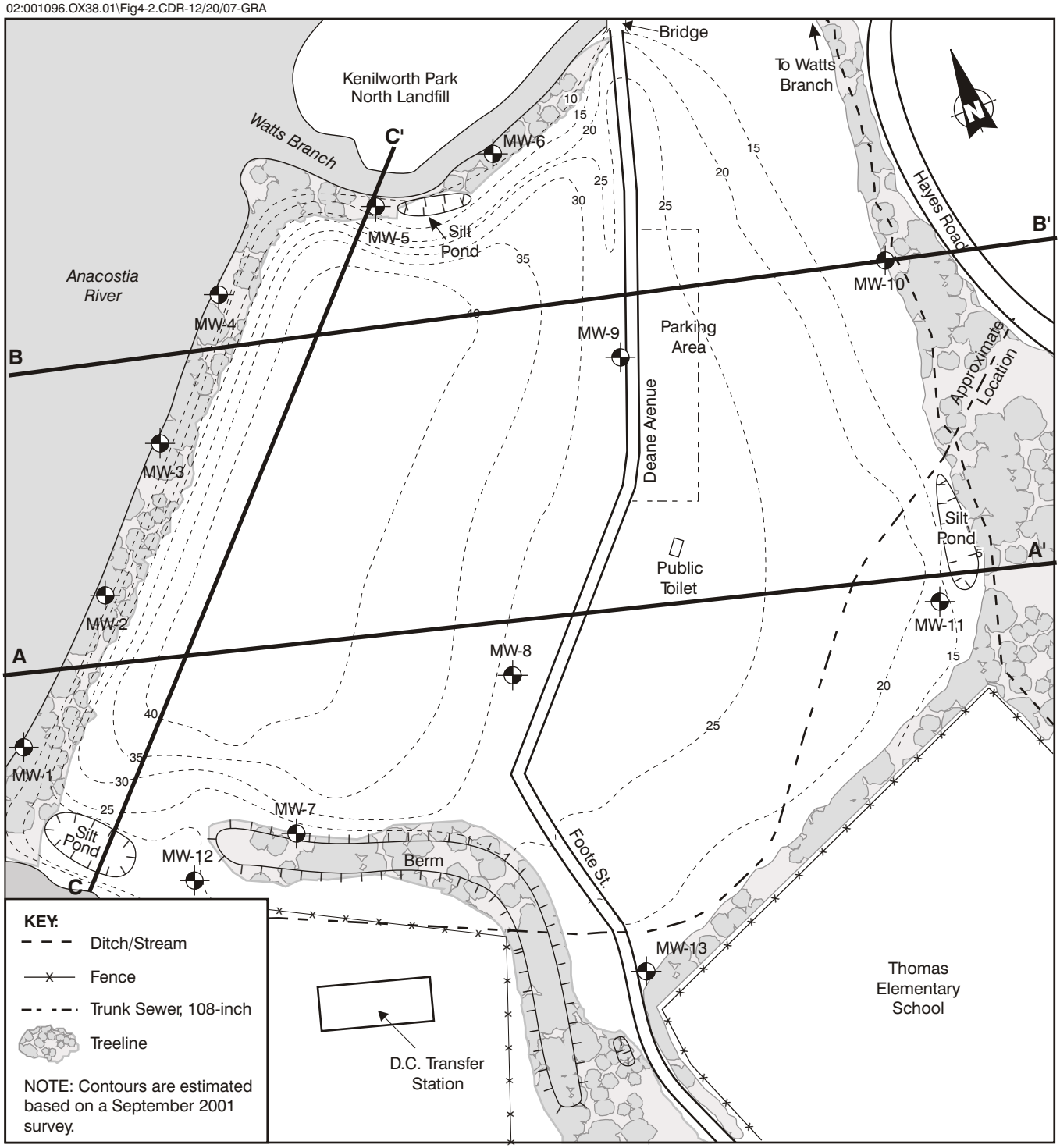

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APPROXIMATE SCALE IN FEET

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Figure 4-2 Stratigraphic Cross-Section Locations, Kenilworth Park South Landfill

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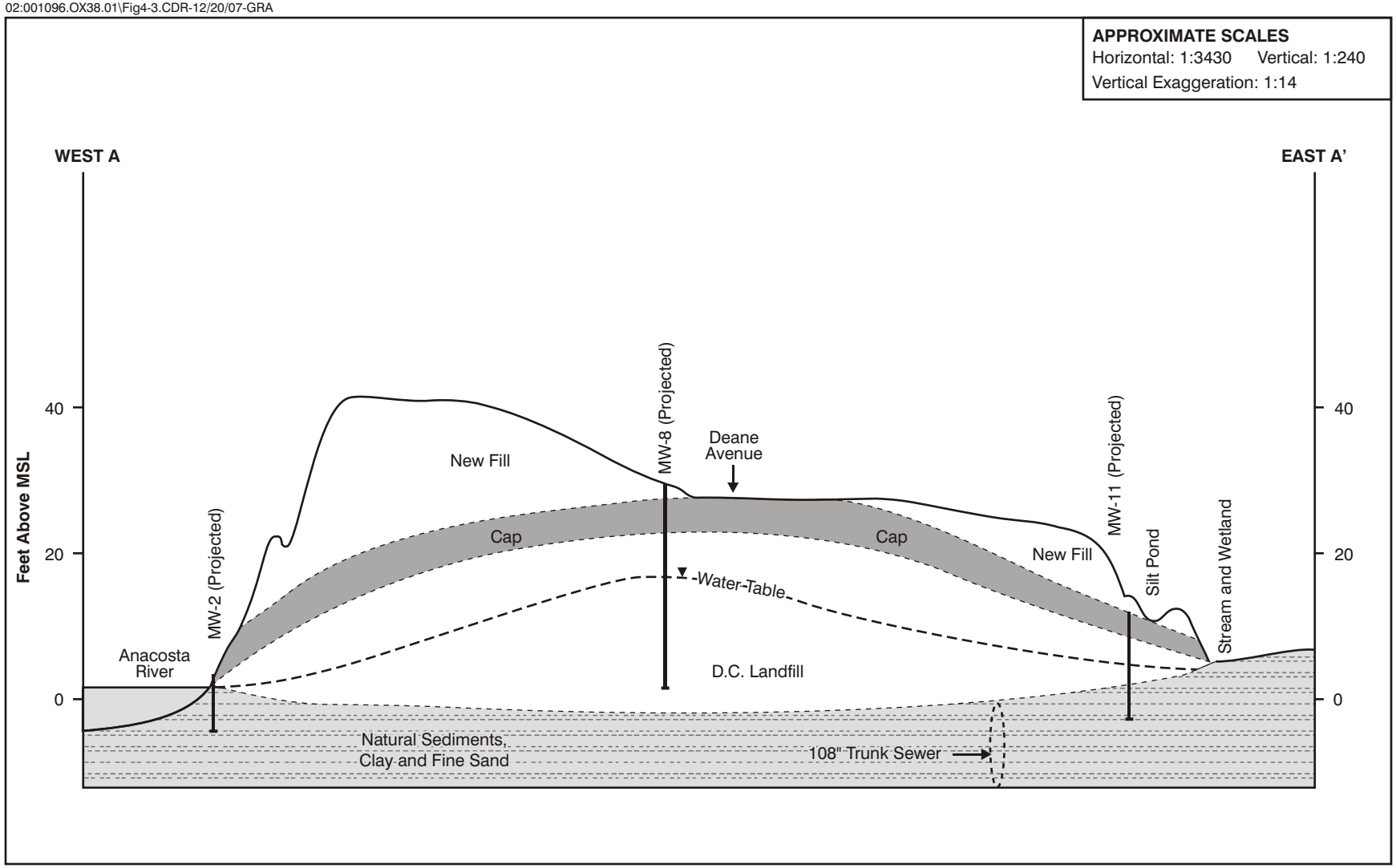

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APPROXIMATE HORIZONTAL SCALE

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Figure 4-3 East-West Stratigraphic Cross-Section A-A' through the Southern Portion of the Site, Kenilworth Park South Landfill

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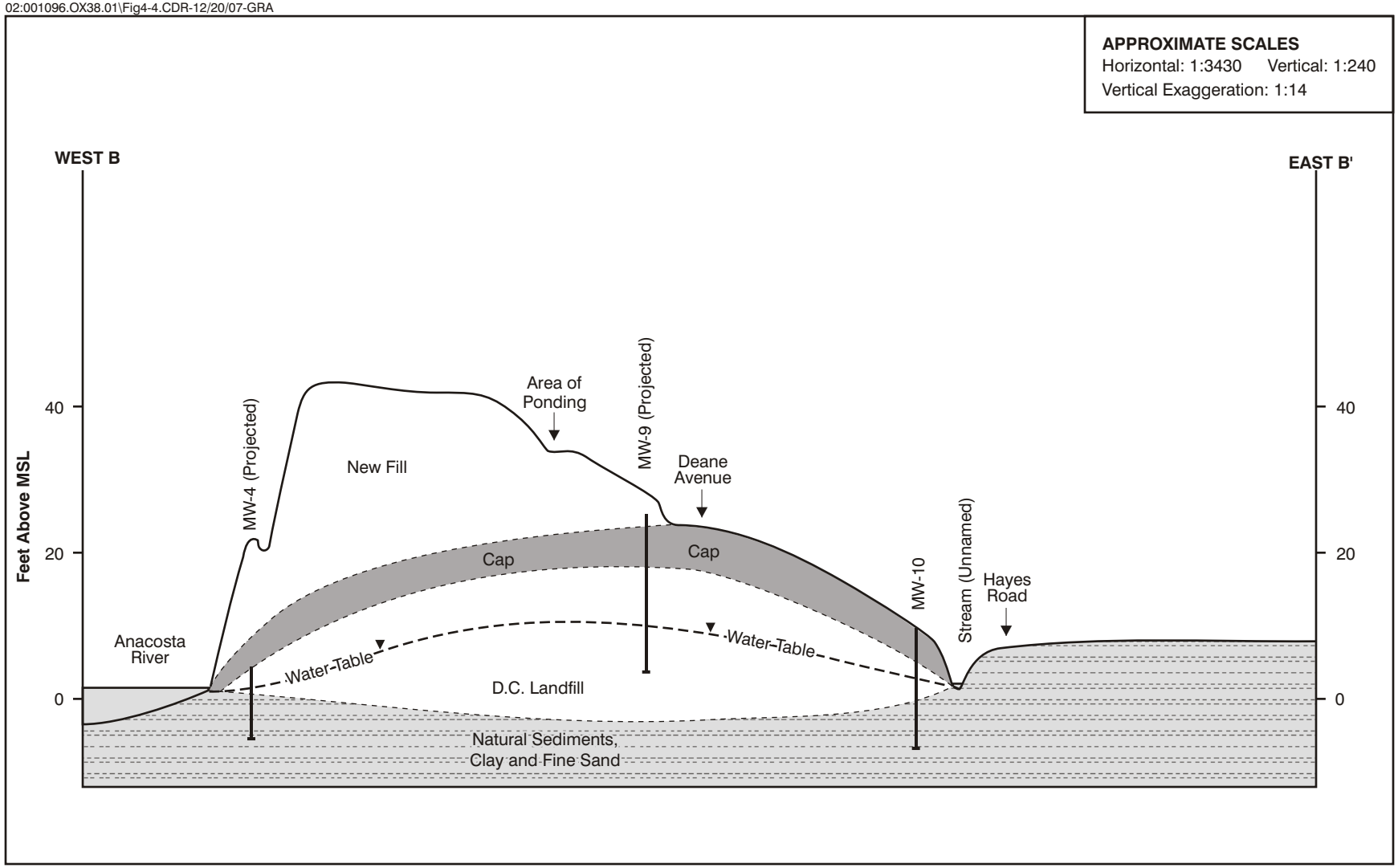

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APPROXIMATE HORIZONTAL SCALE

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Figure 4-4 East-West Stratigraphic Cross-Section B-B' through the Northern Portion of the Site, Kenilworth Park South Landfill

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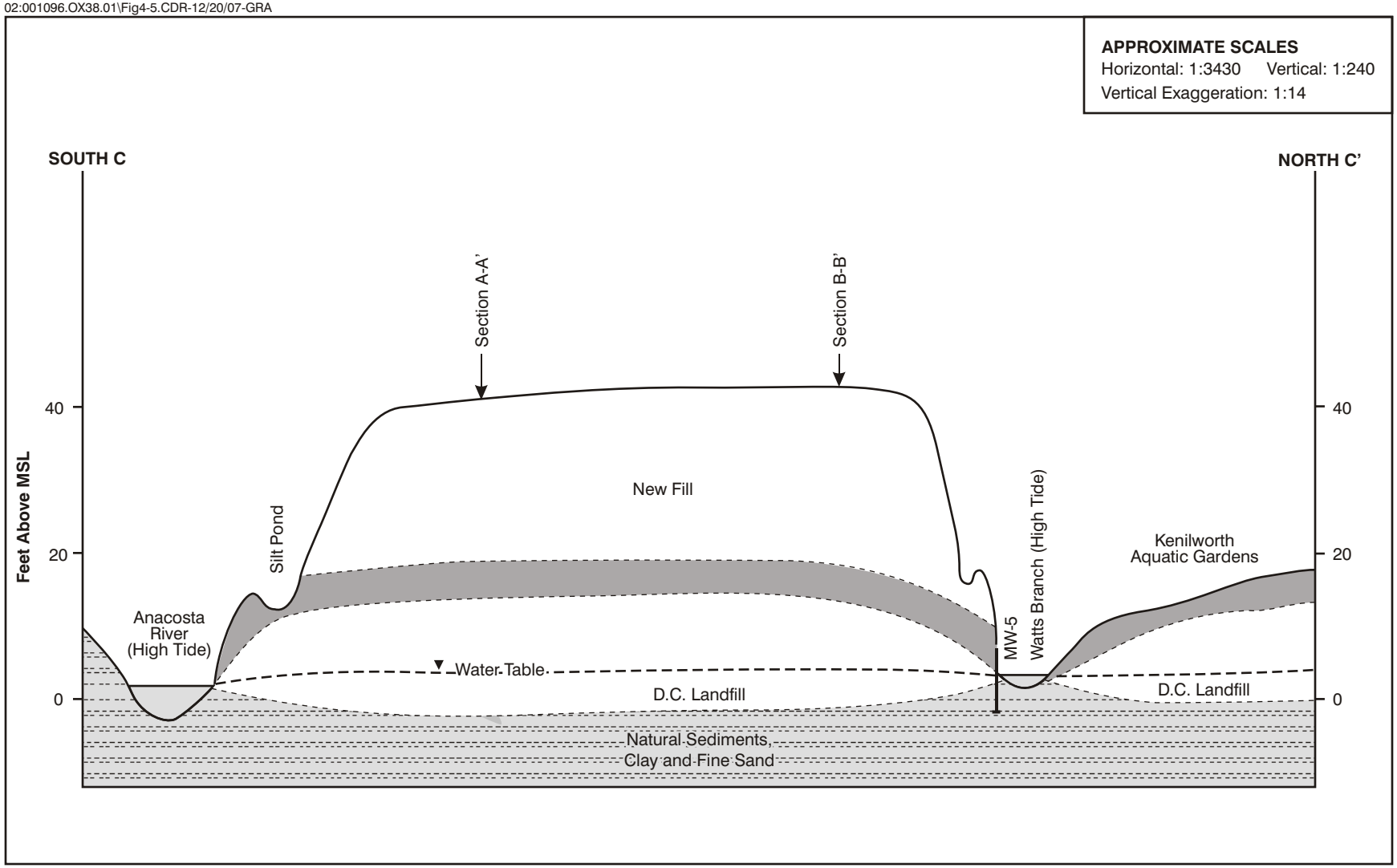

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APPROXIMATE HORIZONTAL SCALE

0 500 1000 Feet

Figure 4-5 North-South Stratigraphic Cross-Section C-C' through the Western Portion of the Site, Kenilworth Park South Landfill

The geology at the Site consists of five layers: fill material, alluvium, sand and gravel, and clays. These layers lie on top of the metamorphic and igneous rock of the Piedmont and the sedimentary rocks of the Coastal Plain. The components of the landfill and the associated soils/geology are discussed below. Figures 4-6 and 4-7 provide the location and a regional geologic cross-section through the Site. Figure 4-8 illustrates the surface geology around the Site and the location of the cross-section seen in Figure 4-9. Figure 4-9 provides the stratigraphy of an area encompassing approximately 8,000 feet south-southeast to 3,000 feet north-northwest west of the Site.

The following conclusions are based on these cross-sections:

- Much of the central part of the Site is covered by the 1997/1998 deposited materials, which consist of mainly clayey materials but also contain sand, gravel, and demolition debris.

- Beneath these deposits is the landfill cap, a heterogeneous mass of generally clayey materials mixed in places with landfill materials.

- Beneath the cap is the landfill material, which consists of municipal waste, in general, with some material that appears to be incinerator ash.

- The landfill material rests on recent alluvium. Based on information gathered when wells were installed into the alluvium, it appears to be mainly clays, silts, and very fine sands.

- The recent alluvium is underlain by Arundel Clay or similar clays of the overlying Lower Patapsco Formation at the east end of the landfill. The Arundel and Lower Patapsco clays, which have low hydraulic conductivities, range from 100 to 200 feet thick under the landfill.

- The Arundel Clay is itself underlain by the Patuxent Formation, both part of the Potomac Group of Cretaceous Age, which in turn rests on the igneous and metamorphic rocks of the Piedmont. The crystalline rocks of the Piedmont lie approximately 350 to 400 feet beneath the Site at the contact between them and the sedimentary rocks of the Potomac Group. The contact slopes to the southeast at approximately 150 feet per mile. The top of the Patuxent formation is at 140 to 160 feet BGS and is shallower at the west end and deeper at the east end.

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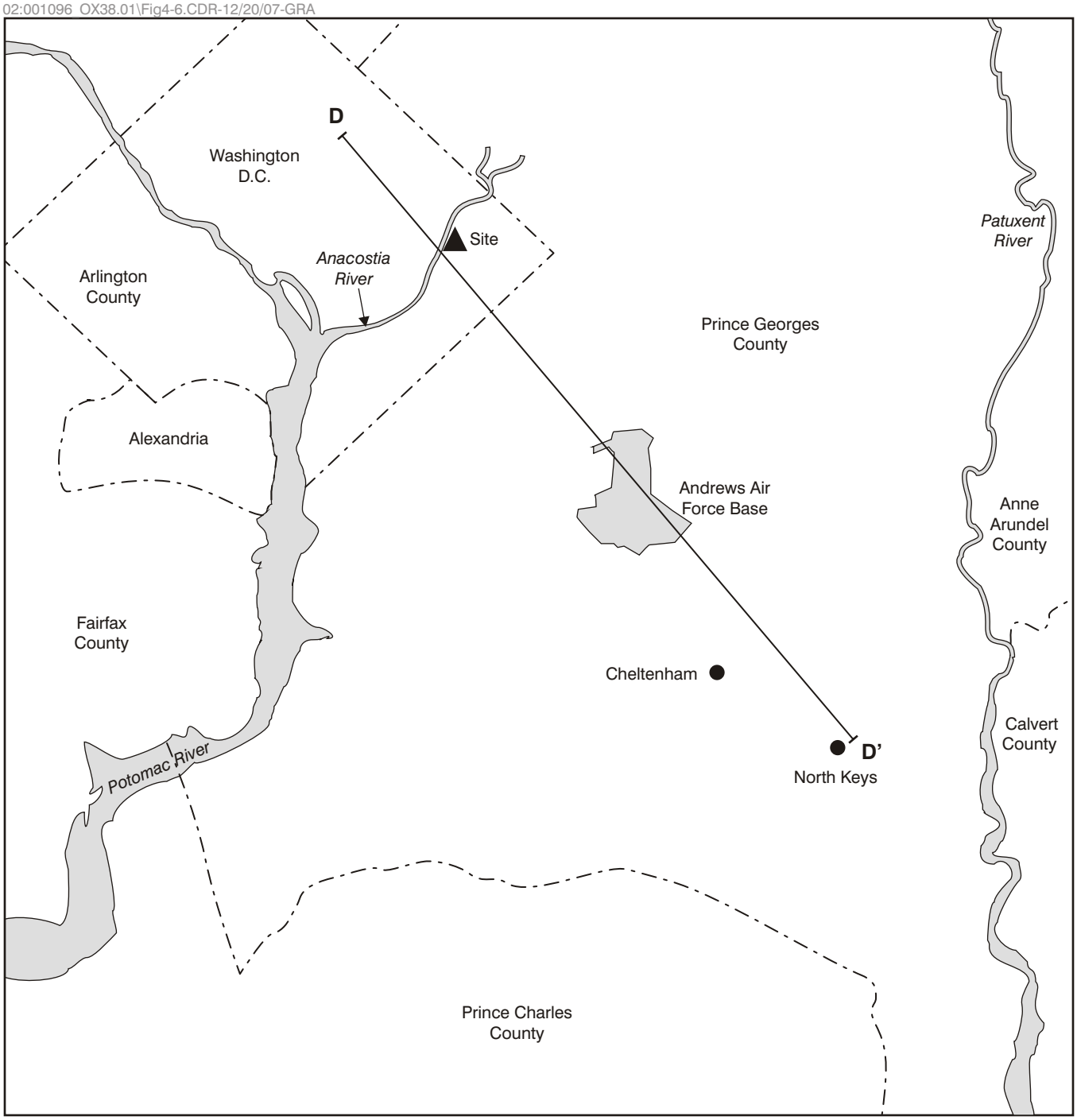

SOURCE: Mack 1966 (Modified)

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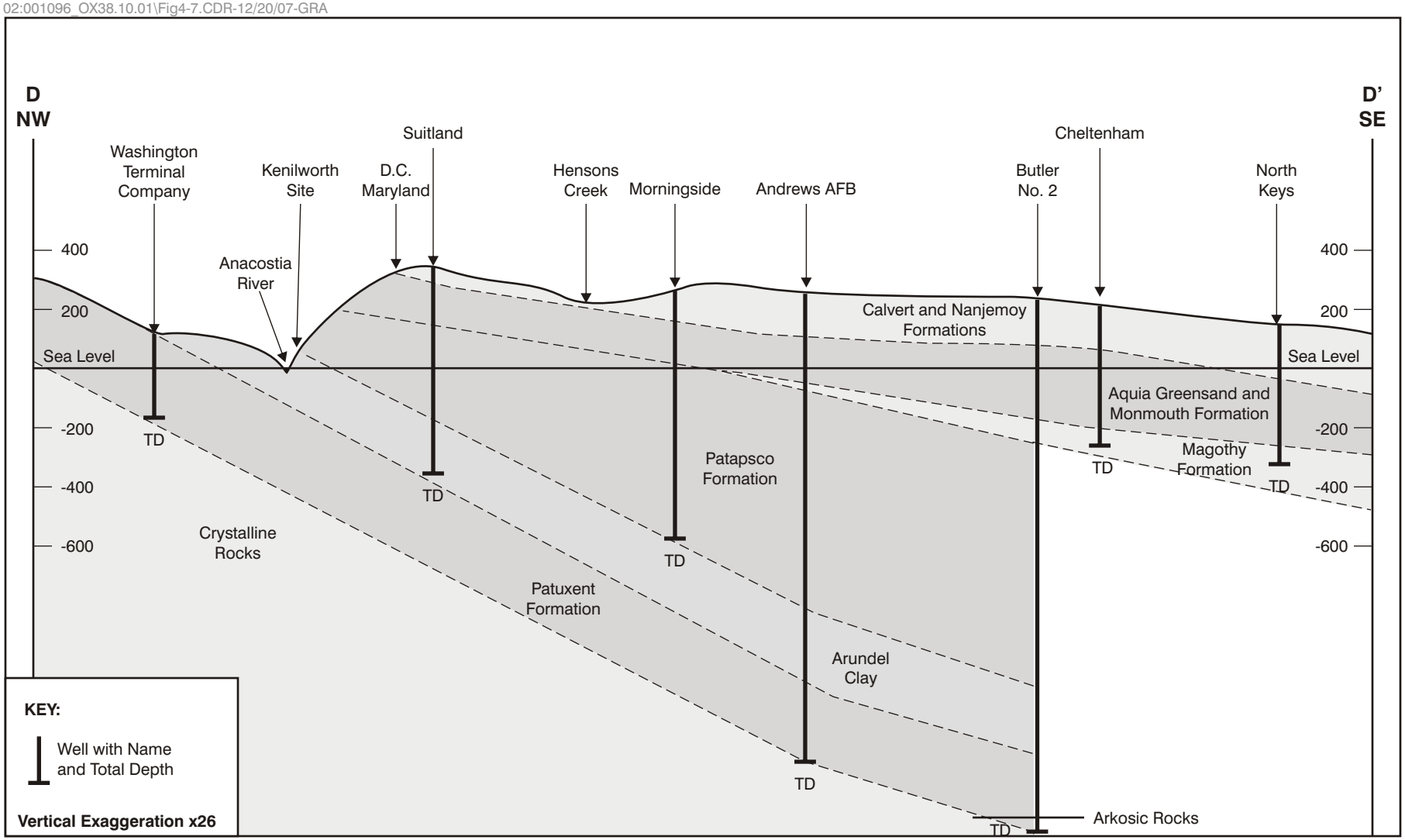
Figure 4-6 Location of Cross-Section D-D'



SOURCE: Mack 1966 (Modified)

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Figure 4-7 Geologic Cross-Section D-D'

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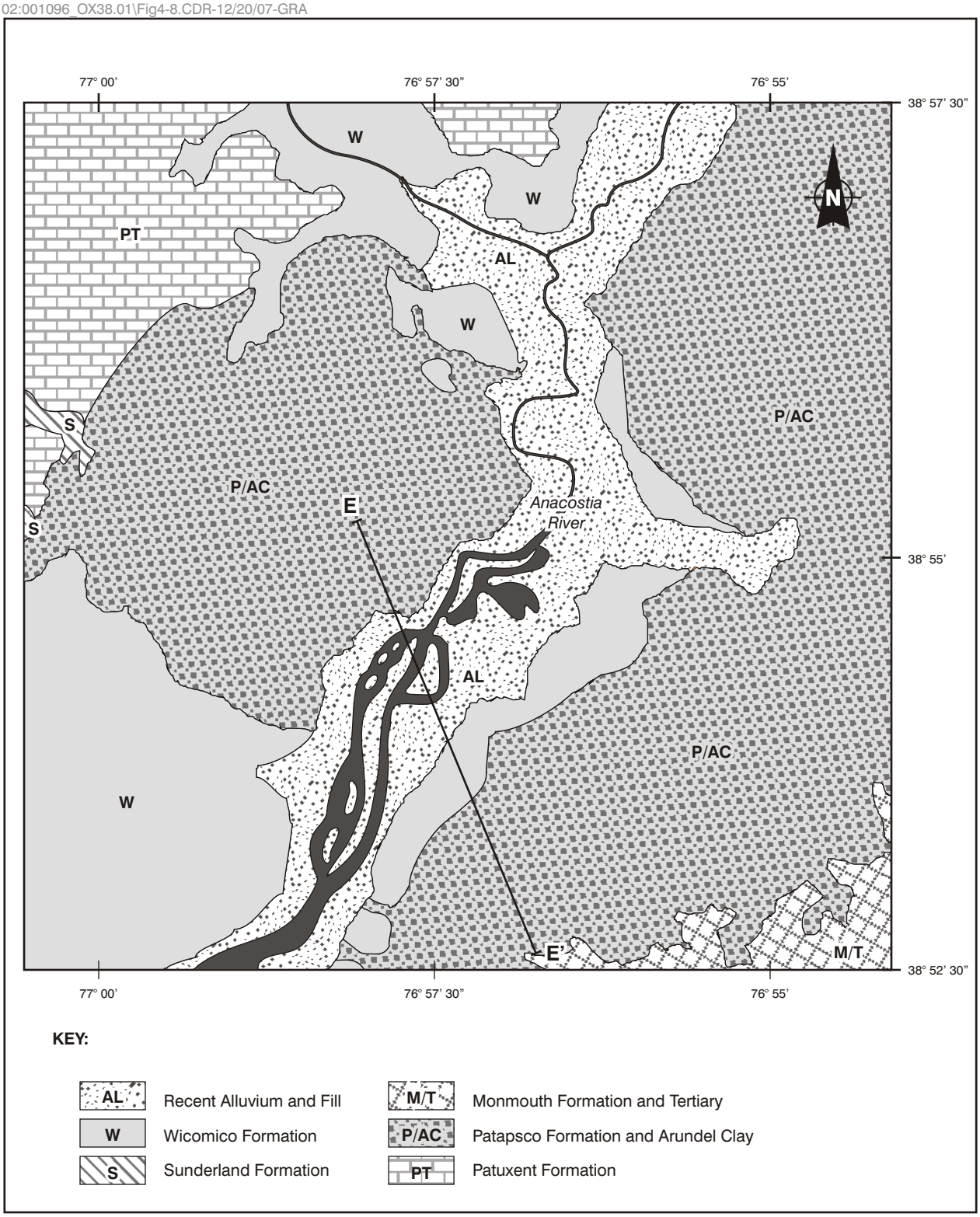

SOURCE: Adapted from Johnston 1961

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Figure 4-8 Surface Geology and Location of Cross-Section E-E' Kenilworth Park Landfill

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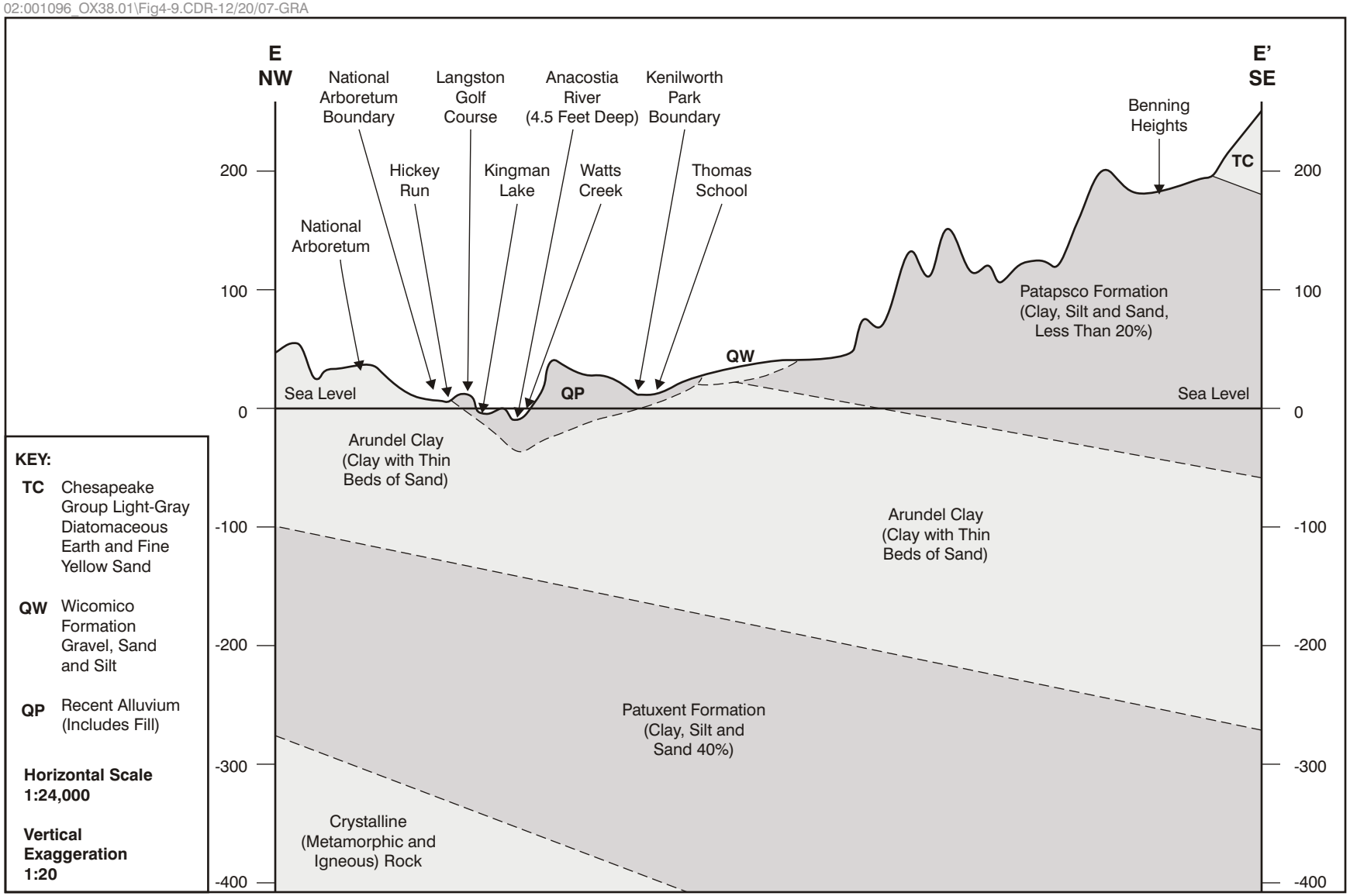

SOURCE: Johnston (1964), Andreason (1999), U.S.G.S. 1965 (Photorevised 1979) and Curtain, et al (1999)

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Figure 4-9 Geological Cross-Section E-E'
Kenilworth Park Landfill

4.2.1 Site Stratigraphy

Figure 4-2 provides a plan view of the Site with cross-section locations, and Figures 4-3 through 4-5 show layers on an exaggerated vertical scale (1:14) to illustrate the layers of fill and geologic materials involved.

The cross-sections were sketched using historical topographic maps to estimate the elevation of underlying natural sediments, a 1996 survey to locate the top of the cap elevation (Woodburn 1996), and a 2001 survey to locate the top of the 1997/1998 deposited material (Appendix C).

The cross-sections illustrate how the current conditions comprise steep slopes angled towards surrounding surface waters. The volume of the clay cap is much greater than that of the overlying 1997/1998 deposited material.

Under the landfill is recent alluvium, which consists predominantly of clay, silt and fine sand, and is of low hydraulic conductivity. This layer was penetrated by a few boreholes during the RI. Beneath this is approximately 100 feet of Arundel Clay (Schnabel Engineering Associates January 1995). Below that are the sands, gravels, and clays of the Upper and Lower Patuxent aquifers.

4.3 Site Hydrology and Hydrogeology

The hydrology of the Site is controlled by its geology. The more permeable layers (such as sands) transmit water. The less permeable layers (such as clays) either act as barriers to or drastically slow down groundwater movement.

As indicated previously, the geology at the Site consists of recent alluvium and fill, close to or at the surface, with Arundel Clay, and Patuxent Formation below the alluvium resting on igneous and metamorphic (crystalline) rocks of the Piedmont. The clays within both the Patuxent Formation and Arundel Clay act as aquitards to slow the movement of water, while the sand and gravel layers are aquifers.

The following sections discuss the hydrology and hydrogeology of the Site.

4.3.1 Site Drainage

The Site has undergone several changes in its hydraulic regime as it has been changed from a wetland connected to the Anacostia River, to an open dump, to a capped landfill, and then topped by a thick layer of materials deposited in 1997 and 1998. During 1997 and 1998, while the new material was being placed on the existing landfill, it was graded to encourage runoff. Because of the resultant gullying, erosion, filling of silt ponds, and occasional discharges of sediment towards the Anacostia River, the Site was regraded in 2002 to 2003. Figure 4-10 shows the current local topography and drainage pattern at the Site.

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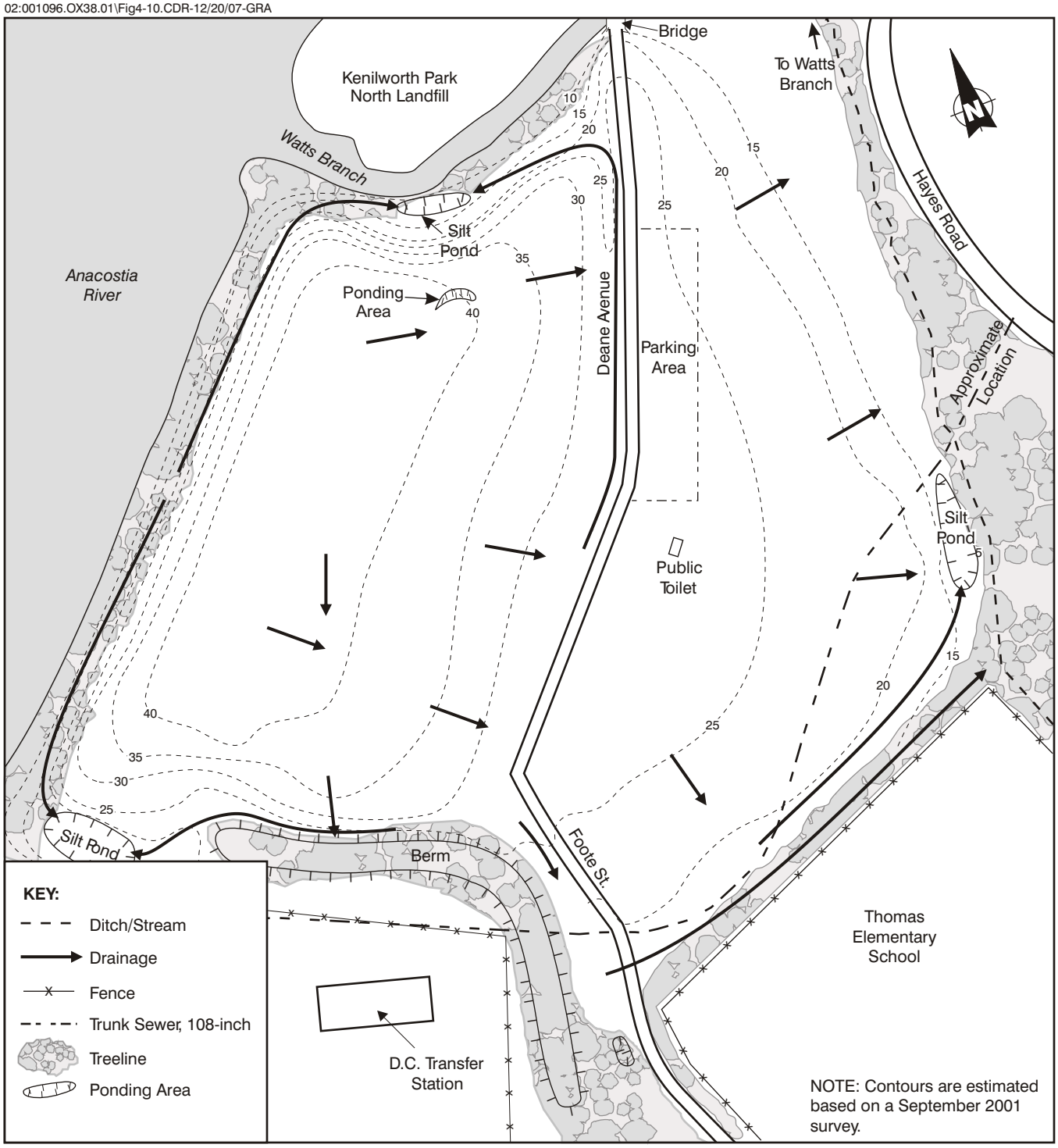

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APPROXIMATE SCALE IN FEET

0 250 500 Feet

Figure 4-10 Sketch Map of Site with Surface Contours and Drainage, Kenilworth Park South Landfill

The area of 1997/1998 deposited material has steep slopes (up to an estimated 25% to 33%) along the west side of the landfill, which faces the river. In 2002/2003, NPS mulched and seeded much of the Site and the vegetation cover on the slopes is extensive, which reduces erosion. A ditch around the toe of the 1997/1998 deposited material west of Deane Avenue directs runoff to silt ponds at the north and south ends of the fill that are designed to overflow to Watts Branch and the Anacostia River, respectively. During the 2002/2003 re-grading, NPS modified the surface of the 1997/1998 deposited material west of Deane Avenue to create terraces surrounded by low berms, and left a pond on top of the landfill. The regrading serves to minimize runoff from the Site surface and curtail erosion.

The 1997/1998 deposited material east of Deane Avenue has a flatter surface and a small drop-off to the Site surface (4 to 5 feet maximum). Flow off the surface is directed to a silt pond east of the Site that is designed to overflow to an unnamed tributary of Watts Branch. This unnamed tributary is a ditch or stream originating at the Grant Street storm drain, discharging next to the Thomas Elementary School schoolyard and running north to Watts Branch at the northeast edge of the Site.

The shortest distance from the 1997/1998 deposited material to the adjoining surface water is less than 50 feet. There is zero distance from the former landfill to surface water because landfill wastes mixed with soil still extend into the river and Watts Branch. Silt fences were initially placed around the 1997/1998 deposited material, between the drainage ditches or silt ponds and the surface waters, as well as along Deane Avenue, but these were removed when the Site was revegetated.

The re-grading at the Site included enlarging the peripheral drainage ditches around the toe of the west side leading to the silt ponds and excavating some accumulated silt at the south end for use as cover material on the east side of the Site. Since re-grading was completed, the runoff from the Site has not been observed to discharge directly to the river but is instead retained in the silt ponds.

It should be noted that the re-grading is an interim response measure pending selection of a final remedy.

4.3.2 Water Table and Hydraulic Conductivity

4.3.2.1 Water Table Elevation

Figure 4-11 illustrates the water table elevation contours based on the water table elevation measurements from June 2001. The water level measurements collected during June 2001, showed some differences in the water table elevations compared with those found during the PA/SI in 1999 (see Figure 5-6 in the Preliminary Assessment/Site Investigation in Appendix B). Some of the differences in water table elevations may be due to tidal differences, however, MW-9 which is a well located adjacent to Deane Avenue showed a marked difference. It is unlikely that the difference in water table elevations at this location is attributable to tidal fluctuations because the other interior wells did not demonstrate the same type of

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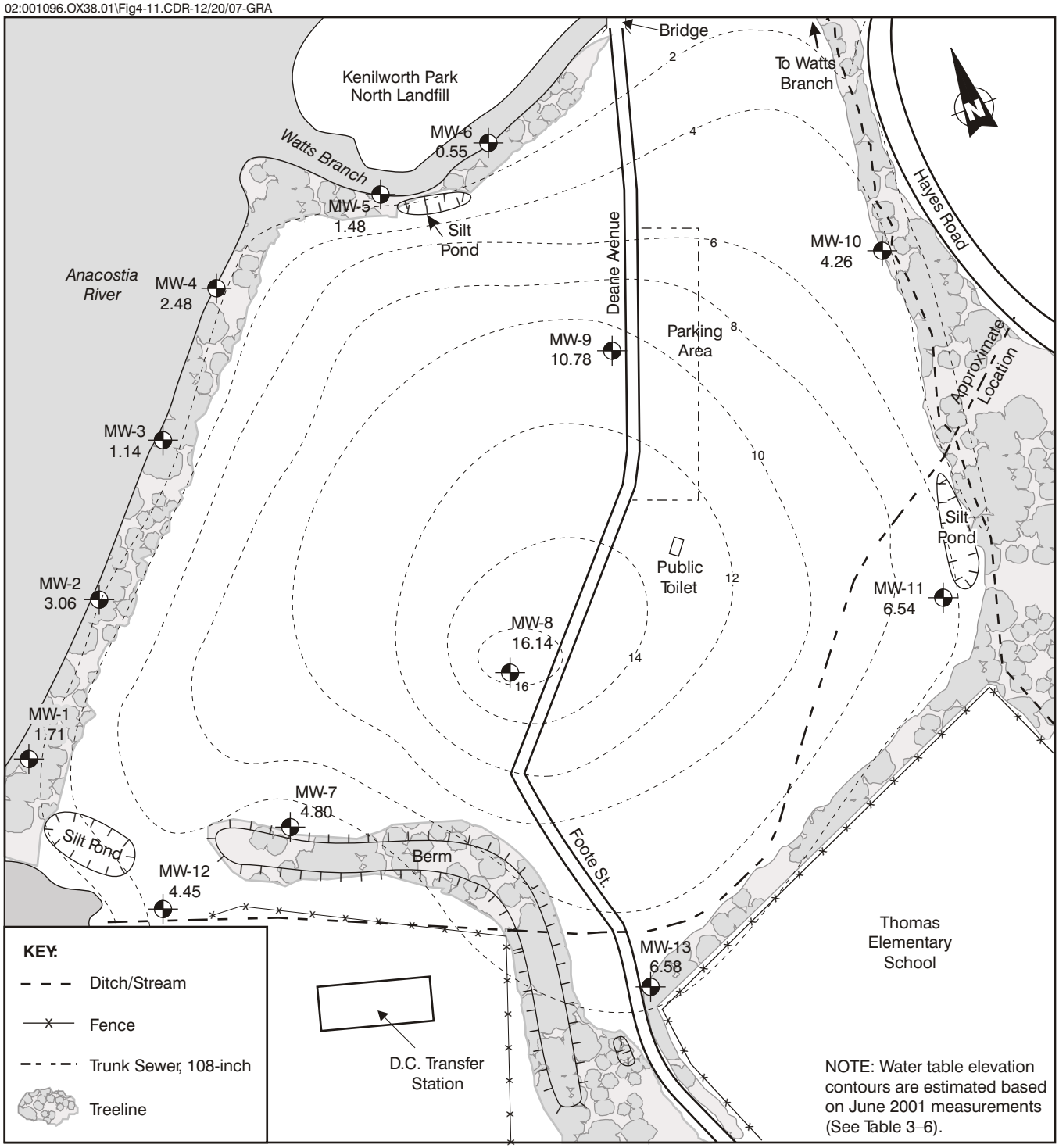

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APPROXIMATE SCALE IN FEET

0 250 500 Feet

Figure 4-11 Water Table Elevations Contour Map, Kenilworth Park South Landfill

elevation change. MW-9, which went dry shortly after completion during the PA/SI, had a depth of 6.4 feet of water in June 2001. The rise in the elevation of the water table in MW-9 between the two sampling events may be the result of infiltration through the bottom of the pond west of MW-08.

The contours of the top of the water table still show a similar overall shape as before, with a mound of groundwater still centered on MW-8. This well measured the highest level of the water table on-site during the PA/SI. However, after collecting repeat measurements from the preexisting wells and new data from MW-9, MW-12, and MW-13 in June 2001, the result shows a more symmetrical groundwater mound. Figure 4-10 depicts the radial flow outwards from the center of the Site, where the water table is highest at MW-8, to the ditches, streams and river.

4.3.2.2 Hydraulic Conductivity and Directions of Flow

During the RI, hydraulic conductivity testing was conducted on the two newly installed wells (MW-12 and MW-13) at the Site. Testing results are presented in Table 4-1, and Appendix E presents the slug test results. Hydraulic conductivity testing had also been carried out on the initial set of 11 wells installed during the PA/SI. The hydraulic conductivities of the perimeter wells around the outside edges of the landfill were used to determine the rates at which water from within the landfill migrates to adjoining surface water. During the RI this rate was calculated to be approximately 1.1 to1.2 million liters per year or approximately 0.0013 cubic feet per second. This is less than one part in 100,000 when compared with the average flow of the Anacostia River past the Site. Table 4-2 shows the results of the hydraulic conductivity testing and the flow calculations. Wells MW-8, MW-9, MW-12 and MW-13 were not included in the calculations of flow across the landfill boundary because they are completed within the fill materials in the interior of the landfill. These fill materials do not control the rate at which groundwater from within the fill discharges to the surrounding surface water.

Table 4-1 Aquifer Hydraulic Conductivity Summary, Kenilworth Park South Landfill

Well Number	Test Date	Test Method	Average Hydraulic Conductivity (cm/s)
MW-12	6/29/01	Rising Head Slug Test	3.17 E-3
MW-13	6/29/01	Rising Head Slug Test	6.19 E-4

Key:

cm/s = Centimeters per second.

Table 4-2 Hydraulic Conductivities and Estimated Volumes of Groundwater Flow From under the KPS Landfill to Surface Water

Monitoring Well and Segment of Landfill Boundary	Length of Segment (meters)	Depth[a] of Segment (meters)	Hydraulic Gradient[b]	Hydraulic Conductivity (centimeters per second)[c]	Volume of Flow (liters per year)
MW-1	101	0.3	0.0106	7.33E-6	73K
MW-2	94	0.3	0.0174	1.88E-5	290K
MW-3	93	0.3	0.0174	7.81E-6	119K
MW-4	118	0.3	0.0122	8.53E-6	116K
MW-5	101	0.3	0.0136	8.43E-6	109K
MW-6	335	0.3	0.0138	9.03E-6	394K
MW-7	101	0.3	0.0300	3.90E-6	112K
MW-10	202	0.3	0.0051	1.08E-6	29K
MW-11	244	0.3	0.0144	3.37E-6	112K
				Total	**1154K**

Note:
[a] Depth of discharge zone is assumed to be the same for all wells.
[b] Dimensionless 1.e.ft/ft.
[c] Average is 7.59E-6cm/sec.

The water table elevations of wells MW-1 through MW-11, when first installed, indicated the presence of a groundwater mound centered at MW-8. They also suggested perched water was present within the former landfill material at MW-9. This well drained downwards into the unsaturated waste below the bottom of the well after installation. Since the well had been installed through the low permeability layer that had supported the perched zone, the well showed a gradually declining hydraulic head during the month after installation until it finally went dry.

Figure 4-11 shows the water table elevation contours based on the water table elevation measurements of June 2001. The distribution of hydraulic head through an aquifer will determine which direction groundwater will flow. The symmetrical nature of the groundwater mound in the landfill materials under the landfill cap imply that the groundwater is flowing outwards in every direction at similar rates. Because the hydraulic gradients are similar, the combinations of hydraulic conductivity and thicknesses of the layers through which the water is migrating must be similar. If they were markedly different in any direction, then the groundwater mound under the landfill cap would not be symmetrical but would show a displacement of the high point towards the side of the Site that had a lower hydraulic conductivity/thickness and, consequently, greater resistance to flow.

Hydraulic head for more than one point, and of different values, can be used to determine the hydraulic gradient. The hydraulic head in the Patuxent Aquifer, the first water supply aquifer beneath the Site, was recorded in a water supply well at the National Arboretum approximately 2,400 feet north of the Site (Schnabel Engineering Associates January 1995) and immediately west of the Anacostia

River. This well (PW-3) showed a static hydraulic head of 28.5 feet AMSL prior to a pump test. The hydraulic head in this well is 12 feet higher than the highest hydraulic head found in the wells at the Site (MW-8). This difference in hydraulic head indicates that the vertical hydraulic gradient is upwards from the Patuxent Formation to the Anacostia River. This direction of the hydraulic gradient would prevent downward migration from the landfill into the aquifer. In addition, the thickness of low permeability clay (Arundel Clay) underneath the Site prevents groundwater migration from the landfill into the underlying Patuxent Aquifer, regardless of the direction of the hydraulic gradient. In summary, if the hydraulic gradient is upwards from the Patuxent Aquifer to the Site across the intervening clays and remains so, it is not possible for contaminants from the Site to migrate to the Patuxent Aquifer with the groundwater.

The National Arboretum wells were not used for their intended purpose of water supply for the Arboretum because of a naturally high level of iron (7 mg/L) in the water, which resulted in the water staining the walkways, etc. The lack of groundwater extraction from the National Arboretum wells contributes to the fact that there is no cone of depression near the Site. In addition, all other wells within the district formerly drawing water from the Patuxent aquifer have been closed down. The water-containing sands and gravels of the Patuxent Formation are still aquifers that are pumped for water supply in the Indian Head-Waldorf area 25 miles south of the Site (Andreason 1999), but the cone of depression created by this pumping does not affect the Site.

4.4 Sediment Dynamics

In 2002, the Anacostia Watershed Toxics Alliance (AWTA) and the Anacostia Watershed Restoration Commission (AWRC) published "Charting a Course Toward Restoration: A Toxic Chemical Management Strategy for the Anacostia River" in draft format (2002), which contains the results of a number of studies that help to interpret the probable behavior of sediments and toxic chemicals in both the water and the sediments in the river. The following sections are derived from this study.

4.4.1 Sediment Transport

Normally the tidal flows of the Anacostia River are approximately 20% of the total volume of the tidal section of the river, which is the area of the river below Bladensburg, Maryland. Inflows from upstream, i.e., flows from upstream into the tidal section, during a 12-hour tidal cycle are approximately 1% of the river volume. Tidal flows are much more important than inflows. Flows are reversed every tidal cycle and are consistently downstream only after significant storm events. Due to the tidal flow reversals, fine-grained suspended solids, which are associated with contaminants, particularly organics, are carried both up- and downriver. Therefore, if the contamination is primarily in the finest sediments, then the current location of contaminated sediment is not a clear indication of proximity to a contaminant source. The finer the sediment particles the greater their surface area compared with their weight and volume. The greater surface

area provides for more sorbtive capacity, i.e., the ability to gather contaminants through absorption and/or adsorption. The organic carbon content of the sediments is also a significant indicator of sorbtive capacity for both metals and organic contaminants.

The flushing time of the tidal section of the Anacostia River, i.e., how long it takes for water to make its way through this portion of the river, is estimated at between 23 to 28 days. As a result of the long duration of stay within the tidal section, 90% of the sediments entering the Anacostia tidal section are deposited within the tidal section. The average rate of deposition is 1.4 centimeters per year. The following section discusses the major sites of sediment deposition within the Anacostia River.

4.4.2 Sites of Sediment Deposition

The rates of flow of the Anacostia River and several of its tributaries were measured, and it was found that approximately 15% of the total water flow enters the Anacostia River either just above the Site from Beaverdam Creek or opposite the landfill from Watts Branch and Hickey Run. The combined flow of Beaverdam Creek, Watts Branch, and Hickey Run is approximately 32 cubic feet per second (ft^3/sec) out of a total of 216 ft^3/sec at the mouth of the Anacostia River. This increase in flow and the fact that the Anacostia River is confined by seawalls and by the steep slopes of the landfill result in the highest average velocities in the tidal Anacostia River occurring opposite the landfill, at a rate of greater than 0.2 meters per second (m/sec).

The major sites of sediment deposition occur where current velocities decrease, such as below the 11th Street Bridge. Other sites of sediment deposition occur where water slows suddenly as a result of widening of the river or diversion into side channels. These include Kenilworth Marsh, Kingman Lake, and the cove just south of the Site at the mouth of Piney Run, between the Site and the Benning Road Plant owned by PEPCO.

4.5 Tidal Influence Study

On June 28, 2001, pressure transducers and data loggers were installed in wells MW-6 and MW-10 at the KPS Landfill to measure the variations in groundwater elevation at the Site over a 12-hour period. The variations in groundwater elevation are used to determine the tidal influence on the Site. The amount of tidal influence affects the migration of groundwater into and out of the Site. Results of the tidal influence study are presented in Appendix F.

The transducers were installed at 0556 hours and 0623 hours respectively. At 0830 hours the transducers were checked, and the one in MW-6 was adjusted because the readings appeared to be anomalous. The tests were terminated at 1803 hours and 1830 hours at MW-6 and MW-10, respectively.

The readings on MW-6 for the period 0556 hours to 0830 hours could not be interpreted and appear to reflect instrument malfunction. From 0830 hours to

1320 hours, the water level in the piezometer rose 7.2 centimeters (cm), and from 1320 hours to 1803 hours the water level fell 3.9 cm.

In MW-10, the water level was uninfluenced by the measured tidal fluctuation, but from 0623 hours until approximately 1330 hours it rose by 0.735 cm in response to a change in barometric pressure. It remained essentially unchanged after that until the end of the test.

Assuming that both wells responded with the same barometric efficiency, the rise in MW-10 should be subtracted from the rise in MW-6 to find the rise caused by response to the tide. MW-10 only responded to barometric pressure change.

MW-6 responded to both tidal and barometric change. The tidal response is then calculated at 6.47 cm or 0.87 centimeters per hour (cm/hr) up to 1330 hours. From 1330 hours to 1803 hours the rate of drop in water level was 0.82 cm/hr, which is comparable to the rate of rise. Over the entire tidal cycle of about 12.3 hours, the well water level fluctuated by approximately 10.4 cm, in response to the predicted tidal fluctuation of approximately 3 feet (91.4 cm). This gives a tidal efficiency of 11.4% in a well sited only 10 feet or less from the high tide mark.

The response in MW-6 was delayed by approximately 9.2 hours past the actual predicted high tide, indicating that this well is close to the limit of tidal influence. If the aquifer had been confined and the fluctuations in water level in the well had been a response to pressure changes resulting from loading on the confining layer of the aquifer, it would have been transmitted rapidly to the well and would not have shown a prolonged delay in response to tidal changes. The delayed response implies that the well is completed in an unconfined aquifer and is responding to bank recharge, as would be expected in such a shallow well. Because of the low tidal efficiency and the delayed response, this shows that the well is not reached by surface water recharging the stream bank during the tidal cycle, and well water reflects the quality of groundwater discharging from the Site.

Because all the piezometers around the Site that were installed close to surface water (MW-1 through MW-6) had low hydraulic conductivities, averaging 9.99E-6 centimeters per second, it is expected that all of them would respond in a manner comparable to the response of MW-6. The water quality in these wells is not expected to be affected by surface water quality in the adjoining stream or river as a result of tidal fluctuations and bank recharge and discharge, despite their proximity to the river.

4.6 Infiltration and Groundwater Flow Interpretation

4.6.1 Water Balance

Previously, during the PA/SI, it was discovered that the landfill cap prevented the migration of precipitation into the landfill. This was revealed during borehole installation, when no organic vapors were detected by an explosimeter until the

landfill cap had been pierced. This suggests that since methane gas could not migrate upwards through the cap, then water was not migrating downwards.

The regrading of the surface created a semi-permanent pond on top of the new fill. Evapotranspiration was initially low as a consequence of the sparse vegetation cover. This appears to have altered the infiltration rate and groundwater recharge at MW-9, in which the water level rose 4.68 feet higher than initially recorded on completion and showed 6.4 feet of water in a well that had run dry soon after its initial completion. Lesser increases in water table levels were shown in MW-7 (+ 0.76 feet), MW-10 (+ 1.50 feet), and MW-11 (+ 0.96 feet) (see Table 4-3).

Table 4-3 Water Table Elevation Change between the PA/SI and the RI

Well No.	Elevation of Toc (ft AMSL)	Depth to Water PA/SI (ft)	Water Table PA/SI (ft AMSL)	Depth to Water RI (ft)	Water Table RI (ft AMSL)	Change in Water Table (ft)
MW-1	5.31	3.21	2.10	4.60	1.71	- 0.39
MW-2	5.86	2.70	3.16	3.60	3.06	-0.10
MW-3	5.04	2.78	2.26	3.99	1.14	-1.12
MW-4	5.48	2.89	2.59	3.00	2.48	-0.11
MW-5	6.28	4.02	2.26	4.80	1.48	-0.78
MW-6	5.35	3.64	1.71	4.80	0.55	-1.16
MW-7	27.30	23.26	4.04	22.50	4.80	+0.76
MW-8	30.54	13.84	16.70	14.40	16.14	-0.56
MW-9	28.48	22.38	6.10	18.70	10.78	+4.68
MW-10	14.36	11.60	2.76	10.10	4.26	+1.50
MW-11	17.04	11.46	5.58	10.50	6.54	+0.96

MW-8 showed a slight decrease in water table elevation (-0.56 feet). This may be the result of barometric pressure difference from the time of previous measurement. The decline in heads in all the tidally affected wells surrounding the Site could reflect the barometric pressure also or a combination of this and tidal effects. Because the range of decline in wells MW-1 through MW-6 is relatively large—0.1 foot (MW-2) to 1.16 feet (MW-6)—these declines likely reflect both barometric and tidal efficiency. With this being the case, these wells would also reflect both the weather and tidal stage differences at the two dates of the two sets of measurements.

The average change in water table elevation in the five wells unaffected by the tide (MW-7, MW-8, MW-9, MW-10 and MW-11) is 1.48 feet over an area of approximately 30 acres. If it is assumed that the waste has an effective porosity of 0.25, this increase in thickness of the zone of saturation is equivalent to an extra recharge of 4.4 inches of water. The groundwater within the landfill is underlain by low hydraulic conductivity materials (i.e., alluvium) and capped with low hydraulic conductivity materials (i.e., the landfill cap). This means that the slight increase in hydraulic gradient outwards from the center of the landfill does

not substantially increase discharge from the saturated fill, as had previously been calculated during the PA/SI (see Appendix B).

The recent increase from 1999 to 2001 in the hydraulic head within the landfill can be attributed to reduced evapotranspiration, reduced runoff, and increased infiltration resulting from the re-grading. This condition may change when the pond is removed and the surface is fully vegetated. Any future development, such as construction of a golf course with water hazards or irrigation, could result in further changes and additional infiltration. These considerations will have to be factored into the design of the Site remedy.

4.6.2 Groundwater Flow

As discussed above, the conditions at the Site are changing as the result of recent modifications to the Site and may not yet have stabilized. The water table has shown obvious changes in a period of months, which indicates that flow within the landfill must be comparatively rapid. This is demonstrated by relatively high hydraulic conductivity values measured in MW-12 and MW-13, screened within the fill, and the rapid draining of the perched water table noted in MW-9 after its installation. The low permeability of the cap, however, appears to be controlling groundwater migration and discharge around the periphery of the Site, as evidenced by the lack of leachate outbreaks around the toe of the landfill.

As discussed in Section 4.3.2.2, the layers of material beneath the Site through which infiltrating precipitation must pass to be able to discharge to surface water are generally of low hydraulic conductivity and slow the rate of movement, such that no visible discharge of water has been observed.

The symmetry of the groundwater mound underneath the cap (Figure 4-11) suggests that flow outwards is impeded similarly in every direction because hydraulic gradients are similar in all directions.

Discharge points for the groundwater from under the landfill are all relatively close to the landfill material in every direction except possibly to the southeast. From the historic maps as well as observation, the groundwater discharge points are close to or at the boundaries of the fill as follows:

- To the north the groundwater discharges to Watts Branch.
- To the west discharge is to the Anacostia River.
- To the south discharge is to the river and probably to Piney Branch (beneath PEPCO and the D.C. Transfer Station). Note: it is unknown to what extent flow is affected by the 108-inch trunk sewer trench under the southeast and south sides of the landfill.
- To the southeast, flow is uncertain, but may pass beneath Thomas Elementary School and either south to Piney Branch, or north to the unnamed stream, or

into storm water drains discharging to the unnamed stream, unless it is intercepted by the 108-inch trunk sewer trench;

- East of the Site, groundwater discharges to the unnamed stream and wetland, which originates at the surface as a discharge from the Grant Street storm water drains. Again, it is unknown to what extent flow is affected by the 108-inch trunk sewer trench that runs under the southeast and south sides of the Site; however, if the trunk sewer trench has an effect, it will tend to channel flow along the trench to the unnamed stream or ditch or to Piney Run. Although no monitoring wells have been installed outside the Site and NPS property boundaries, the geologic setting and closeness of surface water coursing to the periphery of the Site make any long-range migration of groundwater from under the Site extremely unlikely.

The trunk sewer discussed in Section 2.3 is pressurized and watertight and is therefore not gaining any groundwater from the Site. It was installed during 1977 and 1978, and its invert elevation is below sea level. MW-11 and MW-13 installed south and east of the trench have hydraulic heads that are interpreted to be part of the symmetrical mound of groundwater under the Site. There is no indication that the trunk sewer trench affects groundwater flow at all because groundwater is interpreted to flow over the top of the sewer pipe without being deflected in any way.

4.6.3 Discharge of Groundwater and Contaminants to the Surface Water

An estimate of the volume of groundwater discharging to the surrounding surface water bodies from under the cap can only be approximated.

The flux can be calculated by two methods: mass balance or flow across the Site perimeter. The following explains the assumptions used to calculate the flow across the perimeter.

The setting and conditions of the Site suggest that leachate will migrate laterally out of the landfill and discharge to the nearest surface water through low hydraulic conductivity layers. There are no signs of leachate outbreaks or springs around the toe of the fill, and the hydraulic heads in the wells along the river and Watts Branch are very close to sea level. None of these wells is artesian. These factors suggest that there is only a thin layer of saturated material discharging laterally to surface water.

Wells MW-10 and MW-11 on the east side of the fill encountered landfill waste and then natural clays and fine sand at approximately 7 to 9 feet BGS. Water levels in these wells are at the fill/natural materials boundary in MW-10 but within the fill at MW-11. The hydraulic conductivity of wells screened partly within saturated fill cannot be used to calculate seepage into adjoining surface water. This is because the controlling factors in the rate of flow are (a) the hydraulic conductivity of the least permeable zone that the water must travel

through to reach surface water and (b) the cross-sectional area through which the water is moving. Materials encountered at MW-10 and MW-11 do not represent the conditions at the very edge of the KPS Landfill adjacent to surface water because they are screened through landfill material.

Along the Site boundaries with the Anacostia River and Watts Branch (west and north), the measured hydraulic conductivities are more representative of the materials through which leachate or groundwater must move to enter the surface water.

Clays and silts were encountered below the former District Landfill cap in wells MW-1 through MW-6 along the Anacostia River and Watts Branch. The low horizontal hydraulic conductivity of the material encountered and the slow rates of recharge of these wells show that discharge of leachate or groundwater from under the Site through these materials is very slow. Because in layered alluvial deposits there are usually layers of clay, the vertical hydraulic conductivity is often an order of magnitude less than the horizontal, and vertical flow is therefore even slower than horizontal flow. In addition, the alluvium lies on Arundel Clay, which is a dense hard clay that did not yield water to a large diameter (8-inch) borehole at a location (Langston Golf Course) just across the Anacostia River from Kenilworth Park. This means that flow cannot go downwards but must go laterally into surface water. This is because the hydraulic head in the first water supply aquifer beneath the landfill is higher than the head in any well on-site, as discussed in Section 4.3.2.2.

To estimate the volume of flow leaving the Site under the conditions from June 2001, it was assumed that the hydraulic conductivities on the east and south side of the Site average the same as those on the west and north. The flow leaving the west and north sides of the Site was calculated and that quantity was doubled to account for the remaining parts of the perimeter. Since the hydraulic conductivity is known for MW-1 through MW-6, the hydraulic gradients are known and a reasonable estimate can be proposed for the cross-sectional area involved, then the volume of estimated flow can be calculated. These calculations are shown in Table 4-2 in Section 4.3.2.

The seepage face was set arbitrarily low for the calculations performed in the PA/SI to reconcile the field observation of no apparent infiltration through the cap with the date of closure of the landfill and the still high groundwater mound within the Site. The implication was that, despite not being replenished, the water table within the landfill had diminished very slowly, implying a slow leak to the outside.

To account for the increase in the thickness of the zone of saturation around the toe of the landfill, due to the higher water table elevations measured in 2001, the original assumption of a 1-foot thick discharge face around the toe of the Site was increased to 1 meter.

With these assumptions, the flow discharging to the surface water has been estimated as 1,154 cubic meters per year (m^3/yr). The calculations are presented in Table 4-2. The average flow of the Anacostia River past the Site is approximately 4.4 m^3/sec or 139 million m^3/yr, so the discharge from the Site is estimated at 0.0001% of the river flow.

These numbers can be used to calculate the probable mass of contaminants discharging to the river by multiplying the flow by the concentrations found in the monitoring wells adjacent to surface water in each segment of the Site. The results of these calculations are presented in Table 4-4. Ignoring such metals as calcium, magnesium, potassium, and sodium that have no MCL or RBC, the estimated loading per year to the Anacostia River is approximately 10 kilograms. This is primarily (i.e., 99%) from iron, manganese, barium, and aluminum. None of the metal concentrations, when allowing for the high dilution factor of groundwater by the flow of the Anacostia River, exceed the surface water criteria, as shown in Table 4-4.

Table 4-4 Estimated Loading of Metals from Groundwater to Surface Water, Kenilworth Park South Landfill

Metal	Concentration (µg/L) [a]	Loading (grams/year)	% of Total Loading	SW Standards (µg/L) [b]
Aluminum	1,250	222.5	2.20	NA
Antimony	14	2.5	0.025	4,300
Arsenic	25.8	4.6	0.045	0.14 [c]
Barium	2,130	379	3.76	NA
Chromium	11.9	2.1	0.021	NA
Cobalt	5.68	1.0	0.010	NA
Copper	58.1	10.3	0.10	NA
Iron	49,800	8,864	87.80	NA
Lead	24.3	4.3	0.04	NA
Manganese	3,180	566	5.61	NA
Nickel	121	21.5	0.21	4,600
Selenium	13.3	2.4	0.023	NA
Vanadium	8.6	1.5	0.015	NA
Zinc	74.8	13.3	0.13	NA
Total		10,096		

[a] Maximum concentration found in wells adjacent to surface water (MW-1 to MW-6).

[b] DC criteria for class D surface water quality (21 DCMR Ch. 11, as amended Jan. 21, 2000).

[c] Criterion based on carcinogenicity (10^{-6} risk).

Key:

µg/L = Micrograms per liter.

NA = Not available.

Flow of groundwater to surface water has been estimated as 178 m^3 /year.

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5 Nature and Extent of Contamination

5.1 Introduction

This section presents the chemical analytical results of the RI field sampling activities and provides a discussion of the types of contamination identified in each media and the extent of contamination distribution throughout the Site. Both the results of previous investigations and the results of this RI have been considered in this evaluation of the nature and extent of contamination.

Tables 3-1, 3-2, and 3-5 summarize the dates, times, and sample identification numbers for RI samples in surface soil, sediment, subsurface soil, and groundwater, respectively. Tables 5-1 through 5-8 provide the analytical results of each medium sampled. The analytical results that exceeded an appropriate screening criterion are highlighted. This screening was intended to focus on *the nature and extent* of contamination rather than to identify COPCs. An independent screening was conducted to identify the COPCs for the human health risk assessment and the contaminants of potential ecological concern (COPECs) for the SLERA.

To focus the discussion of the nature and extent of contamination, analytical results were compared with the following screening criteria:

- Surface and subsurface soil concentrations were compared with EPA Region 3 risk-based concentrations (RBCs) for residential soils;
- Sediment analytical results were compared with the EPA Region 3 BTAG values; and
- Groundwater analytical results were compared with the lowest available screening criteria between the tapwater RBCs, federal maximum contaminant levels (MCLs), and the District of Columbia water quality standards.

Complete analytical results and data validation memos are provided in Appendix J. Section 5.7 below summarizes the potential pathways for contaminant migration and the possible connections between contaminants in different media at the Site.

Table 5-1 Analytical Results for Surface Soil Samples, Polynuclear Aromatic Hydrocarbons and Polychlorinated Biphenyls, Kenilworth Park South Landfill

	KWS-SU-NE-1		KWS-SU-NE-2		KWS-SU-NE-3		KWS-SU-NE-4		KWS-SU-NE-5[a]		RBCs[b]
Acenaphthene	7,770	N	422	J	42,600	N	16,600	N	26,400	N	4,700,000
Acenaphthylene	ND		ND		ND		ND		ND		N/A
Anthracene	100	N	40	J	26	J	ND		ND		23,000,000
Benz(a)anthracene	50	J	41	J	ND		ND		ND		220
Benzo(a)pyrene	463	N	382	N	509	N	100	J	ND		22
Benzo(b)fluoranthene	598	N	347	N	493	N	121	J	147	J	220
Benzo(g,h,i)perylene	237	N	203	J	169	J	ND		ND		N/A
Benzo(k)fluoranthene	266	N	216	N	129	J	59	J	80	J	2,200
Chrysene	446	N	356	N	436	N	ND		ND		22,000
Dibenz(a,h)anthracene	87	J	117	J	942	N	837	N	447	J	22
Fluoranthene	1,610	N	910	N	1,290	N	394	J	605	N	3,100,000
Fluorene	168	N	ND		1,950	N	721	N	1,160	N	3,100,000
Indeno(1,2,3-cd)pyrene	318	N	197	N	250	N	ND		ND		220
Naphthalene	ND		ND		ND		ND		ND		1,600,000
Phenanthrene	413	N	195	N	318	N	77	J	88	J	N/A
Pyrene	1,140	N	635	N	902	N	260	J	ND		2,300,000
Total PAHs	13,666		4,061		50,014		19,169		28,927		N/A
Aroclor 1242	ND		ND		ND		ND		ND		320.000
Aroclor 1254	742		ND		3,160		1,690		2,340		320.000
Aroclor 1260	1,300		119		2,510		1,010		1,430		320.000

Notes: Figures with highlights indicate values that exceed RBCs.

Key:

[a] KWS-SU-NE-5 is a duplicate of KWS-SU-NE-4

[b] EPA Region III RBCs for residential soils.

µg/kg = Micrograms per kilogram.

N/A = Not applicable.

ND = Not detected.

RBC = Risk based concentrations.

Table 5-2 Analytical Results for Surface Soil Samples, Metals (mg/kg)
Kenilworth Park South Landfill

	KWS-SU-NE-1		KWS-SU-NE-2		KWS-SU-NE-3		KWS-SU-NE-4		KWS-SU-NE-5[a]		RBCs[d]
Aluminum	7400		10700		8660		6990		7610		78,000
Antimony	0.57	J	ND		1.03	J	0.478	J	1.14		31
Arsenic	4.39		1.91		6.4		4.76		6.33		0.430
Barium	263		82.4		505		328		411		16,000
Beryllium	0.884		0.857		0.756		0.63		0.7		160
Cadmium[w]	3.56		0.284	J	8.73		5.1		6.24		39
Calcium	6140		11900		10600		4080		12100		N/A
Chromium VI	100		39		394		256		362		230
Cobalt	7.91		14.3		8.04		7.68		7.59		N/A
Copper	171		28.8		406		236		284		3,100
Iron	20400		21700		21700		16400		18200		55,000
Lead [c]	192		28.7		366		222		316		400
Magnesium	2000		6960		2210		1620		5620		N/A
Manganese[N]	295		486		267		265		258		1,600
Mercury[M]	3.05		0.0578		7.45		5.17		6.4		23
Nickel	24.3		39		31.4		21.1		31.5		1,600
Potassium	1550		1810		708		464		498		N/A
Selenium	2.91		3.72		1.58		1.51		3.75		390
Silver	29		ND		79.3		49		68.5		390
Sodium	77.2	J	63	J	97.7	J	50.9	J	69.7	J	N/A
Vanadium	55.4		46.2		105		47.2		67.2		78
Zinc	390		63.7		831		530		628		23,000

Note: Figures with highlights indicate values that exceed RBCs.
Key:
[a] KWS-SU-NE-5 is a duplicate of KWS-SU-NE-4.
[b] Chromium III.
[c] EPA Action Level.
[d] EPA Region III RBCs for residential soils.
[M] mercuric chloride value used
[N] Nonfood
[w] Water value
mg/kg = Milligrams per kilogram.
N/A = Not applicable.
ND = Not detected.
RBCs = Risk-based concentrations.

Table 5-3 **Analytical Results for Surface Soil and Sediment Background Samples, Polychlorinated Biphenyls (µg/kg), Kenilworth Park South Landfill**

	KWS-SU-BK-1 Fort Mahon	KWS-SU-BK-2 Fort Chaplin	KWS-SU-BK-3 Fort Dupont - E St.	KWS-SU-BK-4 Fort Dupont - Maintenance Yard	KWS-SU-BK-5 Anacostia Park - Blaine St.	RBCs[a]
Aroclor 1242	ND	ND	ND	ND	ND	320
Aroclor 1254	ND	ND	ND	ND	ND	320
Aroclor 1260	38.4	ND	30.5	ND	185	320

	KWS-SU-BK-6 Anacostia Park - Oklahoma St.	KWS-SU-BK-7 Langston Golf Course	KWS-SU-BK-8 Arboretum - Capitol Columns	KWS-SU-BK-9 Arboretum - NE Fence	KWS-SU-BK- Sediment - Storm Sewer Outlet	RBCs[a]
Aroclor 1242	ND	ND	ND	ND	ND	320
Aroclor 1254	ND	ND	ND	ND	278	320
Aroclor 1260	ND	ND	124	124	194	320

Note: Figures with highlights indicate values that exceed RBCs.

Key:

[a] EPA Region III RBCs for residential soils.

µg/kg = Micrograms per kilogram.

ND = Not detected.

RBC = Risk-based concentration.

Table 5-4 **Analytical Results for Subsurface Soil Samples, Polynuclear Aromatic Hydrocarbons and Polychlorinated Biphenyls (µg/kg), Kenilworth Park South Landfill**

	KWS-SS-AR-1		KWS-SS-AR-2		KWS-SS-AR-3		KWS-SS-AR-4		KWS-SS-AR-5		KWS-SS-AR-6[a]		RBCs[b]
Acenaphthene	94.6	N	1380	N	521	N	71.4	J	ND		630	N	4,700,000
Acenaphthylene	30.7	J	ND		ND		30.8	J	ND		344	N	N/A
Anthracene	ND		86.4	N	2.93	J	1.23	J	ND		3.6	J	23,000,000
Benz(a)anthracene	5.95	J	280	N	104	N	11.5	N	74.4	J	42.4	N	220
Benzo(a)pyrene	8.82	N	296	N	231	N	16.4	N	344	N	221	N	22
Benzo(b)fluoranthene	9.25	N	275	N	167	N	9.85	J	133	N	72.9	N	220
Benzo(g,h,i)perylene	5.39	J	175	N	228	N	15.6	J	82.2	J	19.5	J	N/A
Benzo(k)fluoranthene	5.61	J	163	N	130	N	11.1	N	ND		115	N	2,200
Chrysene	6.24	J	339	N	159	N	14.8	N	74.4	J	94.4	N	22,000
Dibenz(a,h)anthracene	ND		29.1	J	243	N	ND		791	N	64.2	N	22
Fluoranthene	24.3	N	1130	N	677	N	50.9	N	207	J	250	N	3,100,000
Fluorene	ND		49.6	N	ND		ND		192	N	192	N	3,100,000
Indeno(1,2,3-cd)pyrene	4.9	J	163	N	190	N	12.3	N	62.6	J	30.4	N	220
Naphthalene	ND		ND		ND		ND		ND		ND		1,600,000
Phenanthrene	6.06	J	387	N	111	N	14.8	N	35.2	J	36.7	N	N/A
Pyrene	19.1	J	817	N	638	N	35.7	N	106	J	61.1	N	2,300,000
Total PAHs	220.92		5570.1		3401.93		296.38		2101.8		2177.2		N/A
Aroclor 1242	ND		ND		ND		ND		ND		ND		320
Aroclor 1254	ND		55.7		71.8		51.8		87.9		66.5		320
Aroclor 1260	7.85	J	22.4	J	32.3		ND		55.7		61.8		320

Note: Figures with highlights indicate values that exceed RBCs.
Key at end of table.

Table 5-4 **Analytical Results for Subsurface Soil Samples, Polynuclear Aromatic Hydrocarbons and Polychlorinated Biphenyls (µg/kg), Kenilworth Park South Landfill**

	KWS-SS-WA-1		KWS-SS-WA-2		KWS-SS-WA-3		KWS-SS-WA-4		KWS-SS-WA-5		RBCs[b]
Acenaphthene	ND		16200	N	ND		206	N	4720	N	4,700,000
Acenaphthylene	ND		ND		ND		216	N	875	J	N/A
Anthracene	ND		1740	N	85.4	J	28.9	N	189	N	23,000,000
Benz(a)anthracene	168	J	5860	N	89.6	J	117	N	894	N	220
Benzo(a)pyrene	899	N	6250	N	306	N	113	N	873	N	22
Benzo(b)fluoranthene	559	J	6370	N	354	N	123	N	1310	N	220
Benzo(g,h,i)perylene	1450	J	4430	N	144	J	61.5	N	660	N	N/A
Benzo(k)fluoranthene	268	J	3820	N	211	N	109	N	649	N	2,200
Chrysene	499	J	7090	N	346	N	150	N	1110	N	22,000
Dibenz(a,h)anthracene	ND		ND		302	J	ND		ND		22
Fluoranthene	2880	N	24400	N	1450	N	518	N	3700	N	3,100,000
Fluorene	ND		ND		ND		13.7	J	ND		3,100,000
Indeno(1,2,3-cd)pyrene	264	J	4110	N	156	J	65.3	N	684	N	220
Naphthalene	ND		ND		ND		ND		3250	N	1,600,000
Phenanthrene	958	N	6410	N	503	N	158	N	611	N	N/A
Pyrene	664	J	19900	N	983	N	149	N	2260	N	2,300,000
Total PAHs	8609		106580		4930		2028.4		21785		N/A
Aroclor 1242	47.7		ND		ND		ND		ND		320
Aroclor 1254	123		ND		150		ND		ND		320
Aroclor 1260	105		22.8		9.13	J	12.6	J	21.5		320

Note: Figures with highlights indicate values that exceed RBCs.
Key at end of table.

Table 5-4 **Analytical Results for Subsurface Soil Samples, Polynuclear Aromatic Hydrocarbons and Polychlorinated Biphenyls (µg/kg), Kenilworth Park South Landfill**

	KWS-SS-NE-1		KWS-SS-NE-2		KWS-SS-NE-3		KWS-SS-NE-4		RBCs[b]
Acenaphthene	697	J	ND		708	N	ND		4,700,000
Acenaphthylene	ND		ND		ND		171	N	N/A
Anthracene	211	N	129	N	159	N	16.6	N	23,000,000
Benz(a)anthracene	214	N	111	N	327	N	98.7	N	220
Benzo(a)pyrene	681	N	65.5	N	255	N	59.2	N	22
Benzo(b)fluoranthene	688	N	134	N	303	N	63.5	N	220
Benzo(g,h,i)perylene	542	N	26.2	J	170	N	33.1	N	N/A
Benzo(k)fluoranthene	378	N	117	N	173	N	39.5	N	2,200
Chrysene	707	N	ND		416	N	103	N	22,000
Dibenz(a,h)anthracene	75.9	J	184	N	169	N	27.1	N	22
Fluoranthene	2570	N	1280	N	1230	N	510	N	3,100,000
Fluorene	49.8	J	132	N	54.4	N	17.6	N	3,100,000
Indeno(1,2,3-cd)pyrene	432	N	85.7	N	154	N	38.1	N	220
Naphthalene	ND		1200	N	ND		226	N	1,600,000
Phenanthrene	752	N	548	N	497	N	133	N	N/A
Pyrene	2710	N	842	N	992	N	336	N	2,300,000
Total PAHs	10707.7		4854.4		5607.4		1872.4		N/A
Aroclor 1242	122		149		ND		56.8		320
Aroclor 1254	119		111		ND		38.4		320
Aroclor 1260	48		22	J	ND		7.37	J	320

Note: Figures with highlights indicate values that exceed RBCs.

Key :

[a] KWS-SS-AR-6 is a duplicate of KWS-SS-AR-5.

[b] EPA Region III RBCs for residential soils.

µg/kg = Micrograms per kilogram.

N/A = Not applicable.

ND = Not detected.

RBCs = Risk-based concentrations.

Table 5-5 Analytical Results for Subsurface Soil Samples, Metals (mg/kg), Kenilworth Park South Landfill

Analyte	KWS-SS-AR-1		KWS-SS-AR-2		KWS-SS-AR-3		KWS-SS-AR-4		KWS-SS-AR-5		KWS-SS-AR-6[a]		RBCs[d]
Aluminum	7740		8860		8830		31800		20000		27000		78,000
Antimony	4.9		9.01		5.3		34.2		32.1		39.2		31
Arsenic	2.93		3.78		4.12		4.89	J	ND		ND		0.430
Barium	38.7		108		71		1020		540		738		16,000
Beryllium	0.567		0.515	J	0.55		0.635		0.2	J	ND		160
Cadmium[w]	ND		1.11		ND		6.64		6.84		7.16		39
Calcium	1200		2730		948		30900		6850		6390		N/A
Chromium VI	11.9		25.1		14.9		59.7		51.7		54.5		230
Cobalt	7.64		9.2		9.11		15.1		13.5		15.5		N/A
Copper	17.3		68.5		22.8		918		416		715		3,100
Iron	16500		25200		17300		81700		83700		108000		55,000
Lead [c]	13		192		24.6		2800		6960		1230		400
Magnesium	1220		1670		1450		6010		1170		1390		N/A
Manganese[N]	258		155		770		722		813		967		1,600
Mercury[M]	0.0851		0.348		0.145		0.0701		0.664		0.586		23
Nickel	9.76		20		10.7		232		67.8		80.4		1,600
Potassium	801		839		1100		1870		818		714		N/A
Selenium	ND		ND		ND		ND		ND		ND		390
Silver	0.599	J	1.92		0.992	J	13.2		95		110		390
Sodium	ND		ND		ND		8480		1800		997		N/A
Vanadium	23.9		54.2		27.2		662		125		246		78
Zinc	44.3		233		65.3		2990		1350		1380		23,000

Note: Figures with highlights indicate values that exceed RBCs.
Key at end of table.

Table 5-5 Analytical Results for Subsurface Soil Samples, Metals (mg/kg), Kenilworth Park South Landfill

	KWS-SS-WA-1		KWS-SS-WA-2		KWS-SS-WA-3		KWS-SS-WA-4		KWS-SS-WA-5		RBCs[d]
Aluminum	4740		9350		2610		6270		5860		78,000
Antimony	0.814	J	ND		62.3		6.77		1.57		31
Arsenic	4.65		3.66		39.3		14.8		5.27		0
Barium	165		92.3		5000		2440		177		16,000
Beryllium	0.468	J	0.935		ND		0.532	J	0.384	J	160
Cadmium[W]	0.624		0.379	J	3.21	J	1.55	J	0.94		39
Calcium	45800		7790		22300		11800		17500		N/A
Chromium VI	19.6		25.9		295		139		27.6		230
Cobalt	5.95		12		21.8		16.3		4.44		N/A
Copper	62.6		29.3		687		538		1420		3,100
Iron	16100		24500		286000		169000		22800		55,000
Lead [c]	302		60.5		10500		3300		1770		400
Magnesium	2810		3320		1940		1400		3230		N/A
Manganese[N]	326		261		1570		1470		621		1,600
Mercury[M]	0.265		0.23		0.636		0.287		0.512		23
Nickel	14.2		23.3		118		88.5		62.3		1,600
Potassium	773		1510		403		689		568		N/A
Selenium	9.78		3.41		10.6	J	13.3		4.3		390
Silver	0.771	J	ND		ND		ND		ND		390
Sodium	131		107		776		317		628		N/A
Vanadium	25.1		32.1		28.7		33.6		27.9		78
Zinc	148		98.9		2290		1670		500		23,000

Note: Figures with highlights indicate values that exceed RBCs.
Key at end of table.

Table 5-5 Analytical Results for Subsurface Soil Samples, Metals (mg/kg), Kenilworth Park South Landfill

	KWS-SS-NE-1		KWS-SS-NE-2		KWS-SS-NE-3		KWS-SS-NE-4		RBCs[d]
Aluminum	19100		3680		7830		8660		78,000
Antimony	0.591	J	1.25		ND		ND		31
Arsenic	13.2		7.46	J	2.77		4.89		0.430
Barium	374		203		63.8		68.7		16,000
Beryllium	1.95		0.26	J	0.804		0.986		160
Cadmium[w]	3.15	J	2.2	J	0.252	J	0.382	J	39
Calcium	10700		16000		1550		3390		N/A
Chromium VI	52.2		34.3		18.6		26.6		230
Cobalt	14.8		5.82		9.59		8.81		N/A
Copper	152		67.7		17		25.4		3,100
Iron	69100		62900		20800		37200		55,000
Lead [c]	378		722		27.4		58.7		400
Magnesium	2930		1210		1570		1600		N/A
Manganese[N]	812		386		234		266		1,600
Mercury[M]	0.144		0.344		0.101		0.311		23
Nickel	35.6		22.7		12.8		11.7		1,600
Potassium	2740		350		685		792		N/A
Selenium	6.3		6.19		1.84		2.85		390
Silver	ND		ND		ND		ND		390
Sodium	731		164		64.6	J	129		N/A
Vanadium	58.3		16.3	J	24.8		25.8		78
Zinc	1010		850		48.1		112		23,000

Note: Figures with highlights indicate values that exceed RBCs.

Key:

[a] KWS-SS-AR-6 is a duplicate of KWS-SS-AR-5.

[b] Chromium III.

[c] EPA Action Level.

[d] EPA Region III RBCs for residential soils.

[M] mercuric chloride value used

[N] Nonfood value

[W] water value

mg/kg = Milligrams per kilogram.

N/A = Not applicable.

ND = Not detected.

RBC = Risk-based concentration.

Table 5-6 Analytical Results for Subsurface Soil Samples, TCLP Metals (mg/L), Kenilworth Park South Landfill

	KWS-SS-OL-1		KWS-SS-OL-2		KWS-SS-OL-3		KWS-SS-OL-4		KWS-SS-OL-5		KWS-SS-OL-6[a]		Regulatory Level[b]
Arsenic	ND		ND		ND		ND		ND		ND		5.0
Barium	1.73		2.49		0.979		3.05		3.97		3.25		100.0
Cadmium	0.0099	J	0.00414	J	ND	J	ND		0.00355	J	0.0017	J	1.0
Chromium	0.0105	J	0.0177	J	0.00564	J	0.0186	J	0.0129	J	0.0176	J	5.0
Lead	1.86		0.206		0.0536	J	0.0452	J	3.04		0.272		5.0
Selenium	ND		ND		0.0132		ND		ND		ND		1.0
Silver	ND		ND		ND		ND		ND		ND		5.0

Note: Figures with highlights indicate values that exceed RBCs.
Key at end of table.

	KWS-SS-NL-1		KWS-SS-NL-2		KWS-SS-NL-3		Regulatory Level[b]	
Arsenic	ND		ND		ND		5.0	
Barium	0.346		0.336		0.379		100.0	
Cadmium	0.00284	J	ND		ND		1.0	
Chromium	ND		ND		ND		5.0	
Lead	0.111	J	0.02	J	0.0648	J	5.0	
Selenium	0.0182	J	ND		ND		1.0	
Silver	ND		ND		ND		5.0	

Note: Figures in bold indicate values that exceed RBCs.
Key:
[a] KWS-SS-OL-6 is a duplicate of KWS-SS-OL-5.
[b] as per 40 CFR 261.24.
D = Duplicate.
mg/kg = Milligrams per kilogram.
N/A = Not applicable.
ND = Not detected
RBC = Risk-based concentration.

Table 5-7 Analytical Results for Groundwater Samples, Organic Compounds (µg/L), Kenilworth Park South Landfill

	KWS-MW-12		KWS-MW-12D[d]		KWS-MW-13		MCL[a]	RBCs [b]	GW Standards[c]
Bis(2-ethylhexyl)phthalate	**6.63**	J	ND		**9.07**	J	6	*4.80*	N/A
1,4-Dichlorobenzene	**3.4**	J	3.38	J	ND		75	*0.47*	75
Acetone	8.41	J	7.6	J	ND		N/A	*5500.00*	N/A
Chlorobenzene	2.8	J	2.75	J	ND		100	*90.00*	N/A
Carbon disulfide	ND		ND		4.58	J	N/A	*1000.00*	N/A
alpha-Chlordane[g]	ND		ND		0.012	J	N/A	*0.19*	N/A
Endosulfan I[E]	ND		ND		0.012	J	N/A	*220.00*	N/A
Aroclor 1242	0.327	J	0.317	J	ND		0.5	*0.03*	N/A
Aroclor 1254	ND		ND		ND		0.5	*0.03*	N/A
Aroclor 1260	ND		ND		ND		0.5	*0.03*	N/A

Note: Figures with highlights indicate values that exceed RBCs for tap water. Figures with bold indicate values that exceed primary or secondary MCL
Italicized figure indicates lowest screening value
Key:
[a] Maximum contaminant level (MCL) (National Primary Drinking Water Regulations).
[b] Risk-Based Concentration for Tap Water (EPA Region 3, 2002a).
[c] DC criteria for class G1 groundwater quality (21 DCMR 1150-1158).
[d] KWS-MW-12D is a duplicate of KWS-MW-12.
D = Duplicate
[E] Endosulfan value used
[g] Chlordane value used
µg/L = Micrograms per liter.
MCL = Maximum contaminant level.
N/A Not applicable.
ND = Not detected.

Table 5-8 Analytical Results for Groundwater Samples, Metals (µg/L), Kenilworth Park South Lar

	KWS-MW-1		KWS-MW-2		KWS-MW-3		KWS-MW-4		KWS-MW-5		KWS-MW-6		KWS-MW-7		MCL	Secondary	RBC	DC	DC-Secondary [g]
Aluminum	**969**		**859**		**187**	J	**404**		**144**	J	**587**		**1250**		N/A	*50-200*	37000	N/A	
Antimony	13.1		14		5.55	J	2.63	J	2.67	J	ND		ND		*6*	N/A	15	N/A	
Arsenic	9.63	J	ND		25.8		15.3	J	ND		ND		ND		10	N/A	*0.045*	50	
Barium	459		**2130**		349		345		191		245		782		2000	N/A	7300	*1000*	
Beryllium	ND		ND		ND		ND		ND		ND		ND		*4*	N/A	73	N/A	
Cadmium[w]	ND		ND		ND		ND		ND		ND		ND		*5*	N/A	18	*5*	
Calcium	81700		68300		64500		41300		68000		54100		19700		N/A	N/A	N/A	N/A	
Chromium VI	11.9		4.28	J	ND		ND		ND		10		3.79	J	*100*	N/A	110	*100*	
Cobalt	4.69	J	ND		5.68	J	ND		ND		4.97	J	ND		N/A	N/A	N/A	N/A	
Copper	10.4	J	14.5	J	5.36	J	20.4		9.33	J	58.1		9.31	J	1300 AL	*1000*	1500	N/A	*1000*
Iron	45900		49800		**16400**		**1390**		**5930**		**6840**		**3780**		N/A	*300*	26000	N/A	
Lead	ND		6.46		ND		3.77	J	3.49	J	ND		**24.3**		*15 AL*	N/A	N/A	50	
Magnesium	56300		50000		41400		41400		31200		20800		19500		N/A	N/A	N/A	N/A	
Manganese[N]	3180		**258**		1290		**252**		1070		1780		**52**		N/A	*50*	730	N/A	
Mercury[M]	ND		ND		ND		ND		ND		ND		ND		*2*	N/A	11	*2*	
Nickel	ND		ND		57.5		24.5		ND		121		ND		N/A	N/A	*730*	N/A	
Potassium	66100		64900		87600		153000		66800		43000		61200		N/A	N/A	N/A	N/A	
Selenium	8.05	J	13.3	J	9.04	J	8.23	J	8.31	J	ND		7.72	J	*50*	N/A	180	*50*	
Silver	ND		ND		ND		ND		ND		ND		ND		N/A	100	180	*50*	
Sodium	162000		140000		246000		564000		376000		314000		176000		N/A	N/A	N/A	N/A	
Vanadium	3.05	J	3.07	J	ND		8.6	J	6.04	J	8.27	J	3.08	J	N/A	N/A	*37*	N/A	
Zinc	14.4		45		9.29	J	18.1		19.4		74.8		70.7		N/A	*5000*	11000	N/A	

Note: Figures with highlights indicate values that exceed the lowest screening value (not including secondary standards). Figures in bold indicate values that exceed the lowest primary or secondary MCL

Key at end of table.

Table 5-8 Analytical Results for Groundwater Samples, Metals (µg/L), Kenilworth Park South Landfill

	KWS-MW-8		KWS-MW-8D		KWS-MW-9		KWS-MW-10		KWS-MW-11		KWS-MW-12		KWS-MW-12D[h]		KWS-MW-13		MCL[a]	Secondary	RBCs [b]	GW Standards[f]	DC Secondary[g]
Aluminum	ND		ND		ND		ND		ND		ND		ND		ND		N/A	*50-200*	37,000	N/A	
Antimony	ND		ND		**6.33**	J	**13**		**8.26**	J	4.55	J	3.58	J	3.41	J	*6*	N/A	15	N/A	
Arsenic	9.89	J	9.5	J	ND		ND		13.7	J	ND		ND		ND		10	N/A	*0.05*	50	
Barium	1230		1240		1290		1310		**6880**		287		289		847		2,000	N/A	7,300	*1,000*	
Beryllium	ND		ND		ND		ND		ND		ND		ND		ND		*4*	N/A	73	N/A	
Cadmium[w]	ND		ND		ND		ND		ND		ND		ND		ND		*5*	N/A	18	*5*	
Calcium	36700		37000		102000		117000		123000		114000		114000		124000		N/A	N/A	N/A	N/A	
Chromium VI	ND		ND		ND		ND		ND		ND		ND		9.91	J	*100*	N/A	110	*100*	
Cobalt	ND		ND		ND		ND		ND		ND		ND		ND		N/A	N/A	N/A	N/A	
Copper	ND		ND		ND		20.4		ND		6.07	J	4.53	J	5.79	J	1300 AL	*1,000*	1,500	N/A	*1,000*
Iron	**7160**		**7220**		**23500**		38000		27400		**9490**		**9600**		92800		N/A	*300*	26,000	N/A	
Lead	ND		ND		ND		**53.4**		3.62	J	ND		ND		ND		*15 AL*	N/A	N/A	50	
Magnesium	65700		66400		29100		34600		35500		29500		29600		17900		N/A	N/A	N/A	N/A	
Manganese[N]	38.7		39.3		**140**		**310**		**74.6**		**360**		**364**		**722**		N/A	*50*	730	N/A	
Mercury[M]	ND		ND		ND		ND		ND		ND		ND		ND		N/A	N/A	11	*2*	
Nickel	ND		ND		ND		13.8	J	ND		ND		ND		ND		N/A	N/A	*730*	N/A	
Potassium	104000		104000		49700		17300		16800		25200		25200		8820		N/A	N/A	N/A	N/A	
Selenium	9.64	J	7.76	J	9.25	J	12.1	J	8.22	J	ND		14.2	J	9.34	J	*50*	N/A	180	*50*	
Silver	ND		ND		ND		ND		ND		ND		ND		ND		N/A	100	180	*50*	
Sodium	431000		441000		187000		50600		44000		66800		67000		11600		N/A	N/A	N/A	N/A	
Vanadium	ND		ND		ND		ND		ND		ND		ND		4.54	J	N/A	N/A	*37*	N/A	
Zinc	7.88	J	8.15	J	5.26	J	16.7		13.6		24		22.6		73.7		N/A	*5,000*	11,000	N/A	

Note: Figures with highlights indicate values that exceed RBCs for tap water. Figures with in bold indicate values that exceed primary or secondary MCL
Italicized figures indicate the lowest screening value
Key:

[a] Maximum contaminant level (MCL) (National Primary Drinking Water Regulations).
[b] Risk-Based Concentration for Tap Water (EPA Region 3, 2002a).
[c] EPA Action Level.
[d] National Secondary Drinking Water Regulations (not enforceable).
[e] Risk-Based Concentration for Chromium III.
[f] DC primary criteria for class G1 groundwater quality (21 DCMR 1150-1158).
[g] DC groundwater secondary standard.
[h] KWS-MW-12D is a duplicate of KWS-MW-12.

D = Duplicate.
µg/L = Micrograms per liter.
MCL = Maximum contaminant level.
N/A = Not applicable.
ND = Not detected.
RBC = Risk-Based Concentration (EPA Region 3)

The symbol ND indicates that the analyte was not detected at that method detection limit. Samples with a "J" qualifier indicate that the analyte was detected but at a level below which it could be reliably quantified, so these are estimated levels. N/A (not analyzed) indicates that samples were not analyzed for that particular analyte.

5.2 Background and Off-Site Soil and Sediment Samples

"Background" refers to the concentration of naturally-occurring analytes such as metals and metalloids. The concept of "background" does not apply to anthropogenic analytes such as PCBs and PAHs, since these do not occur naturally in the environment. Samples of surface soils are considered to be "background" or "off-site" if they are from areas not directly affected by Site-related activities. "Background" or "off-site" sediment samples normally refer to upstream samples. In tidal waters, where directions of flow are periodically reversed (as discussed in section 4.5), "background" refers to locations that are unlikely to be affected by a suspected source or the movements of sediment during tidal reversals. For the purpose of identifying possible contaminant sources and migration patterns, proximate off-site concentrations of anthropogenic contaminants (e.g., PAHs, PCBs, pesticides) and background concentrations of naturally-occurring analytes (e.g., metals) are discussed below.

Background and off-site surface soil samples were collected during this field investigation. These samples included 5 surface soil samples (SS-29, SS-30, SS-32, SS-33, and SS-34) and 4 sediment samples (SED-1, SED-12, SMP-A, and SMP-B) from the PA/SI (E & E June 2000), 9 surface soil samples (KWS-SU-BK-1 through BK-9), and 1 sediment sample (SU-BK-10) during the RI. Background and off-site sample results are listed in Tables 1 through 7 in Appendix L. Table 3-1 lists all the background surface soil and sediment samples collected during the RI field investigation, with the date, analyses requested, and location of the samples. Locations of the samples are also indicated on Figure 3-2.

During the KPN RI, two surface soil samples (KPN-SU-BK-1 and KPN-SU-BK-2) were collected in Kenilworth Aquatic Gardens to supplement the existing database of background and off-site samples collected for this investigation. The two samples collected during the KPN RI were analyzed for SVOCs, pesticides, PCBs, and metals.

The District of Columbia Department of Health requested that 17 additional samples be collected from the Thomas Elementary School schoolyard adjoining the Site (see Figure 5-1a). These samples were analyzed for SVOCs, PCBs, and metals (see Tables 8 through 10 in Appendix L). The results of the additional sampling showed that organics and metals levels in the schoolyard soils are very similar to background and off-site locations in the area and are unaffected by the landfill. Thus, the samples from the schoolyard can be used for comparison purposes. Analytical results of the 17 samples from the Thomas Elementary School schoolyard and the two background samples taken during the KPN RI have been combined with the 14 previously collected samples from the schoolyard, from Kenil-

worth Aquatic Gardens, and from other surrounding park areas to establish off-site levels of PCBs, PAHs, and metals used for comparison with the surface soils at the Site.

The following discussion addresses the levels of PAHs and metals in surface soil and sediment and the results and ranges for those compounds. Average concentrations have been calculated assuming that non-detect samples are zero, a method that is conservative for estimating analyte concentrations.

5.2.1 Surface Soil

Arsenic was detected in all background samples and ranged in concentration from 2.97 milligrams per kilogram (mg/kg) to 12.4 mg/kg, with an average of 6 mg/kg. Iron was also detected in all background samples and ranged from 8,800 mg/kg to 54,000 mg/kg. Lead concentrations ranged from 29.3 mg/kg to 189 mg/kg, with the highest level of lead in background samples found at SS-30 in Kenilworth Aquatic Gardens, collected during the KPS PA/SI.

Benzo(a)pyrene ranged from non-detect to 900,000 micrograms per kilograms (µg/kg) . Total PAHs ranged from 0.85 µg/kg to 861 µg/kg and had an average concentration of 2,200 µg/kg.

The irregular distribution in the off-site samples of PAHs, including benzo(a) pyrene, suggests that much of the distribution is a function of a non-uniform anthropogenic series of sources.

The two most commonly detected Aroclors (a group of PCBs) at the Site are Aroclor 1254 and Aroclor 1260. Off-site levels for Aroclor 1254 range from non-detect to 79.5 µg/kg and average 5 µg/kg because most samples show non-detect levels. Off-site levels of Aroclor 1260 ranged from non-detect to 610 µg/kg, with an average concentration of 91 µg/kg. The two highest concentrations were detected in the southeast corner of the Thomas Elementary School schoolyard at sample locations KS-SS-01 and KS-SS-02 at concentrations of 470 µg/kg and 610 µg/kg, respectively.

Seventeen off-site samples in the Thomas Elementary School schoolyard and 2 off-site samples from Kenilworth Aquatic Gardens were analyzed for 23 pesticides. Of the 23 pesticides analyzed and reported, only DDT, DDE, dieldrin, endrin aldehyde, and beta-benzene hexachloride (BHC) had detectable levels. DDT was found in 16 of 19 samples with a range of non-detect to 120 µg/kg and an average of 27 µg/kg. DDE was found in 18 of 19 samples with a range of non-detect to 33 µg/kg and an average of 12 µg/kg. Dieldrin was found in 4 samples with a range of non-detect to 9.2 µg/kg and an average of 1.2 µg/kg. Endrin aldehyde was found in 1 sample at a concentration of 3.4 µg/kg, and beta-BHC was found in 1 sample at a concentration of 3.2 µg/kg.

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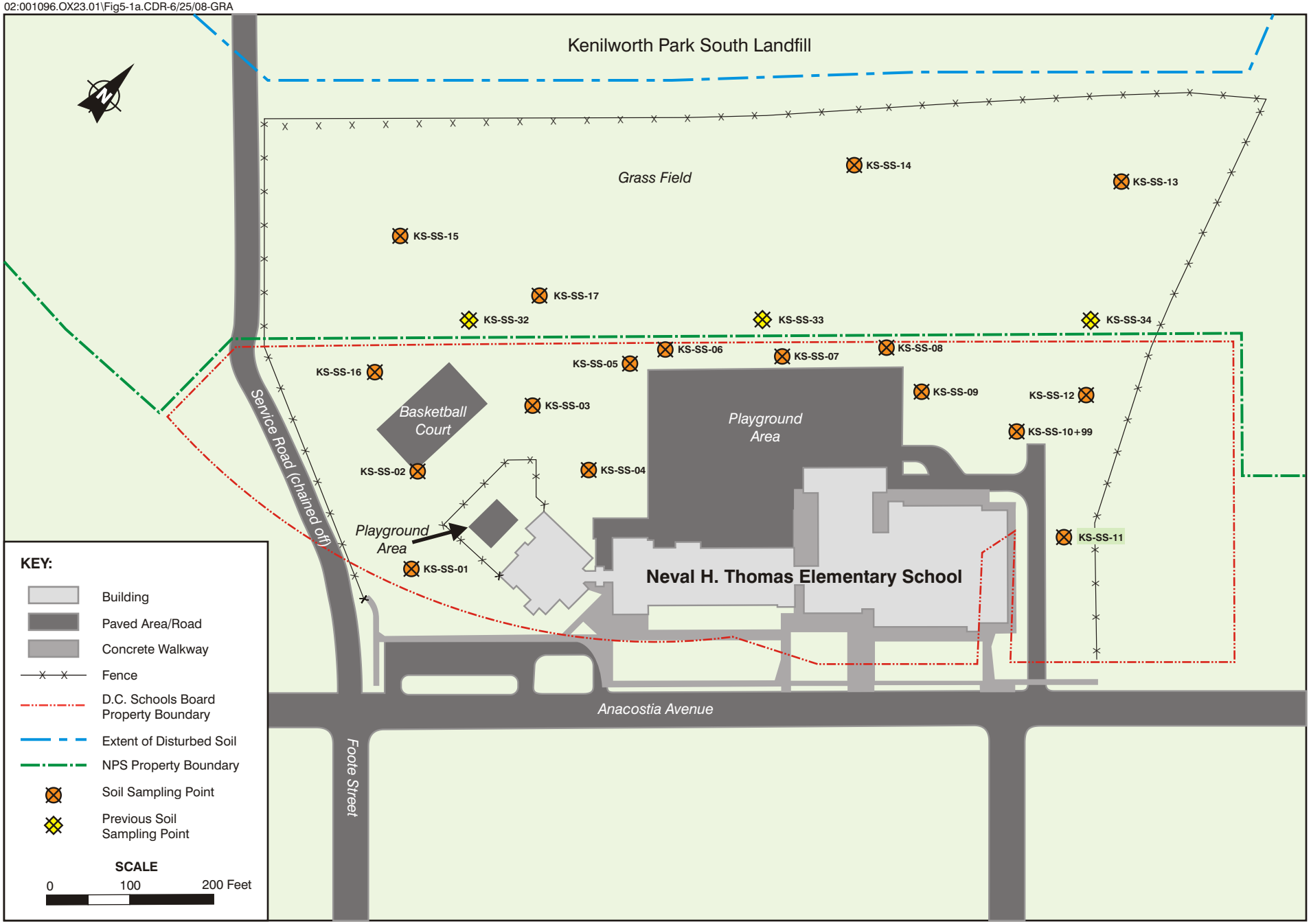

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Figure 5-1a Soil Sample Locations, Thomas Elementary School Yard, Northeast Washington, D.C.

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5.2.2 Sediment

Two sets of sediment upstream samples were collected during the PA/SI. It was determined that most of the first samples, but not all, were close enough to the Site that they may have been influenced by the Site through tidal fluctuations of the Anacostia River. A second round of background and off-site sediment samples (SMP-A and SMP-B) was collected approximately 1 mile upstream of the Site. These samples were analyzed for PCBs, PAHs, and several metals. They showed maximum levels of Aroclors 1242, 1254, and 1260 at 68 micrograms per kilogram (µg/kg), 57.1 µg/kg, and 64.1 µg/kg, respectively, and a maximum level of total PAHs at 11,493 µg/kg (see Figures 5-1 through 5-4). Maximum levels of metals in these samples were arsenic at 6.58 mg/kg; barium at 108 mg/kg; cadmium at 0.994 mg/kg (see Figure 5-5); chromium at 62.5 mg/kg; lead at 81.3 mg/kg (Figure 5-6); and mercury at 0.245 mg/kg (Figure 5-7). Selenium and silver were not detected. There was no indication that the second round of sediment levels of PAHs was related to the Site. In addition, results of a Naval Research Laboratory study (Coffin et al. 1999) indicate that "PAH sources originate above the Anacostia River tidal zone."

The off-site sediment sample KWS-SU-BK-10, collected during the KPS RI at the discharge point for the Grant Street storm drain adjacent to the Thomas School showed levels of PCBs (Aroclor 1254) up to 278 µg/kg. This strongly implies that the PCBs in sediments around the Site may have off-site sources and are not related to the landfill.

5.3 Sediment Analytical Results and Contaminant Distribution

No sediment samples were collected as part of the RI; therefore the following discussion of contaminant distribution uses the results of the 1998 sampling and the PA/SI. Five sediment samples (SD-1 – SD-5) were collected during the 1998 investigation and analyzed for BNAs, TPHs, and metals. Twenty-six sediment samples were collected during the PA/SI in 2 rounds of sampling. Fourteen samples (SED-1 – SED-14) were collected in round 1 of sampling, including 2 background samples (SED-1 and SED-12). These were analyzed for BNAs, TPH, pesticides, PCBs, and metals. Twelve samples (SMP-A – SMP-N) were collected in round 2, including 2 background samples (SMP-A and SMP-B), and analyzed for PAHs, PCBs, and metals. The distribution of selected contaminants in sediment samples collected around the landfill during both the 1998 investigation and the PA/SI are shown in Figures 5-8 through 5-18. The analytical results for these samples are found in Appendices A and B and are discussed below. All sediments were screened against freshwater sediment 2006 BTAG values.

5.3.1 Sediment SVOCs Analytical Results and Distribution

Every sediment sample collected during the 1998 study and PA/SI contained at least 1 PAH that exceeded screening values, including benz(a)anthracene, pyrene, and chrysene. Sample locations SED-4 and SED-14 from the PA/SI and sample SD-4 from the 1998 sampling had the greatest number of analytes exceeding the

screening value. The following table summarizes the range of detected values and number of exceedances of the screening values.

Table 5-9 Range of PAH Detections in the 1998 Investigation and PA/SI Sediment Samples

Pesticide	Minimum Detected Value (µg/kg)	Maximum Detected Value (µg/kg)	Screening Value s (µg/kg)	Number of Exceedances of the Screening Value/Total Number of Sediment Samples
Acenaphthene	49 J	962 J	6.7	6/27
Acenaphthylene	51 J	150 J	5.9	2/27
Anthracene	29.9 J	360	57.2	14/27
Benz(a)anthracene	98.3	920	108	26/27
Benzo(a)pyrene	129	1290	150	25/27
Benzo(b)fluoranthene	193	1880	Not available	Not available
Benzo(g,h,i)perylene	76 J	933	170	15/27
Benzo(k)fluoranthene	119	3,470	240	25/27
Chrysene	163	1,200 J	166	27/27
Dibenz(a,h)anthracene	47 J	240 J	33	6/27
Fluoranthene	305 J	2,000	423	24/27
Fluorene	51 J	180 J	77.4	1/27
Indeno(1,2,3-cd)pyrene	36 J	1,500 J	17	22/27
2-Methylnaphthalene	85 J	640 J	20.2	4/27
Naphthalene	76 J	200 J	176	1/27
Phenanthrene	89.2 J	1,900	204	20/27
Pyrene	296	2,800	195	27/27
Total PAHs (µg /kg)	**1752.2**	**13,779**		

Key:

J = Estimated value.

In the first round of PA/SI sampling in 2000, PAHs were ubiquitous in sediments. The off-site samples contained PAHs that exceeded the screening values for many PAHs. However, the grain sizes found in these samples were not directly comparable to the other sediment samples, which made it difficult to interpret the results. This resulted in the NPS proposing a second round of sampling using sieved samples. In the second round of sampling for the PA/SI, sediments collected from the reach of the Anacostia River adjacent to the Site ranged from 2,130 to 13,779 µg/kg of total PAHs.

Ten of 17 sediment samples collected during the 1998 sampling and the PA/SI exceeded the screening levels for bis(2-ethylhexyl) phthalate.

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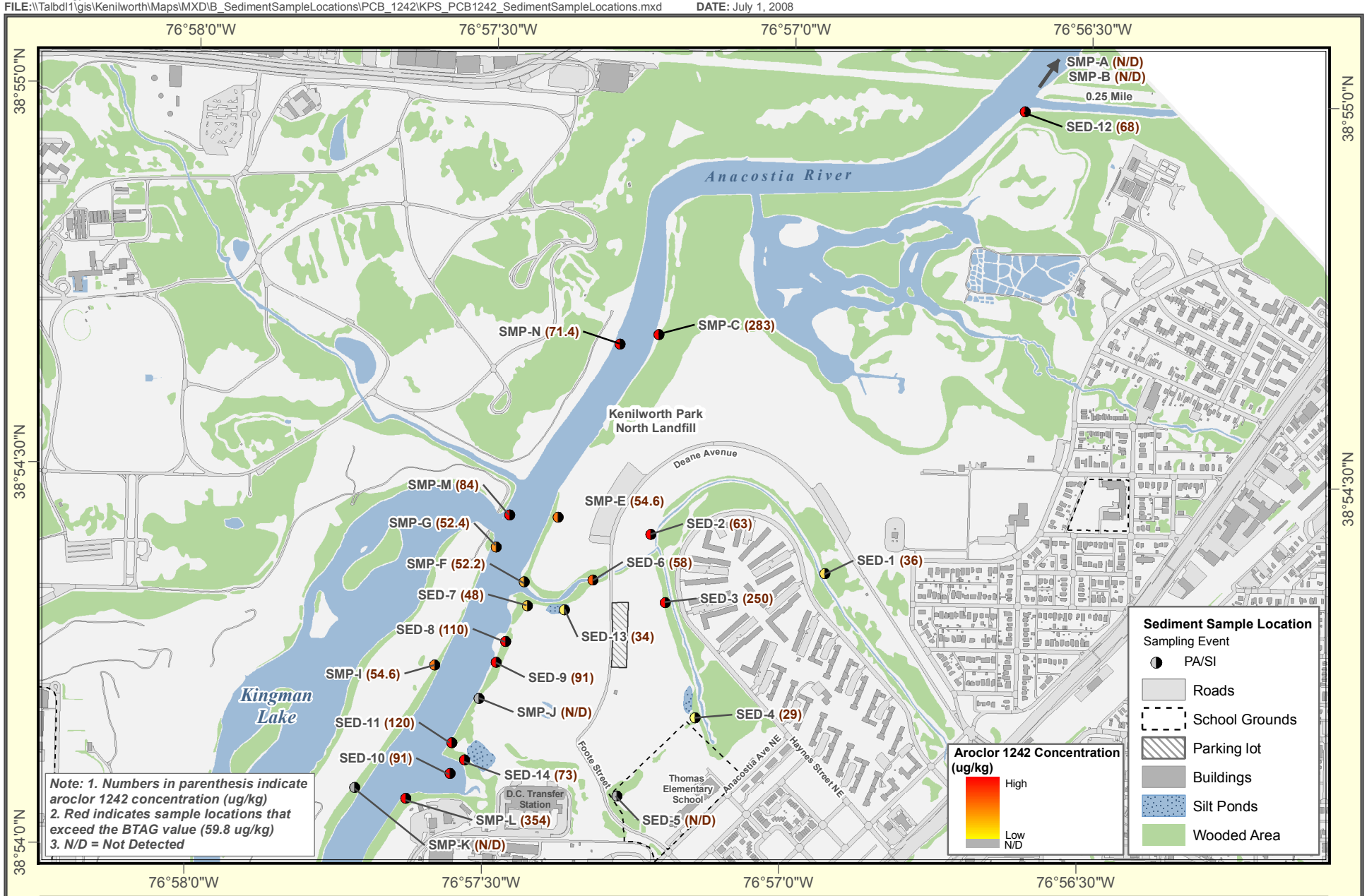

Scale
0 500 1,000 Feet
0 0.1 0.2 Miles
NORTH

Figure 5-1 Aroclor 1242 in Sediment Samples (ug/kg)
Kenilworth Park South Landfill
Washington D.C.

Source: ESRI, 2005; Ecology & Environment, Inc., 2008

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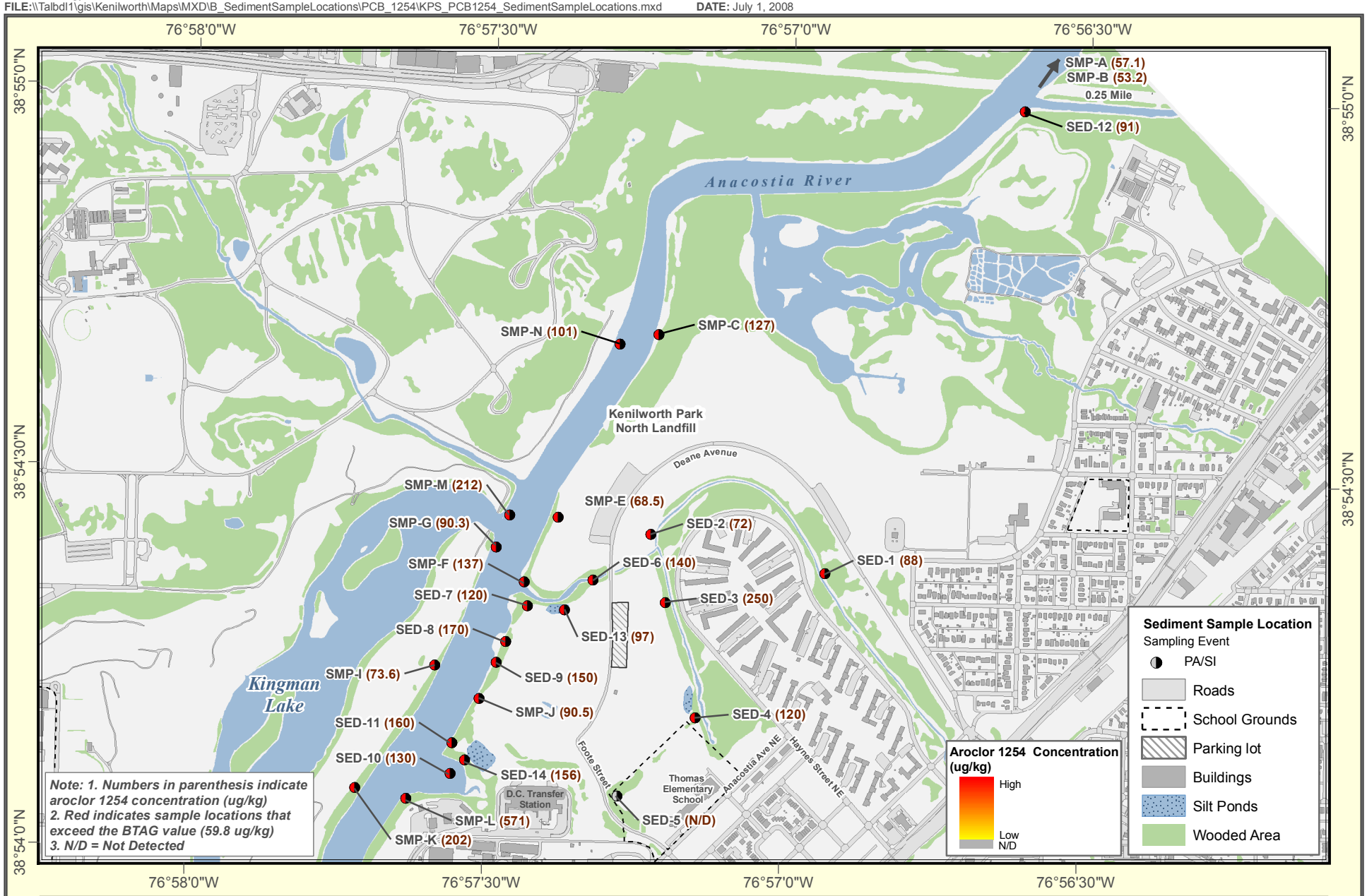

Scale
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0 0.1 0.2 Miles
NORTH

Figure 5-2 Aroclor1254 in Sediment Samples (ug/kg)
Kenilworth Park South Landfill
Washington D.C.

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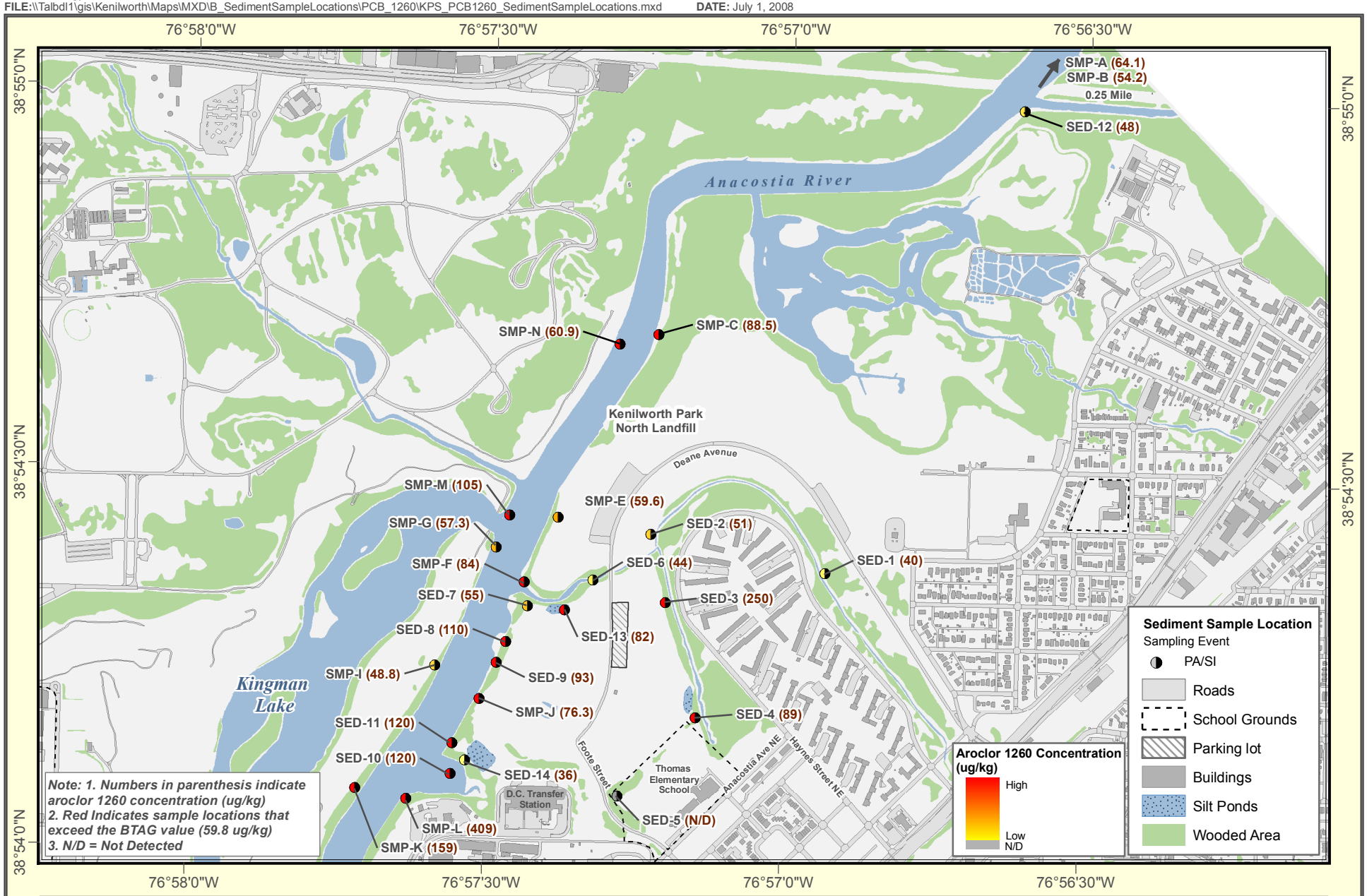

Scale
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NORTH

Figure 5-3 Aroclor 1260 in Sediment Samples (ug/kg)
Kenilworth Park South Landfill
Washington D.C.

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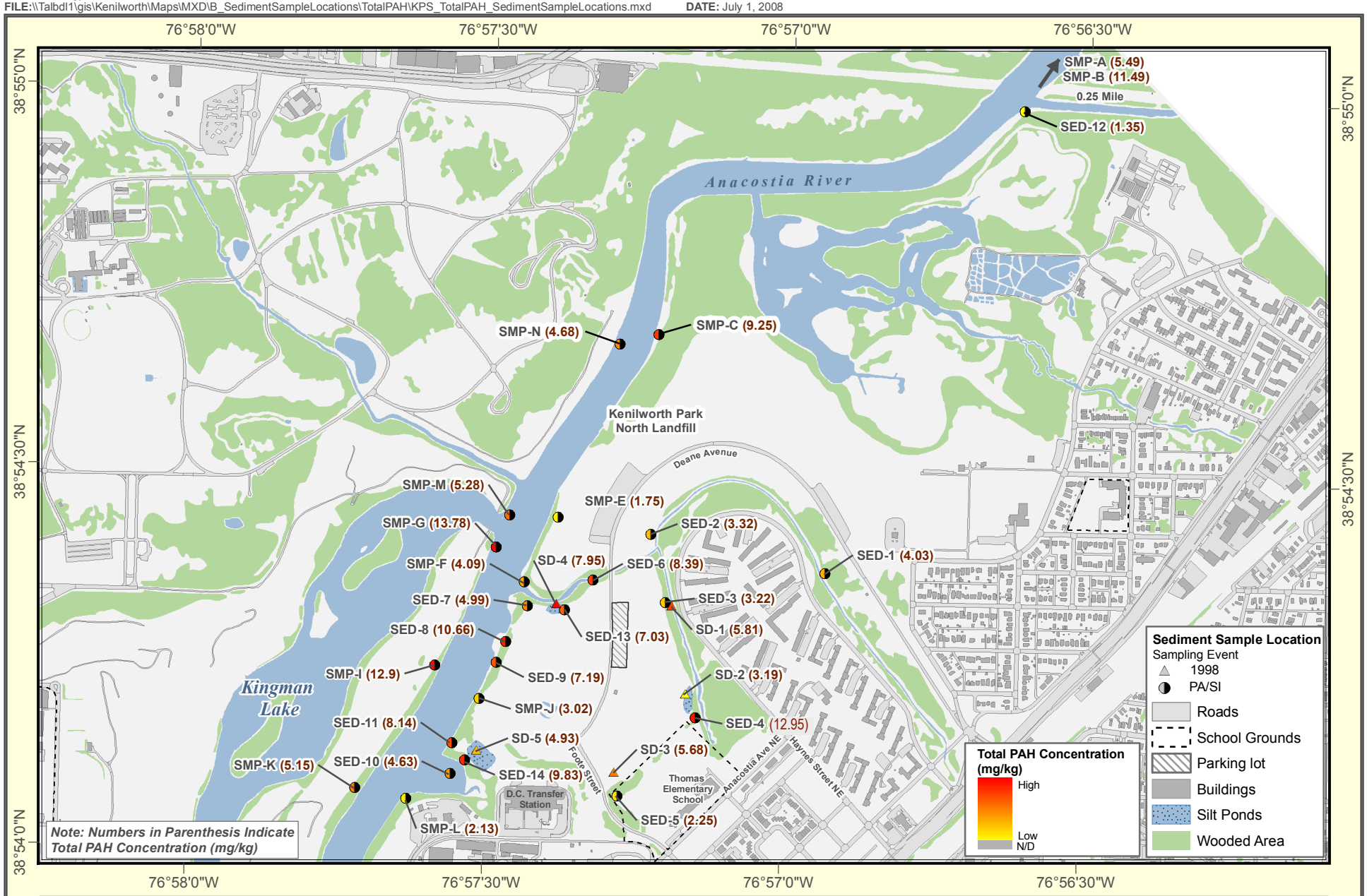

Scale
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0 0.1 0.2 Miles
NORTH

Figure 5-4 Total PAH in Sediment Samples (mg/kg)
Kenilworth Park South Landfill
Washington D.C.

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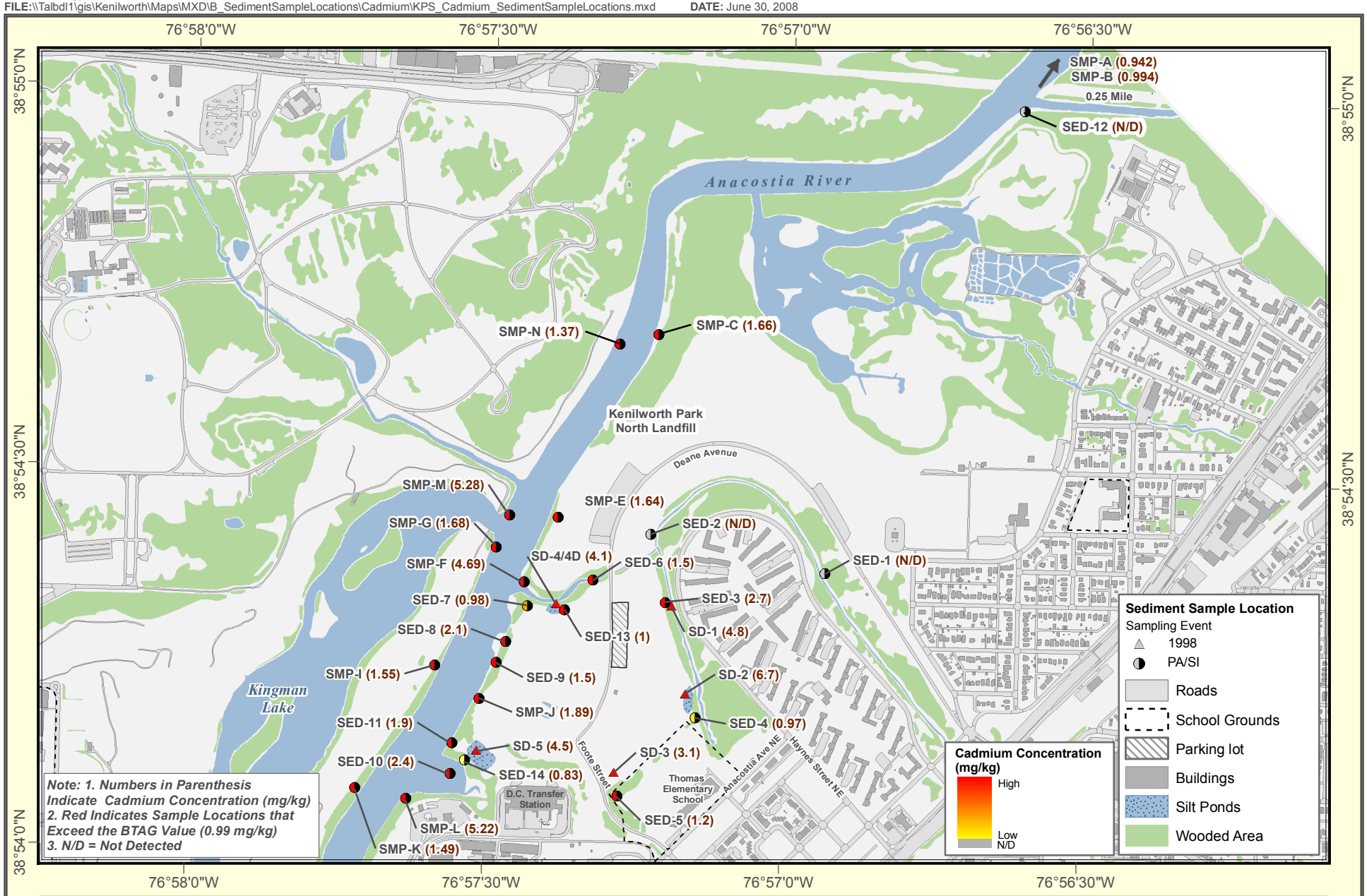

Scale
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Figure 5-5 Cadmium in Sediment Samples (mg/kg)
Kenilworth Park South Landfill
Washington D.C.

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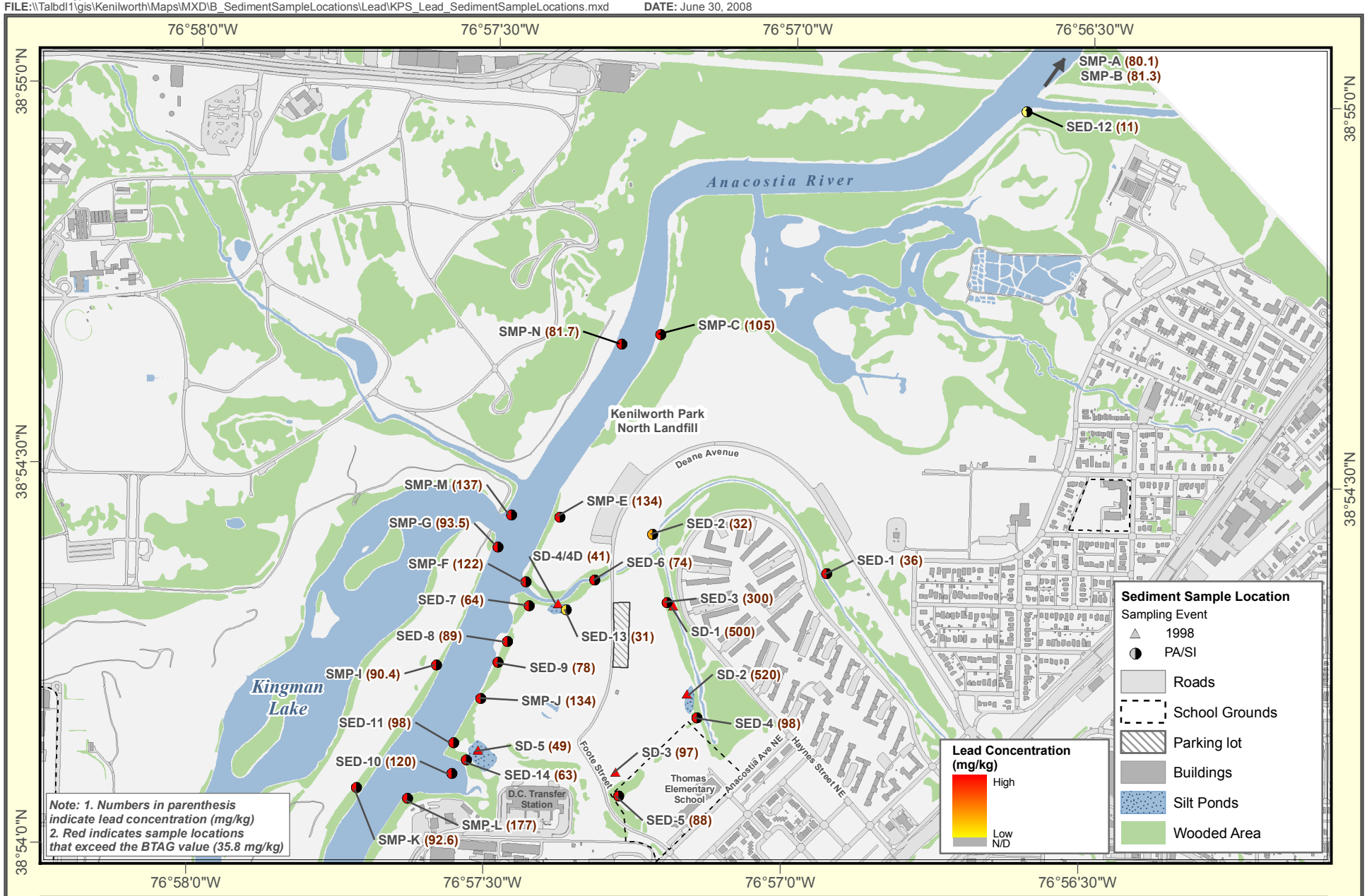

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Figure 5-6 Lead in Sediment Samples (mg/kg)
Kenilworth Park South Landfill
Washington D.C.

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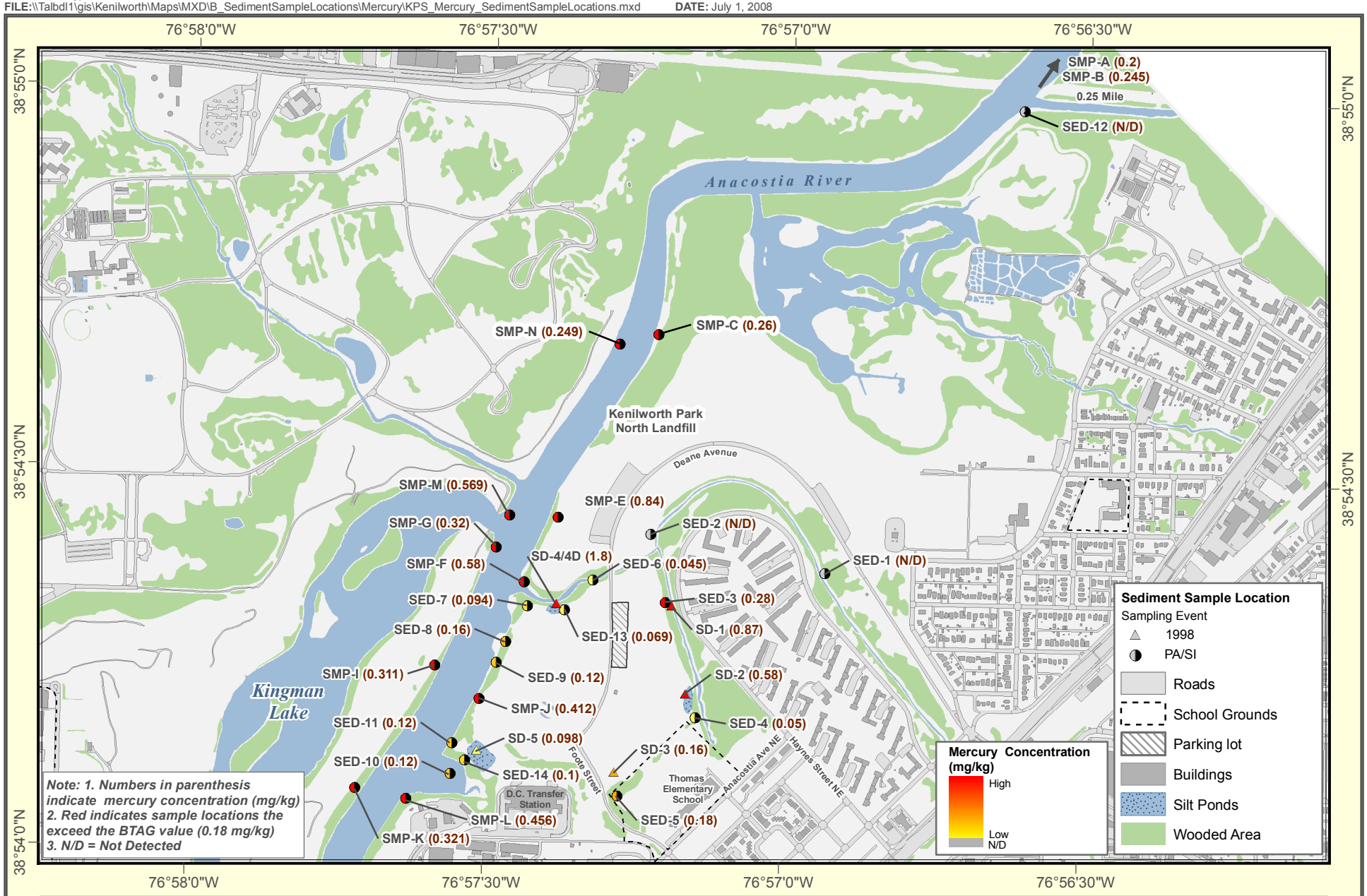

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Figure 5-7 Mercury in Sediment Samples (mg/kg)
Kenilworth Park South Landfill
Washington D.C.

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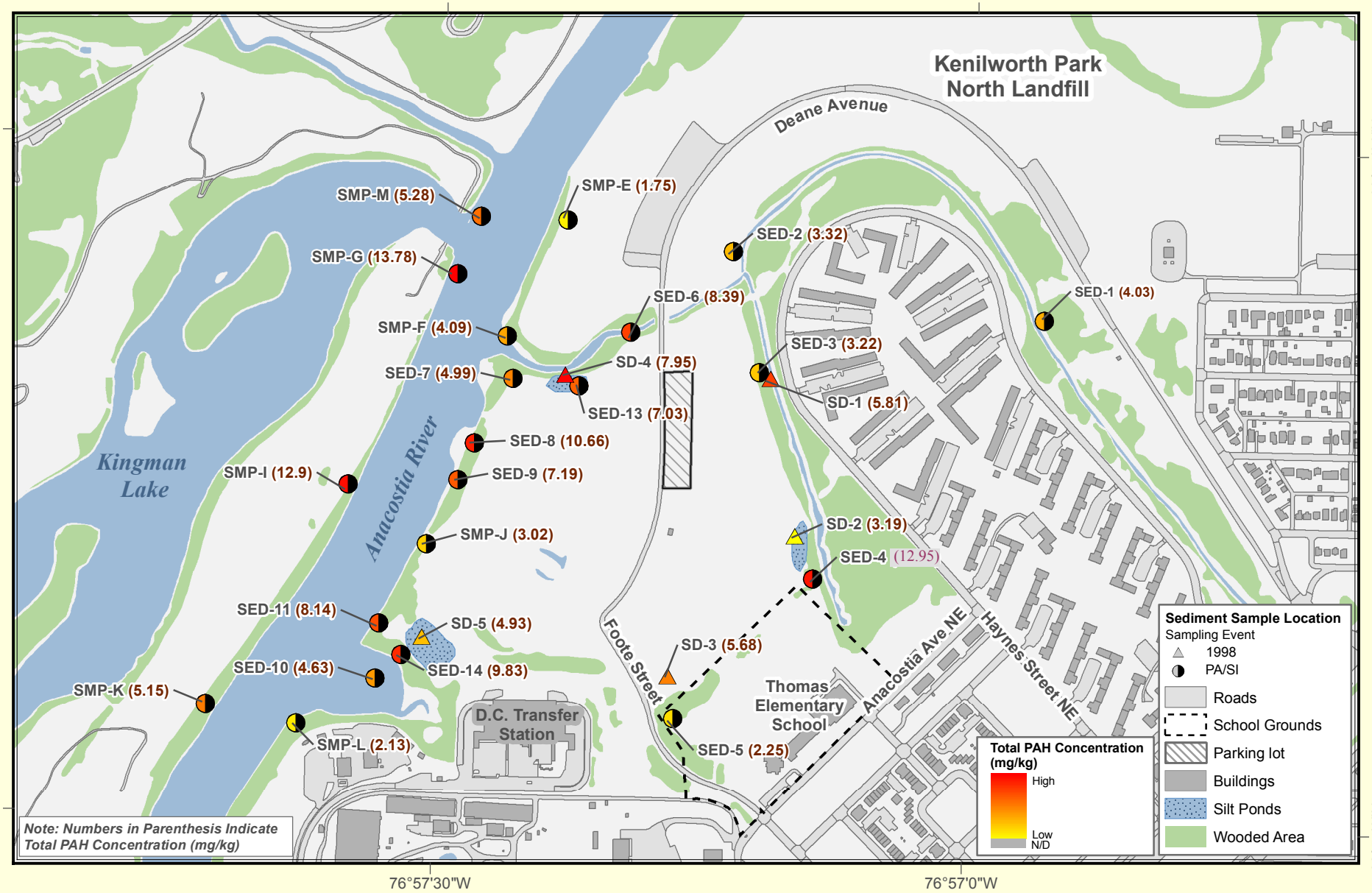

Scale
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NORTH

Figure 5-8 Total PAH in Sediment Samples (mg/kg)
Kenilworth Park South Landfill
Washington D.C.

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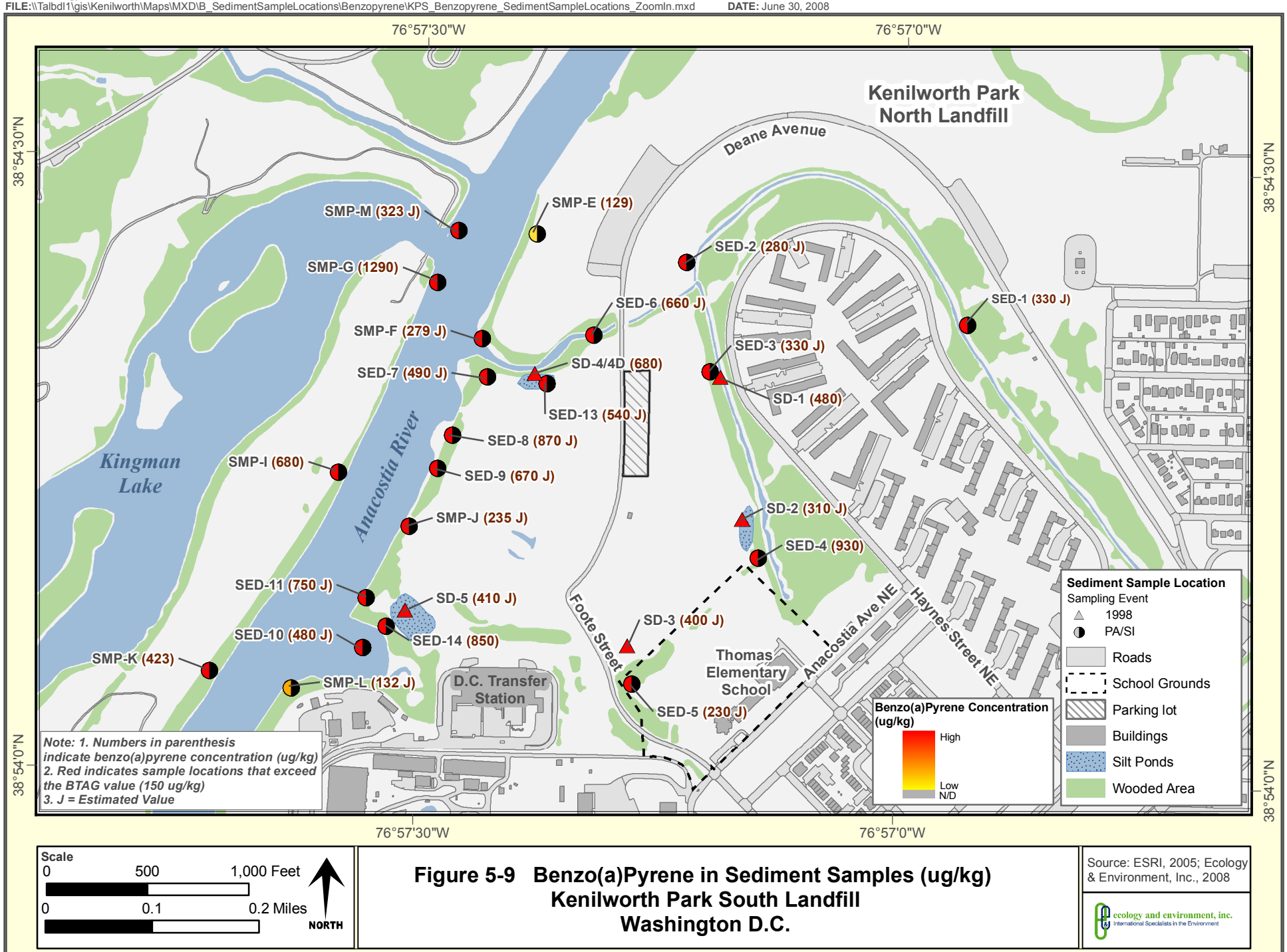

Scale
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NORTH

Figure 5-9 Benzo(a)Pyrene in Sediment Samples (ug/kg)
Kenilworth Park South Landfill
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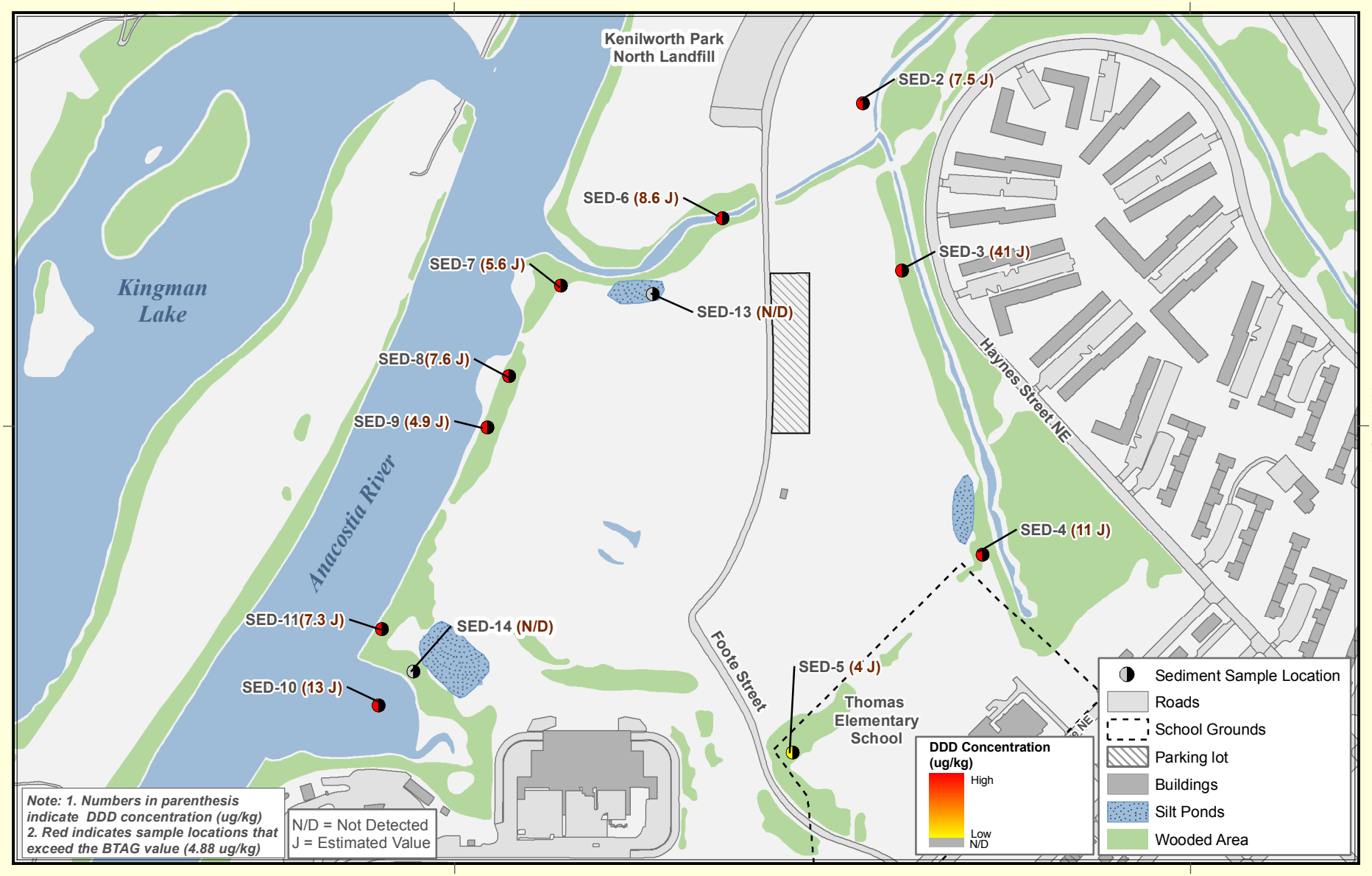

Scale
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NORTH

Figure 5-10 DDD in Sediment Samples (ug/kg)
Kenilworth Park South Landfill
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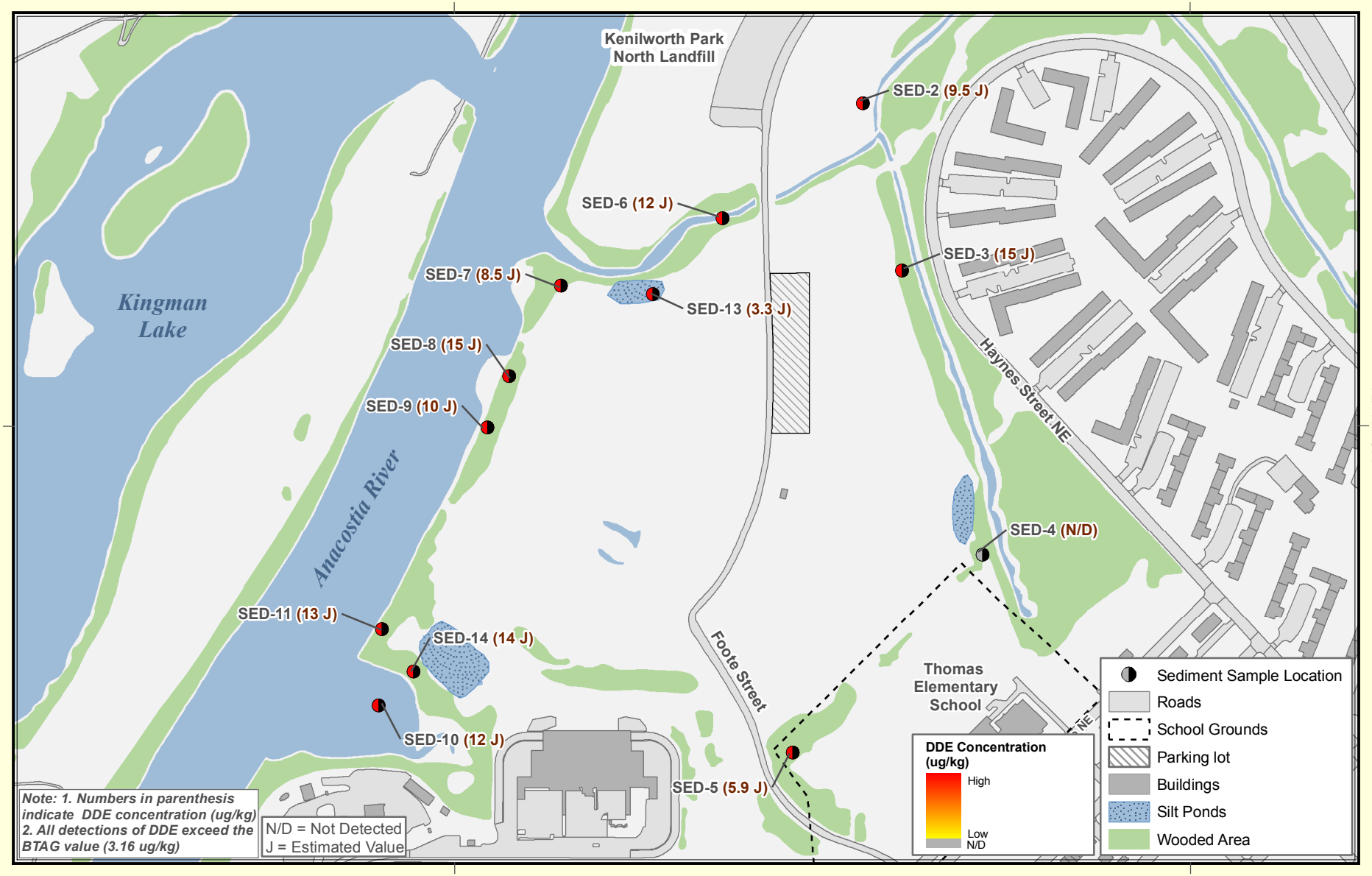

Scale
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NORTH

Figure 5-11 DDE in Sediment Samples (ug/kg)
Kenilworth Park South Landfill
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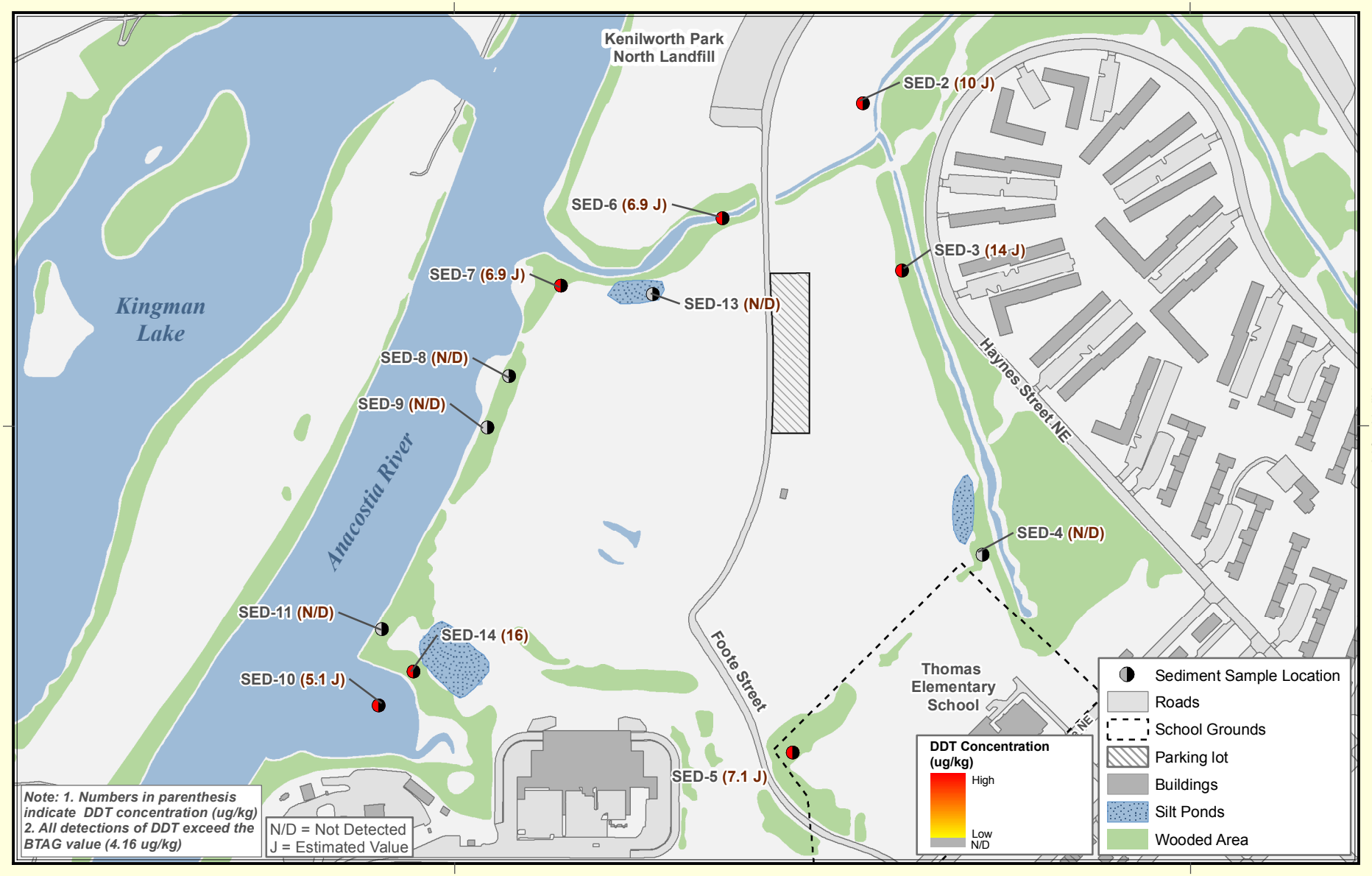

Scale
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NORTH

Figure 5-12 DDT in Sediment Samples (ug/kg)
Kenilworth Park South Landfill
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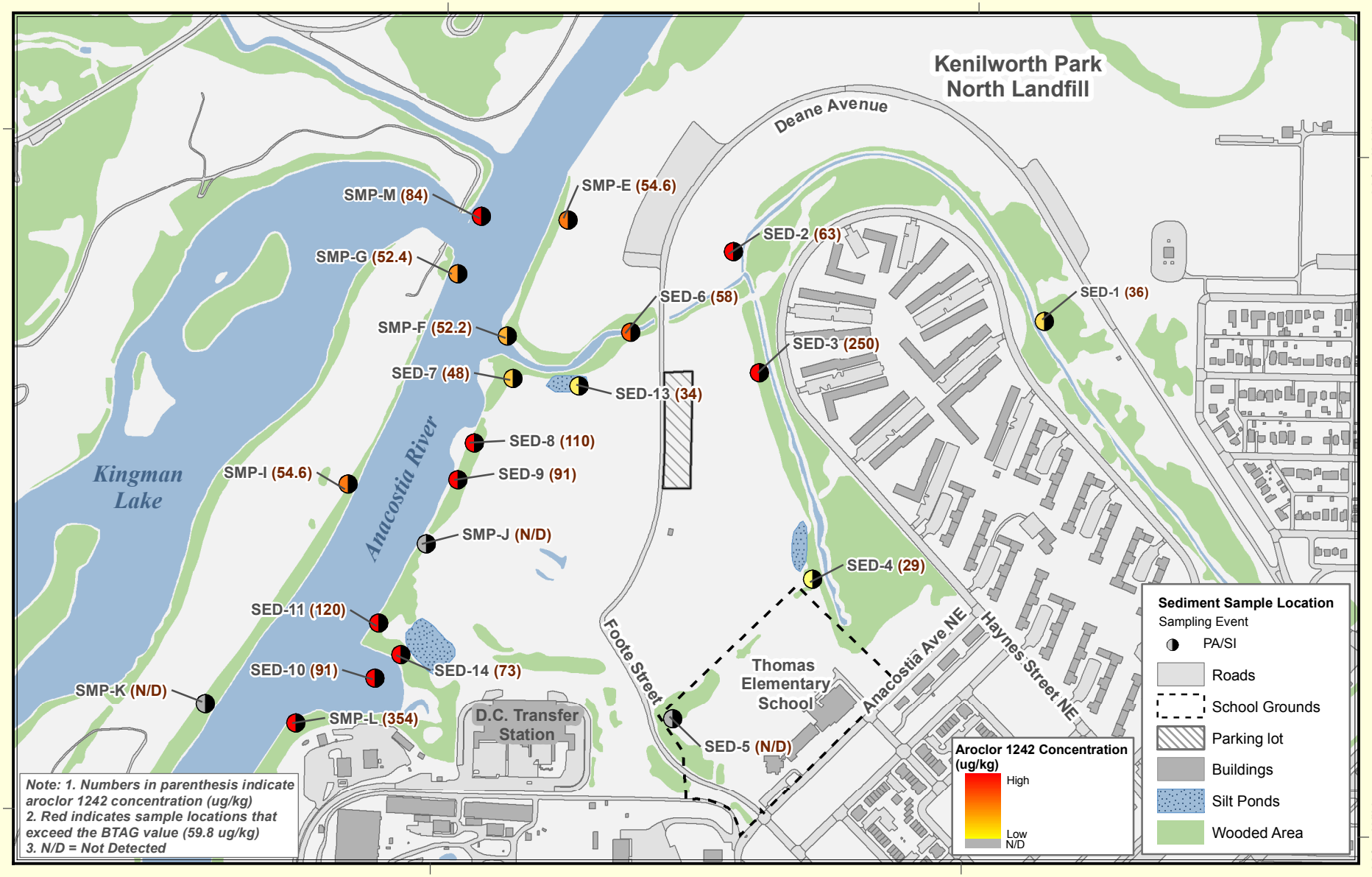

Scale
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NORTH

Figure 5-13 Aroclor 1242 in Sediment Samples (ug/kg)
Kenilworth Park South Landfill
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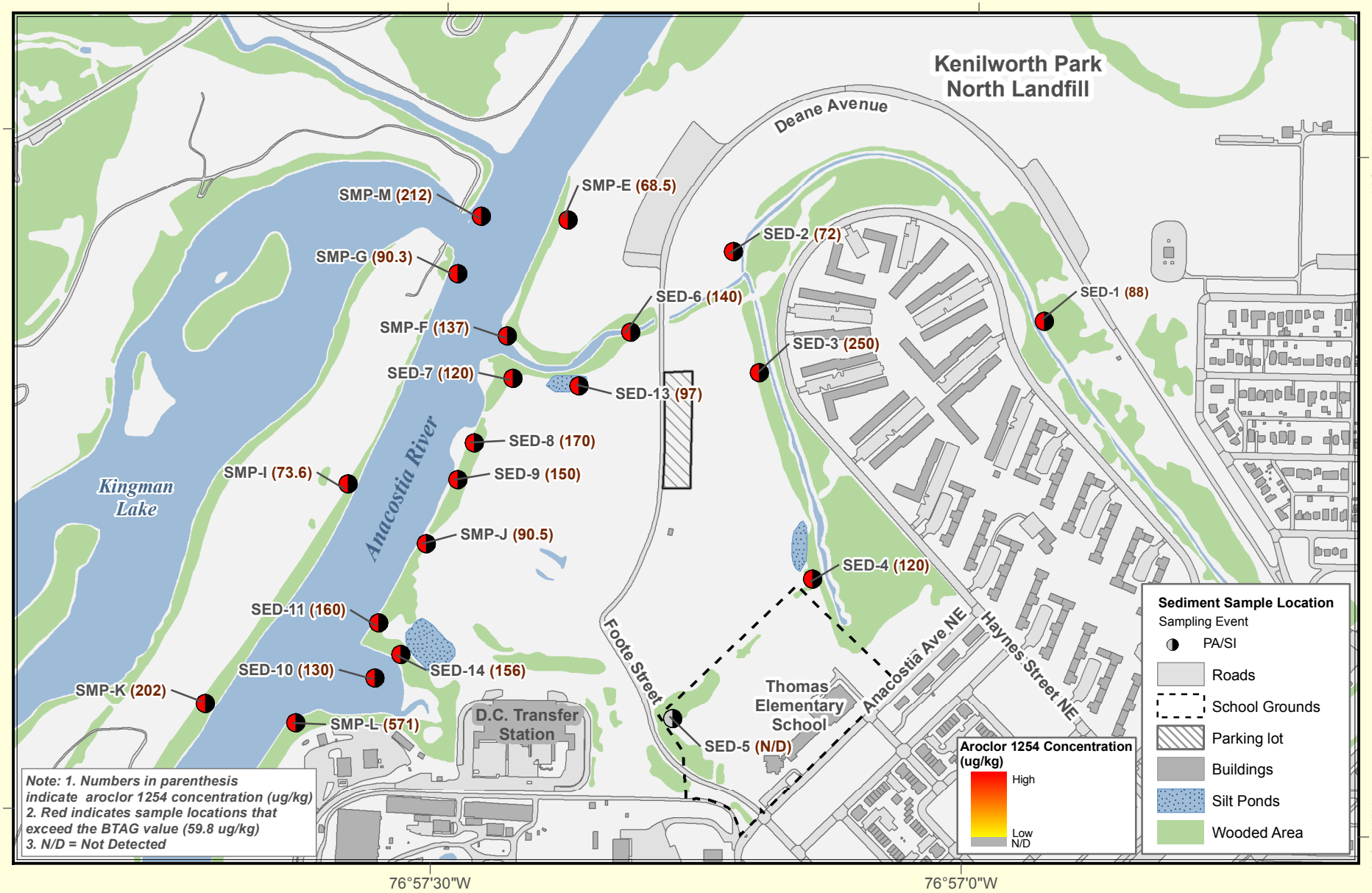

Scale
0 500 1,000 Feet
0 0.1 0.2 Miles
NORTH

Figure 5-14 Aroclor 1254 in Sediment Samples (ug/kg)
Kenilworth Park South Landfill
Washington D.C.

Source: ESRI, 2005; Ecology & Environment, Inc., 2008

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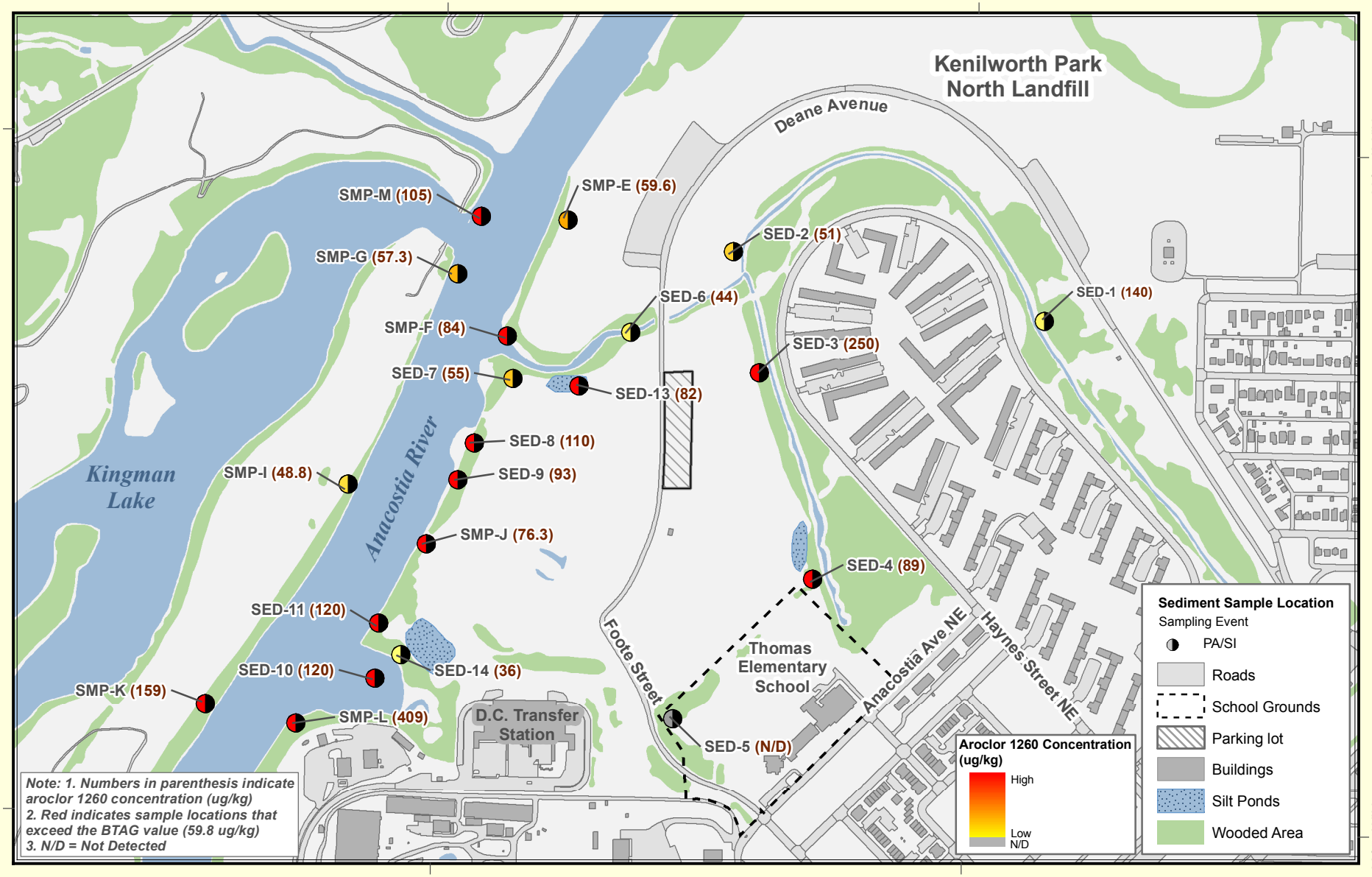
FILE:\\Talbdl1\gis\Kenilworth\Maps\MXD\B_SedimentSampleLocations\PCB_1260\KPS_PCB1260_SedimentSampleLocations_ZoomIn.mxd DATE: July 1, 2008



Scale
0 500 1,000 Feet
0 0.1 0.2 Miles
NORTH

Figure 5-15 Aroclor 1260 in Sediment Samples (ug/kg)
Kenilworth Park South Landfill
Washington D.C.

Source: ESRI, 2005; Ecology & Environment, Inc., 2008

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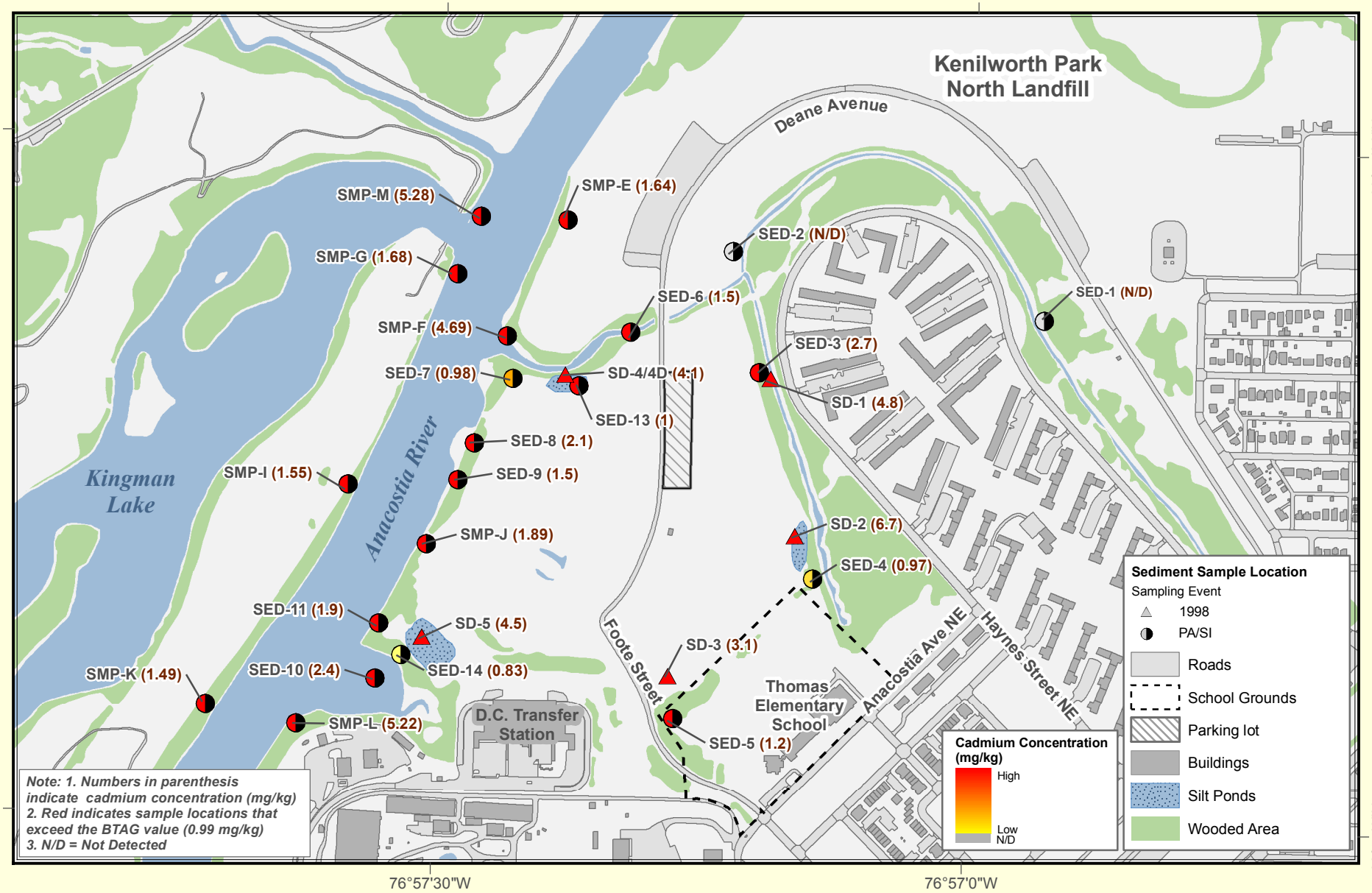
FILE:\\Talbdl1\gis\Kenilworth\Maps\MXD\B_SedimentSampleLocations\Cadmium\KPS_Cadmium_SedimentSampleLocations_ZoomIn.mxd DATE: June 30, 2008



Scale
0 500 1,000 Feet
0 0.1 0.2 Miles
NORTH

Figure 5-16 Cadmium in Sediment Samples (mg/kg)
Kenilworth Park South Landfill
Washington D.C.

Source: ESRI, 2005; Ecology & Environment, Inc., 2008

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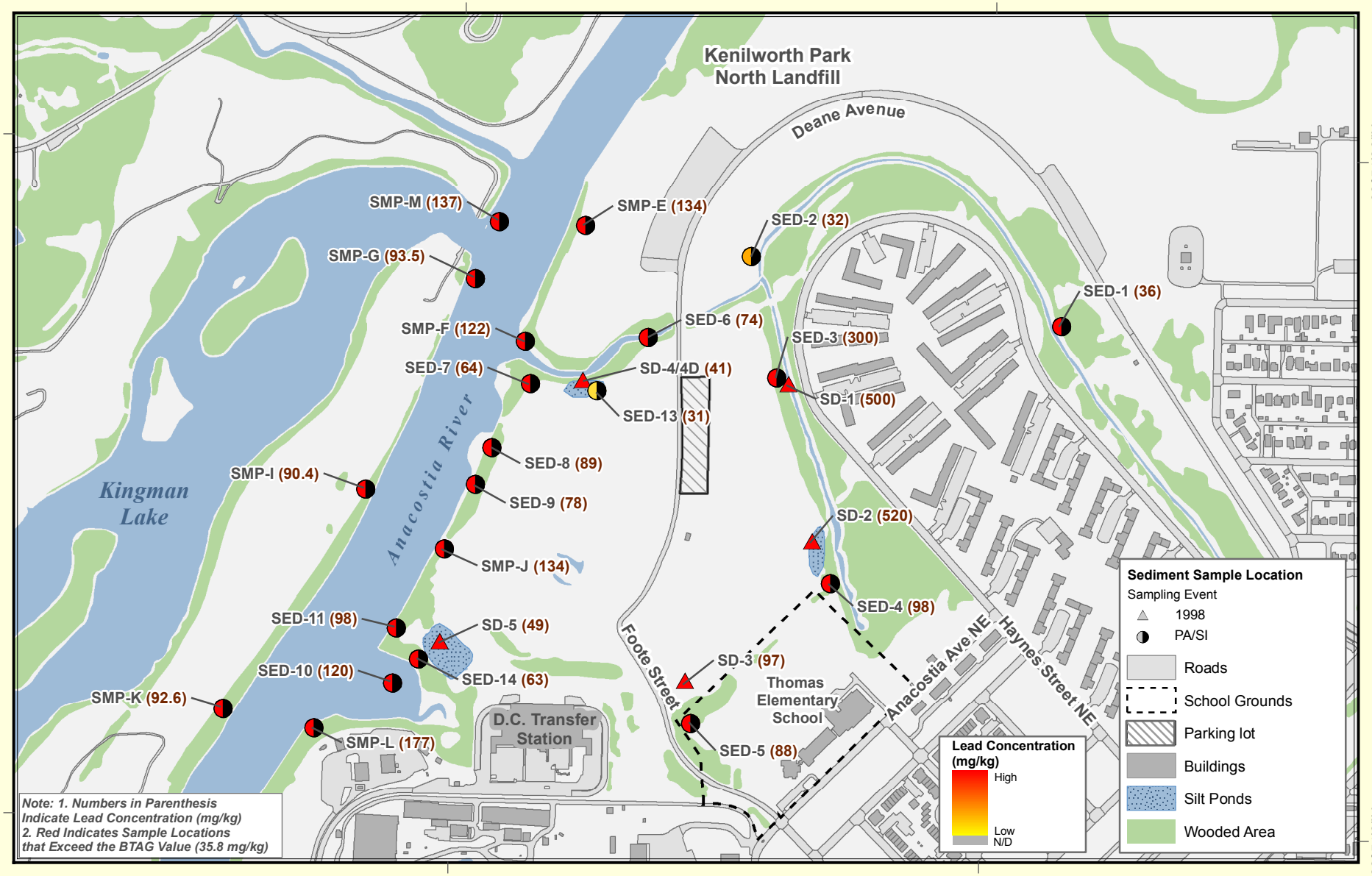
FILE:\\Talbdl1\gis\Kenilworth\Maps\MXD\B_SedimentSampleLocations\Lead\KPS_Lead_SedimentSampleLocations_ZoomIn.mxd DATE: July 1 , 2008



Scale
0 500 1,000 Feet
0 0.1 0.2 Miles
NORTH

Figure 5-17 Lead in Sediment Samples (mg/kg)
Kenilworth Park South Landfill
Washington D.C.

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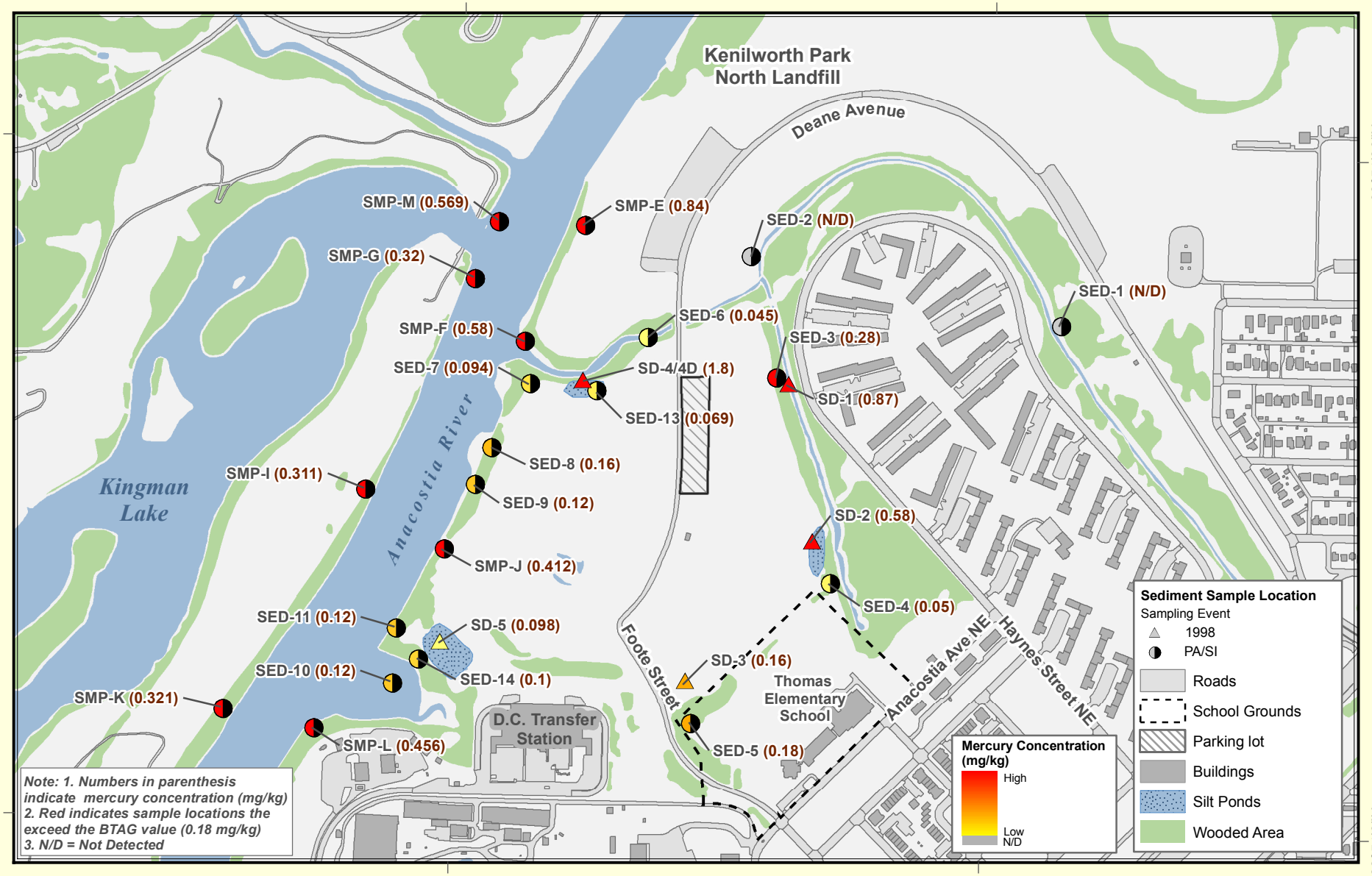
FILE:\\Talbdl1\gis\Kenilworth\Maps\MXD\B_SedimentSampleLocations\Mercury\KPS_Mercury_SedimentSampleLocations_ZoomIn.mxd DATE: July 1 2008



Scale
0 500 1,000 Feet
0 0.1 0.2 Miles
NORTH

Figure 5-18 Mercury in Sediment Samples (mg/kg)
Kenilworth Park South Landfill
Washington D.C.

Source: ESRI, 2005; Ecology & Environment, Inc., 2008

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Distribution of Contamination

Total PAHs found in sediment samples collected along the Anacostia River showed no consistent pattern. Sample locations SED-4, SED-8, SED-14, SMP-I, and SMP-G had the highest total PAHs, with 12,950 µg/kg, 10,660 µg/kg, 9,830 µg/kg, 12,900 µg/kg, and 13,779 µg/kg, respectively (see Figure 5-8). The highest detections of benzo(a)pyrene along the Anacostia River also occurred in these samples (see Figure 5-9). SED-8 and SED-14 are located on the east side of the Anacostia River, while SED-I and SMP-G are located on the west side of the Anacostia River. The range of detections of both total PAHs and benzo(a)pyrene was within one order of magnitude between the lowest and highest detection (i.e., not highly varied). The lack of a pattern of PAH distribution may be attributable to multiple sources of PAHs, the depositional characteristics of the river banks, and tidal fluctuations.

The highest concentration on-site (SED-4) for both total PAHs and benzo(a)pyrene was collected from the sediment in the stream/ditch running alongside the east side of the landfill. This stream originates in the storm water drain from Grant Street and discharges to the surface adjacent to the Thomas Elementary School schoolyard.

5.3.2 Sediment Pesticide Analytical Results and Distribution

Pesticides were analyzed only in the first round of the PA/SI. All sample locations contained concentrations of at least 4 pesticides exceeding their respective screening values.

Aldrin, alpha-chlordane, gamma-chlordane, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, dieldrin, endrin, heptachlor epoxide, and methoxychlor were detected in sediments. The following table summarizes the range of detections and number of exceedances of the screening values.

Table 5-10 Range of Pesticide Detections in PA/SI Sediment Samples

Pesticide	Minimum Detected Value (µg/kg)	Maximum Detected Value (µg/kg)	Screening Values (µg/kg)	Number of Exceedances of the Screening Value/Total Number of Sediment Samples
Aldrin	4.3	35	2	5/12
alpha-Chlordane	3.5	58	3.24	12/12
Gamma-Chlordane	1.3	72	3.24	10/12
4, 4'-DDD	4	41	4.88	8/12
4, 4'-DDE	3.3	15	3.16	11/12
4, 4'-DDT	5.1	16	4.16	7/12
Dieldrin	2.8	4	1.9	2/12
Endrin	14	14	2.22	1/12
Heptachlor epoxide	8	18	2.47	4/12
Methoxychlor	24	55	18.7	6/12

Distribution of Contamination

Pesticide concentrations across the Site were fairly uniform, with SED-3 having the highest concentration of pesticides. It is located in the unnamed stream/ditch located on the east side of the landfill. SED-3 and SED-4, also located in this unnamed stream/ditch, have the highest concentrations of alpha- and gamma-chlordanes, DDD, and methoxyclor. Drainage on the eastern side of the Site is towards the unnamed stream; therefore, low-lying areas near and in the unnamed stream are depositional environments that would be expected to have elevated levels of contaminants. While these contaminants could originate from the landfill, they could also originate from the discharge of the Grant Street storm drain.

Sample location SED-10 had the most detections of pesticides exceeding screening values. SED-10 is located in the Anacostia River, near the southwest corner of the Site and north of the PEPCO electricity generating plant, where the Piney Branch discharges through a culvert under the District garbage transfer station. SED-10 is also located in a diversion to a side channel, discussed in section 4.4.2 as the location of sediment deposition.

DDT or its breakdown products DDE and DDD were detected in every sediment sample (see Figures 5-10 through 5-12). Table 5-10 summarizes the range of values and the number of exceedances of screening values.

The concentrations of DDD, DDE, and DDT in sediments do not vary significantly across the Site. The highest concentrations of DDD, DDE, and DDT were found in SED-3, SED-10, and SED-14. SED-10 and SED-14 are in the same area of the Site, in the southwestern corner in and near the inlet north of the PEPCO electricity generating facility. SED-3 was collected from the unnamed stream/ditch on the east side of the Site.

Alpha-chlordane and gamma-chlordane were analyzed only during the first round of the PA/SI. The screening value for chlordane was used to screen alpha-chlordane and gamma-chlordane. Every sample location exceeded the screening value for alpha-chlordane of 3.24 µg/kg. Every sample location exceeded the screening value for gamma-chlordane except SED-6 (1.3 µg/kg). SED-3, SED-4, and SED-14 were the sample locations with the highest concentrations of alpha-chlordane and gamma-chlordane. The most contaminated sample (SED-4) was collected from the stream/ditch running alongside the east side of the Site. This unnamed stream originates from the Grant Street storm water drain that discharges to the surface adjacent to the Thomas Elementary School schoolyard. The stream then flows north on the eastern side of the Site to Watts Branch. Contamination in SED-4 could originate from the Site or from material that originated from the Grant Street storm drain.

5.3.3 Sediment PCB Analytical Results and Distribution

PCBs in sediments were not analyzed during the 1998 sampling event; therefore, the only PCB data in sediments is from the PA/SI. PCB levels exceeded the screening value in 21 of 22 sample locations and included Aroclor 1254 (21 of 22 screening value = 59.8]), Aroclor 1260 (14 of 22 screening value = 59.8 µg/kg], and Aroclor 1242 (11 of 22 screening value = 59.8]).

The sediment sample with the highest Aroclor concentration (SMP-L) was collected from the embayment south of the Site, between the Site and the PEPCO power station. Piney Run discharges to the embayment. Piney Run is a stream at the bottom end of which is confined to a storm drain at its downstream end until the point at which it enters the Anacostia River. This area also receives sediment deposition from the Anacostia River and potentially from the landfill. Therefore, it is not possible to attribute the contamination found at this location to a single source.

Many of the PCB samples collected during the PA/SI were not collected on the Site. Of the on-site sediment samples, the range of Aroclor 1242 was 63 µg/L to 250 µg/L, with 7 sample locations having levels that exceeded the screening level. On-site concentrations of Aroclor 1254 and 1260 ranged from non-detect to 250 µg/kg. Aroclor 1254 had 12 exceedances of its screening value and Aroclor 1260 had 8 exceedances of its screening value. Sample location SED-3 had the highest on-site concentrations of Aroclors.

Distribution of Contamination

The distribution of Aroclors in the Anacostia River suggests that there are many sources because upstream samples had similar concentrations to samples collected near or at the Site (see Figures 5-1 through 5-3). The distribution of Aroclors does not show any particular pattern, although the highest concentration of PCBs occurred south of the Site (SMP-L). The concentration found at SMP-L was double the concentrations of all Aroclors found in other sediment samples collected along the Anacostia River (see Figures 5-13 through 5-15). Because the concentration found at this location is not consistent with others found in the area and, as discussed above, there are multiple sources contributing to sediment deposition in this area, it is likely there may be another source for the Aroclors found at this sampling location.

Of the on-site sediment samples, SED-3 had the highest concentration of Aroclors 1242, 1254, and 1260. SED-3 is located in the unnamed stream/ditch located on the east side of the Site. This stream is fed by the Grant Street storm drain; thus, contamination found at this location could either originate from the storm drain or the Site.

5.3.4 Sediment Metals Analytical Results and Distribution

A full suite of metals was analyzed in the first round of the PA/SI; only arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver were analyzed

during the second round of the KPS PA/SI and the 1998 sampling event. The levels of lead, cadmium, and mercury exceeded the screening levels at most sample locations. Lead levels exceeded the screening value at 25 of the 27 sediment sampling locations screening value = 35.8mg/kg). Cadmium exceeded its screening value at 23 of the 27 sediment sample locations (screening value = 0.99 mg/kg). The concentration of mercury exceeded its screening value at 14 of 27 sediment sample locations (screening value = 0.18mg/kg). Arsenic levels exceeded the screening value of 9.8 mg/kg in 2 of the 27 samples. The concentration of silver in 4 of the 27 samples exceeded its screening value of 1 mg/kg.

Antimony, copper, iron, and nickel were analyzed only in the first round of the PA/SI, but all had exceedances of their respective screening values. Antimony concentrations ranged from non-detect to 4.4 mg/kg, with 9 samples exceeding the screening value (2 mg/kg). Copper levels ranged from 20 mg/kg to 110 mg/kg with 11 exceedances of the 31.6 mg/kg screening value. The range of iron concentrations was 9,600 mg/kg to 32,000 mg/kg, with 7 samples exceeding the screening value (20,000 mg/kg). Nickel concentrations ranged from 15 mg/kg to 52 mg/kg. Eight samples exceeded the nickel screening value of 22.7 mg/kg.

Distribution of Contamination

Cadmium concentrations exceeded screening levels in sediments collected from the banks of the Anacostia River (see Figure 5-16). As discussed previously, there are multiple potential sources for contaminants found in the sediments of the Anacostia River. SMP-F, located at the mouth of Watts Branch, SMP-M, located at the mouth of Kingman Lake, and SMP-L consistently had the highest levels of metals in sediments collected along the Anacostia River. These samples are from depositional environments of finer than average sediments, which probably contribute to the elevated levels. The larger surface area of fine sediments increases their sorptive capacity.

On the Site itself, the highest concentrations of cadmium were found in the silt ponds. As discussed in Section 4.3.1 and shown in Figure 4-10 drainage of much of the Site is directed toward the silt ponds. As a result, it is to be expected that higher concentrations of contaminants found in the landfill surface soils would be found in the silt ponds. Drainage on the eastern side of the landfill is also directed towards the unnamed stream/ditch that runs along the eastern side of the landfill and drains to Watts Branch, which may explain the elevated concentration of cadmium at SD-1. Like cadmium, lead and mercury levels along the Anacostia River were elevated above screening values, but there is no consistent pattern in their distribution (see Figures 5-17 and 5-18). Unlike cadmium, the distribution of lead and mercury in sediments is not consistently higher in the silt ponds; however, the highest concentrations are found in the silt pond and in the unnamed stream/ditch on the eastern side of the Site, suggesting that higher concentrations may be due to accumulations of finer grained sediments in these locations.

5.3.5 Sediment TPH Analytical Results and Distribution

The five sediment samples collected during the 1998 sampling event were analyzed for TPH. Two were non-detect and the remaining had concentrations ranging from 26 mg/kg to 200 mg/kg. The highest concentration was detected in sample SD-1, collected from Watts Branch below the Deane Avenue bridge. The concentrations of TPH decreased with increasing distance from the location of SD-1.

Fourteen sediment samples collected during the PA/SI also were analyzed for TPH. The highest detected concentrations were in SED-2 (1,600 mg/kg), SED-3 (1,100 mg/kg), and SED-4 (1,100 mg/kg). SED-2 and SED-3 were collected from the unnamed stream/ditch on the east side of the landfill. SED-4 was collected from the silt pond on the east side of the landfill. TPH contamination in the unnamed stream could originate from the Site or from the material originating from the Grant Street storm drain. TPH contamination in the silt pond could be attributable to deposition from drainage running off the eastern side of the landfill, including Deane Avenue and possibly parts of the parking lot.

5.4 Surface Soil Analytical Results and Contaminant Distribution

Surface soil samples were collected during the 1998 sampling event, the PA/SI, and the RI. Twenty-two locations were sampled (KS-SS-1 – KS-SS-22) during the 1998 investigation and analyzed for SVOCs and metals. Thirty-two samples were collected during the PA/SI (KL-SS-1-KL-SS-34), including 5 off-site samples (KL-SS-29, SS-30, SS-32, SS-33, and SS-34). The 27 on-site PA/SI samples were analyzed for PAHs and RCRA metals. The 5 off-site samples were analyzed for PAHs, PCBs, and RCRA metals. Four surface soil samples were collected on-site during the KPS RI (KWS-SU-NE-1 through KWS-SU-NE-4) and analyzed for PCBs, PAHs, and TAL metals. Nine surface soil samples were collected during the RI from off-site locations (KWS-SU-BK-1 through SU-BK-9) and analyzed only for PCBs.

Table 3-1 lists the surface soil samples collected during the KPS RI with the date of sample collection and analyses requested. Locations of all on-site sampling points are presented on Figure 3-1. Tables 5-1 and 5-2 list the analytical results for surface soils collected during the RI.

The distribution of selected contaminants in the 1998 sampling event, the PA/SI, and the RI are shown in Figures 5-19 through 5-21. The analytical results for the 1998 sampling event and the PA/SI are included in Appendix B. Surface soil samples were collected from the surface to 6 inches below the soil surface. All surface soils were compared with the Region 3 residential soil RBCs.

5.4.1 Surface Soil SVOC Analytical Results and Distribution

Table 5-1 lists the analytical results for the PAH samples collected during the KPS RI. At least one PAH exceeded its screening value in all surface soil samples collected during the KPS RI, including benzo(a)pyrene (4 of 4 screening value = 22 µg/kg]) and dibenz(a,h)anthracene (4 of 4 screening value= 22 µg/kg]). Benzo(b)fluoranthene and indeno(1,2,3-cd)pyrene were the only other PAHs that exceeded their screening values in surface soil samples collected during the RI.

During the PA/SI, a combination of benz(a)anthracene, benzo(a)pyrene, and benzo(b)fluoranthene were detected above their respective screening values in most of the 27 surface soil samples collected. The concentration of dibenz(a,h)anthracene in 5 surface soil samples exceeded the screening value. Eight surface soil samples collected during the PA/SI had levels of indeno(1,2,3-cd)pyrene that exceeded the screening value.

Benz(a)anthracene, benzo(a)pyrene, and benzo(b)fluoranthene were detected above their respective screening levels in most of the 22 surface soil samples collected during the 1998 sampling.

The concentrations of chrysene and dibenz(a,h)anthracene in a single surface soil sample collected during the 1998 sampling exceeded their respective screening levels. The levels of benzo(b)fluoranthene and indeno(1,2,3-cd)pyrene both exceeded their respective screening levels in two samples taken during the 1998 sampling.

Distribution of Contamination

Forty-seven of 53 surface soil samples collected during the 1998 sample event, the PA/SI, and the RI exceeded at least one screening level, including benzo(a)pyrene (47 of 53 screening value = 22 µg/kg]) and benzo(b)fluoranthene (35 of 53 screening value = 220 µg/kg]).

There is no apparent pattern to the distribution of total PAHs across the Site (see Figure 5-19). Samples SS-16 and SS-20 from the 1998 sampling had the highest concentration and the second highest concentration of total PAHs (378,200 µg/kg and 68,850 µg/kg, respectively). These sample locations are in the southeast quadrant of the Site within the area covered by material deposited by the Driggs Corporation. Sample NE-3, collected during the RI, had the third highest concentrations of total PAHs – 50,014 µg/kg. This sample was located in the northeast quadrant of the Site and was collected from an area immediately adjacent to the parking lot. This area was part of the undisturbed cap. SS-7, located at the northern entrance to the Site, and SS-22, located in the center of the western portion of the Site, were collected during the PA/SI and also had high concentrations of benzo(a) pyrene (2,260 µg/kg and 2,950 µg/kg) (see Figure 5-20). The locations with high PAH concentrations are spread across the Site. They appear to represent hot spots because each is surrounded by samples that

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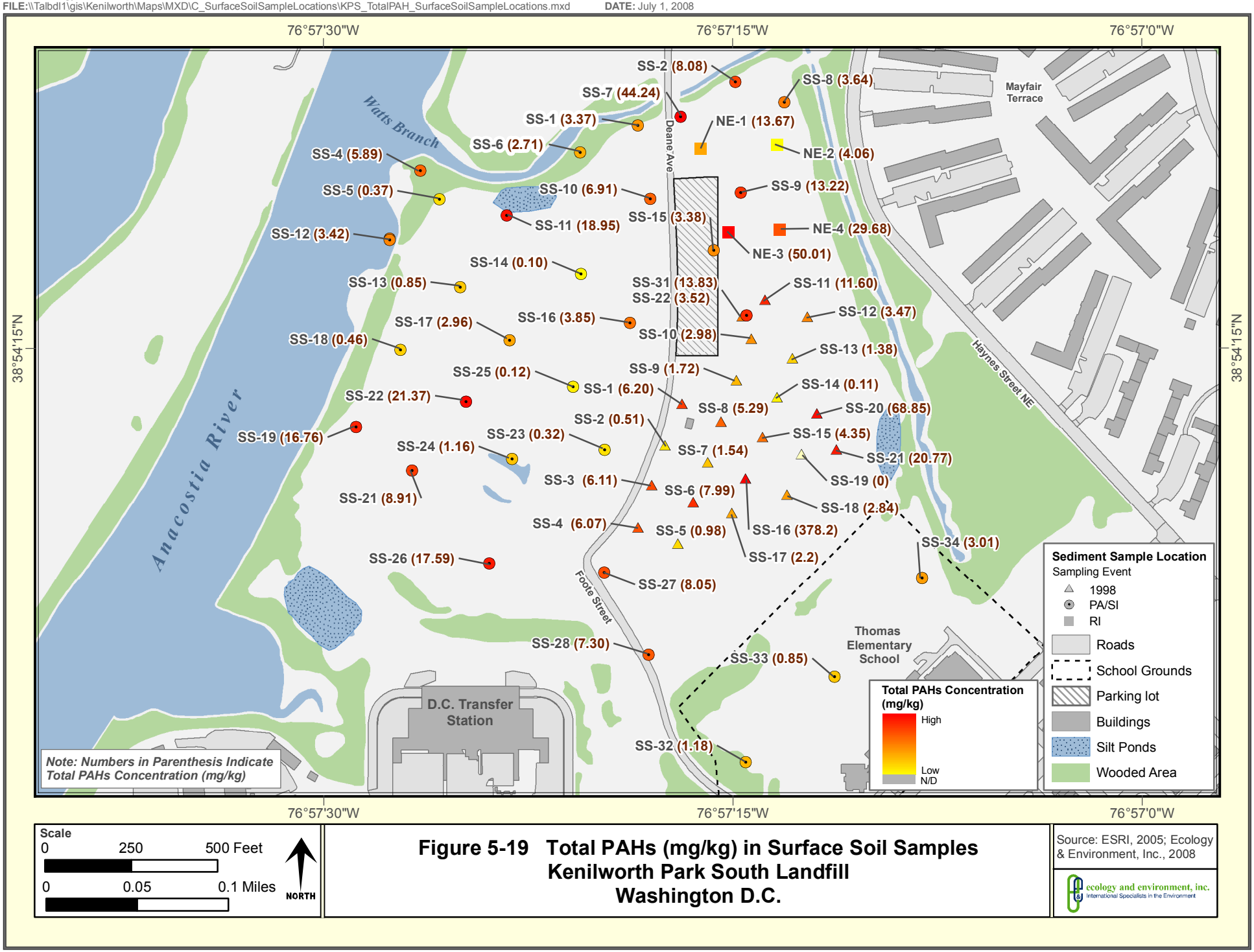
FILE:\\Talbdl1\gis\Kenilworth\Maps\MXD\C_SurfaceSoilSampleLocations\KPS_TotalPAH_SurfaceSoilSampleLocations.mxd DATE: July 1, 2008



Scale
0 250 500 Feet
0 0.05 0.1 Miles
NORTH

Figure 5-19 Total PAHs (mg/kg) in Surface Soil Samples
Kenilworth Park South Landfill
Washington D.C.

Source: ESRI, 2005; Ecology & Environment, Inc., 2008

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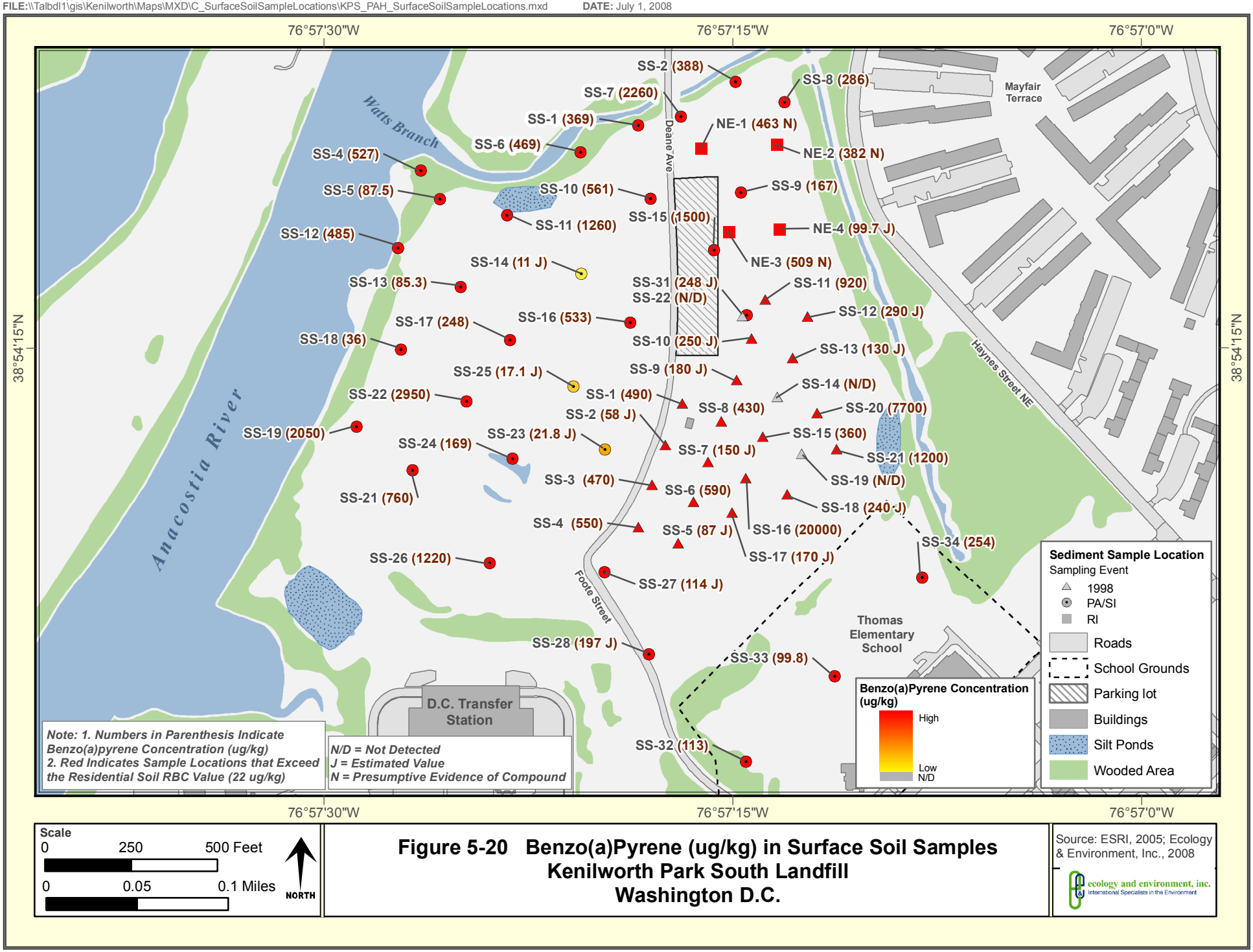
FILE:\\Talbdl1\gis\Kenilworth\Maps\MXD\C_SurfaceSoilSampleLocations\KPS_PAH_SurfaceSoilSampleLocations.mxd DATE: July 1, 2008



Scale
0 250 500 Feet
0 0.05 0.1 Miles
NORTH

Figure 5-20 Benzo(a)Pyrene (ug/kg) in Surface Soil Samples
Kenilworth Park South Landfill
Washington D.C.

Source: ESRI, 2005; Ecology & Environment, Inc., 2008

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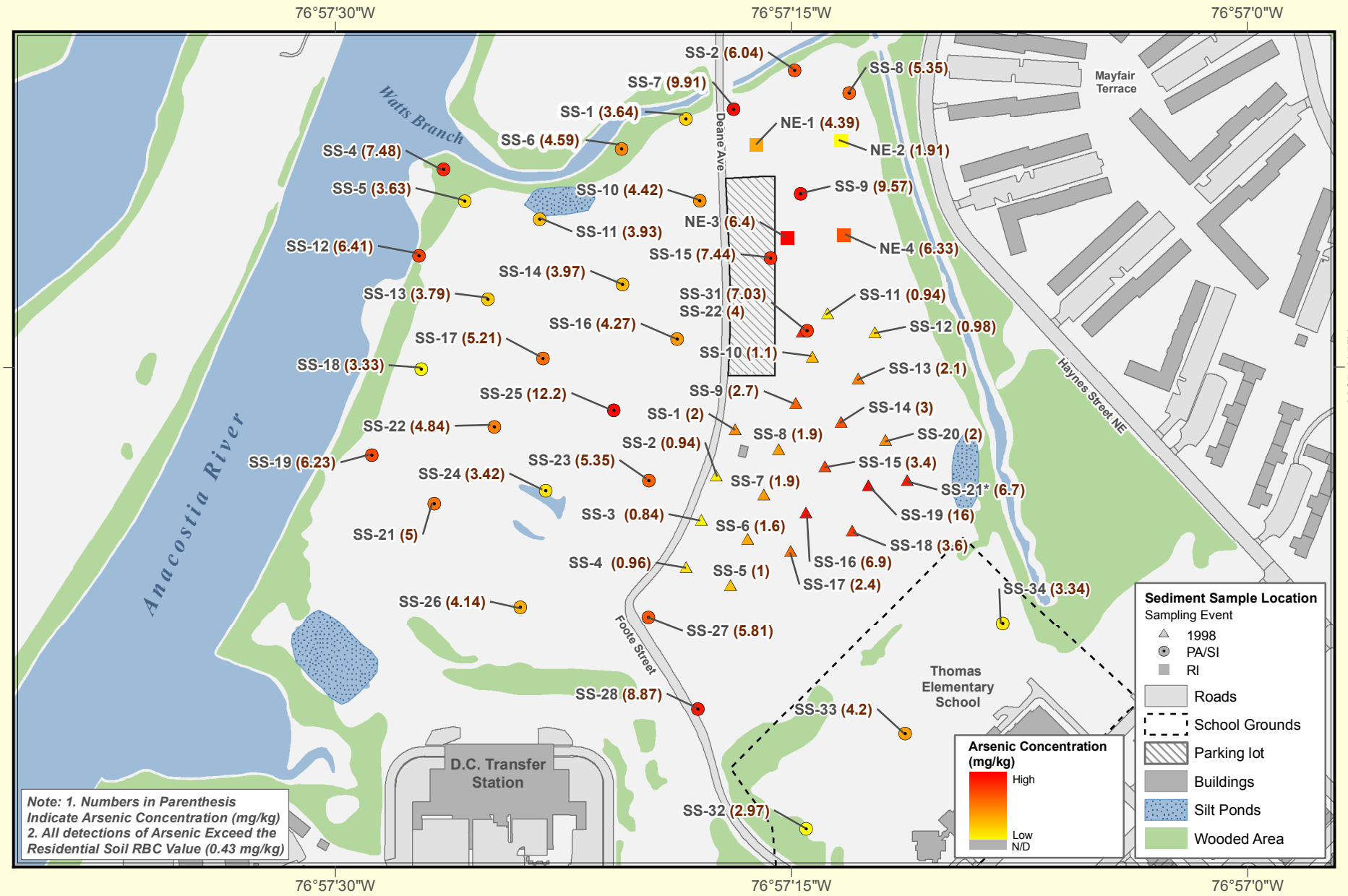

Scale
0 250 500 Feet
0 0.05 0.1 Miles
NORTH

Figure 5-21 Arsenic (mg/kg) in Surface Soil Samples
Kenilworth Park South Landfill
Washington D.C.

Source: ESRI, 2005; Ecology & Environment, Inc., 2008

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have variable but lower concentrations. There does not appear to be a direct correlation between higher PAH concentrations and the 1997/98 fill material.

5.4.2 Surface Soil Pesticide Analytical Results and Distribution

Pesticides were not analyzed in any of the surface soil sampling events because pesticides were not expected to be present, particularly in the demolition debris and excavated material deposited during 1997/1998.

5.4.3 Surface Soil PCBs Analytical Results and Distribution

Table 5-1 lists the analytical results for PCB samples collected during the KPS RI. These samples were collected in the northeast quadrant of the Site, an area that had not been sampled during the PA/SI. This area was part of the undisturbed cap. Aroclor 1254 and 1260 were detected at concentrations exceeding the screening criteria (320 µg/kg for both Aroclors) at 3 of the 4 sampling locations (Aroclor 1254 - range of exceedance: 742 µg/kg to 3,160 µg/kg; Aroclor 1260 - range of exceedance: 1,300 µg/kg to 2,510 µg/kg).

Distribution of Contamination

The section of the landfill sampled and analyzed for PCBs during the RI represents a portion of the landfill that was not covered in 1997/1998. It is unlikely that elevated PCB concentrations extend beyond the northeast corner of the Site where the cap of the former landfill is at the surface.

5.4.4 Surface Soil Metals Analytical Results and Distribution

Table 5-2 lists the analytical results for metals samples collected during the KPS RI. Arsenic exceeded its screening value of 0.43 mg/kg at 4 of 4 sample locations. The concentration of vanadium at KWS-SU-NE-3 exceeded its screening value (0.78 mg/kg) and it is the only other metal that exceeded its screening value in samples collected during the KPS RI.

All surface soil samples collected during the PA/SI exceeded the arsenic screening value (range 2.97 mg/kg to 12.4 mg/kg).

In the 1998 sampling event, arsenic levels in all surface soil samples exceeded the screening value for arsenic (range 0.84 mg/kg to 16 mg/kg). Lead in one sample exceeded the screening value of 400 mg/kg.

Distribution of Contamination

The samples collected during sampling events previous to the RI were analyzed only for RCRA metals; therefore, this discussion of distribution of metals contamination will focus on those RCRA metals where there was an exceedance of the screening criteria. Arsenic was the only RCRA metal that exceeded screening levels in some or all the investigations; however, one sample, SS-21 from the 1998 investigation, contained lead in excess of the screening criteria. This elevated lead level (940 mg/kg) is higher than other sample results which ranged from 8.3 mg/kg to 366 mg/kg.

All locations sampled during the 1998 sampling event, the PA/SI, and the RI contained levels of arsenic greater than the screening level of 0.43 mg/kg. Figure 5-21 shows the distribution of arsenic concentrations. (A color gradient from yellow to red has been used to differentiate the extent of the arsenic contamination, with yellow showing the lowest concentration and red showing the highest concentration of arsenic.) There is no apparent pattern in the distribution of arsenic contamination; the concentration range is not great and may represent only normal levels of variation for background soils.

5.5 Subsurface Soil Investigation

During the RI, subsurface soil samples were collected from 22 boreholes at depths ranging from 1 foot to 12 feet BGS. Table 3-2 summarizes the location, depth, and analyses performed on the RI subsurface soil/landfill waste samples. Locations of all subsurface sampling points are indicated on Figure 3-1.

At boreholes NE-1 to NE-4, in the northeast corner of the Site, samples were collected at depths ranging from 5 to 12 feet, which places the samples as coming from the landfill material. At boreholes AR-1 to AR-5, near the Anacostia River, samples were collected at depths ranging from 1 foot to 2.5 feet. Those boreholes are located at the periphery of the landfill, where no 1997/1998 deposited material was added; therefore, they were expected to come from landfill capping materials. However, municipal waste was noted in some of the samples. At boreholes WA-1 to WA-5, near the tree line and the ditch to the east of the Site, samples were collected at depths ranging from 1.5 to 7.5 feet. Three samples (WA-3, 4, and 5) were collected at depths placing them in the landfill material and contained waste materials confirming this. Two other samples were collected at depths placing them in the 1997/1998 deposited material. All samples collected for the RI were analyzed for PAHs, PCBs, and TAL metals.

Tables 5-4, 5-5, and 5-6 list the analytical results for subsurface soils collected during the RI.

During the 1998 sampling event, 8 subsurface soil samples were collected using a Geoprobe®. These samples were collected at depths ranging from 8 to 15 feet BGS and analyzed for SVOCs, TPH, and metals. Due to the small diameter of the sampler and the heterogeneous nature of the fill materials, the sampler was often blocked and sample cores were not continuous over the interval penetrated. This meant that samples were only known to have come from within the overall section penetrated, for example from the range between 8 and 15 feet BGS. The purpose of these samples was to characterize the nature of the landfill material; therefore, samples were collected when it was certain that the Geoprobe® had penetrated into landfill material. Since the depth of these samples is uncertain, these samples will only be discussed in reference to the nature of contamination found at those locations sampled and not attributed to any specific depths.

During the PA/SI 2000 sampling event, 49 subsurface soil samples were collected from 22 boreholes and analyzed for TCL organics, TPHs, and metals.

5.5.1 Subsurface Soil VOC Analytical Results and Distribution

No subsurface soils collected during the RI were analyzed for VOCs. Nor were subsurface soils collected during the 1998 sampling event analyzed for VOCs. Forty-nine subsurface soil samples from the PA/SI were analyzed for VOCs. No VOCs were detected above their respective screening levels.

Acetone was detected at low levels in 28 of the 49 PA/SI subsurface soil samples, with a maximum of 81 µg/kg. Trichloroethene (TCE) was detected in 11 samples and 2-butanone in 10 samples. The concentrations of TCE ranged from non-detect to an estimated 2.8 µg/kg, and 2-butanone was detected up to 33 µg/kg.

The highest concentrations of VOCs [benzene (74 µg/kg), ethylbenzene (280 µg/kg), 2-hexanone (67 µg/kg), methylene chloride (1.2 µg/kg J), toluene (180 µg/kg) and total xylenes (2,200 µg/kg)] were detected during the installation of MW-10, but the concentrations did not exceed their respective screening levels. There was a strong smell of petroleum product from the borehole at MW-10.

5.5.2 Subsurface Soil Volatile Hydrocarbon (TPH-DRO) Organics Analytical Results and Distribution

Subsurface soil samples collected during the PA/SI and the 1998 field event were analyzed for TPHs. Subsurface soil samples from the RI were not analyzed for TPH. There is no screening value for TPH.

Five of the 8 Geoprobe® boreholes drilled during the 1998 sampling event had detections of TPH. The detections ranged from 45 mg/kg to 360 mg/kg, with the highest detection located near MW-2.

All boreholes sampled during the PA/SI had detections of TPH. TPH concentrations ranged from non-detect to 3,000 mg/kg in BH-17 at 5 to 7 feet BGS. BH-2 (33 feet BGS), BH-6 (33 feet BGS), and BH-15 (11 feet BGS) all had detections of 2,300 mg/kg TPH.

Distribution of Contamination

Individual boreholes showed different patterns of TPH contamination. Some boreholes had consistent levels of TPH at all sampled depths, while others had only a single detection of TPH. All detections of TPH during the 1998 sampling event were in boreholes drilled along the Anacostia River. The boreholes drilled on the eastern side of the landfill were non-detect for TPH. In the PA/SI, aside from BH-17, there appears to be a concentration of elevated levels of TPH (>1000 mg/kg) in the central portion of the west half of the landfill (BH-2, BH-6, BH-9, BH-10, BH-12, BH-15 and BH-16). This implies a homogenous TPH source in landfill materials in this area.

5.5.3 Subsurface Soil SVOC Analytical Results and Distribution

Table 5-4 lists the RI analytical results for PAHs, which were present in on-site subsurface soil samples at levels above screening levels.

Twelve subsurface soil samples collected during the RI field investigation contained levels of benzo(a)pyrene at or above the screening level of (22 µg/kg). Concentrations in all samples ranged from 8.82 to 6,250 µg/kg for benzo(a)pyrene. Eight samples contained dibenz(a,h)anthracene at concentrations in excess of the screening level of 22 µg/kg (range: ND to 791 µg/kg).

The concentrations in samples collected during the RI of benz(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, and indeno(1,2,3-c,d)pyrene were above their respective screening levels in 4, 6, 1, and 4 samples respectively. Total PAHs varied from 0.2 mg/kg in AR-1 to 106.6 mg/kg in WA-2 (see Figure 5-22).

Samples WA-1 through WA-5, collected along the tree line and ditch to the east of the Site, contained levels of benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and/or indeno(1,2,3-cd)pyrene above the respective screening values. Concentrations ranged from 89.6 to 5,860 µg/kg for benz(a)anthracene (screening level = 220 µg/kg), 113 to 6,250 µg/kg for benzo(a)pyrene (screening level = 22 µg/kg), 123 to 6,370 µg/kg for benzo(b)fluoranthene (screening level = 220 µg/kg), ND to 302 µg/kg for dibenz(a,h)anthracene (screening level = 22 µg/kg), and 65.3 to 4,110 µg/kg for indeno(1,2,3-cd)pyrene (screening level = 220 µg/kg). Total PAHs varied from 2,000 µg/kg in sample WA-4 to 106,600 µg/kg in sample WA-2.

Samples NE-1 through NE-4 were collected in the northeast corner of the Site from the original landfill cap. All of these samples had concentrations of benzo(a)pyrene and/or dibenz(a,h)anthracene above the screening level (22 µg/kg). Concentrations ranged from 59.2 to 681 µg/kg for benzo(a)pyrene and from 27.1 to 184 µg/kg for dibenz(a,h)anthracene. Total PAHs varied from 1,872 µg/kg in sample NE-4 to 10,708 µg/kg in sample NE-1.

Only 4 samples of the 49 collected during the PA/SI had no detectable levels of PAHs; total PAHs ranged from non-detect to 10,887,000 µg/kg The levels of benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, benzo(k)fluoranthene, chrysene, and indeno(1,2,3-cd)pyrene exceeded their respective screening levels in multiple samples.

The concentration of bis (2-ethylhexyl) phthalate in BH-3 (S3) in the landfill exceeded the screening level (46 µg/kg) with a concentration of 4,000 µg/kg.

During the 1998 sampling event, PAHs were detected in 7 of the 8 Geoprobe® samples. Total PAHs, where PAHs were detected, ranged from 337 µg/kg to

10,309 µg/kg. The highest concentrations were found in the sample collected on the west side of the silt pond located at the north side of the western half of the Site (see Figure 3-1).

Distribution of Contamination

Most boreholes contained PAHs. However, the level of PAHs varied within boreholes. Some boreholes had the highest concentrations of total PAHs and benzo(a)pyrene in the shallowest sample collected and in others the highest concentration was in the middle or deepest sample collected (see BH-2, BH-4, BH-6, BH-7, BH-8, and BH-10 and Figures 5-22 and 5-23), providing no discernible pattern.

An area on the northern half of the western part of the Site showed some of the highest detections of total PAHs, specifically benzo(a) pyrene. BH-2 at 31 feet BGS had the highest concentration of total PAHs – 10,887,000 µg/kg with benzo(a)pyrene at a concentration of 760,000 µg/kg). The concentrations of individual PAH compounds in this sample were the highest overall and exceeded other detections by at least 2 orders of magnitude. The samples collected from 11 and 21 feet BGS from this borehole had substantially lower levels of PAHs, and the concentrations of PAHs in nearby boreholes, BH-1 and BH-3, had concentrations of PAHs that were 1,000 times less than found in this sample. Therefore, this location is a hot spot of PAH detection. Samples collected from BH-6, BH-7, and BH-10 had elevated levels of total PAHs in comparison with the surrounding boreholes. The sample collected from BH-7 at 31 feet BGS contained total PAHs of 237,900 µg/kg. This location is hydraulically upgradient of BH-2; therefore, the elevated PAH level in this sample is not the result of a contaminant plume originating from BH-2. BH-6 at 33 feet BGS and BH-10 at 11 feet BGS contain total PAHs of 64,800 µg/kg and 128,650 µg/kg, respectively. These boreholes are hydraulically cross gradient to BH-2.

PAHs are present in most of the landfill materials, with pockets of high levels (BH-2, BH-7, BH-10, WA-2). There are multiple sources of PAHs within the landfill. Given that there are multiple locations where the concentration of PAHs in the subsurface materials are higher than in the surface soils, downward leaching by percolating rainwater is not a significant PAH migration pathway.

5.5.4 Subsurface Soil Pesticide Analytical Results and Distribution

No subsurface soil samples were analyzed for pesticides during the RI. The only subsurface soil samples analyzed for the presence of pesticides were collected during the PA/SI. There was no exceedance of the pesticide screening criteria.

5.5.5 Subsurface Soil PCBs Analytical Results and Distribution

Table 5-4 lists the results for PCBs analysis. Aroclors 1242, 1254, and 1260 were detected, but none of them were present in on-site subsurface soil samples at levels above screening criteria.

Ten samples collected during the PA/SI exceeded the screening level for PCBs. All samples except for one were collected from within the landfill material. The other sample may be within the cap or within the 1997/1998 deposited material. PCB concentrations ranged from ND to 93,000 µg/kg of Aroclor 1254, non-detect to 2,700 µg/kg of Aroclor 1242, and non-detect to 200 µg/kg of Aroclor 1260.

Distribution of Contamination

Aroclors were detected in most boreholes drilled at the Site with the exception of BH-5, BH-6, and BH-7. These boreholes are located in the center of the western portion of the landfill. There was no consistent pattern to the distribution of Aroclors. The maximum concentration of each Aroclor was found in a different borehole.

The highest detections of Aroclor 1242 were in BH-9 at 31 feet BGS (2,700 µg/kg), BH-17 at 6 feet BGS (2,000 µg/kg), and BH-12 at 11 feet BGS (1,700 µg/kg) (see Figure 5-24). There were no other detections of any Aroclors in the other samples collected from BH-9. Like the detection of Aroclor 1254 in BH-8, this appears to be an isolated detection (see Figure 5-25). BH-8 is located on the west side of the landfill near the Anacostia River, while BH-12 is on the west side of the landfill but adjacent to Deane Avenue. Aroclor 1242 was also detected in BH-12 at a depth of 21 feet BGS (560 µg/kg).

Aroclor 1254 was found in varying concentrations in boreholes throughout the Site. The highest PCB concentration, 93,000 µg/kg, was a detection of Aroclor 1254 at 21 feet BGS in BH-8 (see Figure 5-25). This borehole is on the west side of Deane Avenue across from the former parking lot. No Aroclors were detected in the sample collected at 11 feet BGS from the same borehole. The detection of 93,000 µg/kg is 100 to 1,000 times greater than all other detections of levels of Aroclor 1254 and it is the only detection that exceeded the screening level of 320 µg/kg.

Aroclor 1260 was detected in many of the subsurface soil samples collected from boreholes located on the edges of the Site (see Figure 5-26), but none exceeded the screening level value of 320 µg/kg.

5.5.6 Subsurface Soil Metals Analytical Results and Distribution

Table 5-5 lists the analytical results from the RI for TAL metals. Levels of antimony, arsenic, iron, and vanadium exceeded screening levels. Antimony was detected above the screening level (31 mg/kg) in 3 subsurface samples, with levels up to 62.3 mg/kg in WA-3 (7 feet BGS). Concentrations of arsenic exceeded screening levels (0.43 mg/kg) in 13 subsurface samples. Arsenic concentrations ranged from non-detect in AR-5 (1.5 feet BGS) to 39.3 mg/kg in WA-3. Iron levels exceeded screening levels (55,000 mg/kg) in 6 samples with a range of 16,100 mg/kg (WA-1 at 2.5 ft BGS) to 286,000 mg/kg (WA-3). Vanadium was detected above screening levels (78 mg/kg) in 2 samples.

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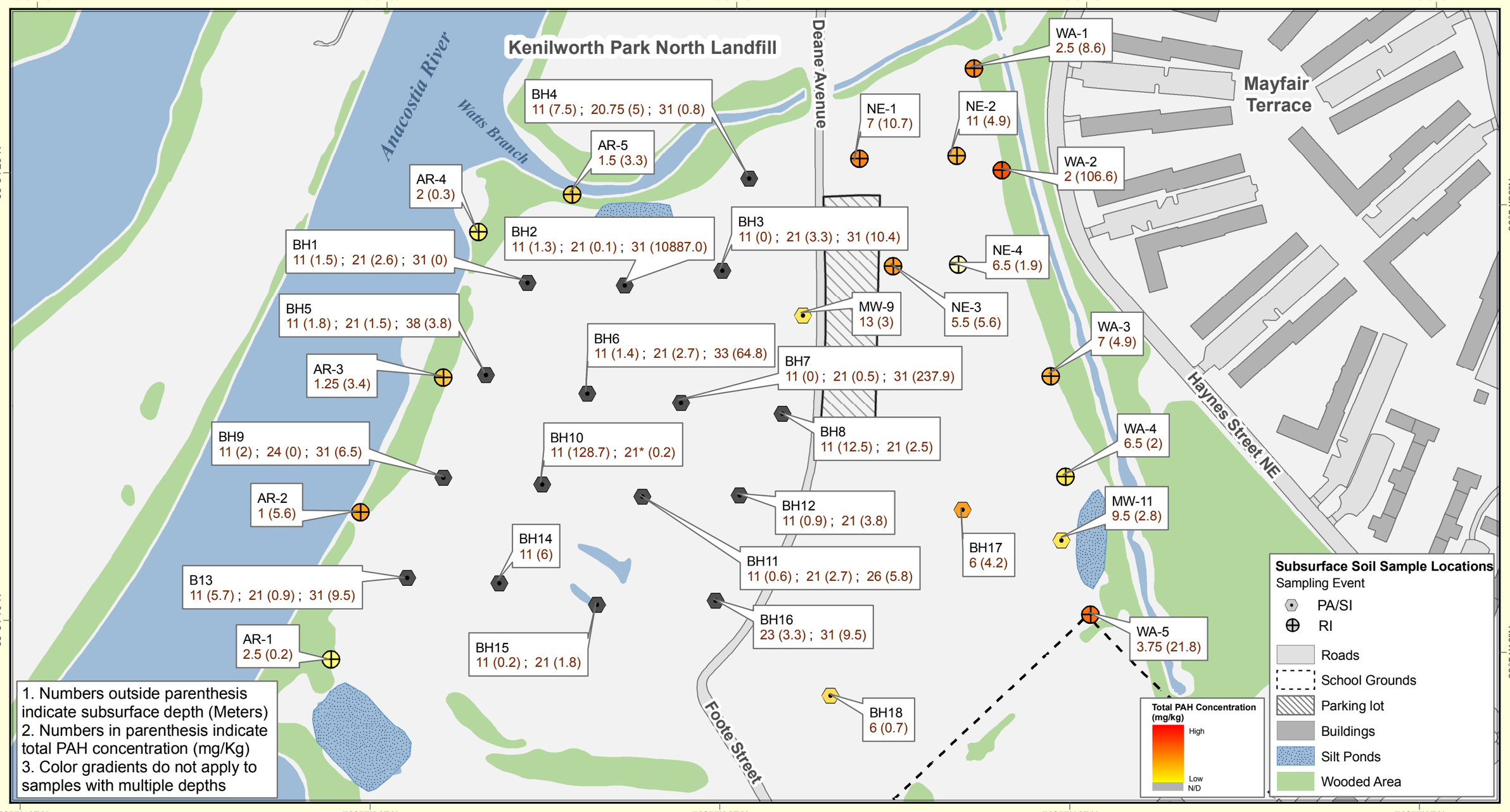

Scale
0 125 250 Feet
0 0.025 0.05 Miles
NORTH

Figure 5-22 Total PAH in Subsurface Sample Locations (mg/kg)
Kenilworth Park South Landfill
Washington D.C.

Source: ESRI, 2005; Ecology & Environment, Inc., 2008

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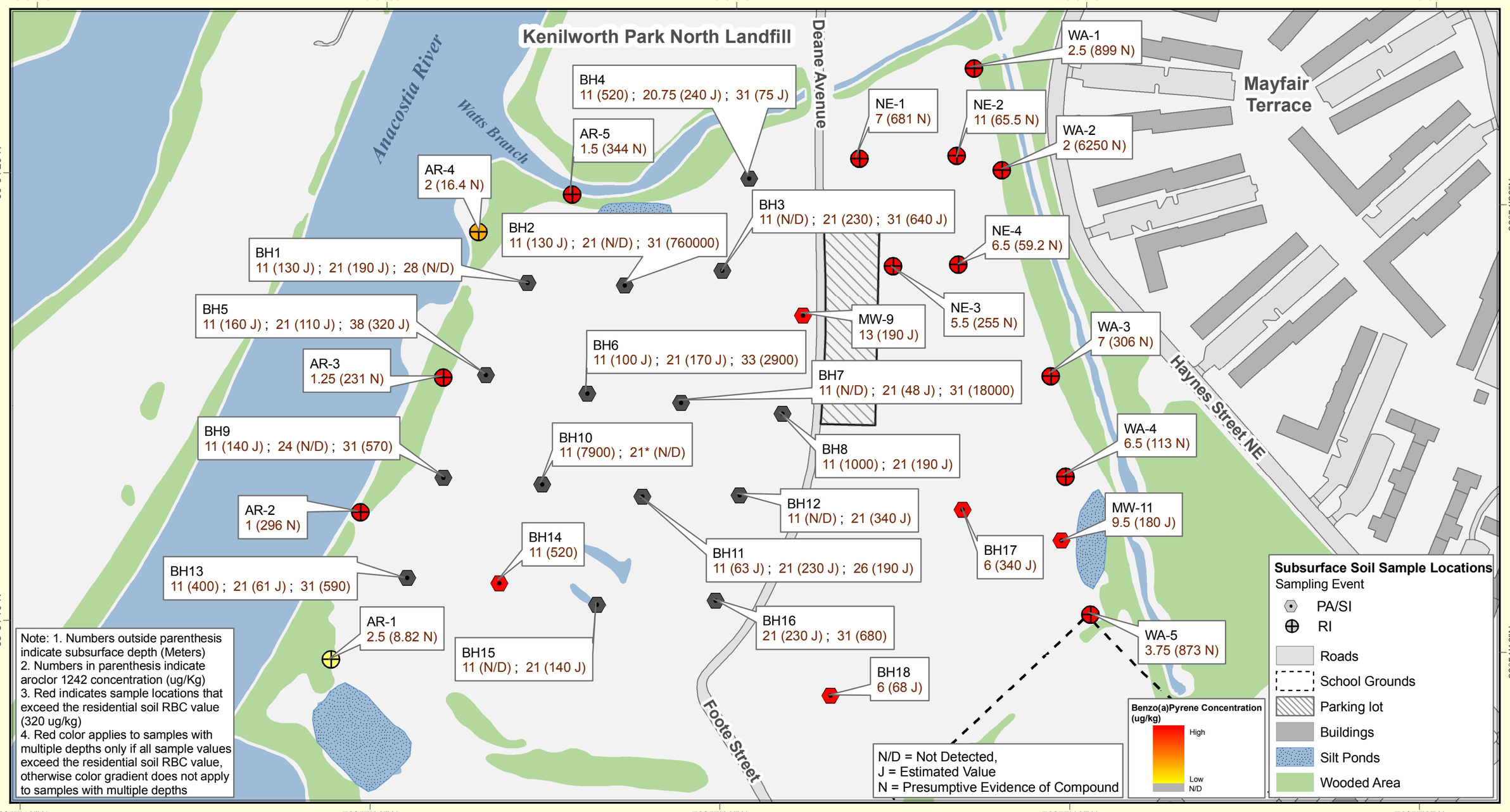

Scale
0 125 250 Feet
0 0.025 0.05 Miles
NORTH

Figure 5-23 Benzo(a)Pyrene in Subsurface Sample Locations (ug/kg)
Kenilworth Park South Landfill
Washington D.C.

Source: ESRI, 2005; Ecology & Environment, Inc., 2008

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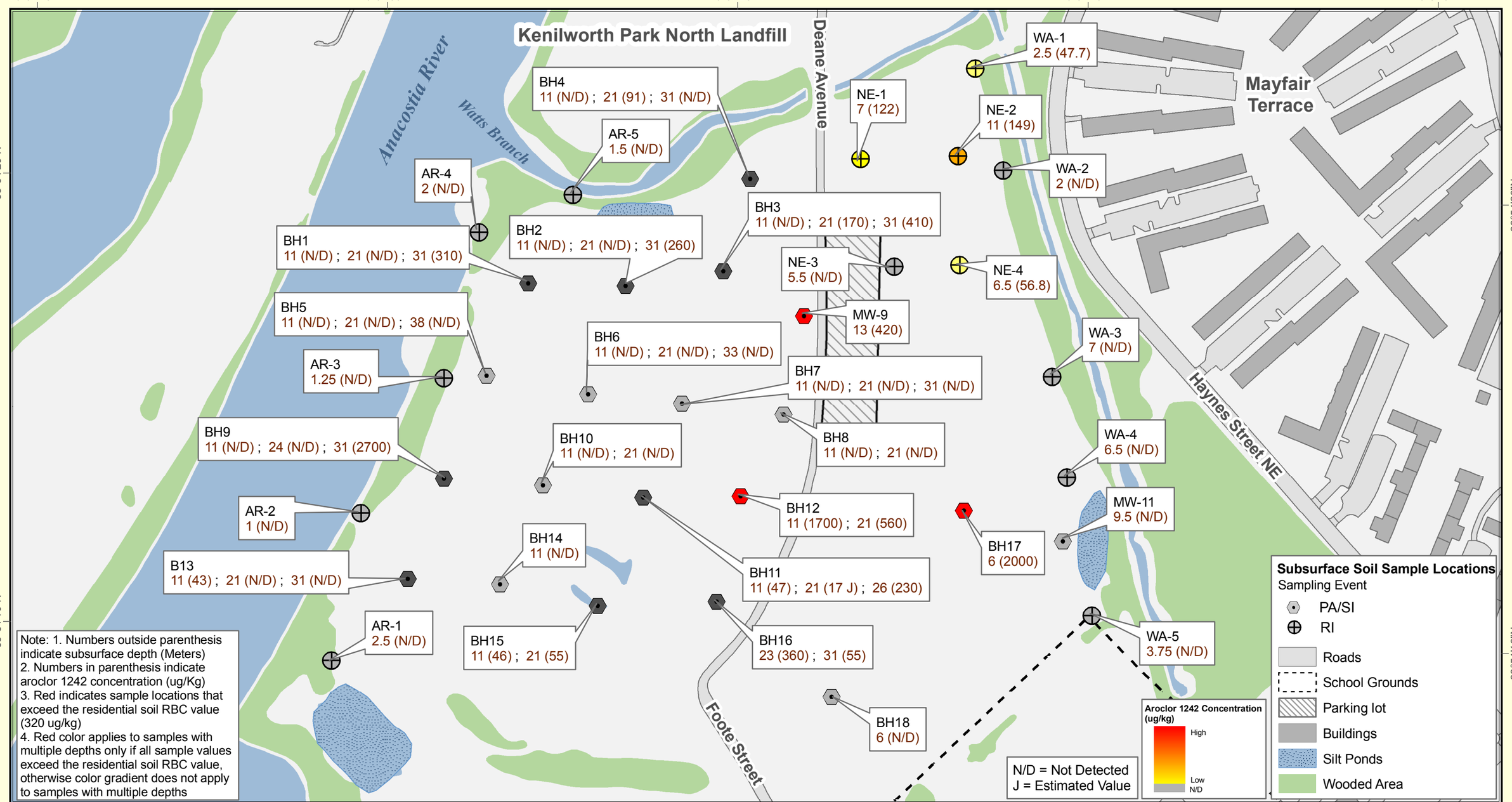

Scale
0 125 250 Feet
0 0.025 0.05 Miles
NORTH

Figure 5-24 Aroclor 1242 in Subsurface Sample Locations (ug/kg)
Kenilworth Park South Landfill
Washington D.C.

Source: ESRI, 2005; Ecology & Environment, Inc., 2008

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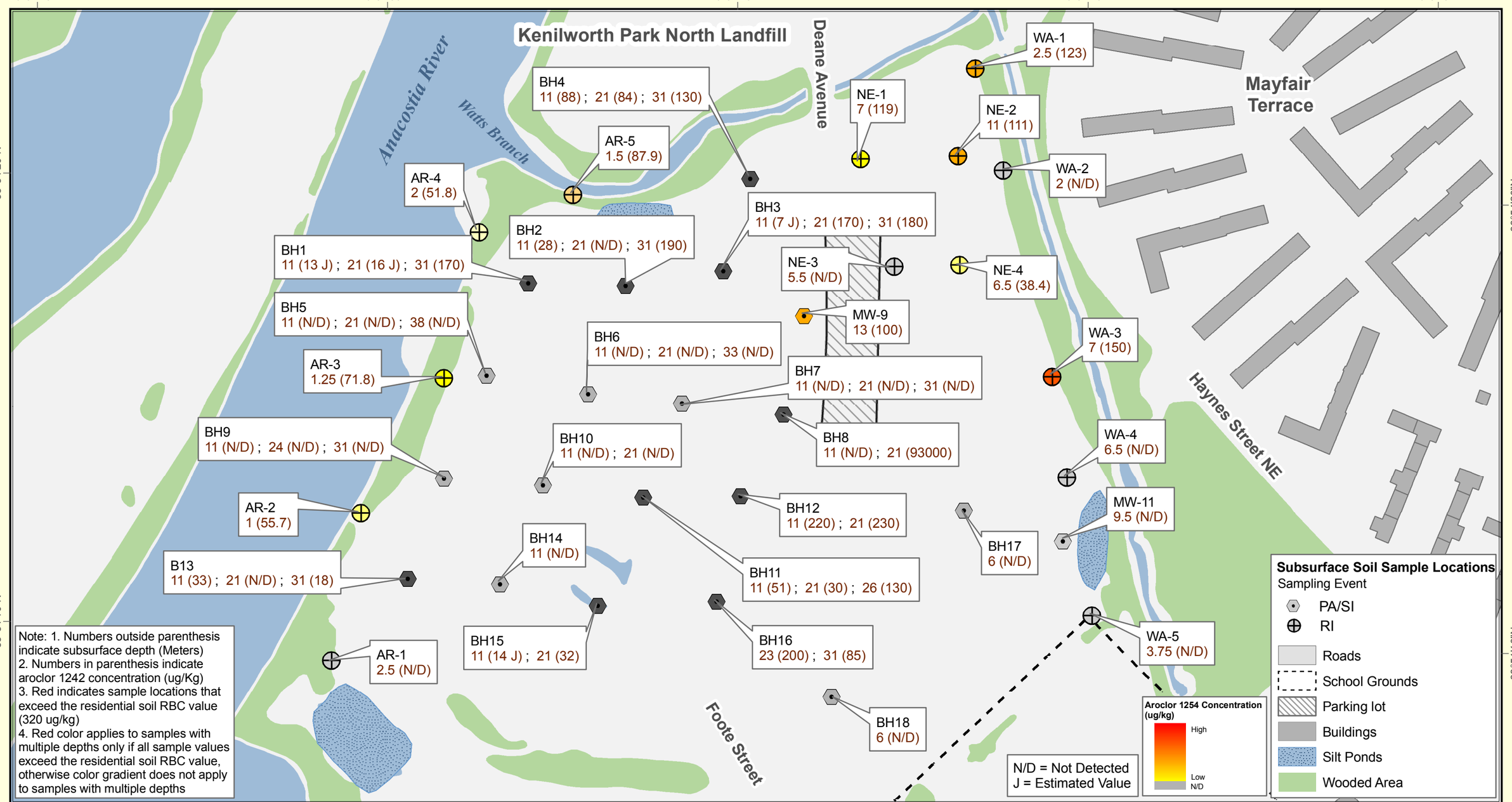

Scale
0 125 250 Feet
0 0.025 0.05 Miles
NORTH

Figure 5-25 Aroclor 1254 in Subsurface Sample Locations (ug/kg)
Kenilworth Park South Landfill
Washington D.C.

Source: ESRI, 2005; Ecology & Environment, Inc., 2008

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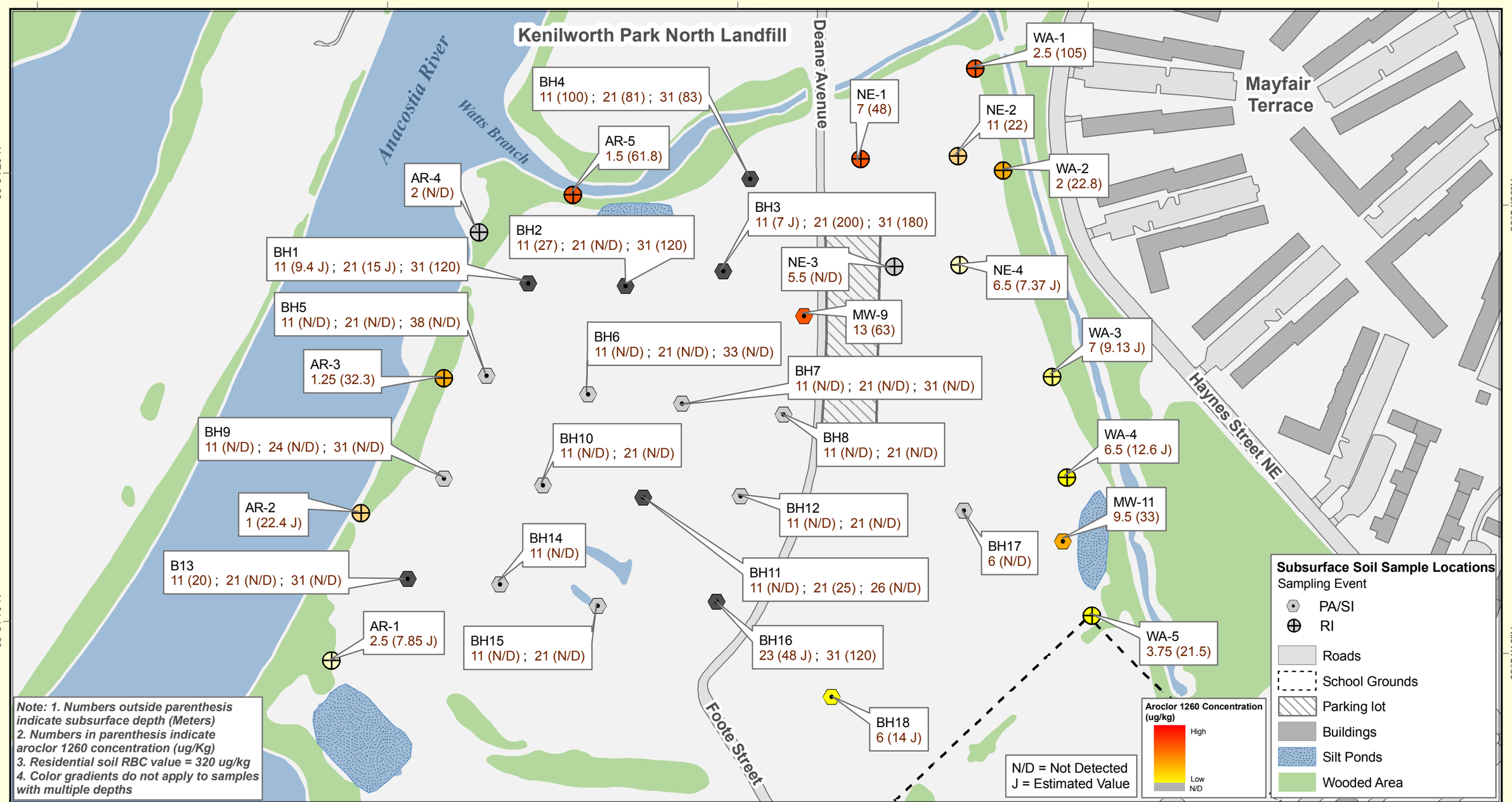

Scale
0 125 250 Feet
0 0.025 0.05 Miles
NORTH

Figure 5-26 Aroclor 1260 in Subsurface Sample Locations (ug/kg)
Kenilworth Park South Landfill
Washington D.C.

Source: ESRI, 2005; Ecology & Environment, Inc., 2008

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Concentrations of lead exceeded the screening level (400 mg/kg) in 6 subsurface soil samples, with concentrations in all samples ranging from 13 mg/kg in AR-1 to 10,500 mg/kg in WA-3.

In the PA/SI, the levels of arsenic in all but one subsurface soil samples exceeded the screening level of 0.43 mg/kg (range 1.7 mg/kg to 43 mg/kg). Iron concentrations exceeded the screening level in 15 subsurface soil samples. Levels of iron ranged from non-detect to 180,000 mg/kg; the screening level is 55,000 mg/kg. At one location (BH-1, at 31 feet BGS), the level of aluminum (84,000 mg/kg) exceeded the screen of 78,000 mg/kg. Five samples contained levels of vanadium greater than the screening level of 78 mg/kg. Sixteen of the 49 subsurface soil samples exceeded the screening level of 400 mg/kg for lead. Lead levels ranged from 2.8 mg/kg to 2,500 mg/kg (BH-4 31 feet BGS). All of the higher levels of lead occurred in samples from within landfill materials; none occurred in the 1997/1998 deposited material.

Analysis of subsurface samples collected from the landfill materials during the 1998 investigation revealed that arsenic, cadmium, and lead concentrations exceeded screening levels. Arsenic concentrations exceeded the screening level in the seven Geoprobe® samples where it was detected. The concentration of cadmium in GS-5 and GS-6 exceeded screening levels (see Figure 3-1).

Lead levels in GS-4, GS-5, GS-6, and GS-8 exceeded the screening level of 400 mg/kg. The levels in GS-4 and GS-6 were 10 times the screening level.

Distribution of Contamination

Aluminum was detected in all subsurface samples at concentrations ranging from 1,900 to 84,000 mg/kg. Only one sample collected at BH-1 (30 to 32 feet BGS) contained aluminum levels above the screening value (78,000 mg/kg). This borehole is located in the northwest portion of the Site. It also contained high levels of iron and vanadium, suggesting that it is a location where metallic waste is concentrated.

Antimony was only detected above the screening value in subsurface soil samples collected from AR-4 (2 feet BGS), AR-5 (1.5 feet BGS), and WA-3 (7 feet BGS). These samples were collected from the northwest corner and eastern side of the Site. Antimony was detected at lower concentrations throughout the subsurface materials. Detected concentrations ranged from 0.814 to 62.3 mg/kg with most detections below 10 mg/kg. Those samples with concentrations above the screening level also had some of the highest iron levels.

Arsenic was found in subsurface soils above screening levels in all but 2 samples collected (see Figure 5-27). The majority of samples contained arsenic below a concentration of 10 mg/kg. The highest concentrations were in boreholes on different sides of the Site (BH-14 at 11 feet BGS (43 mg/kg) and WA-3 at 7 feet BGS (39.3 mg/kg)). The fairly uniform distribution of arsenic detections within individual boreholes and across the subsurface soils suggests that arsenic is a

component of the landfill material. The highest detections of arsenic are in samples with the highest overall levels of metals, indicating pockets of metallic waste or debris, except for BH-14, which showed only an elevated level of arsenic.

Iron was detected in every subsurface soil sample at concentrations ranging from 6,800 mg/kg to 286,000 mg/kg, with 16 exceedances of the screening level of 55,000 mg/kg. This indicates that there is metallic debris or waste throughout the landfill materials. The highest concentrations were found in WA-3 at 7 feet BGS (286,000 mg/kg), BH-4 at 31 BGS (180,000 mg/kg), and WA-4 at 6.5 feet BGS (169,000 mg/kg). Both WA-3 and WA-4 are located on the east side of the Site adjacent to the unnamed stream/ditch, while BH-4 is located west of Deane Avenue in the northern portion of the Site. WA-3 and WA-4 are close to each other and could be drilled through a similar portion of the landfill where metallic debris had been deposited. BH-3 is the closest borehole to BH-4 and its concentration of iron also exceeded screening level, indicating another part of the landfill where metallic wastes were concentrated.

Vanadium was also detected in all subsurface samples at concentrations ranging from 11 mg/kg to 662 mg/kg, with 7 exceedances of the screening level of 78 mg/kg. As discussed above, the detections of metals in all the subsurface material samples indicate that the landfill waste is partly composed of metallic debris or waste. Electrical switches often contain vanadium. The presence of vanadium in all the samples further substantiates this. The highest levels were found in AR-4 at 2 feet BGS (662 mg/kg) and AR-5/6 at 1.5 feet BGS (246 mg/kg). These boreholes are located in the northwest corner of the Site and may reflect the presence of landfill materials containing concentrated vanadium.

5.5.7 Toxicity Characteristic Leaching Procedure Results

Nine subsurface soil samples, including 1 duplicate, were collected and analyzed using the Toxicity Characteristic Leaching Procedure (TCLP) to determine if the landfill wastes meet the definition of RCRA hazardous waste. Subsurface samples were collected at depths ranging from 4 to 12 feet BGS from boreholes OL-1 to OL-5 located in the center of the Site along the western side of Deane Avenue (see Figure 3-1). These samples were collected from landfill material. At boreholes NL-1 to NL-3 located on the west side of the Site, subsurface soil samples were collected at depths of 1 foot within the 1997/1998 deposited material (see Figure 3-1). There were no detections in any of the samples from the TCLP analyses for organic compounds. Table 5-6 lists the results for TCLP metals (inorganic) analyses. None of the samples exceeded the TCLP concentrations.

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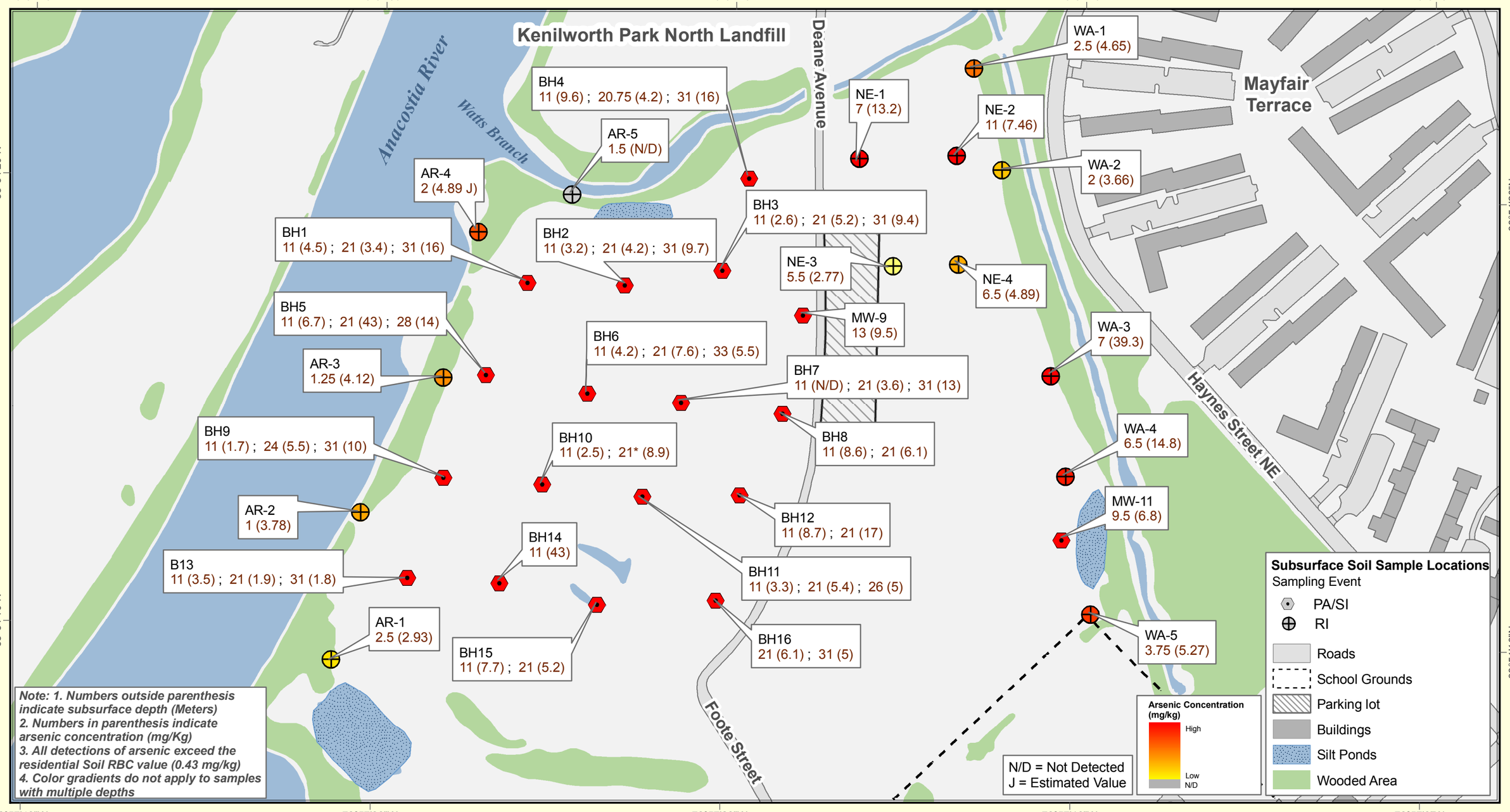

Scale
0 125 250 Feet
0 0.025 0.05 Miles
NORTH

Figure 5-27 Arsenic in Subsurface Sample Locations (mg/kg)
Kenilworth Park South Landfill
Washington D.C.

Source: ESRI, 2005; Ecology & Environment, Inc., 2008

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5.6 Groundwater Investigation

Table 3-3 lists the fifteen groundwater samples collected at the Site during the RI, the date collected, and analyses performed. Locations of all monitoring wells are indicated on Figure 3-1. Eleven samples were collected from existing and previously sampled monitoring wells and analyzed for metals only. Two samples and a duplicate were collected from monitoring wells MW-12 and MW-13, located in the southwestern corner and northwest of the Thomas Elementary School. These samples were analyzed for organic and inorganic compounds. These wells were constructed during the RI.

Tables 5-7 and 5-8 list the sample results for groundwater samples collected during the RI.

During the 1998 sampling event, 9 groundwater samples, including 1 duplicate, were collected from Geoprobe® boreholes and were analyzed for BNAs, VOCs, TPH, and metals. Groundwater had high levels of heavy metals, especially lead, but the very turbid nature of the samples implied that the levels of metals were more the result of suspended solids within the water sample than of dissolved metal ions. VOCs, BNAs other than PAHs, and TPH were found at low or non-detect levels in groundwater. However, because these samples were collected from Geoprobe® boreholes and not from properly constructed and developed wells, the results are not comparable to those collected from monitoring wells. As a result, they are not included in the discussion of contaminant distribution. During the PA/SI 2000 sampling event, 11 groundwater samples were analyzed for VOCs, SVOCs, pesticides, PCBs, TPH, and metals.

Figure 4-7 shows that MW-8 is near the highest point of the groundwater hydraulic heads at the Site. All other wells show hydraulic heads lower than this well. Thus, groundwater is interpreted to flow radially outwards from this point. Contaminant plumes, if they exist within the groundwater within the fill, would also flow radially outwards from the general location of MW-8. Contaminant concentrations found in the wells located on the periphery of the Site indicate the potential levels of contaminants leaving the Site.

5.6.1 Groundwater Volatile Organic Compound Analytical Results and Distribution

Table 5-7 lists the RI analytical results for VOCs in groundwater; 1,4-dichlorobenzene was the only VOC that exceeded a screening level (MW-12). Benzene was the only VOC detected above a screening value (0.34 µg/L) in the PA/SI. It was detected in MW-9 at a concentration of 1.9 µg/L. MW-9 is located on the west side of Deane Avenue across from the former parking lot.

Distribution of Contamination

In general, the detections of VOCs in groundwater are low. The detections of two VOCs above screening levels are isolated, suggesting there are no VOC contaminant plumes.

5.6.2 Groundwater Semivolatile Organic Compound Analytical Results and Distribution

Bis(2-ethylhexyl)phthalate was the only SVOC detected above its screening value in groundwater samples collected during the RI and PA/SI. During the RI, only groundwater samples collected from MW-12 and MW-13 were analyzed for SVOCs. The samples collected from wells MW-12 and MW-13 contained bis(2-ethylhexyl)phthalate at concentrations of 6.63 µg/L and 9.07 µg/L, respectively and exceeded their screening levels. Bis(2-ethylhexyl)phthalate was not detected in sample KWS-MW-12D, the duplicate of sample KWS-SU-MW-12.

During the PA/SI, bis(2-ethylhexyl)phthalate was detected in MW-2, MW-4, MW-6, and MW-8 but exceeded the screening level only in MW-4. Although the presence of bis(2-ethylhexyl)phthalate in these groundwater samples could be from a source in the landfill, it is a common laboratory contaminant and its presence in these samples may be the result of laboratory contamination.

Distribution of Contamination

Although bis(2-ethylhexyl)phthalate was detected in groundwater samples collected from both the PA/SI and RI, it may be from laboratory contamination or it could be present in the landfill. The detection of bis(2-ethylhexyl)phthalate in these wells could possibly reflect the presence of plastics in the landfill materials in the vicinity of these wells. Since all the detections were fairly low and not from contiguous wells, there is no suggestion that a plume exists.

5.6.3 Groundwater Pesticide Analytical Results and Distribution

During the RI, only samples collected from MW-12 and MW-13 were analyzed for pesticides. None were detected above screening levels.

During the PA/SI, the concentrations of beta-BHC and heptachlor epoxide in MW-3 and MW-4 exceeded their respective screening values. No other pesticides were detected above their respective screening levels.

Distribution of Contamination

Given that pesticides above screening levels were only found in MW-3 and MW-4, there is no pesticide plume, and their presence likely reflects the contents of the landfill material immediately surrounding these wells.

5.6.4 Groundwater PCB Analytical Results and Distribution

During the RI, only samples collected from MW-12 and MW-13 were analyzed for PCBs. Aroclor 1242 was detected at 0.327 µg/L in the sample collected from MW-12. This concentration exceeds the screening criteria. No other Aroclors were detected in either well.

No PCBs were detected in the 11 groundwater samples collected during the PA/SI.

Distribution of Contamination

PCBs were not detected in groundwater samples collected during the PA/SI, but were detected in MW-12, one of the new wells installed during the RI. This well is hydraulically downgradient of the southwestern portion of the landfill. The detection at MW-12 could reflect leaching from the immediate surroundings or could be the result of contaminant migration. However, PCBs are not very soluble and the well hydraulically upgradient of it, MW-7, did not detect PCBs in the previous investigations.

5.6.5 Groundwater Metals Analytical Results and Distribution

Table 5-8 lists the RI analytical results for TAL metals. Five of the 13 wells (MW-1, MW-2, MW-9, MW-10, and MW-11) exceeded the screening criteria for antimony. Arsenic was detected above the screening criteria in MW-1, MW-3, MW-4, MW-8, and MW-11. Groundwater samples from MW-2, MW-8, MW-9, MW-10, and MW-11 contained concentrations of barium above the screening level (1000 µg/L). Concentrations ranged from non-detect to 14 µg/kg in MW-2 for antimony and from 191 to 6,880 µg/kg in MW-11 for barium. Samples collected from 2 wells exceeded the screening criteria for lead (15 µg/L), with concentrations of 24.3 µg/L (MW-7) and 53.4 µg/L (MW-10).

Aluminum was detected in MW-1 through MW-7 at levels exceeding the screening criteria of 50 µg/L. All wells exceeded the screening criteria of for iron (300 µg/L). Concentrations ranged from 1,390 µg/L to 92,800 µg/L for iron, with the highest level in MW-13. All wells, except for MW-8, exceeded the screening criteria of 50 µg/L for manganese. Concentrations ranged from 38.7 µg/L to 3,180 µg/L for manganese, with the highest level in MW-1.

The groundwater samples collected during the PA/SI contained metal concentrations that exceeded screening criteria. The turbidity of the samples and analysis of the landfill waste indicated that the metals levels were probably the result of suspended solids. All wells and well points are screened at least partially within the landfill material, which has a high metal content, as shown by the analyses of subsurface samples. The low flow rates in these wells, a consequence of the low hydraulic conductivity, made it very difficult to develop some of them enough to yield clear, non-turbid water, so the analytical results reflect both dissolved and suspended particulate levels of metals.

The PA/SI included 2 rounds of groundwater sampling for metals. During the first round of sampling, unfiltered groundwater samples were collected. During the second round of sampling, conducted in March 2000, both filtered and unfiltered samples were collected and analyzed for RCRA metals from selected wells in order to determine the levels of dissolved and suspended metals in the groundwater at the Site.

During the first round of sampling for the PA/SI, antimony was detected only in MW-5 and MW-7. Both detections were above the screening criteria (6 µg/L). Antimony was not analyzed in the second round of sampling. Arsenic was detected in 4 of the 11 wells [MW-1 (11 µg/L), MW-3 (15 µg/L), MW-5 (14 µg/L), and MW-7 (60 µg/L)]. All detections were above the screening criteria (0.045 µg/L). All detections of aluminum in groundwater exceeded the screening criteria of 50 µg/L. One groundwater sample contained a level of copper that exceeded the screening criteria of 1,000 µg/L. Two detections of chromium exceeded the screening criteria of 100 µg/L. All detections of iron in groundwater exceeded the screening criteria of 300 µg/L. Seven samples contained lead levels that exceeded the screening criteria of 15 µg/L. There was one detection of silver in groundwater and the concentration exceeded the screening criteria. All detections of thallium exceeded the screening criteria of 2 µg/L. All detections of manganese exceeded the screening criteria of 50 µg/L.

During the second round of sampling, lead was detected at above the screening criteria in MW-2, MW-5, MW-6, and MW-12 in the unfiltered samples and in MW-5 in the filtered samples.

The concentrations of cadmium and chromium in single wells exceeded their respective screening criteria in the unfiltered samples, but there was only one exceedance in the filtered samples for barium in MW-2.

Distribution of Contamination

There is no apparent relationship in antimony concentrations between the PA/SI and the RI. Antimony was detected during the PA/SI (at the north and south ends of the western part of the Site), and antimony contamination appears to be localized at these wells. MW-7 had the highest level of metals during the PA/SI and it also showed the highest level of antimony (Figure 5-28). During the RI, antimony was not detected in MW-7 and it was detected below the screening criteria in MW-5 (Figure 5-29). Antimony was detected in 10 wells sampled in the RI. Concentrations of antimony varied little across the landfill with a range of detections from 2.6 µg/L to 14 µg/L. The locations of the highest concentrations of antimony during the RI were the eastern portion of the landfill adjacent to the unnamed stream/ditch (MW-10) and southwestern portion of the landfill adjacent to the Anacostia River (MW-1 and MW-2). This suggests that either the antimony contamination in groundwater originates in a portion of the landfill upgradient of MW-1 and MW-2 or that these wells are drilled in similar materials that are leaching antimony into groundwater. Although there is no clear plume of antimony on the eastern side of the landfill, there could be multiple sources of antimony contamination there, since there are multiple detections of antimony. These wells are drilled into similar materials and screened across landfill materials.

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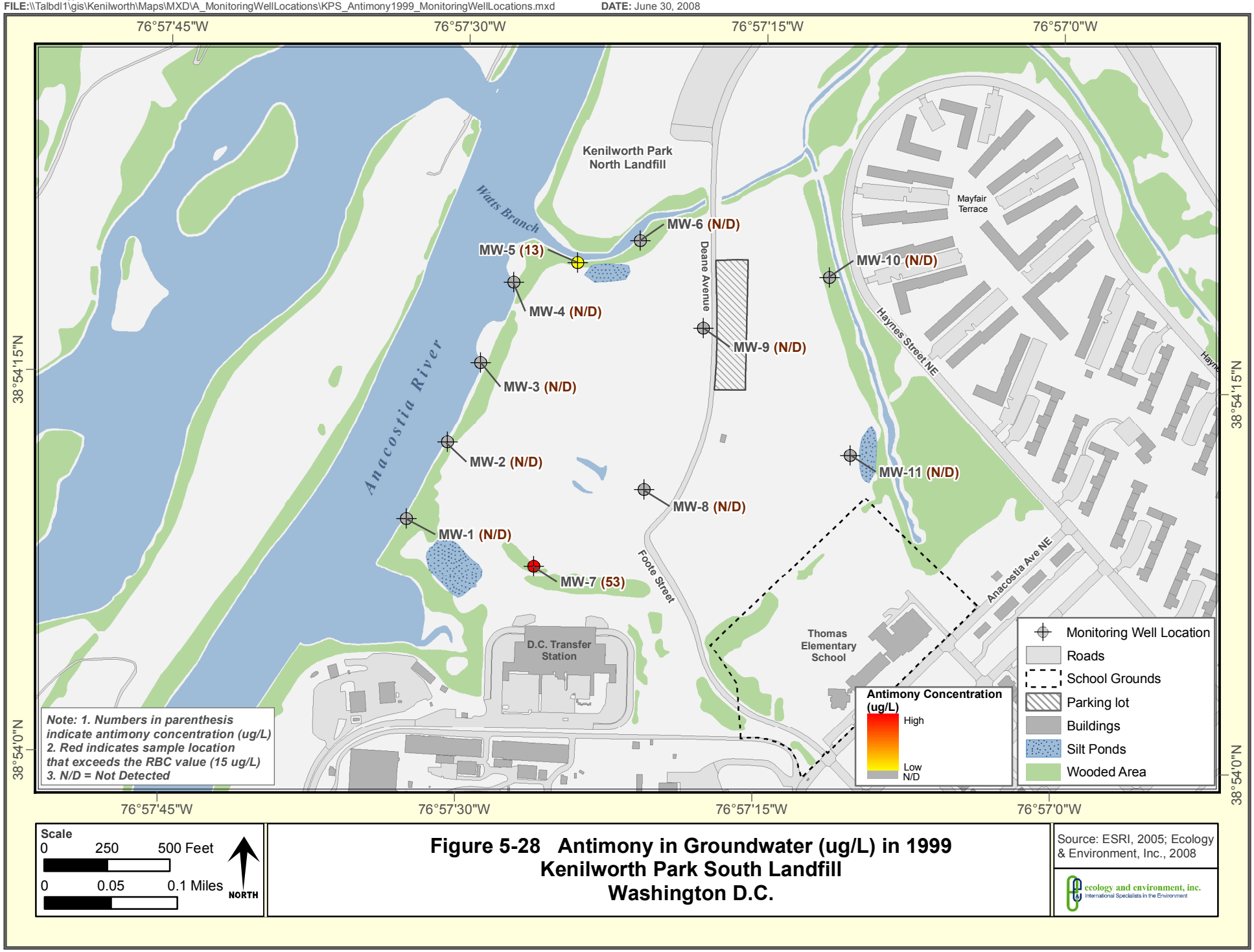

Figure 5-28 Antimony in Groundwater (ug/L) in 1999
Kenilworth Park South Landfill
Washington D.C.

Source: ESRI, 2005; Ecology & Environment, Inc., 2008

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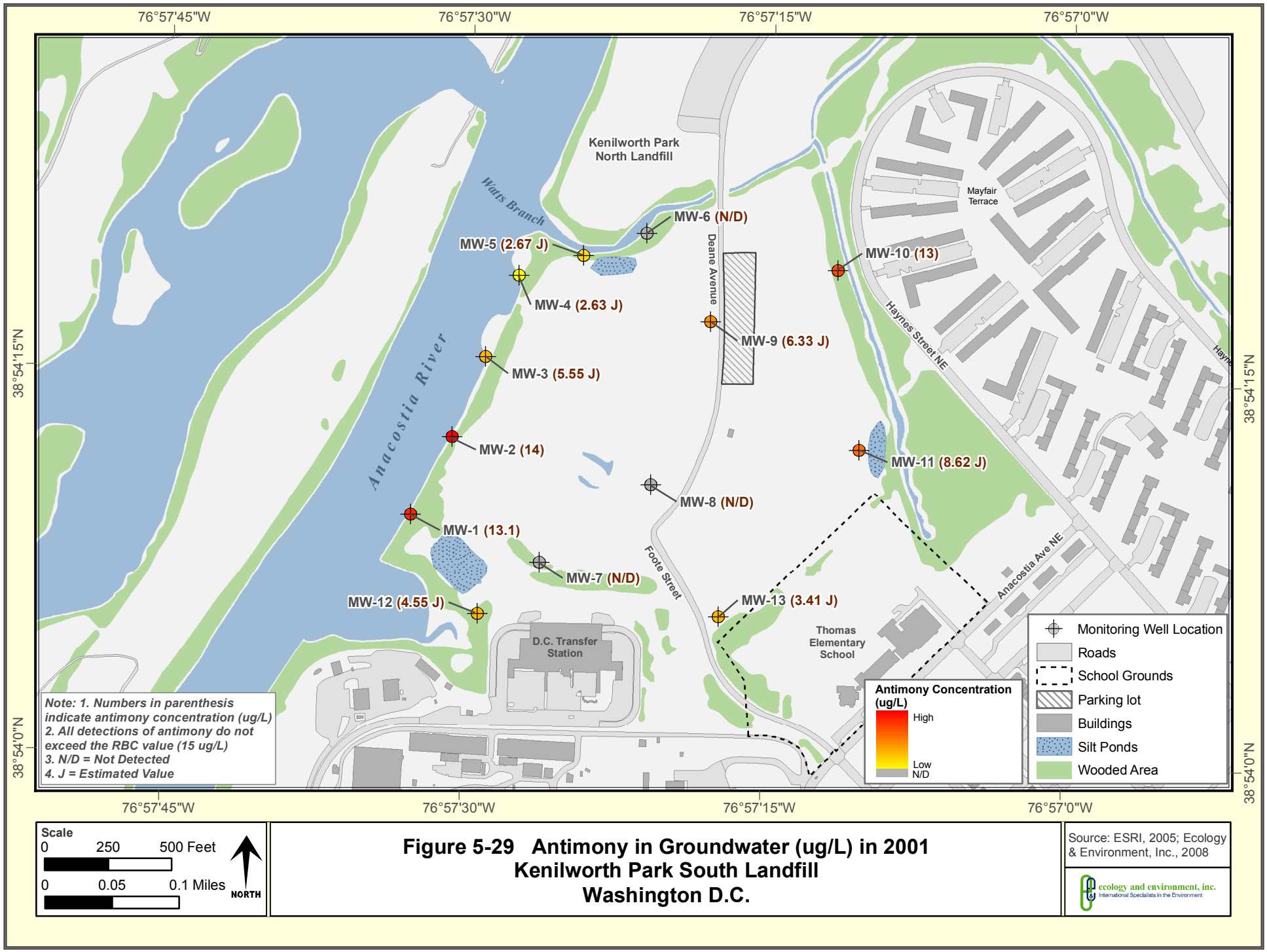

Figure 5-29 Antimony in Groundwater (ug/L) in 2001
Kenilworth Park South Landfill
Washington D.C.

Source: ESRI, 2005; Ecology & Environment, Inc., 2008

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Barium was detected above its screening level 1,000 µg/L in MW-2, MW-7, MW-9, and MW-11 in the PA/SI. In the RI sampling, barium was detected above the screening level in MW-2, MW-8, MW-9, MW-10, and MW-11. The highest concentrations of barium were found in MW-11 during both investigations. The source of the barium is likely to be at or close to the well; MW-2 is at the edge of and downgradient of the Site. The level of barium found during both investigations at MW-2 was 4 to 6 times higher than the levels in the adjoining wells; therefore, there appears to be an isolated source of barium in groundwater that must be near or at MW-2.

There is no apparent pattern of arsenic contamination in groundwater across the Site. In groundwater samples collected from both the PA/SI and the RI, arsenic was either not detected or detected above its screening level. During the PA/SI, arsenic was detected in 4 of the 11 wells (see Figure 5-30) and during the RI arsenic detections were in 5 of the 13 wells (see Figure 5-31). The detections did not all occur in the same wells during the two separate sampling events. Wells MW-2, MW-6, MW-9, and MW-10 did not show detections in either sampling event. The highest arsenic detection was in the sample collected from MW-7 during the PA/SI, but arsenic was not detected in this well during the RI. This detection during the PA/SI was 4 to 6 times higher than any other detections in groundwater at the Site. The concentrations of arsenic in the wells in the vicinity of MW-7 were either non-detect or significantly lower. Therefore, this detection of 60 µg/L appears to reflect a temporary deviation, perhaps reflecting suspended solids at the time of sampling. Samples collected from both MW-1 and MW-3 had detections of arsenic at comparable concentrations during both sampling events. Samples collected from nearby wells did not show detections of arsenic, suggesting that arsenic is present in the landfill materials near these locations and is leaching into the groundwater immediately surrounding a well, but that there is not a plume of arsenic contamination migrating in groundwater.

Iron was detected in all groundwater samples analyzed for iron. Iron levels detected during the PA/SI varied from 7,300 to 220,000 µg/L, with MW-7 having the highest concentrations (see Figure 5-32). In the RI, iron concentrations ranged from 1,390 to 92,800 µg/L at MW-13 (see Figure 5-33). The presence of high levels of iron in wells screened across municipal wastes reflects the iron content of the buried waste as well as the relative solubility of iron.

Lead was detected above the screening level in the PA/SI in wells MW-1, MW-5, MW-6, MW-7, MW-9, MW-10, and MW-11. The highest concentration (2,800 µg/L) was in MW-7 (see Figure 5-34). In the first round of sampling during the RI, the highest level of lead was also found in MW-7 (24.3 µg/L) but at a concentration two orders of magnitude lower (see Figure 5-35). Like iron, the presence of lead in groundwater probably reflects the presence of numerous lead sources (e.g., lead-acid batteries) in the landfill. The detection of lead above the screening level in the filtered sample in only 1 well (MW-5) does not suggest that the high levels of lead found in the fill in several locations are in a soluble form.

5.7 Surface Water

No surface water samples were collected during the June 2001 RI field activities or during the 1998 sampling event.

During the PA/SI, 4 surface water samples were collected and analyzed for VOCs, SVOCs, pesticides, PCBs, and metals. Two of these were off-site samples. One sample was collected upstream in Watts Branch, above tidal influence, and one was collected approximately 1 mile upstream on the Anacostia River, but within the tidal area. The 2 other surface water samples were collected near the Site, at the mouth of Watts Branch and in the Anacostia River opposite the Site. In both of the near-site samples, levels of certain metals (aluminum, barium, iron, lead, and manganese) exceeded the screening level. Given the multiple sources that discharge to the Anacostia River and to Watts Branch, it is not possible to conclude from this information whether the Site is contributing metals concentrations to either water body.

Organic levels were non-detect except at SW-3, which showed acetone detected at 5.3 J µg/L. Acetone is a common laboratory contaminant.

5.8 Contaminant Fate and Transport

Since most of the landfill has been regraded to reduce slopes on the upper surface and to direct surface run-off into drainage swales that are reinforced with rip-rap, erosion has been greatly reduced. A cover of forbs, shrubs, and trees is now established over most of the landfill, especially adjoining the water bodies receiving runoff, and surface runoff has been reduced. The semi-permanent pond on top of the west side of the landfill is acting as storage and reducing surface runoff. Most surface runoff travels through drainage ditches into the silt ponds constructed on the north, east, and south sides of the landfill, and silt tends to settle out before it overflows to surface water. There is evidence of landfill materials on the surface or mixed into the landfill cap both along the Anacostia River and near the mouth of Watts Branch. No groundwater seeps are visible, but slow groundwater discharge is possible. As discussed in Section 4.3.2.2, groundwater would discharge laterally from the landfill towards the surrounding surface bodies and is not infiltrating into the underlying clay. As evidenced by the ponding of water on the cap throughout the year, infiltration is limited. Therefore, contaminant migration from the surface to subsurface is limited.

It appears that infiltration is balanced by groundwater discharge. However, discharge is not significant, given the low hydraulic conductivities found in the wells tested around the periphery of the Site. The primary route of off-site contaminant migration appears to be surface water runoff, with eroded surface soil discharging to surface water

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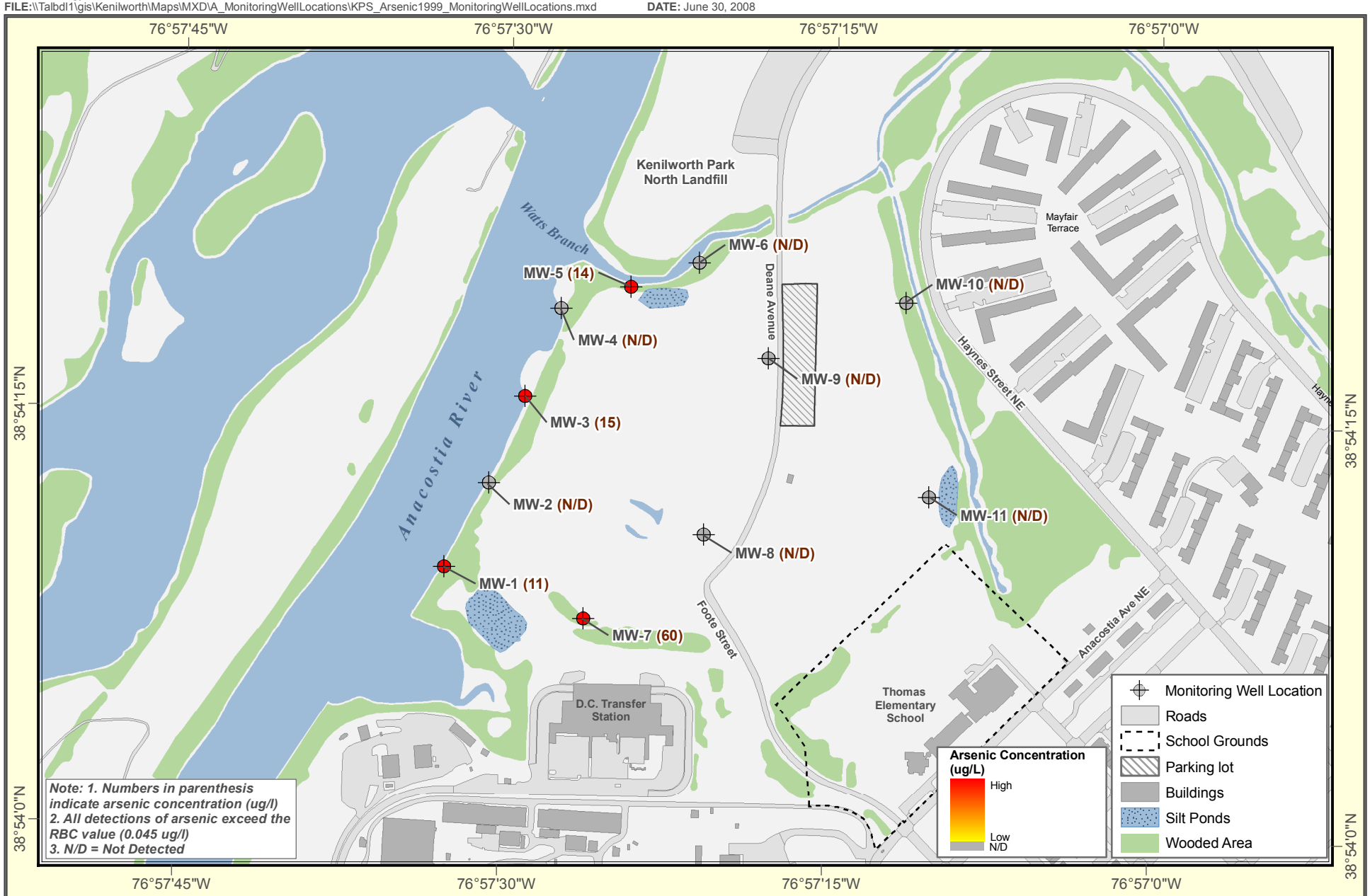

Figure 5-30 Arsenic in Groundwater (ug/L) in 1999
Kenilworth Park South Landfill
Washington D.C.

Source: ESRI, 2005; Ecology & Environment, Inc., 2008

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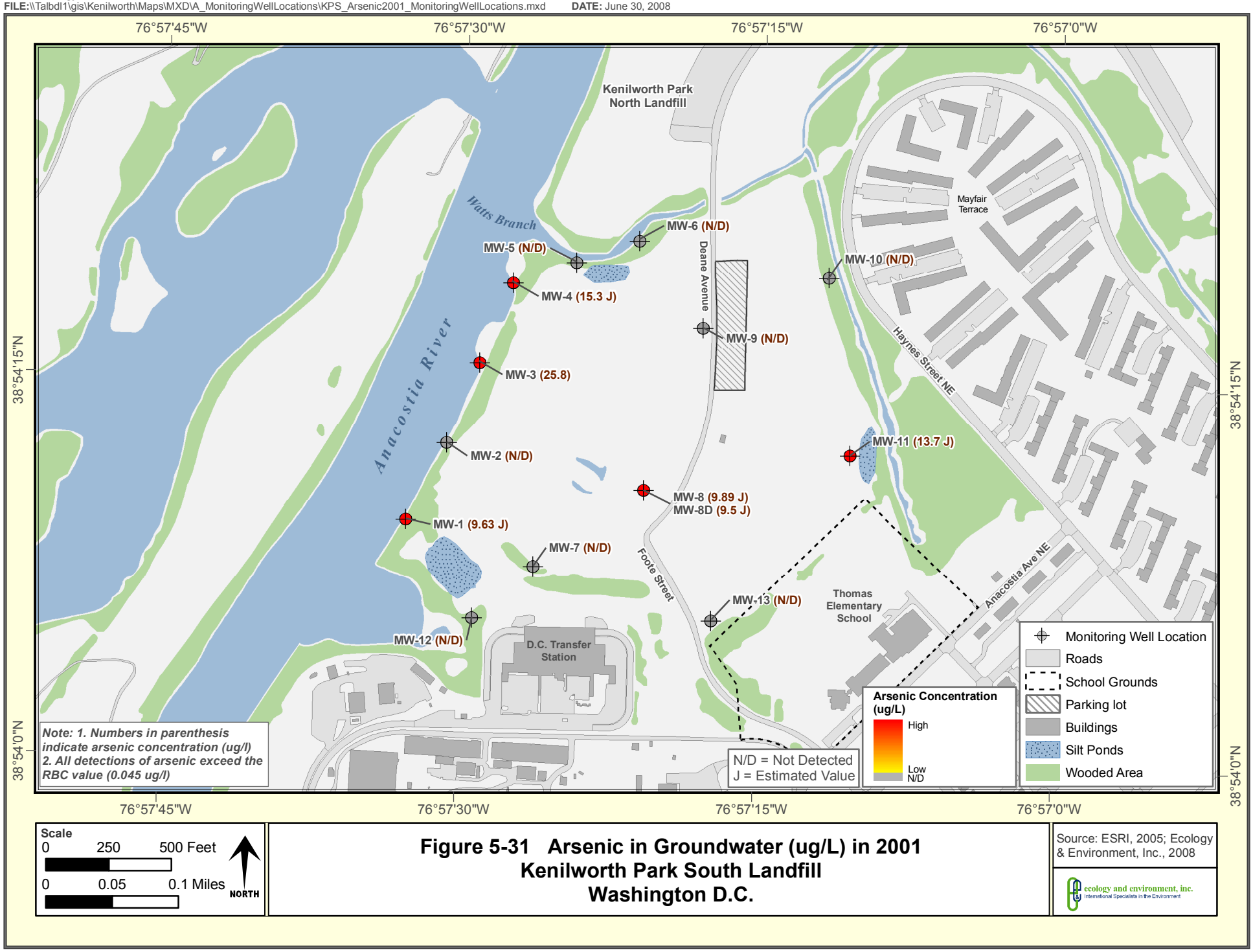

Figure 5-31 Arsenic in Groundwater (ug/L) in 2001
Kenilworth Park South Landfill
Washington D.C.

Source: ESRI, 2005; Ecology & Environment, Inc., 2008

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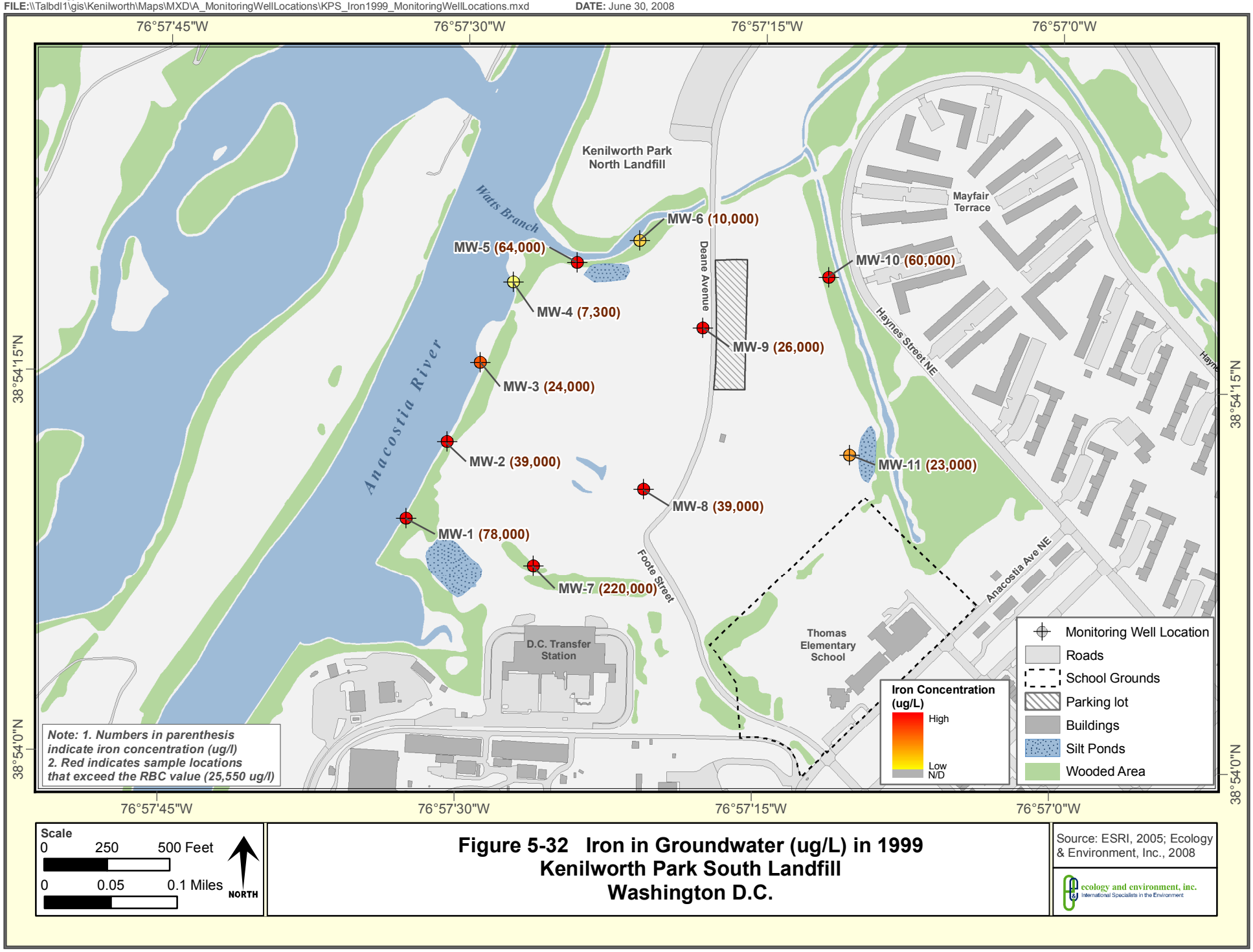

Figure 5-32 Iron in Groundwater (ug/L) in 1999
Kenilworth Park South Landfill
Washington D.C.

Source: ESRI, 2005; Ecology & Environment, Inc., 2008

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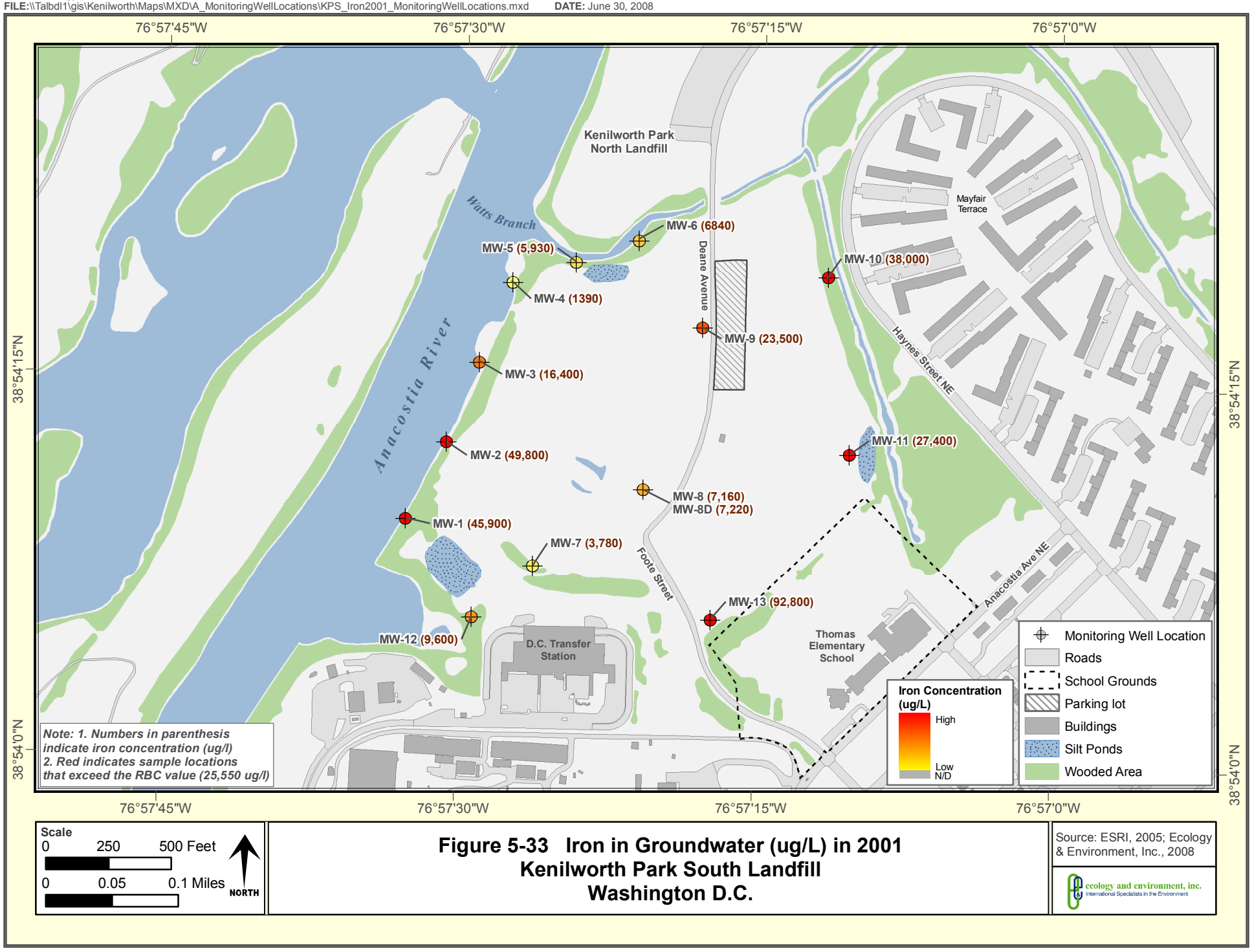

Figure 5-33 Iron in Groundwater (ug/L) in 2001
Kenilworth Park South Landfill
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Source: ESRI, 2005; Ecology & Environment, Inc., 2008

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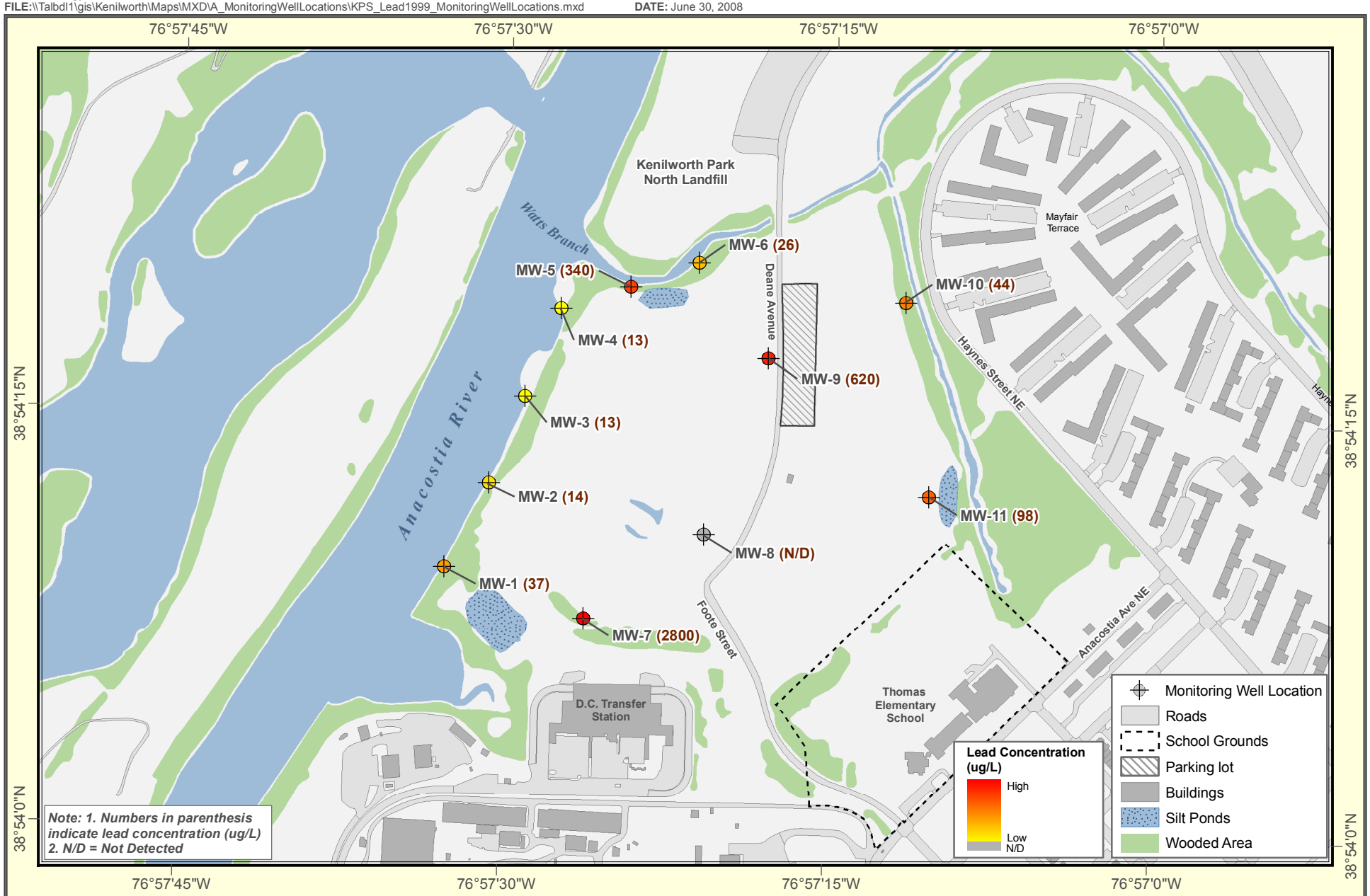

Scale
0 250 500 Feet
0 0.05 0.1 Miles
NORTH

Figure 5-34 Lead in Groundwater (ug/L) in 1999
Kenilworth Park South Landfill
Washington D.C.

Source: ESRI, 2005; Ecology & Environment, Inc., 2008

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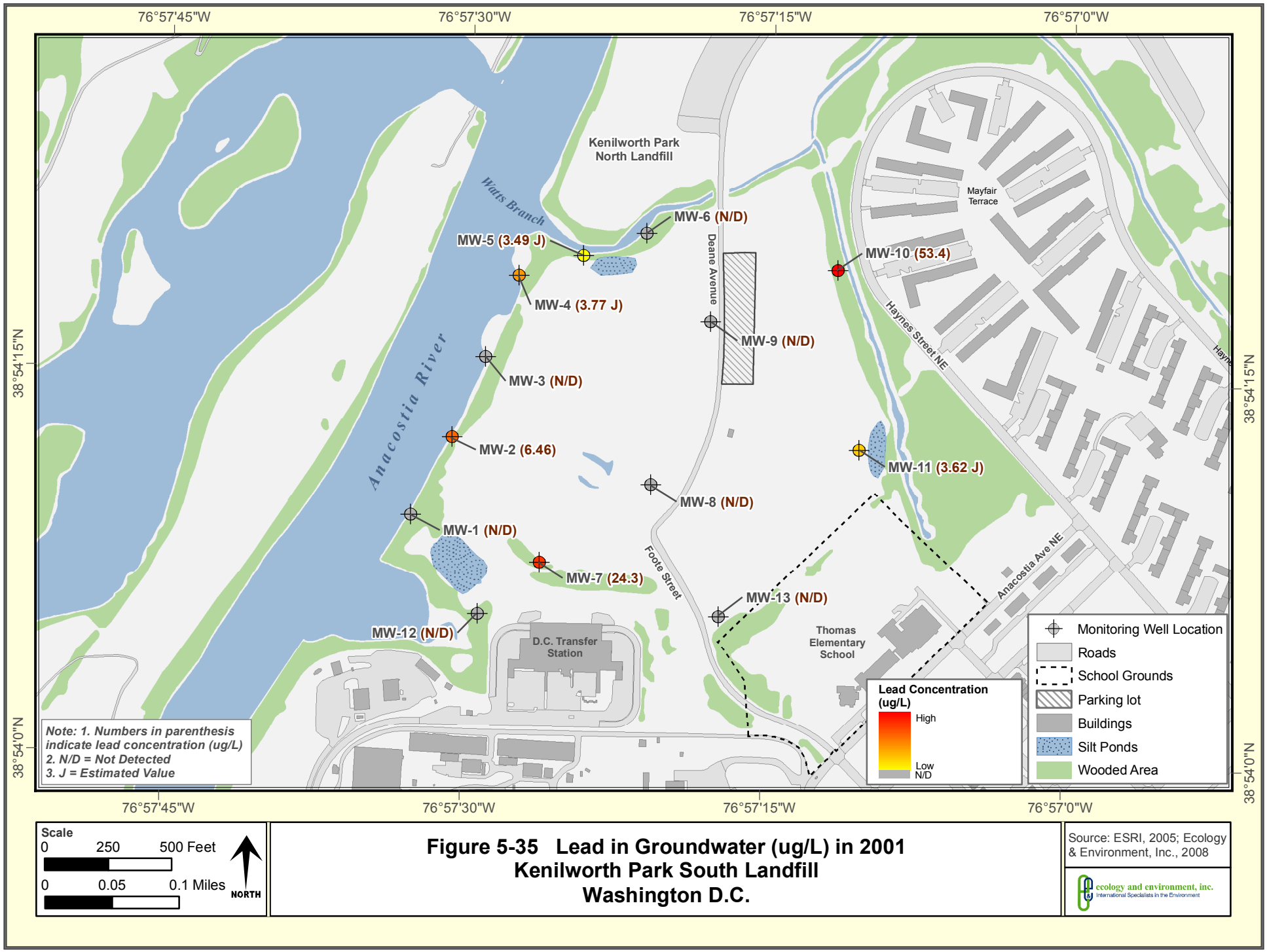

Figure 5-35 Lead in Groundwater (ug/L) in 2001
Kenilworth Park South Landfill
Washington D.C.

Source: ESRI, 2005; Ecology & Environment, Inc., 2008

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5.8.1 VOCs

VOCs have either been non-detect or were at concentrations below the screening values in subsurface soils and surface water. VOCs were not analyzed in surface soils.

Several VOCs—benzene and 1,4-dicholorobenzene—have been detected in groundwater at concentrations above their respective screening values. Since the occurrences of these exceedances are in different locations around the landfill, there are no apparent plumes. As a result, it appears that the VOC contamination found in the groundwater is originating in the area around each individual well and is caused by leaching of landfill material in isolated areas within the Site.

5.8.2 PAHs

PAHs were detected above screening concentrations in all sediment samples. The concentrations found along the Anacostia River varied with no consistent pattern of distribution. The levels were similar in all the samples and differed by less than an order of magnitude. This suggests a natural variability associated with tidal fluxes and fluvial deposition. Since the levels are similar on both sides of the Anacostia River and upstream of the Site, it is unlikely that the Site is contributing a significant level of PAHs to the PAH contamination found in the sediments of the Anacostia River.

There does not appear to be any correlation with benzo(a)pyrene or total PAH levels in sediment, surface soils, and subsurface soils, suggesting that there are different sources of PAHs in each medium. Given the high concentrations of PAHs in the subsurface, any potential leaching from the surface is unlikely to contribute significantly to subsurface contamination. Since PAHs were not detected in groundwater, subsurface PAHs are not leaching to groundwater. PAHs present in surface soils could migrate to sediments through overland flow; however, sediments had similar concentrations of PAHs on both sides of the Anacostia River. Therefore, there appear to be other sources of PAHs in sediments.

5.8.3 Pesticides

Pesticides were not analyzed in all media because there was no reason to suspect their presence. Pesticides were detected in subsurface soils, groundwater, and sediments. The concentrations in both subsurface soils and groundwater are sufficiently low and not distributed in a pattern therefore the presence of a plume is not expected. However, the presence of low levels of different types of pesticides in the subsurface soils and groundwater suggests that the landfill material contains residual levels of pesticides. The pattern of pesticides in sediment samples does not clearly indicate that the Site is the source of the pesticide contamination.

5.8.4 PCBs

Both Aroclor 1254 and 1260 were found in surface and subsurface soil and sediment. In general, concentrations of Aroclors were higher in surface soils than subsurface soils. Aroclor 1254 and 1260 were found in most sediment samples, but Aroclor 1254 was consistently found at higher or the same concentration as

Aroclor 1260. In surface soils, Aroclor 1260 was detected more frequently than Aroclor 1254. Their concentrations varied widely between samples. In subsurface soils, Aroclors 1254 and 1260 were detected at approximately the same frequency.

Aroclor 1254 was found in most sediment samples. Only 3 of the 8 surface soil samples that were analyzed for PCBs had detections of Aroclor 1254 that exceeded the screening value. It was spottily distributed in subsurface soils. The high concentration found at depth in BH-8 (93,000 µg/kg at 21 feet) suggests that there is a likely source at this location.

Aroclor 1260 may have been a component of the materials used to make the cap, but also may be in landfill materials in certain locations. Because it is not present in groundwater, leaching does not appear to be a contaminant migration pathway.

Aroclor 1242 was detected in subsurface soils, sediments, and one groundwater sample (MW-12). This suggests that Aroclor 1242 was in the landfill material and not in the capping material. Aroclor 1242 could have migrated in groundwater from subsurface soils or landfill material. In general, PCBs are only slightly soluble and there is no evidence of a groundwater PCB plume. Therefore, it is likely that the Aroclor 1242 found in sediments resulted from fluvial deposition and originated from a source other than the landfill.

There is no apparent pattern to the distribution of Aroclors in subsurface soils, except that there does not appear to be PCBs present in the center of the western side of the landfill.

5.8.5 Metals

Although many metals were detected, arsenic, iron, and lead were detected in most media in excess of screening criteria. This subsection focuses its discussion of fate and transport on these metals.

Arsenic was detected in all media above screening levels. Although arsenic, where detected, exceeded screening levels, the concentrations found are within the range of naturally variable local background levels. In general, arsenic concentrations in subsurface soils were similar to levels found in surface soils and are within one order of magnitude. The arsenic found both in surface and subsurface soils likely reflects the content of the landfill cap and landfill materials locally. Given the similarity in concentrations between surface and subsurface samples, there is little evidence of migration.

Since arsenic is relatively insoluble, it is not expected that a distribution plume exists for arsenic detections in groundwater. Because not all wells within the landfill contained arsenic, its presence likely reflects leaching of the contents of the landfill in the immediate area of the well. In sediments, arsenic was detected in all samples, but it was only detected above the screening value at SED-3 (PA/SI) and SD-1 (1998 sampling event). Most on-site and off-site sediment

samples contained similar arsenic concentrations. Concentrations in sediments were also very similar to those found in surface soils. Therefore, it appears that runoff is not a source of arsenic contaminant migration from the Site. Infiltration and leaching probably contribute to arsenic found in groundwater at the Site.

Iron concentrations above screening values were detected in all sediment, subsurface soil, and groundwater samples. Only 4 surface soil samples were analyzed for iron. None exceeded the screening level. All unfiltered groundwater samples had iron concentrations in excess of screening criteria. Filtered groundwater samples were not analyzed for iron. The subsurface soils and groundwater pattern of distribution of high levels of iron is similar. Iron concentrations in subsurface soils were higher than in surface soils. Given its solubility, it is likely that iron is leaching out of the landfill materials into the groundwater. This, combined with overland flow from the landfill surface, may explain the presence of elevated levels of iron in sediment samples.

Lead also was detected in sediment, subsurface soil, and groundwater samples above screening values. No surface soil samples exceeded screening values. Lead concentrations in subsurface soil samples contained higher concentrations of lead than in the surface soil samples. Although lead is present in the landfill cap, the landfill materials are the primary source of lead. Only 1 of 59 surface samples contained lead levels exceeding the screening value, while 22 of 62 subsurface soil samples contained levels that exceeded the screening valued. Lead levels differed significantly between the two sampling events; therefore, it is not possible to draw conclusions whether leaching is a significant pathway between subsurface soil and groundwater.

5.9 Summary

The analytical results indicate that both the cap and materials are heterogeneous. In general, the same contaminants exist in all media, but there is no clear relationship between contaminant concentrations in the surface soils, subsurface soils, groundwater, and sediments. Contaminant migration is limited because infiltration is restricted by the cap and the vegetative cover. The vegetative cover also limits runoff. Although contaminant migration could occur, the only contaminant that shows a pattern is iron. Iron is soluble, especially in acids such as those typically found in landfill materials. Organic contaminants such as benzo(a)pyrene, and the Aroclors are likely to be bound to soil particles and only slightly soluble to insoluble. Metals vary in their solubility according to the pH.

Sediment contamination may result from surface runoff in isolated locations where vegetation has been removed. Certain of the soluble contaminants could migrate via groundwater to sediments, but there is limited evidence that this is occurring. Both the tidal nature of the water bodies surrounding the Site and the inputs from the storm drains that discharge into Watts Branch and the unnamed stream/ditch on the east side of the Site are likely to be contributing some of the contamination seen in sediment samples.

Surface soil contamination is distributed throughout the Site. It is likely that the contaminants found in surface soils originated from the cap. The differences in levels of arsenic and lead as seen in their distribution in surface soils indicate that capping materials from different sources were used. Surface soil analytical results from the cap (only available from the portion that was not covered with the 1997-1998 fill material) are within an order of magnitude of the concentrations found at the KPN Landfill.

Subsurface soils did not show a pattern of contamination, nor did they reflect the contamination found in nearby surface soils. Concentrations of metals and organics were often equal, if not greater, in subsurface soils in comparison with surface soils. In some cases, the contamination in the groundwater from a given well does not reflect the concentrations of subsurface soil contaminants found in the well borehole.

In general, contaminants found in groundwater likely reflect contact with the contents of the landfill because the groundwater remains in contact with the fill for long periods.

Contaminant levels in the silt ponds show evidence of contaminant migration at the Site. In general, there is little evidence of migration of wastes and waste components from the Site. The presence and levels of contamination within the landfill and on its surface appear to reflect the content of materials brought to and deposited in or on the landfill.

6 Human Health Risk Assessment

The purpose of the Human Health Risk Assessment (HHRA) is to determine whether or not contamination from the Site could pose potentially significant risks to human receptors and, if so, to aid in the evaluation of proposed remedial alternatives. The topics addressed in the HHRA include contaminant screening, exposure assessment, toxicity assessment, risk characterization, and uncertainty analyses.

Detailed toxicity profiles are included in Appendix I for Contaminants of Potential Concern (COPCs).

The Agency for Toxic Substances and Disease Registry (ATSDR) performed a Health Consultation for the Site in 2006. The findings of the ATSDR are discussed in Section 6.8. The ASTDR report is included as Appendix K.

6.1 Introduction

The objective of this baseline HHRA is to determine whether contaminants from the Site could pose potentially significant risks to human health under existing or reasonably foreseeable future conditions of the Site. This assessment is based on environmental data from the RI conducted in 2001, as well as data from previous investigations in 1998 and 2000. The results of this evaluation can be used to help determine whether or not remedial action is warranted and, if so, to help define remediation goals.

6.1.1 Overview

A detailed discussion of existing conditions at the Site is included in Sections 2.1 and 2.2, and the history of the Site is discussed in Section 2.3. The area surrounding the Site is predominantly urban, recreational, and formerly industrial.

This assessment focuses on the potential human health risks from direct exposure to chemicals in soil and sediment at the Site under existing and expected future conditions of the Site. Currently, the Site is not fully fenced and pedestrian access through the south entrance is unrestricted. Prior to 1997, the Site was a grass-covered mound, with a parking lot and public toilets near the center and exercise stations around the periphery.

Future use of the Site is expected to be similar to past recreational use, although enhancement of park facilities such as playground areas, ball fields, golf facilities, or other improvements could increase recreational use of the Site. Park visitors could potentially be exposed to contaminants in surface soil and sediment at the Site.

One future use scenario identified by NACE staff is the construction of a 9-hole golf course. This use would require soil disturbance to recontour Site topography and to install an irrigation system, among other potential activities. No construction plans for the golf course were available at the time of this assessment. Current contaminant concentrations were used for calculating exposure concentrations. It is the author's understanding that it is standard practice not to disturb the subsurface soil when a landfill is recontoured for use as a golf course. This assessment assumed golfers would not be exposed to subsurface soil; and, therefore, golfers are addressed in this assessment in the Site Visitor scenario. Since it is not known how long or what methods would be used to construct the golf course, the Site Worker scenario assumes a 9 week per year exposure scenario.

Park redevelopment and maintenance activities could involve short-term disturbances of the soil surface, possibly including excavation for installation or repairs of utility lines, which could potentially expose the workers to subsurface soil contamination.

More extensive development of the Site for residential or commercial use is considered extremely unlikely, and the risk assessment does not address these hypothetical scenarios.

Several investigations have been conducted at the Site, including an initial investigation of the new fill in the eastern half of the Site (see Appendix A), a PA/SI of the entire Site (see Appendix B), and this RI. Samples collected during these investigations included surface soil, subsurface soil, and groundwater; sediment samples from drainage ditches, silt ponds, and locations along the banks of Watts Branch and the Anacostia River; and surface water samples from Watts Branch and the Anacostia River (see Figures 2-5, 2-6, 2-7, 3-1, and 3-2 for sample locations). Contaminants that have been detected in Site soil and sediment include various metals, PCBs, and SVOCs, including PAHs. Metals have been detected in sampled groundwater, but the low concentrations indicate that the impact on the adjoining surface water is very slight.

6.1.2 Risk Assessment Organization

The HHRA has been prepared and organized following the general approach outlined in the EPA's *Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual* (RAGS-HHEM), Part A (USEPA 1989) and Part D (USEPA 1998a), and other related EPA guidance. However, the process has been modified in accordance with EPA Region 3 guidance for "Selecting Exposure Routes and Contaminants of Concern by Risk-based Screening" (USEPA 1993a)

in order to eliminate minor contaminants and pathways early on and to focus on those contaminants and media most likely to pose significant human health risks.

The risk assessment is organized into the following major sections:

- This section, 6.1, which introduces the conceptual site model, identifying potential pathways for human exposure to site-related contaminants;
- Section 6.2, which briefly reviews the available characterization data, describes the screening process and criteria used to select COPCs, and identifies the COPCs to be carried through the quantitative assessment;
- Section 6.3, the exposure assessment, which reviews the exposure setting and potentially complete exposure pathways, then describes how exposure point concentrations and exposure estimates were calculated for each exposure scenario;
- Section 6.4, the toxicity assessment, which briefly describes how quantitative toxicity values are used to estimate the magnitude of cancer risks or the likelihood of systemic health effects, then summarizes toxicity values for the COPCs at this Site;
- Section 6.5, the risk characterization, which explains how the toxicity and exposure estimates were combined to calculate potential risks, then presents and discusses the estimated risks for the Site;
- Section 6.6, the uncertainty assessment, which discusses sources of uncertainty in the risk evaluation process and their tendencies to underestimate or overestimate true Site risks; and
- Section 6.7, which summarizes the results and conclusions of the human health risk assessment.

Tables prepared in accordance with *Risk Assessment Guidance for Superfund* (RAGS) Part D (USEPA 1998a) to accompany the risk assessment text can be found as Tables 6-1 through 6-6 and in Appendix G.

6.1.3 Conceptual Site Model

A conceptual site model for the Kenilworth Park South Landfill is presented in Figure 6-1. As a result of past landfilling activities at the Site, surface and subsurface soils are contaminated with elevated levels of metals, PCBs, and PAHs. The detection of similar contaminants in sediments from drainage ditches, silt ponds, or the riverbank adjacent to the Site indicates that contaminants are being transported with surface runoff and, possibly, groundwater or that multiple contaminant sources exist in the general vicinity of the Site. Adjacent surface water bodies (Anacostia River and Watts Branch) have not been noticeably impacted by the Site.

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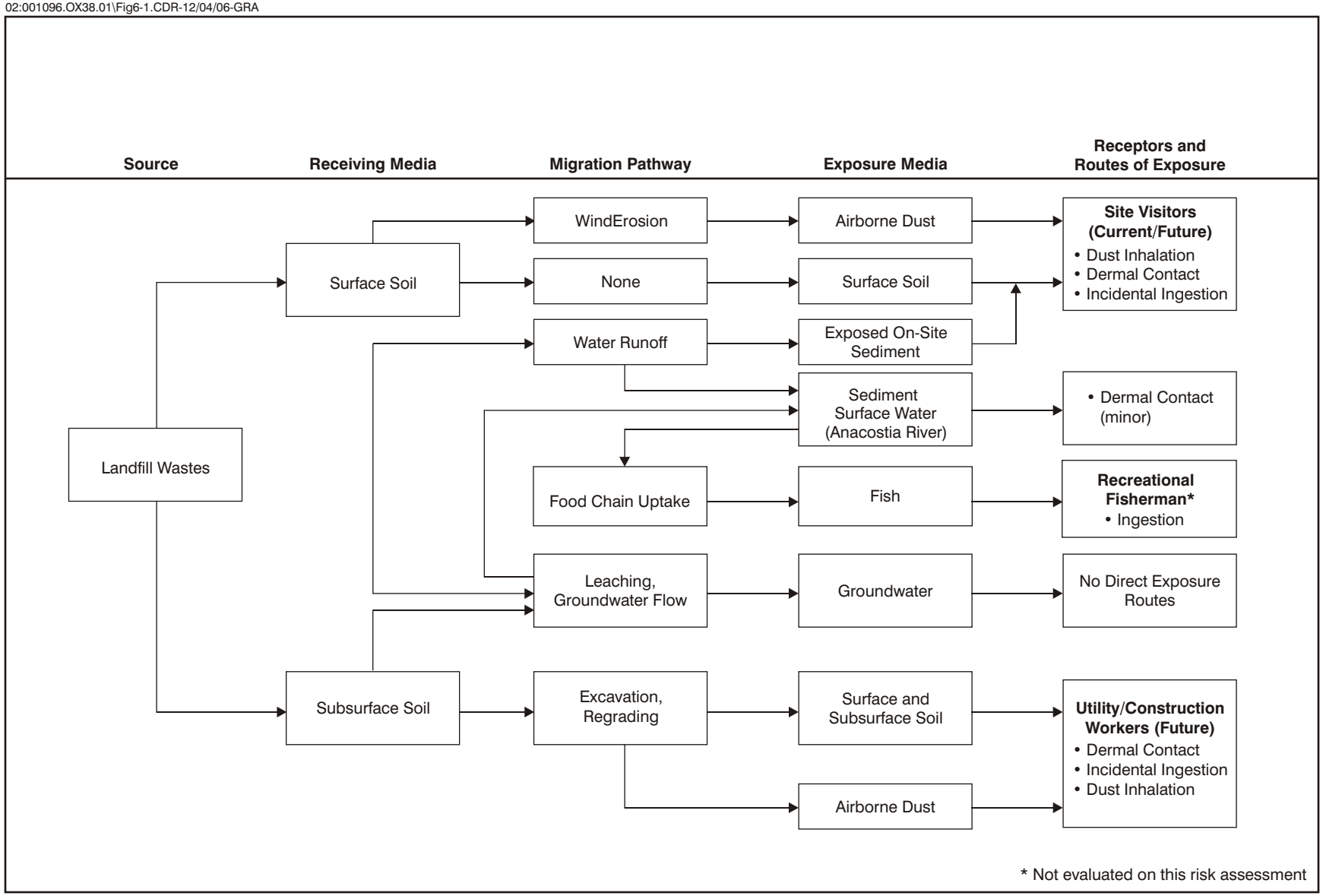

SOURCE: Ecology and Environment, Inc. 2003

Figure 6-1 Human Health Risk Assessment Conceptual Site Model, Kenilworth Park South Landfill

Site Visitors

Currently, since pedestrian access to the Site is unrestricted, local residents and schoolchildren may visit the Site on occasion. Assuming that the Site is redeveloped for recreational use, including use as a golf course, park users would likely visit more frequently and for longer periods. Under existing and expected future conditions, recreational visitors to the Site (Site Visitors) could potentially be exposed to Site-related contaminants by:

- Direct contact (dermal contact and incidental ingestion via hand-to-mouth contact) with surface soil and sediment; and
- Inhalation of airborne dust resulting from wind erosion of the surface in bare soil areas.

Although contact with surface water is possible, regular exposure is unlikely because the river is not used for swimming and is not easily accessible from the Site. According to the ATSDR Health Consultation report (January 23, 2006), the Anacostia River is not a source of water for home or commercial use. The combined storm sewer system in Washington, D.C. has contributed to sewage overflow events in the Anacostia River that resulted in ongoing advisories against swimming in the river. Fish advisories from the District of Columbia Department of Health (2006) are in effect for the Anacostia River because of pesticide and PCB contamination. Surface water use is not expected to change in the foreseeable future. Also, given the low level of Site-related contaminants observed in surface water, these potential exposures would be negligible compared with on-site surface soil/sediment exposure. Therefore, potential exposures via surface water are not quantitatively evaluated in this assessment. Qualitative evaluation of this pathway is further discussed in Section 6.6, "Uncertainty Assessment."

Site Visitors are not likely to be exposed to subsurface soil and groundwater contaminants because these media are inaccessible under normal conditions. At the present time, there are no water supply wells (municipal, commercial, or domestic) that could be affected by the Site. Therefore, there are no direct routes of exposure to contaminants in groundwater and exposure to groundwater can be eliminated as a potential human exposure pathway. This is consistent with the conclusions of ATSDR in the Health Consultation report (January 23, 2006). Exposure to groundwater is not considered to be a complete exposure pathway.

As discussed above, exposure to surface water and groundwater are not considered to be complete exposure pathways for Site Visitors. Site Visitors also are not likely to be exposed to subsurface soil because this medium is inaccessible under normal conditions.

Site Workers

During short-term excavation activities at the Site, e.g., during installation or maintenance of underground utility lines, recontouring for recreational use (e.g.,

golf course), or similar purposes, workers could potentially be exposed to contamination in subsurface soils in addition to surface contamination. Exposures could occur by:

- Direct contact (dermal contact and incidental ingestion via hand-to-mouth contact) with soil; and

- Inhalation of airborne dust raised by construction activities.

Although the duration of exposure for a Site Worker is likely to be relatively brief, perhaps several weeks at the most, worker contact rates for all exposure routes during excavation activities are likely to be considerably greater than those of Site Visitors.

Table 6-1 summarizes the potential receptors and exposure pathways and identifies which will be evaluated in the quantitative risk assessment.

6.2 Identification of Chemicals of Potential Concern

This section describes the process that was used to select the Chemicals of Potential Concern (COPCs) for the human health risk assessment. In summary, after the available analytical data from the most current and previous investigations were reviewed and sorted by exposure medium, the contaminant concentrations detected in on-site soil and sediment samples were screened against risk-based concentrations (RBCs) to eliminate chemicals found only at low levels that would be unlikely to pose any significant health risk.

6.2.1 Data Collection

This risk assessment relies on soil and sediment data collected during this RI, as well as data from two previous site investigations. The earlier investigations include:

- A 1998 investigation that involved collecting 23 surface soil samples from locations in or near the 1997/1998 deposited materials in an area east of Deane Road; 8 subsurface soil samples from locations at the west and north edges of the Site; and 5 sediment samples from drainage ditches and silt ponds at the Site (Appendix B); and

- A PA/SI conducted in 1999-2000 (Appendix B) that included the collection of 29 surface soil samples (27 from 1997/1998 deposited materials and 2 from off-site locations); 49 subsurface soil samples from 22 locations; 26 sediment samples (16 from on-site or locations next to the Site, 4 from far upstream off-site locations, and 6 from other off-site locations upstream and/or on the opposite side of the river); 4 surface water samples (2 from river locations near the Site; 2 upstream), and 12 groundwater samples (11 on-site and one off-site well location).

Tables 6-1 Selection of Exposure Pathways, Kenilworth Park South Landfill Site

Scenario Timeframe	Medium	Exposure Medium	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current/ Future	Surface Soil/ Sediment	Surface Soil/ Sediment	Site Visitor	Child/Adult	Ingestion	On-Site	Quant	Visitors may contact contaminated surface
					Dermal	On-Site	Quant	Visitors may contact contaminated surface
				Child	Ingestion	On-Site	Quant	Visitors may contact contaminated surface
					Dermal	On-Site	Quant	Visitors may contact contaminated surface
		Airborne Dust	Site Visitor	Child/Adult	Inhalation	On-Site	Quant	Visitors may inhale dust from wind erosion
				Child	Inhalation	On-Site	Quant	Visitors may inhale dust from wind erosion
	Surface water	Surface water	Site Visitor	Child/Adult	Ingestion	Offsite	None	Contact is unlikely and chemical
					Dermal	Offsite	None	Contact is unlikely and chemical
	Groundwater	Groundwater	None	N/A	None	Offsite	None	Groundwater is not used. No complete exposure pathway.
Future	Surface &	Surface &	Utility/Construction	Adult	Ingestion	On-Site	Quant	Workers may contact surface/subsurface soils during excavation.
	Subsurface	Subsurface	Worker		Dermal	On-Site	Quant	Workers may contact surface/subsurface
		Airborne Dust	Utility/Construction Worker	Adult	Inhalation	On-Site	Quant	Workers may inhale dust raised by

Details of the earlier sampling activities, analyses performed, and analytical results can be found in the prior investigation reports (Appendices A, B) and are discussed in Section 4 of this report.

Part of the purpose of this RI was to address data gaps, mainly by sampling areas missed by the previous investigations. Among the samples collected were surface and subsurface soil samples from the northeast quadrant of the Site; 5 subsurface soil samples along the wetland area east of the Site; 4 shallow subsurface soil samples from along the river; and groundwater samples from 11 existing wells plus 2 new wells south of the Site. The soil and sediment samples were analyzed for TAL metals, PCBs, and PAHs. In addition, 9 off-site soil samples and 1 off-site sediment sample were collected for PCB analysis. Later sampling requested resulted in the conclusion that samples from the Thomas Elementary School yard were not impacted by the Site. The additional samples allowed for a more extended discussion of the off-site data (see Section 5.2).

All of the data from 1998 to 2001 were reviewed. Because the results of groundwater and surface water sampling indicate that there has been little or no impact on the surface water, those data have been omitted from this evaluation. Because this human health risk assessment is focused on potential direct exposures to soil and sediment contamination on the Site, subsurface soils from depths greater than 15 feet (beyond expected excavation depths) and off-site samples were omitted from soil and sediment data sets that were used to select COPCs and estimate exposures. The samples used in the risk assessment (from all three investigations) are summarized in Tables G-1 through G-3 in Appendix G.

6.2.2 Data Evaluation and Data Qualifiers

Data were reviewed using EPA's functional guidelines for evaluating inorganic and organic analyses (EPA 1994a, b), and the usability of data for risk assessment purposes was determined using established guidelines (EPA 1992a). The qualified analytical results are in Tables 5-1 through 5-8.

Some of the reported analytical results were flagged with a "J" qualifier, which indicates that the value reported is estimated. The "J "qualifier is usually applied when the reported value is less than the specified method detection limit. While the qualifiers marginally reduce confidence in the accuracy of the results of the quantitative estimates of exposures, EPA guidance requires use of J-flagged values because they are the best available estimates of the actual concentrations present.

A "U" flag applied to an analytical result indicates that the chemical was not detected in the sample at the specified quantitation limit. (In the analytical summaries in this RI report and in prior reports for the Site, U-flagged values were replaced with "ND" [non-detect]). For chemicals that were selected as COPCs (based on high concentrations detected in some samples) to be carried through the quantitative risk assessment, U-flagged results were included in the

data sets and used in the calculations of exposure point concentrations (EPCs) by assuming each non-detected concentration to be equal to half the quantitation limit reported, in accordance with relevant guidance (USEPA 1989).

6.2.3 Selection of Chemicals of Potential Concern

Chemicals detected in surface soil, subsurface soil, and sediment were identified as COPCs if concentrations detected at the Site exceeded values used for risk-based screening based on human health risks. The criteria that were considered are discussed below.

Risk-Based Screening Concentrations

Values used for risk-based screening for soil and sediment were adapted from RBCs developed by EPA Region 3 (USEPA 2006). Because the Site is located near a residential neighborhood, the RBCs were calculated using the residential soil exposure assumptions. In addition, recreational screening levels are not available. Residential screening levels are protective of recreational and worker exposure. In accordance with EPA Region 3 guidance on risk-based screening (USEPA 1993a), screening levels based on cancer risk were calculated using a target cancer risk of 10^{-6}, while RBCs based on noncancer effects were calculated using a hazard index (HI) of 0.1. Two screening levels were calculated for chemicals with toxicity values based on both cancer and non-cancer effects, and the lower (more protective) value was used for screening. The same RBCs were used to screen both soil and sediment data. Although sediment samples may differ from soil samples in terms of location and some physical characteristics, these media are similar in terms of potential human exposures. Since the magnitude of actual exposures at the Site is likely to be less than that assumed for soils in a residential setting, these RBCs are considered to be more than adequately protective due to the greater exposure time factored into the residential RBC than would be the case under a recreational scenario. Chemicals present only at concentrations below the screening level pose negligible human health risks; therefore, they can be eliminated from further consideration in the human health risk assessment.

Essential Nutrients

Calcium, magnesium, potassium, and sodium are considered to be essential nutrients. Although extremely high doses of essential nutrients may cause adverse health effects in humans, these substances generally are not considered to be toxic to humans under normal conditions of exposure. According to CERCLA guidance (USEPA 1989), chemicals that are essential nutrients, present at low concentrations (i.e., only slightly elevated above naturally occurring levels), and toxic only at very high doses need not be considered further in the quantitative risk assessment. Calcium, magnesium, potassium, and sodium are specifically listed in CERCLA guidance as examples of such chemicals. Magnesium and potassium are present at the Site at levels that are only slightly elevated compared with background levels. Therefore, these chemicals were excluded as COPCs in the human health risk assessment. Maximum concentrations of calcium at the Site exceed background levels as much as 12.5 times and data are not available

regarding sodium background concentrations. However, no toxicity and screening data are available for these two essential nutrients and therefore they cannot be quantitatively evaluated in the risk assessment. Additionally, these elements are not considered CERCLA hazardous substances. Due to the lack of toxicity and screening data and their status as essential nutrients, calcium and magnesium were excluded as COPCs in the human health risk assessment.

Background and Reference Concentrations

Because most metals are naturally present in the environment, it is important to distinguish typical background concentrations from higher concentrations that may reflect site-related contamination. Although TCL organic chemicals are not considered natural constituents of soils and sediments, there may be anthropogenic sources of TCL chemicals unrelated to the Site. A few soil and sediment samples were collected, although not all samples were tested for all parameters. Background or reference surface soil samples include samples SS-29, SS-30, SS-32, SS-33, and SS-34 (see the PA/SI [E & E 2000]), KWS-SU-BK-1 through BK-9 from the 2006 KPS Landfill RI, KS-SS-01 through KS-SS-17 from the Thomas Elementary School schoolyard (see E & E 2006) and SU- BK-1 and SU- BK-2 from the KPN Landfill RI (E & E 2007). Background sediment samples include samples SMP-A and SMP-B from the PA/SI (E & E 2002) and sample SU-BK-10 from the 2006 RI/FS.

The ranges of concentrations observed in background and reference samples from each medium were generally small compared with on-site samples. Maximum background concentrations are provided for comparison purposes only. No compound was eliminated from quantitative evaluation in the risk assessment based on background concentrations.

COPCs

The occurrence and distribution of chemicals detected in surface soil, sediment, and subsurface soil (at depths no more than 15 feet BGS) are presented in Tables G-1 through G-3 in Appendix G, and COPCs are identified. The COPCs, which are summarized in Table 6-2, include various metals, PCBs, and carcinogenic PAHs. Because the lists are similar across the soil and sediment media, all chemicals identified as COPCs in any of those media were carried through the quantitative assessment for all three media.

6.3 Exposure Assessment

There are three steps in the exposure assessment process: characterization of the exposure setting, identification of potential exposure pathways, and quantification of potential exposures.

Table 6-2 Summary of Chemicals of Potential Concern, Kenilworth Park South Landfill Site

	Surface Soil	Sediment	Subsurface Soil
Aluminum		X	X
Antimony		X	X
Arsenic	X	X	X
Barium			X
Cadmium	X	X	X
Copper	X		X
Iron		X	X
Lead	X	X	X
Manganese		X	X
Mercury	X	X	X
Nickel			X
Selenium			X
Silver	X	X	
Thallium			X
Vanadium	X		X
Zinc			X
Aroclor-1242		X	X
Aroclor-1254	X	X	X
Aroclor-1260	X	X	
Benzo(a)anthracene	X	X	X
Benzo(a)pyrene	X	X	X
Benzo(b)fluoranthene	X	X	X
Benzo(k)fluoranthene	X		X
Chrysene	X		
Dibenzo(a,h)anthracene	X	X	X
Indeno(1,2,3-cd)pyrene	X	X	X

6.3.1 Exposure Setting and Potentially Exposed Populations

Currently, pedestrian access to the Site is not restricted. Visitors to the Site could potentially be exposed to contaminants in surface soils or sediments. Regular park visitors are most likely to include local residents from the Hayes Street neighborhood, which is located just beyond the wetland area northeast of the Site, and students from the elementary school just to the southeast. Improving recreational facilities at the Site could increase Site use beyond current levels. Park improvements might entail short-term soil disturbances and possibly excavation activities in some areas of the Site, temporarily exposing the workers to subsurface contamination.

6.3.2 Complete Exposure Pathways

Exposure pathways that are potentially complete under existing and expected future conditions of the Site are shown in Figure 6-1. Table 6-1 lists the potential exposure pathways and receptors, indicates which were selected for quantitative evaluation, and provides the rationale for selection or exclusion. The following receptors/pathways were selected for quantitative evaluation:

Current/Future Site Visitors

Recreational users are potentially exposed to surface soil/sediment contamination by direct contact routes (incidental ingestion via hand-to-mouth transfer and dermal contact) and by inhalation of airborne dust resulting from wind erosion of soil.

Future Utility/Construction Workers

Workers may have short-duration exposures by direct contact with contaminated surface and subsurface soils and by inhalation of dust raised during excavation activities.

As discussed in Section 6.1.3, there are no water supply wells (municipal, commercial, or domestic) that can be affected by the Site. Therefore, there are no direct routes of exposure to contaminants in groundwater and exposure to groundwater can be eliminated as a potential human exposure pathway. This is consistent with the evaluation conducted by ATSDR in the Health Consultation (ATSDR 2006).

According to the 2006 ATSDR report, neither the Anacostia River nor Watts Branch are a source of water for home or commercial use. The sewer overflow problems in the Anacostia River prevent swimming in the river. Fish advisories from the District of Columbia Department of Health (2006) are in effect for the Anacostia River and signs are posted cautioning people from fishing or swimming. Therefore, potential exposures via surface water are negligible and so are not quantitatively evaluated in this assessment.

Generally, when land use is residential, baseline HHRA guidance recommends evaluation of young children in the 1-to-6-year age group because their soil exposures relative to body weight (BW) are considerably greater than those of

adults. Since the Site is near a residential area, it is conceivable that visitors could include very young children, accompanied by parents or older siblings. For that reason, both child and age-integrated child/adult receptor groups are evaluated as Site Visitors in this risk assessment. The age-integrated child/adult receptor's exposure is divided between 6 years at childhood rates and the remainder (24 years) at adult rates.

6.3.3 Quantification of Exposure

This section explains how the quantitative exposure estimates were obtained. Section 6.3.3.1 describes the exposure media that were evaluated and the calculations of EPCs for the COPCs. Section 6.3.3.2 presents the exposure estimate calculations for each route of exposure and explains the rationale for selecting the input values used in the calculations.

6.3.3.1 Exposure Point Concentrations

For direct contact routes (ingestion and dermal contact), EPCs were estimated directly from measured concentrations in the data sets described below. For non-detect results, a value equal to half the reported quantitation limit was substituted. Following baseline HHRA guidance (USEPA 1992b), the 95% Upper Confidence Limit (UCL) of the arithmetic mean concentration was calculated as a conservative estimate of the average concentration for each COPC. The distribution of each data set (reported concentrations of the COPC in the exposure media) was first tested. The UCL was then calculated using ProUCL software (version 3.0) for the distribution that best fit the data. If the calculated UCL concentration was higher than the maximum detected concentration in the dataset, the maximum detected concentration was used as the EPC (USEPA December 2002). Spreadsheets showing the EPC calculations and listing the samples and input values can be found in Appendix G, Tables G-28 and G-29. Summaries of the EPC calculation results are presented in Appendix G, Tables G-4 and G-5.

Site Visitor

Over the long-term, current and future Site Visitors may be exposed to surface contamination anywhere on the Site; therefore, visitor exposures were estimated using data from all on-site surface soil and sediment samples combined.

For contaminants on dust released to ambient air from soil, EPCs in air were estimated from the soil concentrations by applying Particulate Emission Factors (PEFs). The PEF for wind erosion of soil, which was used to evaluate inhalation exposures of Site Visitors, was calculated using an equation and input assumptions obtained from EPA's *Soil Screening Guidance User's Guide* (USEPA 1996).

Site Worker

Although future excavation activities would likely be limited to small areas of the Site, they could occur on any part of the Site. The available data show that COPCs are present throughout the Site, with no clear pattern pointing to a "worst" area where assessment of excavation exposure should be focused. Consequently,

potential exposures of Site Workers engaged in excavation activities were estimated on a site-wide basis using data from all subsurface samples within 15 feet of the surface combined with surface soil and sediment data.

For contaminants on dust released to ambient air from soil, EPCs in air were also estimated from the soil concentrations by applying Particulate Emission Factors (PEFs). Because physical disturbance of soil during excavation can raise a considerable amount of dust, a different approach was used to calculate a PEF for the Site Worker scenario. The PEF was calculated using an emission rate estimated from measurements at construction sites combined with a box model to account for downwind dilutions. These PEF calculations for the Site Visitor and Site Worker scenarios are presented in Tables G-12 and G-13 respectively, in Appendix G.

6.3.3.2 Exposure Estimation Calculations

The exposure estimates described in this section combine the following:

- Estimates of contaminant concentrations in the exposure media described above;
- Estimates of contact rate plus frequency and duration of exposure that an individual in the receptor population would experience; and
- Estimates of physiological parameters (e.g., BW, life expectancy).

The equations used to estimate the magnitude of potential exposures by each route are provided in Appendix G, Tables G-6 through G-11. The input values for the exposure variables are also presented and sources are referenced in these tables. EPA-recommended standard default exposure factors (USEPA 1991a) were used when appropriate. Where standard defaults were unavailable or inappropriate, exposure factor values were based on EPA recommendations or estimated from data in the *Exposure Factors Handbook* (USEPA 1997a) and the *Risk Assessment Guidelines for Superfund Volume I: Human Health Evaluation Manual* (Part E, Supplemental Guidance for Dermal Risk Assessment), (USEPA 2004), taking into consideration the nature of the expected exposures. The input values were selected to reflect the long-term Reasonable Maximum Exposure (RME) of each receptor group. Accordingly, for contact rate variables, the values selected are high-end estimates of long-term exposures, rather than worst-case estimates that would not likely be sustained.

The exposure factors and specific values selected are discussed further below. For the first exposure route, all of the exposure factors are described in the text. For subsequent routes, only the variables not previously mentioned will be discussed.

Incidental Ingestion of Surface Soil/Sediment by Site Visitors (Tables G-6, G-8a, and G-8b)

The Ingestion Rate (IR-S) is the amount of soil/sediment that an individual might ingest through hand-to-mouth contact. The adult ingestion rate (IR-Sa) of 100 milligrams/day (mg/day) and the child ingestion rate (IR-Sc) of 200 mg/day are EPA-recommended standard default values for residential soil exposure (USEPA 1991a) based on high-end estimates for soil and dust ingestion. In a residential setting, it is reasonable to make the conservative assumption that all soil exposure occurs at home. However, since a Site Visitor would likely spend just part of each day in the Site and the rest of the day at other locations (e.g., at home, school, work) where soil contact could also occur, it is reasonable to assume that part of the total soil ingested by a Site Visitor would be unrelated to the Site. For this assessment, the fraction of total soil exposure that is site-related was assumed to be half. Exposure Frequency (EF) is the number of days per year that exposure is expected to occur. Because the Site is near a residential neighborhood, the EF for Site Visitors was assumed to be 350 days per year, the standard default value recommended by the EPA for residential exposures (USEPA 1991a). Exposure Duration (ED) is the number of years over which exposure could occur. Because the Site Visitors are assumed to be local residents, the total ED for the child is 6 years and for the adult was assumed to be equal to 30 years, EPA's standard default value for residential exposure, which is roughly equal to the 90th percentile residence time for an owner-occupied dwelling (USEPA 1991a). For carcinogens, the 30-year total ED was divided between childhood exposure (ED_c) for 6 years (ages 1 to 6 years) and exposure as an adult (ED_a) for 24 years.

The body weights (BW_a and BW_c) of 70 kilograms (kg) for the adult and 15 kg for the child, which are also standard default values, are based on average BWs for the two age groups. The averaging time (AT) is the total time in days over which the exposure is averaged for the purpose of estimating risks. The AT for carcinogenic effects is equivalent to 70 years, the assumed value, by convention, for a lifetime. For noncarcinogenic effects, the AT is equal to the total ED multiplied by 365 days per year.

Dermal Contact with Soil/Sediment by Site Visitors (Tables G-6, G-8a, and G-8b)

The Dermal Absorption Factor (DABS) is the fraction of the chemical contacted in soil that is estimated to pass through the skin. The DABS values used for the COPCs are based on current EPA recommendations (USEPA 2000b, 1995a). The Soil-to-Skin Adherence Factor (SSAF), is the amount of soil that adheres per unit area of exposed skin surface. In reality, the amount of soil that adheres to skin varies widely depending on soil type, on the intensity of contact, and on the body part (highest for hands, lower for head and arms). The SSAF values used for adults and children, 0.07 milligrams per square centimeter (mg/cm^2) and 0.2 mg/cm^2, respectively are the current recommendations for residents that are based on weighted averages of adherence to different body parts. The Skin Surface area (SA) is the area of skin that might come into contact with soil. SA values of

5,700 square centimeters (cm^2) and 2,800 cm^2 for adults and children, respectively, are also appropriate values for residents.

Inhalation of Airborne Dust by Site Visitors (Tables G-7, G-9a, and G-9b)

Unlike the ingestion and dermal contact route, inhalation exposures last only as long as the Site Visitor is at the Site. It is expected that the time that a recreational Site Visitor spends at the Site would be just a small portion of the day. For this assessment, an Exposure Time (ET) of 2 hours/day was assumed. The adult and child inhalation rates (IN_a and IN_c) of 1.6 cubic meters per hour (m^3/hr) and 1.2 m^3/hr, respectively, are average short-term inhalation rates (IN) reported for a moderate activity level (USEPA 1997a).

Incidental Ingestion of Surface Soil/Sediment by Excavation/ Construction Workers (Table G-10)

For Site Workers involved in excavation activities, an IR-S value of 480 mg/day was assumed based on data for construction workers (Hawley 1989; USEPA 1991a), and all soil ingested on a day of exposure is assumed to be from the Site. The EF of 260 days/year is simply the standard 5-day work week expressed as the frequency over a 1-year (52-week) period. The duration of any excavation project at the Site will likely be considerably less than a year; an ED of 0.17 years (equivalent to 9 weeks) was assumed, based on professional judgment.

Dermal Contact with Soil/Sediment by Excavation/ Construction Workers (Table G-10)

The SSAF value of 0.9 mg/cm^2 is the 95th percentile value reported for utility workers in the latest dermal exposure guidance (USEPA 2000b). The skin SA of 3,300 cm^2 is the recommendation for industrial workers from the same dermal guidance.

Inhalation of Airborne Dust by Excavation/Construction Workers (Table G-11)

The IN for workers, 20 cubic meters per day (m^3/day), is the standard default value for worker exposure. Over an 8-hour work day, that rate is equivalent to 2.5 m^3/hr, the recommended average rate for heavy activities (USEPA 1997a). Construction activities at the Site most likely would include park redevelopment (including regrading/recontouring) and maintenance activities, including excavation for installation or repair of utility lines.

The estimates from the above exposure equations are expressed as chronic daily intakes (CDIs) or subchronic daily intakes (SDIs), which are used to estimate noncarcinogenic risks, or as lifetime average daily intakes (LADIs), which are used to estimate excess lifetime cancer risks. The values calculated are combined with toxicity estimates (presented in Section 6.4.2) to obtain the risk estimates. The exposure estimates appear with the risk estimates in Tables G-18 through G-27 in Appendix G.

6.4 Toxicity Assessment

The purpose of the toxicity assessment is to provide an estimate of the relationship between the extent of exposure to a contaminant and the likelihood and/or severity of adverse effects. Section 6.4.1 describes the practices and procedures generally used to develop the quantitative toxicity values and the process for incorporating the toxicity values into the risk assessment. Section 6.4.2 presents the toxicity values used to estimate risks associated with exposure to COPCs along with their bases and sources.

6.4.1 Development of Toxicity Values

Carcinogenic and noncarcinogenic health effects are both evaluated quantitatively in the risk assessment. Endpoints for these two different types of effects are assessed differently because the mechanism(s) by which chemicals cause cancer is fundamentally different from the process(es) by which noncarcinogenic effects are caused. The principal difference in the evaluation reflects the assumption that noncarcinogenic effects exhibit a threshold dose below which no adverse effects occur, whereas no such threshold has been shown to exist for most carcinogenic effects.

6.4.1.1 Classification of Chemicals as Carcinogens or Noncarcinogens

As used in this risk assessment, the term carcinogen refers to a chemical for which there is sufficient evidence that exposure may result in continuing uncontrolled cell division (cancer) in humans and/or animals. Conversely, the term noncarcinogen refers to any chemical for which the carcinogenic evidence is negative or insufficient.

The likelihood that a chemical is a human carcinogen is specified by a weight-of-evidence classification. Data derived from human and animal studies are reviewed and characterized as sufficient, limited, no data, or evidence of no effect. According to these guidelines, chemicals in the first two groups, A and B (B1 or B2), are considered human carcinogens or probable human carcinogens and should be subjected to non-threshold carcinogenic risk procedures. Group C chemicals, which are considered to be possible human carcinogens, may or may not be subject to these procedures, depending on the quality of the available data. Group D chemicals are not classified as carcinogens due to inadequate evidence in animals, while Group E chemicals show no evidence of carcinogenicity in human or animal studies.

Exposure to some chemicals may result in both carcinogenic and noncarcinogenic effects. In those cases, both types of effects were considered and evaluated in the quantitative assessment.

6.4.1.2 Assessment of Noncarcinogens

The potential for noncarcinogenic adverse health effects (e.g., organ damage, immunological effects, birth defects, skin irritation) is usually assessed by comparing the estimated Site-related exposure to the Reference Dose (RfD). The

RfD is developed by identifying the No-Observed-Adverse-Effect Level (NOAEL) or lowest-observed-adverse-effect level (LOAEL) in the scientific literature and adjusting that value using Uncertainty Factors (UFs), which compensate for the data limitations of the critical study or studies and for the uncertainties associated with differences between the study conditions and the human exposure situation (e.g., different species, different doses, different routes, different lengths of exposure) and variability in the human population, so that the resulting RfD is protective of the human population. RfDs are expressed in units of milligrams per kilogram per day (mg/kg-day).

The RfD is an estimate (with uncertainty spanning perhaps an order of magnitude) of the daily exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime. The RfD is used as a reference point for gauging the potential effects of other exposures. Generally, exposures that are less than the RfD are not likely to be associated with adverse health effects. As the exposure increases beyond the RfD and as the size of the excess increases, the potential for health effects also increases. Noncarcinogenic hazards are usually assessed by calculating a hazard quotient (HQ) for each chemical exposure by each exposure pathway as follows:

$$HQ = ADI/RfD$$

where:

HQ = Hazard quotient,
ADI = Average daily intake (either a CDI or SDI), and
RfD = Reference dose.

HQs associated with the same type of adverse health effect should be summed across pathways and chemicals to obtain an HI. An HI greater than 1.0 indicates that adverse effects are possible, whereas an HI less than 1.0 indicates that adverse effects would not be expected.

6.4.1.3 Assessment of Carcinogens

In contrast to noncarcinogenic effects for which thresholds are thought to exist, thresholds have not been demonstrated for most carcinogenic effects. Consequently, federal regulatory agencies assume that any exposure to a carcinogen entails some finite risk of cancer. However, depending on the potency of a specific carcinogen and the level of exposure, such a risk could be extremely small.

Several mathematical models have been developed to estimate low-dose carcinogenic risks from high-dose cancer bioassays. A linearized multi-stage model is used to estimate toxicity values based on prudent public health policy and uses the 95% UCL of the slope of the dose-response curve to estimate low-dose Slope Factors (SFs) (USEPA 1986). The results of this procedure are unlikely to underestimate the actual SFs (formerly termed “carcinogenic potency

factors") for humans. SFs are expressed as the inverse of the daily dose per unit body weight ([mg/kg-day]$^{-1}$).

Using SFs, excess lifetime cancer risks associated with each chemical exposure by each pathway can be estimated by:

$$\text{Risk} = \text{LADI} \times \text{SF}$$

where:

LADI = Lifetime average daily dose, and
SF = Slope factor.

The separate cancer risks are summed across chemicals and exposure pathways that apply to a given receptor group to obtain the total cancer risk for that receptor.

6.4.1.4 Route-to-Route Extrapolation of Reference Doses and Slope Factors

Because RfDs and SFs for the dermal route have not been developed, oral RfDs and SFs are commonly used to evaluate risks from dermal exposure. When this is done, the oral toxicity value, which is based on the administered dose, must first be adjusted to an absorbed dose basis because dermal exposures are expressed as absorbed doses. The dermal SF is estimated by dividing the oral SF by the fraction of the administered dose that is absorbed through the gastrointestinal (GI) tract. The dermal RfD is estimated by multiplying the oral RfD by the fraction of GI absorption.

Although inhalation route biokinetics differ more from oral route biokinetics than does the dermal route, oral toxicity values may also be used to evaluate the inhalation exposures and vice versa. Extrapolation of toxicity values from one route to another is inappropriate if the critical effect for either route is at the point of contact. For example, the critical effect from copper ingestion is gastrointestinal irritation; therefore, the oral RfD cannot be used to evaluate dermal or inhalation risks.

6.4.2 Toxicity Values for the COPCs at the Kenilworth Park South Landfill

Toxicity values for carcinogenic and noncarcinogenic effects were compiled from the following sources. This approach is consistent with the EPA Office of Solid Waste and Emergency Response (OSWER) Directive (December 5, 2003):

- The Integrated Risk Information System (IRIS) computer database (USEPA 2006b). This is the preferred source of toxicity values because these data are the most recent EPA criteria available and they have been reviewed extensively by the EPA;

- The Health Effects Assessment Summary Tables (HEAST) were consulted if a toxicity value was unavailable on IRIS. The National Center for Environmental Assessment (NCEA) has established these provisional values for use in risk assessments.

- The NCEA Superfund Health Risk Technical Support Center, which provides provisional RfDs and SFs for some chemicals that are not listed in IRIS or the HEAST (USEPA1997b);

Only values that are currently available from the above sources were used in this risk assessment. Pending or withdrawn values were not used.

Tables G-14, G-15, G-16, and G-17 in Appendix G list the toxicity values for COPCs that were used in this risk assessment. Table G-14 lists oral and dermal RfDs and Table G-15 lists inhalation RfDs for noncarcinogenic effects along with the associated target organ(s), UFs, confidence levels, and sources of the RfDs. Table G-16 lists oral and dermal SFs, and Table G-17 lists inhalation SFs along with weight-of-evidence classifications, and sources of the SFs.

Benzo(a)pyrene is the only carcinogenic PAH with a verified SF. However, the Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons (USEPA 1993b), recommends that the other carcinogenic PAHs be assessed in terms of their potencies relative to benzo(a)pyrene using the following relative potency factors (RPFs):

Benzo(a)pyrene	1.0
Benzo(a)anthracene	0.1
Benzo(b)fluoranthene	0.1
Benzo(k)fluoranthene	0.01
Chrysene	0.001
Dibenz(a,h)anthracene	1.0
Indeno(1,2,3-cd)pyrene	0.1

The SFs for carcinogenic PAHs in Table G-16 are the product of these RPFs and the SF of benzo(a)pyrene.

6.4.3 Assessment of Lead

One of the COPCs identified in soil and sediment is lead. Although the toxic effects from lead exposure are well-known, there are no verified or consensus toxicity values available for lead in IRIS, HEAST, or other sources. The absence of authoritative toxicity values reflects the scientific community's inability to agree on a threshold dose for lead's noncarcinogenic effects or to satisfactorily estimate its carcinogenic potency, despite a large body of scientific literature on its toxicological effects (USEPA 2001b).

Instead, the EPA has adopted models to assess blood lead dose-response relationships in adults and children in lead-contaminated areas. Young children

are the segment of the population at greatest risk from lead exposure because compared with adults, their intake of lead from the GI tract is greater (50% for children versus 5% for adults), and their developing organ systems are more sensitive to the toxic effects of lead. Therefore, where land use is characterized as residential, lead Integrated Exposure Uptake Biokinetic (IEUBK) model is used (USEPA 1994c), which predicts blood lead levels in young children resulting from multiple pathways of exposure, to aid in decisions about soil cleanup levels. The most recent interim soil lead guidance from OSWER (USEPA 1994c) recommends a screening level of 400 parts per million (ppm) for lead in soil in residential areas, based on predictions of the current version of the IEUBK model. Lead exposures for Site Visitors at the Site were evaluated by comparing concentrations in soils from the Site to the residential screening value and other criteria.

The adult lead model (USEPA December 5, 2003) is used to evaluate adult lead risks in non-residential scenarios, such as exposure to adult workers. The adult lead model assesses the risks from potential lead exposures of pregnant women or women of child-bearing age in the workplace that is protective of a developing fetus. The target fetal blood lead level used in this assessment is 10 micrograms per deciliter (μg/dL). The adult lead model can be used to calculate preliminary remediation goals (PRGs), or screening levels, for lead in soil or can be used to calculate predicted blood-lead concentrations in adult women workers and fetuses of those workers. This model was used to evaluate the potential risks of exposure to lead in surface soil, subsurface soil, and sediment to utility/construction workers at the Site.

6.5 Risk Characterization

This section combines information developed in the exposure and toxicity assessment sections (Sections 6.3 and 6.4) to obtain quantitative estimates of potential risks to human health posed by the COPCs.

6.5.1 Risk Estimation Procedures

Potential cancer risks are estimated by multiplying the estimated LADI of each carcinogen by its SF. This calculated risk, which is expressed as the probability of an individual developing cancer over a lifetime, is an estimated upper-bound incremental probability. Initially, cancer risks are estimated separately for exposure to each chemical for each exposure pathway and receptor category (e.g., adult, child). Separate cancer risk estimates then are summed across chemicals and exposure pathways applicable to a receptor population to obtain the total excess lifetime cancer risk for that population. Cancer risk estimates are provided in scientific notation; a cancer risk of 1×10^{-6} is equivalent to 1E-6 or 0.000001 or one-in-a-million.

The potential for adverse noncarcinogenic effects is assessed by comparing the estimated CDI or SDI of a substance to the appropriate RfD. This comparison is made by calculating the ratio of the estimated CDI (or SDI) to the RfD to obtain an HQ. HQs that are associated with similar critical effects should be summed to

obtain an HI for that effect, whereas HQs for different critical effects should be kept separate. However, for screening purposes, HQs are commonly summed across chemicals and exposure pathways applicable to a given receptor population to obtain an HI for that population. If an HI greater than the target acceptable exposure level (HI equal to 1.0) is identified, the HI is recalculated by summing only those HQs associated with similar target organs or mechanisms of action.

6.5.2 Magnitude of Estimated Risks

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 Code of Federal Regulations [CFR] 300.430(e)(2)(i)(A)(2)) establishes 1 x 10^{-6} as the point of departure for determining remediation goals. This is the concentration of a carcinogen that would cause one additional cancer per million people exposed. For evaluating non-carcinogenic effects, baseline HHRA guidance defines acceptable exposure levels as those to which the human population, including sensitive subgroups, may be exposed without adverse effects during a lifetime or part of a lifetime, incorporating an adequate margin of safety. This acceptable exposure level is approximated by an HI equal to 1.0. If the HI is less than 1.0, adverse effects usually would not be expected. An unacceptable risk of adverse health effects may exist when the HI is greater than 1.0.

6.5.3 Risk Estimates

Detailed tables in Appendix G present estimates of the potential exposures and associated risks to visitors from contaminants from the Site. Noncancer HIs for soil/sediment exposures are presented in Tables G-18 through G-23, and cancer risks are presented in Tables G-24 through G-27. All of the estimated risks are summarized and the totals of the risks for each receptor are presented in Tables 6-3 through 6-6.

Site Visitor

Based on RME assumptions for Site Visitors, the estimated cancer risk associated with potential exposures to Site soil is 2.6 x 10^{-5} for the composite child/adult, due mainly to soil ingestion.

As for potential non-cancer effects, the total HI associated with Site Visitor exposures to Site soil are 0.22 for the composite child/adult and 1.6 for the child, also due mainly to soil ingestion. Although the total HI of 1.6 for the child is slightly greater than the benchmark of 1.0, when segregated by target organ the HIs are all less than 1.0, as seen in Table 6-4. These results indicate that Site Visitors' exposures to contamination at the Site are not expected to cause adverse non-carcinogenic health effects.

Site Worker

The estimated cancer risk to a Site Worker from short-term exposure to surface and subsurface soil contamination is lower: 4.5 x 10^{-7}.

Table 6-3 Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure for the Adult Site Visitor
Kenilworth Park South Landfill Site

Chemical	Non-Carcinogenic Hazard Quotient				
	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Aluminum	Offspring, nervous system	6.0E-03	--	2.4E-04	6.2E-03
Antimony	Whole body, blood	4.3E-03	--	1.1E-04	4.4E-03
Arsenic	Skin	1.4E-02	--	1.6E-03	1.5E-02
Barium	Cardiovascular system, kidney	5.1E-04	--	2.9E-05	5.4E-04
Cadmium	Kidneys	2.5E-03	--	3.9E-04	2.9E-03
Copper	GI system	3.0E-03	--	--	3.0E-03
Iron	Various organs	5.6E-02	--	2.2E-03	5.8E-02
Lead	--	--	--	--	0.0E+00
Manganese	Central nervous system	2.7E-03	--	2.7E-04	3.0E-03
Mercury, soluble salts	Immune system	3.3E-03	--	1.9E-04	3.5E-03
Nickel, soluble salts	Whole body, organs	1.2E-03	--	1.2E-04	1.3E-03
Selenium	Whole body	1.7E-04	--	6.7E-07	1.7E-04
Silver	Skin	9.4E-04	--	9.4E-05	1.0E-03
Thallium	Liver, blood	7.7E-03	--	3.1E-05	7.8E-03
Vanadium	None reported	4.3E-02	--	6.6E-03	4.9E-02
Zinc	Blood	1.1E-03	--	4.2E-06	1.1E-03
Aroclor 1242	--	--	--	--	0.0E+00
Aroclor 1254	Immune system, various	3.9E-02	--	2.2E-02	6.1E-02
Aroclor 1260	--	--	--	--	0.0E+00
Benz[a]anthracene	--	--	--	--	0.0E+00
Benzo[a]pyrene	--	--	--	--	0.0E+00
Benzo[b]fluoranthene	--	--	--	--	0.0E+00
Benzo[k]fluoranthene	--	--	--	--	0.0E+00
Chrysene	--	--	--	--	0.0E+00
Dibenz[a,h]anthracene	--	--	--	--	0.0E+00
Indeno[1,2,3-cd]pyrene	--	--	--	--	0.0E+00
(Total)					2.2E-01
Aluminum	Nervous system	--	7.9E-04	--	7.9E-04
Antimony	Whole body, blood	--	--	--	0.0E+00
Arsenic	Skin	--	--	--	0.0E+00
Barium	Fetus	--	1.4E-04	--	1.4E-04
Cadmium	Kidneys	--	8.2E-06	--	8.2E-06
Copper	--	--	--	--	0.0E+00
Iron	Various organs	--	--	--	0.0E+00
Lead	--	--	--	--	0.0E+00
Manganese	Nervous system	--	5.0E-03	--	5.0E-03
Mercury, soluble salts	Immune system	--	--	--	0.0E+00
Nickel, soluble salts	Whole body, organs	--	--	--	0.0E+00
Selenium	Whole body	--	--	--	0.0E+00
Silver	Skin	--	--	--	0.0E+00
Thallium	Liver, blood	--	--	--	0.0E+00
Vanadium	None reported	--	--	--	0.0E+00
Zinc	Blood	--	--	--	0.0E+00
Aroclor 1242	--	--	--	--	0.0E+00
Aroclor 1254	Immune system, various	--	--	--	0.0E+00
Aroclor 1260	--	--	--	--	0.0E+00
Benz[a]anthracene	--	--	--	--	0.0E+00
Benzo[a]pyrene	--	--	--	--	0.0E+00
Benzo[b]fluoranthene	--	--	--	--	0.0E+00
Benzo[k]fluoranthene	--	--	--	--	0.0E+00
Chrysene	--		--		
Dibenz[a,h]anthracene	--	--	--	--	0.0E+00
Indeno[1,2,3-cd]pyrene	--	--	--	--	0.0E+00
(Total)					6.0E-03
	Total Hazard Index Across All Exposure Routes				0.22

Notes:

Scenario Timeframe: Current/Future

Receptor Population: Site Visitor

Receptor Age: Adult

Total [Whole body] HI =	0.006
Total [Blood] HI =	0.013
Total [Cardiovascular system] HI =	0.001
Total [Skin] HI =	0.016
Total [Gastrointestinal system] HI =	0.003
Total [Nervous system] HI =	0.02
Total [Liver] HI =	0.008
Total [Kidney] HI =	0.003
Total [Offspring] HI =	0.006
Total [Immune system] HI =	0.06
Total [Unspecified Organs] HI =	0.12

Table 6-4 Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure for the Child Site Visitor
Kenilworth Park South Landfill Site

Chemical	Primary Target Organ	Non-Carcinogenic Hazard Quotient Ingestion	Inhalation	Dermal	Exposure Routes Total
Aluminum	Offspring, nervous system	0.06	--	0.0016	0.0571
Antimony	Whole body, blood	0.04	--	0.000752	0.0410
Arsenic	Skin	0.13	--	0.010704	0.1381
Barium	Cardiovascular system, kidn	0.00	--	0.000192	0.0050
Cadmium	Kidneys	0.02	--	0.002578	0.0256
Copper	GI system	0.03	--	--	0.0276
Iron	Various organs	0.52	--	0.014634	0.5373
Lead	--	--	--	--	0.0000
Manganese	Central nervous system	0.03	--	0.001774	0.0271
Mercury, soluble salts	Immune system	0.03	--	0.001219	0.0317
Nickel, soluble salts	Whole body, organs	0.01	--	0.000781	0.0119
Selenium	Whole body	0.00	--	4.37E-06	0.0016
Silver	Skin	0.01	--	0.000614	0.0094
Thallium	Liver, blood	0.01	--	2.02E-05	0.0072
Vanadium	None reported	0.40	--	0.043028	0.4426
Zinc	Blood	0.01	--	2.77E-05	0.0099
Aroclor 1242	--	--	--	--	0.0000
Aroclor 1254	Immune system, various	0.15	--	0.057637	0.2047
Aroclor 1260	--	--	--	--	0.0000
Benz[a]anthracene	--	--	--	--	0.0000
Benzo[a]pyrene	--	--	--	--	0.0000
Benzo[b]fluoranthene	--	--	--	--	0.0000
Benzo[k]fluoranthene	--	--	--	--	0.0000
Chrysene	--	--	--	--	0.0000
Dibenz[a,h]anthracene	--	--	--	--	0.0000
Indeno[1,2,3-cd]pyrene	--	--	--	--	0.0000
(Total)					1.5778
Aluminum	Nervous system	--	0.0003	--	0.0003
Antimony	Whole body, blood	--	--	--	0.0000
Arsenic	Skin	--	--	--	0.0000
Barium	Fetus	--	0.0005	--	0.0005
Cadmium	Kidneys	--	0.0000	--	0.0000
Copper	--	--	--	--	0.0000
Iron	Various organs	--	--	--	0.0000
Lead	--	--	--	--	0.0000
Manganese	Nervous system	--	0.0018	--	0.0018
Mercury, soluble salts	Immune system	--	--	--	0.0000
Nickel, soluble salts	Whole body, organs	--	--	--	0.0000
Selenium	Whole body	--	--	--	0.0000
Silver	Skin	--	--	--	0.0000
Thallium	Liver, blood	--	--	--	0.0000
Vanadium	None reported	--	--	--	0.0000
Zinc	Blood	--	--	--	0.0000
Aroclor 1242	--	--	--	--	0.0000
Aroclor 1254	Immune system, various	--	--	--	0.0000
Aroclor 1260	--	--	--	--	0.0000
Benz[a]anthracene	--	--	--	--	0.0000
Benzo[a]pyrene	--	--	--	--	0.0000
Benzo[b]fluoranthene	--	--	--	--	0.0000
Benzo[k]fluoranthene	--	--	--	--	0.0000
Chyrsene	--		--		
Dibenz[a,h]anthracene	--	--	--	--	0.0000
Indeno[1,2,3-cd]pyrene	--	--	--	--	0.0000
(Total)					0.0026
	Total Hazard Index Across All Exposure Routes				1.5803

Note:
Scenario Timeframe: Current/Future
Receptor Population: Site Visitor
Receptor Age: Child

Total [Whole body] HI =	0.055
Total [Blood] HI =	0.058
Total [Cardiovascular system] HI =	0.005
Total [Skin] HI =	0.148
Total [Gastrointestinal system] HI =	0.028
Total [Nervous system] HI =	0.09
Total [Liver] HI =	0.007
Total [Kidney] HI =	0.031
Total [Offspring] HI =	0.058
Total [Immune system] HI =	0.24
Total [Unspecified Organs] HI =	0.75

Table 6-5 Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure for the Adult/Child Site Visitor
Kenilworth Park South Landfill Site

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil/ Sediment	Surface Soil/ Sediment	On Site	Aluminum	--	--	--	0.00E+00
			Antimony	--	--	--	0.00E+00
			Arsenic	7.02E-06	--	6.65E-07	7.69E-06
			Barium	--	--	--	0.00E+00
			Cadmium	--	--	--	0.00E+00
			Copper	--	--	--	0.00E+00
			Iron	--	--	--	0.00E+00
			Lead	--	--	--	0.00E+00
			Manganese	--	--	--	0.00E+00
			Mercury, soluble salts	--	--	--	0.00E+00
			Nickel, soluble salts	--	--	--	0.00E+00
			Selenium	--	--	--	0.00E+00
			Silver	--	--	--	0.00E+00
			Thallium	--	--	--	0.00E+00
			Vanadium	--	--	--	0.00E+00
			Zinc	--	--	--	0.00E+00
			Aroclor 1242	3.15E-07	--	1.39E-07	4.54E-07
			Aroclor 1254	1.80E-06	--	7.96E-07	2.60E-06
			Aroclor 1260	1.23E-06	--	5.42E-07	1.77E-06
			Benz[a]anthracene	5.29E-07	--	2.17E-07	7.46E-07
			Benzo[a]pyrene	5.69E-06	--	2.34E-06	8.03E-06
			Benzo[b]fluoranthene	5.61E-07	--	2.30E-07	7.91E-07
			Benzo[k]fluoranthene	5.29E-08	--	2.17E-08	7.46E-08
			Chrysene	5.83E-09	--	2.39E-09	8.22E-09
			Dibenz[a,h]anthracene	2.46E-06	--	1.01E-06	3.47E-06
			Indeno[1,2,3-cd]pyrene	2.98E-07	--	1.22E-07	4.20E-07
			(Total)				2.60E-05
Surface Soil/ Sediment	Airborne Dust	On Site	Aluminum	--	--	--	0.00E+00
			Antimony	--	--	--	0.00E+00
			Arsenic	--	7.49E-09	--	7.49E-09
			Barium	--	--	--	0.00E+00
			Cadmium	--	1.89E-09	--	1.89E-09
			Copper	--	--	--	0.00E+00
			Iron	--	--	--	0.00E+00
			Lead	--	--	--	0.00E+00
			Manganese	--	--	--	0.00E+00
			Mercury, soluble salts	--	--	--	0.00E+00
			Nickel, soluble salts	--	--	--	0.00E+00
			Selenium	--	--	--	0.00E+00
			Silver	--	--	--	0.00E+00
			Thallium	--	--	--	0.00E+00
			Vanadium	--	--	--	0.00E+00
			Zinc	--	--	--	0.00E+00
			Aroclor 1242	--	3.35E-11	--	3.35E-11
			Aroclor 1254	--	1.92E-10	--	1.92E-10
			Aroclor 1260	--	1.31E-10	--	1.31E-10
			Benz[a]anthracene	--	5.64E-11	--	5.64E-11
			Benzo[a]pyrene	--	6.07E-10	--	6.07E-10
			Benzo[b]fluoranthene	--	5.98E-11	--	5.98E-11
			Benzo[k]fluoranthene	--	5.64E-12	--	5.64E-12
			Chyrsene	--	6.21E-13	--	6.21E-13
			Dibenz[a,h]anthracene	--	2.62E-10	--	2.62E-10
			Indeno[1,2,3-cd]pyrene	--	3.17E-11	--	3.17E-11
			(Total)				1.08E-08
			Total Risk Across All Exposure Routes				2.60E-05

Note:
Scenario Timeframe: Current/Future
Receptor Population: Site Visitor
Receptor Age: Adult/Child

Table 6-6 **Summary of Receptor Risks and Hazards for COPCs**
Reasonable Maximum Exposure for the Utility/Construction Worker
Kenilworth Park South Landfill Site

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil/ Sediment/ Subsurface Soil	Surface Soil/ Sediment Subsurface Soil	On Site	Aluminum	--	--	--	0.0E+00
			Antimony	--	--	--	0.0E+00
			Arsenic	1.2E-07	--	2.3E-08	1.4E-07
			Barium	--	--	--	0.0E+00
			Cadmium	--	--	--	0.0E+00
			Copper	--	--	--	0.0E+00
			Iron	--	--	--	0.0E+00
			Lead	--	--	--	0.0E+00
			Manganese	--	--	--	0.0E+00
			Mercury, soluble salts	--	--	--	0.0E+00
			Nickel, soluble salts	--	--	--	0.0E+00
			Selenium	--	--	--	0.0E+00
			Silver	--	--	--	0.0E+00
			Thallium	--	--	--	0.0E+00
			Vanadium	--	--	--	0.0E+00
			Zinc	--	--	--	0.0E+00
			Aroclor 1242	5.7E-09	--	5.0E-09	1.1E-08
			Aroclor 1254	6.5E-09	--	5.6E-09	1.2E-08
			Aroclor 1260	4.6E-09	--	4.0E-09	8.5E-09
			Benz[a]anthracene	7.3E-09	--	5.9E-09	1.3E-08
			Benzo[a]pyrene	7.8E-08	--	6.3E-08	1.4E-07
			Benzo[b]fluoranthene	7.9E-09	--	6.3E-09	1.4E-08
			Benzo[k]fluoranthene	7.0E-10	--	5.6E-10	1.3E-09
			Chrysene	8.4E-11	--	6.7E-11	1.5E-10
			Dibenz[a,h]anthracene	3.5E-08	--	2.8E-08	6.4E-08
			Indeno[1,2,3-cd]pyrene	4.5E-09	--	3.6E-09	8.0E-09
			(Total)				4.2E-07
Surface Soil/ Sediment	Airborne Dust	On Site	Aluminum	--	--	--	0.0E+00
			Antimony	--	--	--	0.0E+00
			Arsenic	--	2.3E-08	--	2.3E-08
			Barium	--	--	--	0.0E+00
			Cadmium	--	6.9E-09	--	6.9E-09
			Copper	--	--	--	0.0E+00
			Iron	--	--	--	0.0E+00
			Lead	--	--	--	0.0E+00
			Manganese	--	--	--	0.0E+00
			Mercury, soluble salts	--	--	--	0.0E+00
			Nickel, soluble salts	--	--	--	0.0E+00
			Selenium	--	--	--	0.0E+00
			Silver	--	--	--	0.0E+00
			Thallium	--	--	--	0.0E+00
			Vanadium	--	--	--	0.0E+00
			Zinc	--	--	--	0.0E+00
			Aroclor 1242	--	1.1E-10	--	1.1E-10
			Aroclor 1254	--	1.3E-10	--	1.3E-10
			Aroclor 1260	--	8.8E-11	--	8.8E-11
			Benz[a]anthracene	--	1.4E-10	--	1.4E-10
			Benzo[a]pyrene	--	1.5E-09	--	1.5E-09
			Benzo[b]fluoranthene	--	1.5E-10	--	1.5E-10
			Benzo[k]fluoranthene	--	1.3E-11	--	1.3E-11
			Chrysene	--	1.6E-12	--	1.6E-12
			Dibenz[a,h]anthracene	--	6.8E-10	--	6.8E-10
			Indeno[1,2,3-cd]pyrene	--	8.6E-11	--	8.6E-11
			(Total)				3.3E-08
						Total Risk Across All Exposure Routes	4.5E-07

Notes:
Scenario Timeframe: Future
Receptor Population: Utility/Construction Worker
Receptor Age: Adult

Table 6-6 **Summary of Receptor Risks and Hazards for COPCs**
Reasonable Maximum Exposure for the Utility/Construction Worker
Kenilworth Park South Landfill Site

Chemical	Primary Target Organ	Non-Carcinogenic Hazard Quotient Ingestion	Inhalation	Dermal	Exposure Routes Total
Aluminum	Offspring, nervous system	4.9E-02	--	3.0E-03	5.2E-02
Antimony	Whole body, blood	1.2E-01	--	4.9E-03	1.2E-01
Arsenic	Skin	1.1E-01	--	2.0E-02	1.3E-01
Barium	Cardiovascular system, kidn	5.9E-03	--	5.3E-04	6.5E-03
Cadmium	Kidneys	2.3E-02	--	5.7E-03	2.9E-02
Copper	GI system	4.3E-02	--	--	4.3E-02
Iron	Various organs	8.0E-01	--	4.9E-02	8.5E-01
Lead	--	--	--	--	0.0E+00
Manganese	Central nervous system	1.9E-02	--	2.9E-03	2.1E-02
Mercury, soluble salts	Immune system	1.3E-02	--	1.1E-03	1.4E-02
Nickel, soluble salts	Whole body, organs	1.2E-02	--	1.9E-03	1.4E-02
Selenium	Whole body	2.3E-03	--	1.4E-05	2.3E-03
Silver	Skin	5.0E-03	--	7.8E-04	5.8E-03
Thallium	Liver, blood	8.0E-03	--	4.9E-05	8.0E-03
Vanadium	None reported	3.1E-01	--	7.5E-02	3.9E-01
Zinc	Blood	1.6E-02	--	9.8E-05	1.6E-02
Aroclor 1242	--	--	--	--	0.0E+00
Aroclor 1254	Immune system, various	2.6E-02	--	2.3E-02	4.9E-02
Aroclor 1260	--	--	--	--	0.0E+00
Benz[a]anthracene	--	--	--	--	0.0E+00
Benzo[a]pyrene	--	--	--	--	0.0E+00
Benzo[b]fluoranthene	--	--	--	--	0.0E+00
Benzo[k]fluoranthene	--	--	--	--	0.0E+00
Chrysene	--	--	--	--	0.0E+00
Dibenz[a,h]anthracene	--	--	--	--	0.0E+00
Indeno[1,2,3-cd]pyrene	--	--	--	--	0.0E+00
(Total)					1.7E+00
Aluminum	Nervous system	--	6.6E-02	--	6.6E-02
Antimony	Whole body, blood	--	--	--	0.0E+00
Arsenic	Skin	--	--	--	0.0E+00
Barium	Fetus	--	1.6E-01	--	1.6E-01
Cadmium	Kidneys	--	7.8E-03	--	7.8E-03
Copper	--	--	--	--	0.0E+00
Iron	Various organs	--	--	--	0.0E+00
Lead	--	--	--	--	0.0E+00
Manganese	Nervous system	--	3.5E-01	--	3.5E-01
Mercury, soluble salts	Immune system	--	--	--	0.0E+00
Nickel, soluble salts	Whole body, organs	--	--	--	0.0E+00
Selenium	Whole body	--	--	--	0.0E+00
Silver	Skin	--	--	--	0.0E+00
Thallium	Liver, blood	--	--	--	0.0E+00
Vanadium	None reported	--	--	--	0.0E+00
Zinc	Blood	--	--	--	0.0E+00
Aroclor 1242	--	--	--	--	0.0E+00
Aroclor 1254	Immune system, various	--	--	--	0.0E+00
Aroclor 1260	--	--	--	--	0.0E+00
Benz[a]anthracene	--	--	--	--	0.0E+00
Benzo[a]pyrene	--	--	--	--	0.0E+00
Benzo[b]fluoranthene	--	--	--	--	0.0E+00
Benzo[k]fluoranthene	--	--	--	--	0.0E+00
Chrysene	--	--	--	--	0.0E+00
Dibenz[a,h]anthracene	--	--	--	--	0.0E+00
Indeno[1,2,3-cd]pyrene	--	--	--	--	0.0E+00
(Total)					5.9E-01
Total Hazard Index Across All Exposure Routes					2.3

Total [Whole body] HI =	0.14
Total [Blood] HI =	0.15
Total [Cardiovascular system] HI =	0.01
Total [Skin] HI =	0.14
Total [Gastrointestinal system] HI =	0.04
Total [Nervous system] HI =	0.49
Total [Liver] HI =	0.01
Total [Kidney] HI =	0.04
Total [Offspring] HI =	0.22
Total [Immune system] HI =	0.06
Total [Unspecified Organs] HI =	0.9

For Site Workers exposed to surface and subsurface soil contamination during excavation activities, the total HI is estimated to be 2.3, approximately 70% due to soil ingestion, 26% due to dust inhalation, and the rest due to dermal absorption from soil. When HIs are segregated by target organ, however, none is greater than 1.0, as seen in Table 6-7, indicating that Site Workers are not expected to be subject to adverse non-cancer health effects from soil exposure at the Site.

Table 6-7 Comparison of Exposure Assumptions for Risk Assessment

Exposure Assumption	Baseline HHRA by E & E	ATSDR
Site Visitor Recreational Exposure		
Exposure Point concentration	Upper 95% confidence level[1]	Upper 95% confidence level
Frequency	350 days per year[2]	Adult 220 days per year Child 114 days per year
Years of exposure	Child 6 Adult 24 Combined 30	Child 16 Adult 40
Lifespan – years	70	70
Body weight	Adult 70 kg Child 15 kg	Adult 70 kg Child 10 kg
Site Worker Exposure[3]		
Exposure Point concentration	Upper 95% confidence level	Maximum observed concentration
Frequency	260 days per year	200 days per year
Years of exposure	0.173 (9 weeks)	5 years
Lifespan – years	70	70
Body weight	Adult 70 kg	Adult 70 kg

Notes:

1 Non-detects assumed at ½ detection limit in the baseline HHRA

2 Assumed that half of daily soil exposure came from the Site.

3 ATSDR worker scenario was construction of a golf course; baseline HHRA worker scenario was a 9-week excavation job.

6.5.4 Risks from Lead Exposure

Lead was identified as a COPC in soil and sediment at the Site. But because lead has no approved RfD or SF, the risks from lead exposure cannot be quantitatively estimated. Thus, the quantitative risk estimates presented above do not include risks associated with lead.

In lieu of a risk-based concentration, NPS will use a health-based screening concentration of 400 mg/kg for lead in residential soil. This residential soil screening level is based on a prediction of blood lead levels in young children exposed to lead in soil and other media, using conservative exposure input assumptions from EPA's IEUBK model. It was derived to limit exposure to soil lead so that the chance of a blood lead level exceeding 10 micrograms per deciliter (μg/dL) in a full-time child resident would be no greater than 5%. Since

the model predictions are based on long-term average exposure, this protective screening concentration should be interpreted as an average soil lead concentration across an exposure area (e.g. a residential yard) rather than an upper limit for individual locations. Generally, when the average soil lead concentration is less than 400 mg/kg, no further action is required. Out of 75 surface soil and sediment sample locations at the Site, 3 at the east edge were found to have lead concentrations greater than 400 mg/kg—SS-21 with 940 mg/kg, SD-1 with 500 mg/kg, and SD-2 with 520 mg/kg. It is unlikely that Site Visitor exposures would focus exclusively on this narrow band of lead-contaminated soil at the east edge of the Site and much more likely that the exposures would include areas to the west where surface soil lead concentrations are considerably lower, giving an average lead exposure concentration under 400 mg/kg. For example, if the high lead concentrations at locations SS-21 and SD-2 are averaged with lower concentrations just to the west (at locations SS-18, SS-19, SS-20), the estimated lead exposure concentration within this small area would be 379 mg/kg. For the Site as a whole, the average concentration of lead in surface soil is 106 mg/kg. Based on this analysis, it is unlikely that lead in surface soil/sediment poses a significant health risk to Site Visitors.

Much higher lead concentrations were found in subsurface soils along the east and west edges of the Site. The maximum lead concentration, 10,500 mg/kg, was reported at location WA-3 at the east edge, at 6.5 to 7.5 feet BGS. As long as this subsurface contamination remains inaccessible, it does not pose any health risk to Site Visitors or workers. However, excavating the soil in these areas could expose workers to higher lead levels. The 400 mg/kg residential soil lead screening level might be considered overly conservative for workers, since it is based on blood lead predictions in children, who absorb lead more readily and are more sensitive to lead's toxic effects than are adults. On the other hand, workers engaged in excavation activities may have higher rates of soil exposure by all routes than other receptor groups.

The adult lead model (USEPA January 2003) is used to evaluate lead exposure in non-residential scenarios such as exposure of adult workers. The adult lead model can also be used to calculate a risk-based PRG for lead in soil, based on potential lead exposures of pregnant women or women of child-bearing age in the workplace that is protective of a developing fetus. The PRG is calculated using a target fetal blood lead level of 10µg/dL. Exposure parameters (i.e., soil ingestion rate and EF) for a utility/construction worker were used in the adult lead model to calculate a PRG for long-term exposure. Note that the EF for a utility/construction worker is 70 days/year. Due to the constraints of the adult lead model, the minimum EF that can be used in the model is 90 days/year (USEPA January 2003). Therefore, an EF of 90 days/year was used to calculate the PRG. Using this soil ingestion rate and EF for a utility/construction worker the adult lead model calculates a PRG of approximately 455 mg/kg. The exposure parameters used in the adult lead model and the calculated PRGs for a utility/construction worker are presented in Table G-28 of Appendix G.

Site-wide, the average lead concentration in surface and subsurface soils to the 15-foot depth is 424 mg/kg, driven up by extremely high subsurface soil lead concentrations in a few locations, as described above. The presence of much higher lead concentrations in subsurface soils in some areas suggests that excavation activities in those areas could potentially lead to elevated blood lead levels in workers and cause adverse health effects.

6.6 Uncertainty Assessment

The risk characterization combines and integrates the results from data collection and evaluation, the exposure assessment, and the toxicity assessment to obtain quantitative estimates of the potential risks posed by contamination at the Site. There are inherent uncertainties associated with the assumptions used in each of these elements, and with the overall risk assessment process, which may lead to underestimation or overestimation of true risks and which affect the degree of confidence that can be placed in the risk characterization results. The following sections briefly describe uncertainties associated with each step of the process and the way they likely affect the overall risk estimates.

6.6.1 Environmental Sampling and Analysis

Samples collected during the investigations were intended to characterize the nature and extent of contamination at the Site. Although many soil sampling locations were selected in a random or systematic fashion using a grid system, some sampling locations were selected in a purposeful or directed manner to focus on particular areas where contamination was known or suspected to be present. Samples collected in this manner provide considerable information about the Site but are not statistically representative of contamination that may be present on the Site as a whole.

Because of the variability and uncertainty inherent in the sampling and measurement processes, the chemical concentrations reported may differ from the actual chemical concentrations. Uncertainty is introduced by the use of estimated results, which may not have the same precision and accuracy as data meeting all standard quality control (QC) criteria. There is also uncertainty associated with the use of non-detect results, assuming concentrations based on half the reported quantitation limits, which may overestimate or underestimate the true concentrations present. These factors decrease the level of confidence in the exposure concentration estimates but are generally minor contributors to the overall risk characterization uncertainties.

6.6.2 Exposure Assessment Uncertainties

Exposure point concentrations for soil and sediment were estimated directly from COPC concentrations measured in those media. To avoid underestimating the average long-term exposure point concentration, the value used for each COPC was either the 95% UCL of the mean or the maximum observed concentration. This approach is likely to overestimate the actual average concentrations of the COPCs in the exposure media.

For inhalation exposures, contaminant concentrations associated with airborne particulate matter were estimated by combining soil concentrations with PEFs that were derived using air models and conservative model input assumptions to avoid underestimating air concentrations. The results may overestimate actual dust inhalation exposures.

All exposure calculations assume that the chemical concentrations in soil and sediment will remain constant over the duration of exposure; up to 30 years for a Site Visitor. Actual concentrations could remain the same or decrease, depending on both site-specific and chemical-specific factors. Organic chemicals can evaporate from surface soil or dissolve in infiltrating precipitation, substantially reducing the concentrations in soil over time. Furthermore, under favorable conditions, many organic chemicals can degrade as the result of chemical or biological transformations. Since inorganics do not degrade and are relatively immobile, the concentrations of inorganic COPCs in soil would be expected to remain relatively stable. On the other hand, migration of contaminated soils away from the source area (due to surface runoff and erosion) would tend to reduce the concentrations of all contaminants in soils at the Site over the long term.

The individual exposure parameter values used in the RME calculations were selected to represent a high-end estimate of exposure for an individual receptor that is conservative but still within the range of possible exposures. The exposure values selected were either recommended standard default values or conservatively protective estimates. As a result, the calculated potential exposures probably overestimate the actual exposure for most individuals in the receptor populations. Estimated risks based on mean or median exposure values to reflect the Central Tendency (CT) exposures of receptor populations could be considerably lower than the estimates based on RME assumptions presented in this assessment. For example, the standard default soil ingestion rates for the CT case of 50 mg/day for adults and 100 mg/day for children are one-half of the RME defaults, and the CT standard default adult resident exposure duration of 9 years is less than one-third as great as the RME default of 30 years (USEPA 1993c).

Additional uncertainty is associated with the procedures used to estimate dermal absorption of chemicals from soil. Dermal absorption of COPCs in soil was estimated using conservative absorption factors. The recommended defaults, which generally fall at the upper ends of the ranges that have been observed in absorption studies, may not reflect actual dermal absorption. The dermal route accounted for only a small part of the total estimated exposures and risks.

6.6.3 Toxicity Assessment Uncertainties

The basic uncertainties associated with the derivation of toxicity values in the toxicity assessment include:

- Uncertainties arising from the design, execution, or relevance of the scientific studies that form the basis of the assessment; and

- Uncertainties involved in extrapolation from the underlying scientific studies to the exposure situation being evaluated, including variable responses to chemical exposure within human and animal populations, between species, and between routes of exposure.

These uncertainties could result in a toxicity estimate based directly on the underlying studies that either underestimates or overestimates the true toxicity of a chemical. The toxicity assessment process compensates for these basic uncertainties through the use of UFs and modifying factors in the derivation of RfDs for assessing non-carcinogenic effects and the method of calculating the 95% UCL value from the linearized multistage model to derive low-dose SFs for assessing cancer risks. This approach ensures that the potential toxicity of a chemical to humans is unlikely to be underestimated; however, actual toxicity may be substantially overestimated as a result.

The use of adjusted oral toxicity values to evaluate dermal risks is an additional source of uncertainty to the dermal risk estimates, because the biokinetics (uptake, distribution, metabolism, and elimination) from dermal exposure may be different from ingestion. The same is true when oral toxicity values are used to evaluate the inhalation route. Because of these differences, effects caused by oral exposure to a chemical may not be caused by dermal exposure or inhalation exposure, or the effects may occur at a higher or lower dose.

In the absence of information to the contrary, carcinogenic risks should be treated as additive and HIs for similar non-carcinogenic effects should also be treated as additive. The assumption of risk additivity ignores possible synergisms or antagonisms among different chemicals, which would increase or decrease their toxic effects and could tend to underestimate or overestimate total risks for the Site.

6.6.4 Risk Characterization Uncertainties

As explained earlier, intentionally conservative assumptions are used throughout the risk assessment process so that the true risk is unlikely to be underestimated. The cumulative effect of this approach could be to substantially overestimate the true risk.

The last UF to consider is the probability of the postulated exposures actually occurring. The surface soil/sediment exposure pathways are potentially complete under the existing conditions, and exposures to subsurface soils during future excavation projects can reasonably be expected. The postulated exposure rates and frequencies of occurrence may overestimate the average exposures but could certainly reflect the RME for the scenarios evaluated.

6.7 Conclusion of the Human Health Risk Assessment

Based on RME assumptions, the total estimated cancer risk to Site Visitors from potential exposures to surface soil contamination is 2.6×10^{-5} or less, and cancer

risk to Site Workers from exposure to surface and subsurface soil contamination is 4.5×10^{-7}. Although the total HIs for non-cancer effects for the child visitor and the Site Worker is above the benchmark of 1.0, when segregated by target organ none of the individual HIs exceed the benchmark, indicating that non-cancer effects from soil exposure are not expected.

The quantitative risk estimates do not include possible health effects from lead because lead has no approved toxicity values. Based on comparison of a screening level of 400 mg/kg for lead in soil to lead levels reported in soils at the Site, it is expected that the moderately elevated lead levels found in surface soil and sediment along the eastern edge of the Site would not pose a risk to human health. However, there are much higher concentrations of lead in subsurface soils along the eastern and western edges of the Site. Should soil excavation activities occur in those areas, exposed workers could potentially experience increased blood lead levels leading to adverse health effects.

6.8 ATSDR Health Consultation

As previously referenced, in October 2002, the District of Columbia Department of Health requested a public health consultation for the Site from the ATSDR. The ATSDR conducted a site visit on June 17 and 18, 2003. Using the contaminant data from the RI sampling event, ATSDR investigators performed an independent evaluation of risk. In 2006, the ATSDR finalized the *Public Health Consultation – Kenilworth Park Landfill – South Side*. A comparison of the two health assessment approaches (ATSDR and the E & E baseline Human Health Risk Assessment) is presented in Table 6-7. Besides differences in exposure parameters, slight differences in receptors and toxicity assessment were also found between the ATSDR assessment and this risk assessment for the Site.

ATSDR identified the compounds of concern as PCBs, PAHs, metals, and methane. ATSDR reached the following conclusions:

- The Site does not pose a public health hazard for recreational use.
- Methane gas is an indeterminate hazard.
- Chemical contamination at the Site does not pose a present or future public health hazard to adjacent communities.
- Uncertainty as to the limits of the landfill area presents an indeterminate public health hazard due to the proximity of the elementary school.

Recommendations made by ATSDR in their public health consultation include the following:

- Restrict access of Thomas Elementary School students to NPS property;

- Provide additional testing along the property boundaries during and after landfill renovations;
- Provide additional testing for PCBs, PAHs, and metals on the 200+ yards of NPS property that the elementary school is using;
- Use preventive methods to eliminate accidental exposure during capping of soil.
- Monitor for methane gas on the landfill during and after landfill renovation.

In August 2005, supplemental sampling was performed at the Thomas Elementary School to address concerns identified in the ATSDR public health consultation. The analytical results from the supplemental sampling effort have been incorporated into this RI Report. The supplemental sampling complemented data collected by E & E from the schoolyard during 2001 investigations and included both the NPS property used by the school and the school property itself. Methane gas monitoring was performed as well as soil sampling and analyses for PAHs, PCBs, metals, and pesticides. Results of the soil sampling were compared with screening criteria. This comparison provided a conservative screening value because exposure at the schoolyard would be less than the exposure assumed for screening purposes.

The level topography and the lack of any mounding suggests that the NPS property used by the school was not part of the landfill. The results of the additional sampling determined that methane was not present in the schoolyard. PAH values at the school were comparable to samples collected at Kenilworth Aquatic Gardens, north of the Site. The PAH benzo(a)pyrene exceeded the screening level, with concentrations similar to those of the off-site locations.

Two supplemental PCB samples exceeded the screening value of 0.320 mg/kg for Aroclor 1260. These samples were farthest from the landfill in an area unlikely to have been impacted by landfill activities. Both sample concentrations were less than 1 mg/kg, the “clean” threshold for PCB spill clean-up in publicly accessible areas (40 CFR Chapter 1, Part 761).

7 Ecological Risk Assessment

A screening-level ecological risk assessment was conducted in spring 2007. Based on the results of the SLERA, the NPS determined that additional analysis was required to refine the discussion of potential impacts on ecological receptors at the Site. This section details the SLERA process and its results. Following the completion of the SLERA, a risk assessment work plan and a Baseline Ecological Risk Assessment Problem Formulation (BERA PF) were developed. The results of the BERA PF are described in Section 7.9.

7.1 SLERA Process

This SLERA is based on the current and previous Site investigations, including analytical results, conclusions about the nature and extent of contamination, and the description of environmental data and migration pathways from the RI, the 2000 PA/SI, and the 1998 investigation.

The purpose of this assessment is to:

- Identify which contaminants in different media represent a potential ecological risk to assessment endpoints (species, group of species, or trophic levels) at the Site; and
- Provide a relative measure of the magnitude of the risk for each contaminant and each selected assessment endpoint.

The SLERA screened contaminants at the Site against Region 3 1995 BTAG screening values to provide a preliminary evaluation of the contaminants of potential ecological concern (COPECs).

7.2 Introduction

This section presents a SLERA for the Site. The goal of a SLERA is to determine if, based on conservative assumptions, risk is negligible or if further evaluation is needed to accurately characterize the potential risks at a Site. The following ecological risk assessment guidance documents were used in preparing this assessment:

- *Ecological Risk Assessment Guidance for Superfund: Process for Developing and Designing Ecological Risk Assessments* (USEPA 1997c);
- *Guidelines for Ecological Risk Assessment* (USEPA 1998b);
- *Revised Region III BTAG Screening Levels* (USEPA 1995c); and
- *Toxicological Benchmarks for Wildlife: 1996 Revision* (Sample et al. 1996).

Ecological risk assessment is an 8-step process. The first 2 steps of the process constitute the activities appropriate for a SLERA. These steps are (1) screening-level problem formulation and (2) screening-level exposure estimate and risk calculation. At the conclusion of these 2 steps, a decision is made regarding the need to complete the remaining steps of the process, which may involve additional field investigation directed at a comprehensive evaluation of ecological risks.

7.3 Problem Formulation

Problem formulation, the first step in the SLERA, identifies the goals, breadth, and focus of the assessment (USEPA 1997c, 1998b). The problem-formulation step identifies valuable habitats, chemicals of potential concern, receptors, and exposure pathways. A site conceptual model is developed that summarizes the relationship between stressors and receptors and serves as a guide for further steps of the risk assessment. The problem-formulation step for the Site is based on a review of existing reports, including a 1998 sampling report and the 2000 PA/SI, as well as data collected for this RI.

7.3.1 Summary of Ecology at Kenilworth Park South Landfill

A detailed discussion of existing conditions at the Site is included in Sections 2.1 and 2.2, and the history of the Site is discussed in Section 2.3. The area surrounding the Site is predominantly urban, recreational, and formerly industrial.

The Site includes an open area with vegetation ranging from trees and shrubs, to shrubs and grasses to grasses to sparse grass. Most areas have some vegetation with the exception of Deane Avenue. The former parking lot area is sparsely vegetated. A zone of trees and shrubs is located along the banks of Watts Branch and the river and varies from 40 to 140 feet wide. Two silt ponds are located to the south and north of the Site, adjacent to the Anacostia River and Watts Branch, respectively. A third silt pond is located about 120 feet north of the Thomas Elementary School fence line (see Figure 4-10). Between Hayes Road and the Site is an unnamed stream that originates from storm drains located in the vicinity of Grant Street and that flows north into Watts Branch. Along the unnamed stream is a grassy, wooded wetland area located within the 100-year floodplain. The remainder of the Site is above the 100-year floodplain. A hedgerow screens the school from the Site and the wooded wetland along the stream screens the Site from a neighborhood located on Hayes Road. Located on the south side of the Site is a tree-lined berm.

The Site is located in a section of the Anacostia River considered to be part of the tidal Potomac River and Estuary System. In this area the average tidal range is close to 3 feet. The Anacostia River is classified as a riverine, permanent tidal open water and has an estimated area of more than 100 acres, with a shoreline frontage of approximately 22,000 feet within 1 mile of the Site. Based on a review of National Wetland Inventory (NWI) maps that cover the entire reaches of the Anacostia and Potomac Rivers, wetlands have been identified for 1 mile upstream (due to tidal flow reversals) of the Site and for 15 miles downstream of the Site. Wetlands are discussed in section 2.3.4 and shown in Figure 2-3. Besides the wetland area located on the east side of the Site, the closest wetlands are those located at the Kenilworth Aquatic Gardens, which have a wetland frontage of 4,500 feet. To the west of the Site, across the Anacostia River, is the Langston Golf Course. The golf course lies on either side of Kingman Lake and has a total wetland frontage of more than 19,000 feet. Located 8.4 miles downstream from the Site, below Kingman Lake, are the closest major wetlands, at Oxon Creek. No other sensitive or critical habitats have been identified downstream of the Site.

The Anacostia River is not used as a source of drinking water but is used for recreational purposes such as boating and fishing, although a fish advisory has been issued (USEPA 2000a). The river has a very muddy bottom and has large quantities of trash in it.

7.3.2 Federally Listed Endangered or Threatened Species

According to the USFWS, although there may be transient individuals, no federally listed or proposed endangered or threatened species are known to exist within the Site boundary (Ratnaswamy 2007 [see Appendix H]). The only previously listed endangered or threatened species known to have occurred within 4 miles of the Site was the Peregrine falcon (*Falco peregrinus*), but it has since been delisted.

7.3.2.1 District of Columbia Species of Greatest Conservation Need

The government of the District of Columbia, Department of the Environment, has identified 2 Species of Greatest Conservation Need (SGCN) at the Kenilworth Park and Landfill (Appendix H). The eastern meadowlark (*Sturnella magna*) and the red-shouldered hawk (*Buteo lineatus*) use the football fields or meadows adjacent to the landfill zone. The American robin and the red-tailed hawk were used in this analysis as surrogates for the eastern meadowlark and red-shouldered hawk, respectively. The American robin is an appropriate surrogate for the eastern meadowlark for three reasons: (1) it forages similarly (walking on the ground); (2) is of a similar size; and (3) eats similar foods (many invertebrates). In reality, the American robin is a conservative surrogate for the meadowlark because the diet assumed for the robin in this assessment results in greater exposure to soil than an eastern meadowlark would normally have. There are no other confirmed or identified SGCN at the Site; however, the Site contains habitat suitable for other SGCN species (see Appendix H).

7.3.3 Summary of Contaminants

Several types of contaminants—SVOCs, PCBs, VOCs, and metals—were detected in the surface soil and sediment at the Site, while only metals were detected in the surface water (see Table 7-1). Specifically, 26 SVOCs, 23 metals, and 2 PCBs were detected in surface soil; 24 SVOCs, 21 metals, 3 VOCs, 10 pesticides, and 3 PCBs were detected in sediment; and 10 metals were detected in surface water. (Note: magnesium, calcium, potassium, and sodium are not presented on Table 7-1). The potential effects of these chemicals on wildlife and aquatic life exposed to contaminated media are numerous and could include effects on growth, reproduction, and survival. Specific physio-chemical characteristics, other than Log K_{ow} values (the octanol-water partitioning coefficient which relates a chemical's tendency to bioaccumulate in organisms) of chemicals detected at the Site and specific toxic effects of these chemicals, were not evaluated under the scope of work for this screening-level assessment.

7.3.4 Exposure Pathways and Conceptual Site Model

The primary sources of contamination at the KPS Landfill are the surface and subsurface soils. Potential migration pathways are through the leaching of chemicals from the soils to groundwater and groundwater discharges to surface water or through the overland runoff of storm water with subsequent discharge into the surface water. Contaminated suspended particulates in surface water could deposit onto sediment and, in turn, contaminants in sediment could dissolve in the surface water. Flow of the river could carry contaminants in the surface water and sediment downstream and contaminate other areas of the river. In addition, the aquatic and terrestrial food chains (i.e., flora and fauna) could also be affected. Hence, terrestrial wildlife could potentially be exposed to chemicals originating from the Site in surface soil, sediment, surface water, and the food chain. Aquatic life could be exposed to chemicals in the surface water, sediment, and food chain.

Wildlife and aquatic life species could potentially be exposed to contaminants through the following exposure routes: ingestion of surface water, incidental ingestion of soil and sediment, and bioaccumulation through the ingestion of contaminated prey or vegetation. Figure 7-1 presents a summary of the above information in a conceptual site model for the Site.

Table 7-1 Maximum Concentrations Detected of Contaminants in Soil, Surface Water, and Sediment, Kenilworth Park South Landfill, Washington D.C.

Chemical	Surface Soil (mg/kg)	Surface Water (mg/L)	Sediment (mg/kg)
1,2,4-Trichlorobenzene			
1,3-Dichlorobenzene			
1,4-Dichlorobenzene			
2,4-Dimethylphenol	0.064		
2-Butanone			0.035
2-Methylnapthalene	17.6		0.64
2-Methylphenol	0.064		
4,4'-DDD			0.041
4,4'-DDE			0.015
4,4'-DDT			0.016
4-Choroaniline	0.26		
4-Methylphenol	0.2		0.64
Acenaphthene	42.6		0.18
Acenaphthylene	6.5		0.15
Acetone			0.092
Aldrin			0.035
alpha-Chlordane			0.058
Aluminum	31,800	0.41	13000
Anthracene	26		0.36
Antimony	39.2		4.4
Arsenic	16		12
Barium	1,020	0.063	480
Benzo(a)anthracene	29		0.92
Benzo(a)pyrene	20		0.93
Benzo(b)fluoranthene	13		1
Benzo(g,h,i)perylene	4.43		0.75
Benzo(k)fluoranthene	21		1.1
Benzoic acid			1.1
Benzyl alcohol			0.049
Beryllium	0.935		1.4
Bis(2-ethylhexyl) phthalate	0.67		3.4
Butylbenzyl phthalate	0.26		0.19
Cadmium	8.73		6.7
Chromium	394		89
Chrysene	25		1.2
Cobalt	15.5		17
Copper	918		110
Cyanide			
Dibenzo(a,h)anthracene	1.47		0.24
Dibenzofuran	9.8		0.13
Dieldrin			0.004
Di-n-butyl-phthalate			
Di-n-octyl-phthalate	0.08		0.16
Endrin			0.014
Fluoranthene	72		2
Fluorene	15		0.18
gamma-Chlordane			0.072
Heptachlor epoxide			0.018

Table 7-1 Maximum Concentrations Detected of Contaminants in Soil, Surface Water, and Sediment, Kenilworth Park South Landfill, Washington D.C.

Chemical	Surface Soil (mg/kg)	Surface Water (mg/L)	Sediment (mg/kg)
Indeno(1,2,3-cd)pyrene	7.6		1.5
Iron	108,000	1.8	32,000
Lead	6,960	0.012	520
Manganese	967	0.27	970
Mercury	7.77		1.8
Methoxychlor			0.055
Napthalene	1.6		0.2
Nickel	232		52
PCB-1016			
PCB-1242			0.25
PCB-1254	3.16		0.571
PCB-1260	2.51		0.409
Phenanthrene	80		1.9
Phenol	0.12		
Pyrene	57		2.8
Selenium	3.75		
Silver	110		7.6
Thallium	9.07		
Toluene			0.0035
Vanadium	662		85
Zinc	2,990	0.025	560

Key:
Blank cell = Not detected above the sample quantitation limit or chemical not analyzed.
mg/kg = Milligrams per kilogram.
mg/L = Milligrams per liter.

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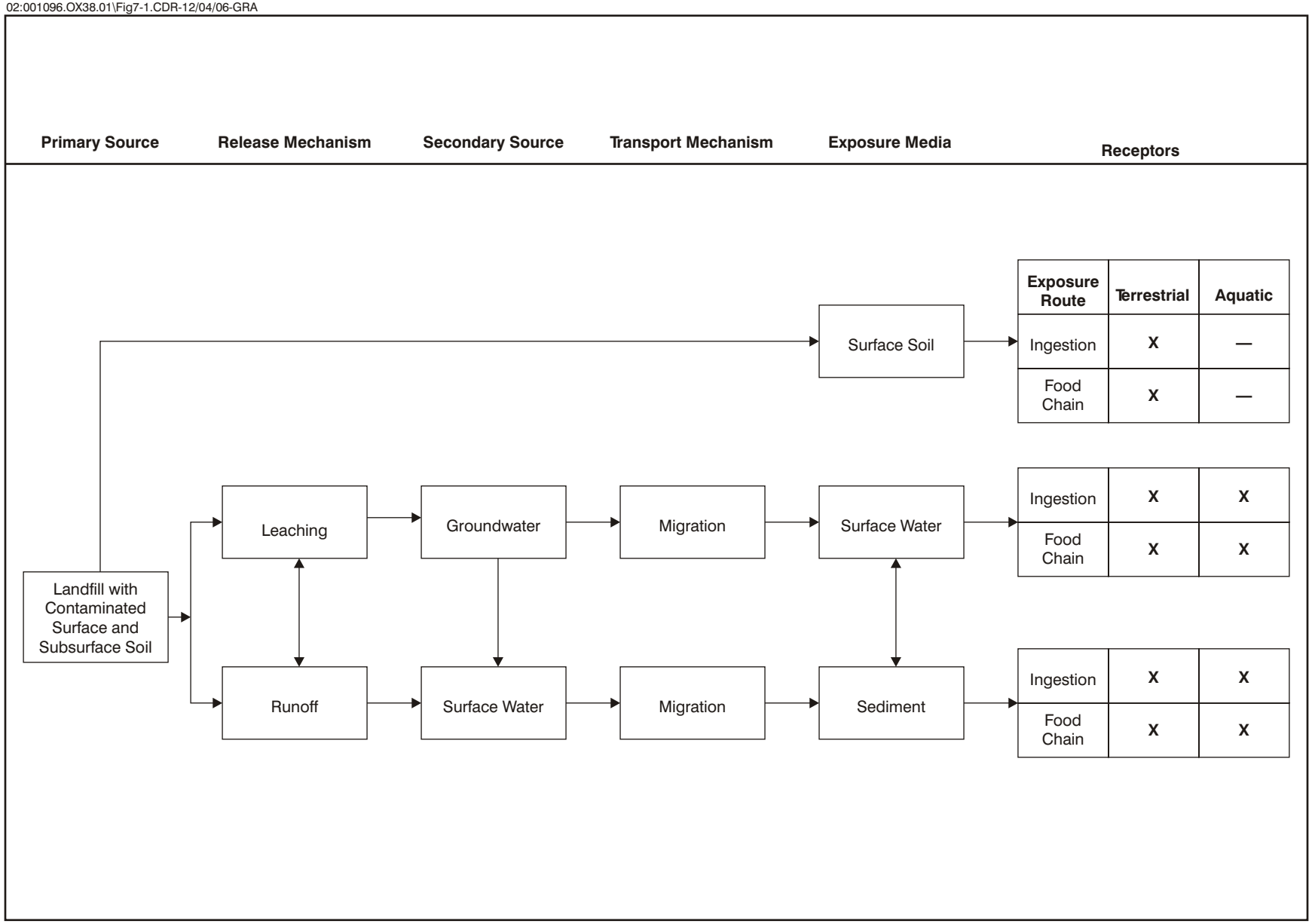

SOURCE: Ecology and Environment, Inc. 2001

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Figure 7-1 Ecological Risk Assessment Conceptual Site Model, Kenilworth Park South Landfill Site

7.4 Assessment Endpoints

Assessment endpoints are environmental values (such as representative species, trophic level, or habitats) to be protected from site contaminants (USEPA 1997c, 1998b). Relevant general assessment endpoints were selected for the Site in accordance with relevant guidance. These assessment endpoints are identified in this section. When applicable, species representative of these endpoints are noted. The representative receptor species are not necessarily species that will be found at the Site. Instead, the receptor species represent a group of species with similar ecological and behavioral characteristics (habitat, feeding habits, and range). The receptor species selected for evaluation in this assessment cover the range of wildlife guilds found at the Site. They have similar characteristics to species found at the Site and, more importantly, have been well-studied in regards to their diet, food ingestion rate, and other factors affecting their exposure to environmental contaminants. As a result, reliable exposure parameters are available for the receptor species. For most species found at the Site, exposure parameters are not available. Using well-studied receptor species minimizes uncertainty in the assessment and is recommended by guidance.

7.4.1 Terrestrial Assessment Endpoints and Measures

The following describes each of the terrestrial assessment endpoints:

Terrestrial Plant Community

Sustainability (survival, growth, reproduction) of terrestrial plants that can serve as shelter and food for invertebrates and wildlife is the assessment endpoint. The concentrations of site-related chemicals in soil, which can be compared with screening levels for soil, are the measures used to evaluate potential effects of contaminants on assessment endpoints.

Soil Invertebrate Community

Sustainability (survival, growth, and reproduction) of soil invertebrates that can condition/process soil and serve as a food source for wildlife is the assessment endpoint. The concentrations of site-related chemicals in surface and subsurface soil, which can be compared with screening levels for soil, are the measures used to evaluate potential effects of contaminants on assessment endpoints.

Bird and Mammal Populations

Sufficient rates of survival, growth, and reproduction of herbivorous, omnivorous, and carnivorous birds and mammals to sustain healthy populations on and near the Site are the assessment endpoints. The concentrations of site-related chemicals in environmental media from the Site, which can be used to model dietary exposure to site-related chemicals for comparison with published toxicity thresholds, are the measures used to evaluate the effects of contaminants on assessment endpoints. The selected receptor species for terrestrial herbivorous mammals is the meadow vole, for terrestrial insectivores is the short-tailed shrew (*Blarina brevicauda*), for omnivorous birds is the American robin (*Turdus migratorius*), for carnivorous birds is the red-tailed hawk (*Buteo jamaicensis*), and for carnivorous mammals is the red fox (*Vulpes vulpes*).

7.4.2 Aquatic Life Assessment Endpoints and Measures

The following describes each of the aquatic life assessment endpoints:

Benthic Invertebrates

Sustainability (survival, growth, and reproduction) of the on-site sediment invertebrate community is the assessment endpoint. The concentrations of site-related chemicals in on-site sediment, which can be compared with screening benchmarks for effects on sediment invertebrates, are the measures used to evaluate the potential effects of contaminants on the assessment endpoints.

Amphibian Population

Sustainability (survival, growth, reproduction) of on-site amphibians is the assessment endpoint. The concentrations of site-related chemicals in groundwater, which can be compared with water quality criteria, are the measures used to evaluate the potential effects of contaminants on the assessment endpoints.

Reptile Population

Sustainability (survival, growth, reproduction) of on-site reptiles is the assessment endpoint. No measures are available to assess effects on the assessment endpoints because methods for assessing risks to reptiles from chemical contamination are poorly developed. Consequently, reptiles are not quantitatively evaluated in this assessment.

Bird Populations

Sufficient rates of survival, growth, and reproduction of aquatic birds to sustain healthy populations on and near a site are the assessment endpoints. The concentrations of site-related chemicals in environmental media from a site, which can be used to model dietary exposure to site-related chemicals for comparison with published toxicity thresholds, are used as the measures to evaluate the potential effects of contaminants on assessment endpoints. The blue heron (*Ardea herodias*), which is omnivorous, was selected as the representative receptor of the aquatic bird population.

7.5 Receptors

The following are brief descriptions of the mammalian and bird receptors that were evaluated in the food chain modeling. Each description provides information about the species' preferred habitat, home ranges, and food preferences.

Meadow Vole

The meadow vole (Microbus pennyslvanicus) is the most widely distributed small grazing herbivore in North America and can be found across the majority of the northern half of the United States, in grassy fields, marshes, and bogs. Their presence can be characterized by the burrows they form through grassy areas. Meadow voles feed primarily on shoots, grasses, and bark, but their diet can also include seeds, roots, fungi, insects, and animal matter. The home range of a meadow vole depends upon a variety of factors, including season, habitat, popula-

tion density, and the age and sex of the animal. All voles apparently do some burrowing, excavating underground nests that are used as nurseries, resting areas, and as shelter from severe weather. No information was found regarding the depth of burrowing by meadow voles but a prairie vole has been found to burrow to a depth of 8 inches (Davis and Kalisz August 1992). Summer ranges tend to be larger than winter ranges; ranges in marshes tend to be larger than ranges in meadows; and male home ranges are larger than those of females and they tend to overlap with home ranges of other meadow voles, both male and female. Reported average home ranges for meadow voles are 0.05 acres in the summer months (based on a Virginia location) and 0.0005 acres in the winter months (based on a Montana location). This species is active by day and night (USEPA 1993d).

Short-Tailed Shrew

The short-tailed shrew (*Blarina brevicauda*) is a small, carnivorous mammal that is common in many habitats, especially those with abundant vegetative cover. This shrew feeds primarily on invertebrates, including insects, earthworms, slugs, and snails. Vertebrates and plants typically make up a minor component of the diet. The species is active year-round. Shrews have a relatively small home range and inhabit round, underground nests and maintain underground runaways, usually in the top 10 centimeters of soil, but sometimes as deep as 50 centimeters. Nonbreeding home ranges during the winter can vary from 0.07 to 0.17 acres at high prey densities to 2.5 to 5.4 acres during low prey densities with a minimum of territory overlap. In the summer, ranges of opposite sex animals overlap, but same sex individuals do not; females with young exclude all others from their area (USEPA 1993d). The short-tailed shrew potentially could reside entirely within the Site.

American Robin

The American robin (*Turdus migratorius*) is a common resident of open areas, woodland edges, and early successional habitats. The makeup of the diet varies seasonally, with invertebrates making up the majority of food items during the spring and early summer. During this time, robins feed on the ground, searching the soil and leaf litter for invertebrates such as earthworms. Robins establish small territories during the breeding season with an average foraging home range of 0.4 to 2 acres. During the nonbreeding roosting period, robins are likely to return to the same foraging sites for many weeks and to join roosts within 0.6 to 1.9 miles of these foraging areas (USEPA 1993d). Therefore, robins potentially could reside entirely within the area provided by the Site. Northern populations typically winter in southern locations.

Red Fox

Red foxes (*Vulpes vulpes*) use a wide variety of habitats but prefer areas with a diverse mix of habitats. The fox is an opportunistic feeder, but small mammals generally make up a large proportion of the diet; other food items include birds, fruit, and carrion. The fox is active year-round. Home-range size varies from approximately 250 acres to more than 2,500 acres, so the Site (approximately 50

acres) would represent only a small proportion of total feeding area for this species (USEPA 1993d).

Red-tailed Hawk

The red-tailed hawk (*Buteo jamaicensis*) is the most common hawk species in the United States. Red-tails are found in a wide variety of habitats, including woodlands, wetlands, pastures, prairies, and deserts. They appear to prefer a mixed landscape containing old fields, wetlands, and pastures for foraging, interspersed with groves of woodlands, bluffs, and streamside trees for perching and nesting. Red-tails hunt primarily from an elevated perch, often near woodland edges. Small mammals, including mice, shrews, voles, rabbits, and squirrels, are important prey, particularly in the winter. Red-tails also eat other prey, depending on availability, including birds, lizards, snakes, and large insects. Red-tails are territorial throughout the year, including winter. The more northerly red-tailed hawk populations are migratory while the more southerly are not. Home range size can vary from a few hundred acres to more than 3,700 acres, depending on the habitat; therefore, the Site (approximately 50 acres) would represent only a small proportion of total feeding area for this species (USEPA 1993d).

Great Blue Heron

The great blue heron (*Ardea herodias*) is a wading bird that occurs in a variety of freshwater and marine habitats and breeds throughout much of North America. Small fish make up 90% to 98% of the diet, with the rest consisting of crustaceans, insects, amphibians, reptiles, birds, and small mammals. The great blue heron fishes by still hunting and stalking in shallow water. The foraging range (i.e., distance from breeding colony to feeding area) for this species can vary from an average of 2 miles to a maximum of 15 miles (USEPA1993d).

7.6 Risk Analysis

For this SLERA, analytical data for surface soil, sediment, and surface water are used. In order to present a conservative evaluation of conditions at the Site so that no chemicals are overlooked as COPECs, maximum analyte concentrations were used in the ecological screening evaluation (see Table 7-1 for maximum media concentrations used in this SLERA). Contaminant screening was conducted in 3 steps as outlined below:

Step 1: EPA Region 3 BTAG Screening

BTAG values are based upon the lowest value from a combination of sources considered protective of the most sensitive organism in a medium. BTAG values used in this evaluation included aquatic flora and fauna, soil flora and fauna, and sediment flora and fauna. The BTAG values are conservative screening benchmarks. For the Site, an initial contaminant screening was performed by using maximum analyte concentrations detected in soil, surface water, and sediment and comparing these concentrations with the BTAG screening levels. Determination of the maximum soil concentration included samples from the subsurface that, under existing conditions at the Site, would not be available to ecological receptors. Contaminant concentrations that fell below the BTAG

screening values were eliminated as COPECs. In addition, essential nutrients with low toxicity were also eliminated; these nutrients included calcium, potassium, magnesium, and sodium. Contaminants for which no BTAG benchmark(s) were available were retained as COPECs.

Step 2: Bioaccumulation Screening

This screening step was included to ensure that contaminants with a potential to bioaccumulate were included in the food chain modeling even if these contaminants were detected at concentrations below the BTAG screening values. Contaminants in surface water, sediment, and surface soil were screened for potentially bioaccumulating compounds. For terrestrial receptors, contaminants in the surface soil and surface water whose log K_{ow}, exceeded 3.5 were included as COPECs even if they were detected at levels below the BTAG benchmarks. Similarly, for aquatic receptors, contaminants in surface water or sediment whose log K_{ow} exceeded 4.3 were retained as COPECs (U.S. Army Edgewood Research, Development, and Engineering Center 1994). Log K_{ow} refers to the logarithm of the octanol-water partitioning coefficient and is proportional to an analyte's tendency to bioaccumulate.

Step 3: Food Chain Modeling

Contaminants remaining after steps 1 and 2 were retained as COPECs and were used to estimate receptor exposure from the ingestion of food, water, and incidental ingestion of soil and sediment. HQs were calculated by dividing total exposure by the appropriate toxicity reference, i.e., the NOAEL and LOAEL. HQs are calculated to provide a relative measure of potential risk. An HQ greater than 1 indicates a potential for adverse effects to occur from exposure. The magnitude of the hazard quotient suggests the relative degree of risk posed to different assessment endpoints. The calculations were performed using exposure parameters included in the spreadsheet models provided by the ERT. The ERT spreadsheets are used to provide a preliminary evaluation of COPECs at a site. In some cases, toxicity benchmarks provided in the ERT spreadsheets were updated with those found in Sample et al. (1996), the most definitive review on the subject. Therefore, the most recent NOAELs and LOAELs were used in the calculations. There were several analytes, however, for which updated values were not provided, and the benchmarks from the original ERT spreadsheets were used. These chemicals included all of the PAHs except for benzo(a)pyrene, butylbenzylphthalate, iron, PCB-1260, and silver. In addition, there were many analytes at the Site where no benchmarks are available at all. The list of NOAELs and LOAELs are presented in Appendix H Tables H-1 and H-2. As a first run of the model, bioaccumulation factors were set to a value of 1; it was assumed that contaminant concentrations in food were the same as the contaminant concentrations in soil or sediment. Analytes with an HQ less than 1 were eliminated from the list of COPECs at the Site.

7.6.1 BTAG Screening

Maximum analyte concentrations in the soil, sediment, and surface water were compared with screening values. Most analytes exceeded their corresponding

screening values and were retained as COPECs. As already stated, essential nutrients, including calcium, magnesium, potassium, and sodium were eliminated as COPECs.

Soil

The soil flora screening showed that the maximum concentrations of all chemicals except for arsenic, cobalt, 2,4-dimethylphenol, and 2-methylphenol exceeded screening values (see Table 7-2). Therefore, except for these 4, all analytes, including those without a BTAG value, were retained as soil flora COPECs in surface soil.

The soil fauna screening showed that the maximum concentrations of all chemicals except for cobalt, 2,4-dimethylphenol, and 2-methylphenol exceeded screening values (see Table 7-3). Therefore, except for these 3, all analytes, including those without a BTAG value, were retained as soil fauna COPECs in surface soil.

Surface Water

The surface water flora screening showed that the maximum concentrations of aluminum, barium, and zinc did not exceed screening values (see Table 7-4). There are no BTAG screening values for iron, lead, and manganese and, therefore, these 3 analytes were retained as surface water flora COPECs.

The surface water fauna screening showed that the maximum concentrations of aluminum, iron, and lead exceeded screening values, but barium, manganese, and zinc did not exceed screening values (see Table 7-5). Therefore, aluminum, iron, and lead were retained as surface water fauna COPECs.

Sediment

The sediment flora screening showed that the maximum concentrations of all analytes with screening values, except for 4-methylphenol, benzyl alcohol, benzo(b)fluoranthene, and dibenzofuran, exceeded screening values (see Table 7-6). All chemicals that exceeded their respective screening value were retained as sediment flora COPECs. In addition, numerous analytes without screening values were retained as COPECs for this media.

The sediment fauna screening showed that the maximum concentrations of all analytes with screening values, except for antimony, 4-methylphenol, benzyl alcohol, di-n-octyl-phthalate, benzo(b)fluoranthene, and dibenzofuran, exceeded BTAG screening values (see Table 7-7). All analytes that exceeded their respective BTAG screening value were retained as sediment fauna COPECs. In addition, there were numerous analytes without screening values that were also retained as COPECs for this media.

Table 7-2 Screening of the Surface Soil for Effects on Flora Using BTAG Screening Values, Kenilworth Park South Landfill, Washington D.C.

Chemical	EPA Region 3 BTAGS for Soil Flora	Maximum Detected Surface Soil Concentration	Maximum Concentration Detected Equals or Exceeds Benchmark?
Metals (µg/kg)			
Aluminum	1,000	31,800,000	**Yes**
Antimony	480	39,200	**Yes**
Arsenic	328,000	16,000	No
Barium	440,000	1,020,000	**Yes**
Beryllium	20	935	**Yes**
Cadmium	2,500	8,730	**Yes**
Chromium (as Cr III)	20	394,000	**Yes**
Cobalt	100,000	15,500	No
Copper	15,000	918,000	**Yes**
Iron	3,260,000	108,000,000	**Yes**
Lead	2,000	6,960,000	**Yes**
Manganese	330,000	967,000	**Yes**
Mercury	58	7,770	**Yes**
Nickel	2,000	232,000	**Yes**
Selenium	1,800	3,750	**Yes**
Silver	0.0098	110,000	**Yes**
Thallium	1.0	9,070	**Yes**
Vanadium	500	662,000	**Yes**
Zinc	10,000	2,990,000	**Yes**
PCBs (µg/kg)			
PCB-1254	100	3,160	**Yes**
PCB-1260	100	2,510	**Yes**
BNAs (not PAHs) (µg/kg)			
2,4-Dimethylphenol	100	64	No
2-Methylphenol	100	64	No
4- Methylphenol	100	200	**Yes**
4-Chloroaniline	-	260	*
Bis(2-ethylhexyl)phthalate	-	670	*
Butylbenzylphthalate	-	260	*
Dibenzofuran	-	9,800	*
Di-n-octylphthalate	-	80	*
Phenol	100	120	**Yes**
PAHs (µg/kg)			
2-Methylnaphthalene	-	17,600	*
Acenaphthene	100	42,600	**Yes**
Acenaphthylene	100	6,500	**Yes**
Anthracene	100	26,000	**Yes**
Benz(a)anthracene	100	29,000	**Yes**
Benzo(a)pyrene	-	20,000	*
Benzo(b)fluoranthene	100	13,000	**Yes**
Benzo(g,h,i)perylene	100	4,430	**Yes**
Benzo(k)fluoranthene	100	21,000	**Yes**
Chrysene	100	25,000	**Yes**
Dibenzo(a,h)anthracene	100	1,470	**Yes**
Fluoranthene	100	72,000	**Yes**
Fluorene	100	15,000	**Yes**

Table 7-2 Screening of the Surface Soil for Effects on Flora Using BTAG Screening Values, Kenilworth Park South Landfill, Washington D.C.

Chemical	EPA Region 3 BTAGS for Soil Flora	Maximum Detected Surface Soil Concentration	Maximum Concentration Detected Equals or Exceeds Benchmark?
Indeno(1,2,3-cd)pyrene	100	7,600	**Yes**
Naphthalene	100	1,600	**Yes**
Phenanthrene	100	80,000	**Yes**
Pyrene	100	57,000	**Yes**

Key:
BTAG = Biological Technical Assistance Group, Revised, EPA Region III, 1995.
Blank cell or (-) = BTAG value not available.
* - Retained as COPC because no screening value was available
µg/kg = Micrograms per kilogram.

Table 7-3 Screening of the Surface Soil for Effects on Fauna Using BTAG Screening Values, Kenilworth Park South Landfill, Washington D.C.

Chemical	EPA Region 3 BTAGS for Soil Fauna	Maximum Detected Surface Soil Concentration	Maximum Concentration Detected Equals or Exceeds Benchmark?
Metals (µg/kg)			
Aluminum	-	31,800,000	*
Antimony	-	39,200	*
Arsenic	-	16,000	*
Barium	440,000	1,020,000	**Yes**
Beryllium	-	935	*
Cadmium	-	8,730	*
Chromium (as Cr III)	-	394,000	*
Cobalt	200,000	15,500	No
Copper	-	918,000	*
Iron	12,000	108,000,000	**Yes**
Lead	10,000	6,960,000	**Yes**
Manganese	330,000	967,000	**Yes**
Mercury	58	7,770	**Yes**
Nickel	-	232,000	*
Selenium	1,800	3,750	**Yes**
Silver	-	110,000	*
Thallium	-	9,070	*
Vanadium	58,000	662,000	**Yes**
Zinc	-	2,990,000	*
PCBs (µg/kg)			
PCB-1254	-	3,160	*
PCB-1260	-	2,510	*
BNAs (not PAHs) (µg/kg)			
2,4-Dimethylphenol	100	64	No
2-Methylphenol	100	64	No
4- Methylphenol	100	200	**Yes**
4-Chloroaniline	-	260	*
Bis(2-ethylhexyl)phthalate	-	670	*
Butylbenzylphthalate	-	260	*
Dibenzofuran	-	9,800	*
Di-n-octylphthalate	-	80	*
Phenol	100	120	**Yes**
PAHs (µg/kg)			
2-Methylnaphthalene	-	17,600	*
Acenaphthene	100	42,600	**Yes**
Acenaphthylene	100	6,500	**Yes**
Anthracene	100	26,000	**Yes**
Benz(a)anthracene	100	29,000	**Yes**
Benzo(a)pyrene	100	20,000	**Yes**
Benzo(b)fluoranthene	100	13,000	**Yes**
Benzo(g,h,i)perylene	100	4,430	**Yes**
Benzo(k)fluoranthene	100	21,000	**Yes**
Chrysene	100	25,000	**Yes**
Dibenzo(a,h)anthracene	100	1,470	**Yes**
Fluoranthene	100	72,000	**Yes**
Fluorene	100	15,000	**Yes**

Table 7-3 Screening of the Surface Soil for Effects on Fauna Using BTAG Screening Values, Kenilworth Park South Landfill, Washington D.C.

Chemical	EPA Region 3 BTAGS for Soil Fauna	Maximum Detected Surface Soil Concentration	Maximum Concentration Detected Equals or Exceeds Benchmark?
Indeno(1,2,3-cd)pyrene	100	7,600	**Yes**
Naphthalene	100	1,600	**Yes**
Phenanthrene	100	80,000	**Yes**
Pyrene	100	57,000	**Yes**

Key:

BTAG = Biological Technical Assistance Group, Revised, EPA Region III, 1995.

Blank cell or (-) = BTAG value not available.

* - Retained as COPC because no screening value was available

µg/kg = Micrograms per kilogram.

Table 7-4 Screening of the Anacostia River Surface Water for Effects on Aquatic Flora Using BTAG Screening Values, Kenilworth Park South Landfill, Washington D.C.

Chemical	EPA Region 3 BTAGS for Surface Water Flora	River Inflow Samples		Maximum Concentration Detected Equals or Exceeds Benchmark?
		SW-2	SW-3	
Metals (µg/L)				
Aluminum	460	290	410	No
Barium	10,000	62	63	No
Iron	-	1,200	1,800	*
Lead	-	nd	12	*
Manganese	-	270	240	*
Zinc	30	nd	25	No

Key:

BTAG = Biological Technical Assistance Group, Revised, EPA Region III, 1995.

Blank cell or (-) = BTAG value not available.

* - Retained as COPC because no screening value was available

µg/L = Micrograms per liter.

nd = Not detected above the sample quantitation limit.

Table 7-5 Screening of the Anacostia River Surface Water for Effects on Aquatic Fauna Using BTAG Screening Values, Kenilworth Park South Landfill, Washington D.C.

Chemical	EPA Region 3 BTAGS for Surface Water Fauna	River Inflow		Maximum Concentration Detected Equals or Exceeds Benchmark?
		SW-2	SW-3	
Metals (µg/L)				
Aluminum	25	290	410	**Yes**
Barium	10,000	62	63	No
Iron	320	1,200	1,800	**Yes**
Lead	3.2	nd	12	**Yes**
Manganese	14,500	270	240	No
Zinc	110	nd	25	No

Key:

BTAG = Biological Technical Assistance Group, Revised, EPA Region III, 1995.

µg/L = Micrograms per liter.

nd = Not detected above the sample quantitation limit.

Table 7-6 Screening of the Sediment for Effects on Flora Using BTAG Screening Values, Kenilworth Park South Landfill, Washington D.C.

Chemical	EPA Region 3 BTAGS for Sediment Flora	Maximum Detected Sediment Concentration	Maximum Concentration Equals or Exceeds Benchmark?
Metals (µg/kg)			
Aluminum	-	13,000,000	*
Antimony	-	4,400	*
Arsenic	8,200	12,000	**Yes**
Barium	-	480,000	*
Beryllium	-	1,400	*
Cadmium	5.1	6,700	**Yes**
Chromium (as Cr III)	<81,000	89,000	**Yes**
Cobalt	-	17,000	*
Copper	-	110,000	*
Iron	-	32,000,000	*
Lead	-	520,000	*
Manganese	-	970,000	*
Mercury	150	1,800	**Yes**
Nickel	20,900	52,000	**Yes**
Silver	-	7,600	*
Vanadium	-	85,000	*
Zinc	-	560,000	*
Pesticides/PCBs (µg/kg)			
4, 4'-DDD	-	41	*
4, 4'-DDE	2.2	15	**Yes**
4, 4'-DDT	1.58	16	**Yes**
Aldrin	-	35	*
alpha-Chlordane	-	58	*
Dieldrin	-	4	*
Endrin	-	14	*
gamma-Chlordane	-	72	*
Heptachlor epoxide	-	18	*
Methoxychlor	-	55	*
PCBs (µg/kg)			
PCB-1242	22.7	250	**Yes**
PCB-1254	22.7	250	**Yes**
PCB-1260	22.7	250	**Yes**
BNAs (not PAHs) (µg/kg)			
4-Methylphenol	670	640	No
Benzoic Acid	650	1,100	**Yes**
Benzyl Alcohol	57	49	No
Bis(2-ethylhexyl)phthalate	-	3,400	*
Butyl benzyl phthalate	-	190	*
Dibenzofuran	540	130	No
Di-n-octyl phthalate	-	160	*
PAHs (µg/kg)			
2-Methylnaphthalene	70	640	**Yes**
Acenaphthene	16	180	**Yes**
Acenaphthylene	44	150	**Yes**
Anthracene	-	360	*
Benzo(a)anthracene	261	920	**Yes**

Table 7-6 Screening of the Sediment for Effects on Flora Using BTAG Screening Values, Kenilworth Park South Landfill, Washington D.C.

Chemical	EPA Region 3 BTAGS for Sediment Flora	Maximum Detected Sediment Concentration	Maximum Concentration Equals or Exceeds Benchmark?
Benzo(a)pyrene	430	930	**Yes**
Benzo(b)fluoranthene	3,200	1,000	No
Benzo(g,h,i)perylene	670	750	**Yes**
Benzo(k)fluoranthene	-	1,100	*
Chrysene	384	1,200	**Yes**
Dibenzo(a,h)anthracene	63.4	240	**Yes**
Fluoranthene	665	2,000	**Yes**
Fluorene	19	180	**Yes**
Indeno(1,2,3-cd)pyrene	600	1,500	**Yes**
Naphthalene	160	200	**Yes**
Phenanthrene	240	1,900	**Yes**
Pyrene	665	2,800	**Yes**
VOCs (µg/kg)			
Acetone	-	92	*
2-Butanone	-	35	*
Toluene	-	35	*

Key:
Blank cell or (-) = BTAG value not available.
BTAG = Biological Technical Assistance Group, Revised, EPA Region III, 1995.
* - Retained as COPC because no screening value was available
µg/kg = Micrograms per kilogram.

Table 7-7 Screening of the Sediment for Effects on Benthic Fauna Using BTAG Screening Values, Kenilworth Park South Landfill, Washington D.C.

Chemical	EPA Region 3 BTAGS for Sediment Fauna	Maximum Detected Sediment Concentration	Maximum Concentration Equals or Exceeds Benchmark?
Metals (µg/kg)			
Aluminum	-	13,000,000	*
Antimony	150,000	4,400	No
Arsenic	8,200	12,000	**Yes**
Barium	-	480,000	*
Beryllium	-	1,400	*
Cadmium	1,200	6,700	**Yes**
Chromium (as Cr III)	< 81,000	89,000	**Yes**
Cobalt	-	17,000	*
Copper	34,000	110,000	**Yes**
Iron	-	32,000,000	*
Lead	46,700	520,000	**Yes**
Manganese	-	970,000	*
Mercury	150	1,800	**Yes**
Nickel	20,900	52,000	**Yes**
Silver	1,000	7,600	**Yes**
Vanadium	-	85,000	*
Zinc	150,000	560,000	**Yes**
Pesticides/PCBs (µg/kg)			
4, 4'-DDD	<16	41	**Yes**
4, 4'-DDE	2.2	15	**Yes**
4, 4'-DDT	1.58	16	**Yes**
Aldrin	-	35	*
alpha-Chlordane	-	58	*
Dieldrin	-	4	*
Endrin	-	14	*
gamma-Chlordane	-	72	*
Heptachlor epoxide	-	18	*
Methoxychlor	-	55	*
PCBs (µg/kg)			
PCB-1242	22.7	250	**Yes**
PCB-1254	22.7	250	**Yes**
PCB-1260	22.7	250	**Yes**
BNAs (not PAHs) (µg/kg)			
4-Methylphenol	670	640	No
Benzoic Acid	650	1,100	**Yes**
Benzyl Alcohol	57	49	No
Bis(2-ethylhexyl)phthalate	-	3,400	*
Butyl benzyl phthalate	63	190	**Yes**
Dibenzofuran	540	130	No
Di-n-octyl phthalate	6,200	160	No
PAHs (µg/kg)			
2-Methylnaphthalene	70	640	**Yes**
Acenaphthene	16	180	**Yes**
Acenaphthylene	44	150	**Yes**
Anthracene	85.3	360	**Yes**
Benzo(a)anthracene	261	920	**Yes**

Table 7-7 Screening of the Sediment for Effects on Benthic Fauna Using BTAG Screening Values, Kenilworth Park South Landfill, Washington D.C.

Chemical	EPA Region 3 BTAGS for Sediment Fauna	Maximum Detected Sediment Concentration	Maximum Concentration Equals or Exceeds Benchmark?
Benzo(a)pyrene	430	930	**Yes**
Benzo(b)fluoranthene	3,200	1,000	No
Benzo(g,h,i)perylene	670	750	**Yes**
Benzo(k)fluoranthene	-	1,100	*
Chrysene	384	1,200	**Yes**
Dibenzo(a,h)anthracene	63.4	240	**Yes**
Fluoranthene	665	2,000	**Yes**
Fluorene	19	180	**Yes**
Indeno(1,2,3-cd)pyrene	600	1,500	**Yes**
Naphthalene	160	200	**Yes**
Phenanthrene	240	1,900	**Yes**
Pyrene	665	2,800	**Yes**
VOCs (µg/kg)			
Acetone	-	92	*
2-Butanone	-	35	*
Toluene	-	35	*

Key:
Blank cell or (-) = BTAG value not available.
BTAG = Biological Technical Assistance Group, Revised, EPA Region III, 1995.
* - Retained as COPC because no screening value was available
µg/kg = Micrograms per kilogram.

7.6.2 Bioaccumulation Screening

The aquatic bioaccumulation screening for sediment and surface water showed that the Log K_{ow} for 28 organic compounds exceeded 4.3. These analytes included 10 pesticides, 3 PCBs, and 15 SVOCs, including 12 PAHs (see Table 7-8). Benzo(b)fluoranthene was the only analyte added to the list of COPECs during this screening of sediment and surface water.

The terrestrial bioaccumulation screening for surface soil and surface water showed that the Log K_{ow} for 21 organic compounds exceeded 3.5. These analytes included 2 PCBs and 19 SVOCs, including 16 PAHs (see Table 7-9). No analytes were added to the list of COPECs during this screening of surface soil and surface water.

7.6.3 Food Chain Modeling

Following the first 2 screening steps and retaining all applicable COPECs, HQs were calculated for the terrestrial and aquatic receptors chosen for evaluation using maximum COPEC concentrations. Food chain modeling was estimated by calculating exposure doses for each receptor, then if a toxicity reference factor was available for the specific receptor, the HQ_n, based on the NOAEL, and the HQ_l, based on the LOAEL, were calculated. HQs were calculated for the meadow vole, short-tailed shrew, American robin, red-tailed hawk, red fox, and great blue heron. These receptors were evaluated for exposure to the following media:

- Meadow vole - soil, surface water, and plants;
- Short-tailed shrew and American robin - soil, surface water, and invertebrates;
- Red-tailed hawk - soil, surface water, and small mammals;
- Red fox - soil, surface water, and small mammals; and
- Great blue heron - sediment, surface water, and fish.

Tables H-3 through H-7 in Appendix H summarize the results of the food chain modeling for the 5 terrestrial wildlife receptors. Table H-8 in Appendix H summarizes the results for the aquatic receptor, the great blue heron.

Meadow Vole

The HQ_n for 15 metals, 13 PAHs, and 2 PCBs exceeded 1 for this receptor (see Table H-3). The HQ_l exceeded 1 for 12 metals, 2 PCBs, and 11 PAHs. The HQ_ns that exceeded 1 ranged in magnitude from 1.2 for mercury, nickel, and benzo(g,h,i)perylene to 6,498 for aluminum. HQ_l that exceeded 1 ranged in magnitude from 1.8 for benzo(b)fluoranthene to 650 for aluminum. All HQs calculated for the remaining COPECs fell below 1. Of all metal COPECs for this receptor, lead, vanadium, aluminum, and iron all had exceptionally high HQs calculated for them. In addition, the HQs for antimony, arsenic, barium, and

Table 7-8 Aquatic Bioaccumulation Screening for Sediment and Surface Water Chemicals Using Log K_{ow} Values, Kenilworth Park South Landfill, Washington D.C.

Chemical	Log K_{ow} [1] for Sediment and Surface Water Chemicals	Log K_{ow} Exceeded 4.3?
Metals		
Aluminum *	0.33	No
Antimony	0.00	No
Arsenic	0.68	No
Barium *	0.00	No
Beryllium	0.57	No
Cadmium	-0.07	No
Chromium (as Cr III)	0.00	No
Cobalt	0.00	No
Copper	-0.57	No
Iron *	na	na
Lead *	0.73	No
Manganese *	0.00	No
Mercury	-0.47	No
Nickel	-0.57	No
Silver	0.00	No
Vanadium	0.00	No
Zinc *	-0.47	No
Pesticides/PCBs		
Aldrin	6.75	**Yes**
alpha-Chlordane	6.60	**Yes**
gamma-Chlordane	6.60	**Yes**
4, 4'-DDD	5.87	**Yes**
4, 4'-DDE	6.00	**Yes**
4, 4'-DDT	6.79	**Yes**
Dieldrin	5.45	**Yes**
Endrin	5.45	**Yes**
Heptachlor epoxide	4.91	**Yes**
Methoxychlor	5.67	**Yes**
PCB-1242 **	6.30	**Yes**
PCB-1254	5.61	**Yes**
PCB-1260 **	6.30	**Yes**
BNAs (not PAHs)		
Benzoic acid	1.87	No
Benzyl alcohol	1.08	No
Bis(2-ethylhexyl)phthalate	8.39	**Yes**
Butylbenzylphthalate	4.84	**Yes**
Dibenzofuran (furan) ***	1.36	No
Di-n-octylphthalate	8.54	**Yes**
4- Methylphenol	1.97 [2]	No
2,4-Dimethylphenol	2.61	No
PAHs		
Acenaphthene	4.15	No
Acenaphthylene	3.94	No
Anthracene	4.35	**Yes**
Benzo(a)anthracene	5.52	**Yes**

Table 7-8 Aquatic Bioaccumulation Screening for Sediment and Surface Water Chemicals Using Log K_{ow} Values, Kenilworth Park South Landfill, Washington D.C.

Chemical	Log K_{ow} [1] for Sediment and Surface Water Chemicals	Log K_{ow} Exceeded 4.3?
Benzo(a)pyrene	6.11	**Yes**
Benzo(b)fluoranthene	6.11	**Yes**
Benzo(g,h,i)perylene	6.70	**Yes**
Benzo(k)fluoranthene	6.11	**Yes**
Chrysene	5.52	**Yes**
Dibenz(a,h)anthracene	6.70	**Yes**
Fluoranthene	4.93	**Yes**
Fluorene	4.02	No
Indeno(1,2,3-cd)pyrene	6.70	**Yes**
2-Methylnaphthalene	3.72	No
Naphthalene	3.17	No
Phenanthrene	4.35	**Yes**
Pyrene	4.93	**Yes**
VOCs		
Acetone	-0.24	No
2-Butanone	0.84	No
Toluene	2.54	No

Key:
[1] Source of Log K_{ow}: Figure 30, Summary of Physical and Chemical Properties, 30 Texas Annotated Code, Chapter 350.73(e).
[2] Source of Log K_{ow} for this chemical EPA 1986.
(*) Detected in both the surface water and sediment.
(**) Value is for polychlorinated biphenyls.
(***) Value is for furans.
na = Not available.

Table 7-9 Terrestrial Bioaccumulation Screening for Surface Soil and Surface Water Chemicals Using Log K_{ow} Values, Kenilworth Park South Landfill, Washington D.C.

Chemical	Log K_{ow} [1] for Surface Soil and Surface Water Chemicals	Log K_{ow} Exceeds 3.5?
Metals		
Aluminum *	0.33	No
Antimony	0.00	No
Arsenic	0.68	No
Barium *	0.00	No
Beryllium	0.57	No
Cadmium	-0.07	No
Chromium (as Cr III)	0.00	No
Cobalt	0.00	No
Copper	-0.57	No
Iron *	na	na
Lead *	0.73	No
Manganese *	0.00	No
Mercury	-0.47	No
Nickel	-0.57	No
Selenium	0.24	No
Silver	0.00	No
Thallium	na	na
Vanadium	0.00	No
Zinc *	-0.47	No
Pesticides/PCBs		
PCB-1254	5.61	**Yes**
PCB-1260 **	6.30	**Yes**
BNAs (not PAHs)		
4-Chloroaniline	1.72	No
Bis(2-ethylhexyl)phthalate	8.39	**Yes**
Butylbenzylphthalate	4.84	**Yes**
Di-n-octylphthalate	8.54	**Yes**
Phenol	1.51	No
2-Methylphenol	na	na
4- Methylphenol	1.97 [2]	No
2,4-Dimethylphenol	2.61	No
Dibenzofuran (furan) ***	1.36	No
PAHs		
Acenaphthene	4.15	**Yes**
Acenaphthylene	3.94	**Yes**
Anthracene	4.35	**Yes**
Benzo(a)anthracene	5.52	**Yes**
Benzo(a)pyrene	6.11	**Yes**
Benzo(b)fluoranthene	6.11	**Yes**
Benzo(g,h,i)perylene	6.70	**Yes**
Benzo(k)fluoranthene	6.11	**Yes**
Chrysene	5.52	**Yes**
Dibenz(a,h)anthracene	6.70	**Yes**
Fluoranthene	4.93	**Yes**
Fluorene	4.02	**Yes**

Table 7-9 Terrestrial Bioaccumulation Screening for Surface Soil and Surface Water Chemicals Using Log K_{ow} Values, Kenilworth Park South Landfill, Washington D.C.

Chemical	Log K_{ow} [1] for Surface Soil and Surface Water Chemicals	Log K_{ow} Exceeds 3.5?
Indeno(1,2,3-cd)pyrene	6.70	**Yes**
2-Methylnaphthalene	3.72	**Yes**
Naphthalene	3.17	No
Phenanthrene	4.35	**Yes**
Pyrene	4.93	**Yes**

Key:

[1] Source of Log K_{ow}: Figure 30, Summary of Physical and Chemical Properties, 30 Texas Annotated Code, Chapter 350.73(e).

[2] Source of Log K_{ow} for this chemical EPA 1986.

(*) Detected in both the surface water and surface soil.

(**) Value is for polychlorinated biphenyls.

(***) Value is for furans.

na = Not available.

thallium were all considerably greater than 1. Due to the presence of metals, PCBs, and PAHs in the soil and vegetation, considerable risk to the vole is predicted by the screening-level assessment.

Short-tailed Shrew

The HQ_n for 15 metals, 13 PAHs, and 2 PCBs exceeded 1 for this receptor (see Table H-4). The HQ_l exceeded the departure point of 1 for 13 metals, 13 PAHs, and 2 PCBs. The HQ_ns that exceeded 1 ranged in magnitude from 1.8 for nickel to 9,484 for aluminum. The HQ_ls that exceeded 1 ranged in magnitude from 1.1 for manganese to 948 for aluminum. All HQs calculated for the remaining COPECs fell below 1. The metals and PCBs posed the most risk. However, the HQs calculated for metals for this receptor were quite high even in comparison with the HQ for the vole. In addition to the metals and PCBs, considerable risk to the shrew from the PAHs in soil and invertebrate prey is predicted by the screening-level assessment.

American Robin

The HQ_n for 14 metals, 11 PAHs, and 2 PCBs exceeded 1 for this receptor (see Table H-5). The HQ_l exceeded 1 for 11 metals, 3 PAHs, and 1 PCB. The HQ_ns that exceeded 1 ranged in magnitude from 1.5 for indeno(1,2,3-cd)pyrene to 12,171 for lead. The HQ_ls that exceeded 1 ranged in magnitude from 1.1 for pyrene to 1,412 for aluminum. The lead HQ_l for this receptor was 1,217. All HQs calculated for the remaining COPECs fell below 1. Chromium, barium, lead, mercury, and zinc HQs were very high for the robin. In addition to the metals, considerable risk to the robin from PAHs and PCBs in invertebrates and soil is predicted.

Red-tailed Hawk

The HQ_n for 13 metals, 7 PAHs, and 2 PCBs exceeded 1 for this receptor (see Table H-6). The HQ_l exceeded 1 for 9 metals. The HQ_ns that exceeded 1 ranged in magnitude from 1.1 for anthracene to 2,592 for lead. The HQ_ls that exceeded 1 ranged in magnitude from 1.6 for selenium to 301 for aluminum. All HQs calculated for the remaining COPECs fell below 1. The metals that show the most risk for the hawk are chromium, lead, iron, aluminum, vanadium, and zinc. In addition to the metals, risk to the hawk may occur due to the consumption of PAHs and the PCBs taken up into small mammals. However, the greatest risk posed to this receptor is due to exposure to metals.

Red Fox

The HQ_n for 15 metals, 11 PAHs, and 2 PCBs exceeded 1 for this receptor (see Table H-7). The HQ_l exceeded 1 for 12 metals, 8 PAHs, and 1 PCB. The HQ_ns that exceeded 1 ranged in magnitude from 1.3 for benzo(b)fluoranthene to 7,721 aluminum. The HQ_ls that exceeded 1 ranged in magnitude from 1.1 for benzo(k)fluoranthene to 771 for aluminum. All HQs calculated for the remaining COPECs fell below 1. The results suggest that the metals that would present the most risk for the red fox are antimony, arsenic, barium, iron, lead, thallium, and

vanadium. In addition to the metals, risk to the fox may occur due to the consumption of PAHs and the PCBs present in soil and small mammals.

Great Blue Heron

The HQ_n for 9 metals and 3 pesticides exceeded 1 for this receptor (see Table H-8). The HQ_l exceeded 1 for 7 metals. The HQ_ns that exceeded 1 ranged in magnitude from 1.2 for mercury to 135 for lead. The HQ_ls that exceeded 1 ranged in magnitude from 1.3 for zinc to 86 for aluminum. All HQs calculated for the remaining COPECs fell below 1. Of all metal COPECs for this receptor, lead, aluminum, and iron presented the highest level of risk due to the ingestion of fish. This was also true for the 3 pesticides, with 4,4'-DDD showing the highest level of risk of the 3.

COPEC HQ_ns that exceeded 1 for all the terrestrial receptors included aluminum, arsenic, barium, copper, iron, lead, mercury, nickel, selenium, vanadium, PCB-1254, PCB-1260, acenapthene, anthracene, benzo(a)anthracene, chrysene, fluoranthene, phenanthrene, and pyrene. The HQ_ns were usually much greater than 1. For those HQ_ls calculated for these receptors, only aluminum, barium, copper, iron, lead, mercury, and zinc exceeded 1 for all 5 terrestrial receptors. Table 7-10 summarizes the HQs calculated using NOAELs for the terrestrial receptors, and Table 7-11 summarizes the HQs calculated using LOAELs for these receptors. Table 7-12 summarizes the HQs calculated using the NOAELs and LOAELs for the great blue heron.

7.7 Risk Characterization

Terrestrial and aquatic habitats exist on and near the Site where ecological receptors have the potential to be found. For example, some areas of the Site that are heavily vegetated, wetlands on and near the Site, and the proximity to the Anacostia River all represent habitats where ecological receptors might occur.

The results of this SLERA suggest that wildlife that forage on-site and in the river and drainage ditches on and near the Site may be adversely affected by Site-related contamination in surface soil and sediment.

The potential ecological risks are largely driven by the estimated exposure from diet and, to a lesser extent, by the estimated exposure from incidental ingestion of sediment and/or soil. However, these risk estimates are highly conservative because they assume that all intake of food and sediment/soil occurs at the Site and that the concentration of contaminants in food equals the concentration of contaminants in the soil or sediment. Exposure to receptors from ingesting metals in surface water was insignificant for all receptors. Organic chemicals were not detected in surface water samples collected near the Site.

Table 7-10 Summary of Hazard Quotients Calculated Using NOAELs for Terrestrial Receptors, Kenilworth Park South Landfill, Washington D.C.

COPEC	Meadow Vole HQ_n	Short-tailed Shrew HQ_n	American Robin HQ_n	Red-tailed Hawk HQ_n	Red Fox HQ_n
Aluminum	6,498	9,484.3	572.8	122.0	7,721.4
Antimony	123.2	180.1	N/A	N/A	145.7
Arsenic	50.3	73.0	6.2	1.3	59.5
Barium	40.6	59.2	96.9	20.6	48.7
Beryllium	0.3	0.4	N/A	N/A	0.4
Cadmium	1.9	2.8	11.9	2.5	2.3
Chromium	0.03	0.04	778.6	165.8	0.04
Copper	12.9	18.8	38.6	8.2	15.4
Iron	774.2	1,478.5	2,134.2	454.6	289.0
Lead	185.6	271.0	12,171.2	2,592.4	220.7
Manganese	2.3	3.4	1.9	0.4	2.8
Mercury	1.3	1.9	34.1	7.3	1.5
Nickel	1.2	1.8	5.9	1.3	1.5
Selenium	4.0	5.8	14.8	3.2	4.7
Silver	0.3	0.5	N/A	N/A	0.1
Thallium	250.1	388.0	N/A	N/A	303.4
Vanadium	725.6	1,058.7	114.8	24.4	859.9
Zinc	4.0	5.8	407.5	86.8	4.7
Pesticides/PCBs					
PCB-1254	22.2	32.3	34.7	7.4	4.4
PCB-1260	9.0	17.2	5.5	1.2	3.4
BNAs					
Acenaphthene	11.7	22.4	8.4	1.8	4.4
Acenaphthylene	N/A	N/A	N/A	N/A	N/A
Anthracene	7.2	13.7	5.1	1.1	2.7
Benzo(a)anthracene	8.0	15.3	5.7	1.2	3.0
Benzo(a)pyrene	7.9	11.5	N/A	N/A	9.2
Benzo(b)fluoranthene	3.6	6.8	2.6	0.5	1.3
Benzo(g,h,i)perylene	1.2	2.3	0.9	0.2	0.5
Benzo(k)fluoranthene	5.8	11.1	4.1	0.9	2.2
Bis(2-ethylhexyl) phthalate	0.01	0.3	N/A	N/A	0.3
Butylbenzyl phthalate	0.001	0.0	0.5	0.1	0.01
Chrysene	7.0	13.2	4.9	1.1	2.6
Fluoranthene	20	37.9	14.2	3.0	7.4
Fluorene	4.1	7.9	3.0	0.6	1.5
Indeno(1,2,3-cd)pyrene	2.1	4.0	1.5	0.3	0.8
Napthalene	0.44	0.8	0.3	0.1	0.2
Phenanthrene	22	42.1	15.8	3.4	8.2
Pyrene	16	30.0	11.3	2.4	5.9

Note: Shade exceeds the departure point of 1.

Key:

Blank cell = Not detected above the sample quantitation limit or NOAEL not available.

HQn = Hazard Quotient using the NOAEL.

NOAEL = No observed adverse effects level.

Table 7-11 Summary of Hazard Quotients Calculated Using LOAELs for Terrestrial Receptors, Kenilworth Park South Landfill, Washington D.C.

COPEC	Meadow Vole HQ_l	Short-tailed Shrew HQ_l	American Robin HQ_l	Red-tailed Hawk HQ_l	Red Fox HQ_l
Metals					
Aluminum	649.9	948.4	1,412.1	300.8	771.4
Antimony	12.4	18.0	N/A	N/A	14.7
Arsenic	5.0	7.3	4.3	0.9	5.9
Barium	11.0	16.1	48.3	10.3	13.0
Beryllium	N/A	N/A	N/A	N/A	N/A
Cadmium	0.2	0.3	0.9	0.2	0.2
Chromium	N/A	N/A	155.7	33.2	N/A
Copper	9.8	14.3	29.4	6.3	11.6
Cyanide	N/A	N/A	N/A	N/A	N/A
Iron	77.4	147.8	213.4	45.5	28.9
Lead	18.6	27.1	1,217.1	259.2	22.0
Manganese	0.7	1.1	N/A	N/A	0.9
Mercury	10.4	15.1	239.9	51.1	61.1
Nickel	0.6	0.9	4.3	0.9	0.7
Selenium	2.4	3.5	7.4	1.6	2.9
Silver	0.03	0.1	N/A	N/A	0.01
Thallium	25.8	37.9	N/A	N/A	31.1
Vanadium	72.5	105.7	N/A	N/A	86.0
Zinc	2.0	2.9	45.1	9.6	2.4
Pesticides/PCBS					
PCB-1254	2.2	3.2	3.5	0.7	0.9
PCB-1260	6.9	13.2	0.6	0.1	2.6
BNAs					
Acenaphthene	5.9	11.2	0.8	0.2	2.2
Acenaphthylene	N/A	N/A	N/A	N/A	N/A
Anthracene	3.6	6.8	0.5	0.1	1.3
Benzo(a)anthracene	4.0	7.6	0.6	0.1	1.5
Benzo(a)pyrene	0.8	1.2	N/A	N/A	0.9
Benzo(b)fluoranthene	1.8	3.4	0.3	0.1	0.7
Benzo(g,h,i)perylene	0.6	1.2	0.1	0.0	0.2
Benzo(k)fluoranthene	2.9	5.5	0.4	0.1	1.1
Bis(2-ethylhexyl) phthalate	N/A	N/A	N/A	N/A	N/A
Butylbenzyl phthalate	0.001	0.001	N/A	N/A	0.001
Chrysene	3.4	6.6	0.5	0.1	1.3
Fluoranthene	9.9	19.0	1.4	0.3	3.7
Fluorene	2.1	3.9	0.3	0.1	0.8
Indeno(1,2,3-cd)pyrene	1.0	2.0	0.2	0.0	0.4
Napthalene	0.2	0.4	0.0	0.0	0.1
Phenanthrene	11.0	21.1	1.6	0.3	4.1
Pyrene	7.9	15.0	1.1	0.2	2.9

Note: Shade exceeds the departure point of 1.

Key:

Blank cell = Not detected above the sample quantitation limit or LOAEL not available.

HQl = Hazard Quotient using the LOAEL.

LOAEL = Lowest observed adverse effects level.

Table 7-12 Summary of Hazard Quotients Calculated Using NOAELs and LOAELs for Aquatic Receptors, Kenilworth Park South Landfill, Washington D.C.

COPEC	Great Blue Heron	
	NOAEL HQ_n	LOAEL HQ_l
Metals		
Aluminum	35	85.7
Arsenic	0.7	0.5
Barium	6.8	3.4
Cadmium	1.4	0.1
Chromium	26.1	5.2
Copper	0.7	0.5
Iron	93.9	9.4
Lead	135.0	13.5
Manganese	0.3	N/A
Mercury	1.2	8.3
Nickel	0.2	0.1
Vanadium	2.2	N/A
Zinc	11.3	1.3
Pesticides/PCBs		
4,4'-DDD	4.0	0.4
4,4'-DDE	1.5	0.2
4,4'-DDT	1.6	0.2
alpha-Chlordane	0.0	0.0
Chrysene	0.0	0.0
Dieldrin	0.0	N/A
Endrin	0.4	0.0
gamma-Chlordane	0.0	0.0
PCB-1242	0.2	N/A
PCB-1254	0.9	0.1
PCB-1260	0.1	0.0
BNAs		
Acenaphthene	0.005	0.001
Anthracene	0.011	0.001
Benzo(a)anthracene	0.027	0.003
Benzo(b)fluoranthene	0.029	0.003
Benzo(g,h,i)perylene	0.022	0.002
Benzo(k)fluoranthene	0.032	0.003
Butylbenzyl phthalate	0.051	N/A
Fluoranthene	0.059	0.006
Fluorene	0.005	0.001
Indeno(1,2,3-cd)pyrene	0.044	0.004
Napthalene	0.006	0.001
Phenanthrene	0.056	0.006
Pyrene	0.082	0.008

Note: Shade exceeds the departure point of 1.

Key:

Blank cell = not detected above the sample quantitation limit or NOAEL/LOAEL not available.

HQn = Hazard Quotient using the NOAEL.

HQl = Hazard Quotient using the LOAEL.

LOAEL = Lowest observed adverse effects level.

NOAEL = No observed adverse effects level.

In general, HQs for SVOCs (primarily PAHs), pesticides, and PCBs were lower than for metals. This suggests that metals pose a greater risk than organic chemicals to wildlife at the Site. However, adverse effects could potentially exist for all COPECs with HQs greater than unity. Aluminum and iron greatly exceeded unity for all wildlife receptors evaluated. In fact, these metals showed the highest risk levels of all metals for the mammalian receptors, except for the red fox, for which the vanadium HQ_l was higher than the iron HQ_l. The high HQs calculated for aluminum and iron in this SLERA are due largely to the fact that these metals were assumed to be 100% bioavailable. In reality, it is very likely that the bioavailablity of these metals in soil at the Site is lower than assumed, thereby overestimating risk.

For benthic invertebrates, pelagic aquatic life, soil invertebrates, and plants, the screening evaluation suggests that these receptor groups potentially could be adversely affected by Site-related chemicals. In fact, most of the chemicals detected in the surface soil and sediment at the Site exceeded the screening benchmarks. The benchmarks are based upon the lowest screening value from a combination of sources and are considered to be protective of the most sensitive organism in a medium. The Site-related chemicals are present at similar concentrations in upstream and downstream sediment samples and at other recognized contaminated sites in and along the banks of the Anacostia River. Therefore, the Site-related impacts would be indistinguishable from non-site related impacts.

7.8 Uncertainty

The risk screening for ecological receptors involves several notable uncertainties regarding potential risks to wildlife posed by Site-related contaminants. These are described below.

- The bioavailability of metals in environmental media at the Site is poorly understood. To be conservative, it was assumed that 100% of the metals present in water, sediment, and surface soil were bioavailable. If bioavailability is less than 100%, potential risks to all categories of ecological receptors would be correspondingly lower.

- Food chain transfer of metals at the Site is poorly understood. The risks to wildlife at the Site are largely driven by estimated concentrations of chemicals in plants and wildlife prey. The prey concentrations were calculated using uptake factors supplied by the ERT spreadsheets. The uncertainty associated with this kind of approach is often high, since a number of site-specific factors affect the food-chain transfer of contaminants. Site-specific data on contaminant levels in plants and wildlife food items would be needed to reduce the uncertainty in this area.

- To be conservative, the maximum concentrations in water, sediment, and soils were used to estimate wildlife risks at the Site. Also, the maximum concentrations used for screening were selected from surface and subsurface

soil samples. In reality, however, wildlife receptors at the Site are exposed to a range of concentrations and, if the Site is not disturbed, would not encounter soils below the depth of the receptors' activities. A better understanding of the magnitude and extent of contamination in the river and on the Site would make possible a more precise evaluation of wildlife risks.

- Analytes for which species-specific NOAEL or LOAEL values were not available could not be evaluated. This could potentially underestimate the risks to the specific receptors at the Site.

- Wildlife use of the Site has not been well characterized. To be conservative, it was assumed the wildlife receptors evaluated in this assessment spend 100% of their time on the Site. However, in reality, wildlife are mobile and are exposed to contaminants throughout their range. If the Site is less attractive to wildlife than the surrounding area, wildlife use of the Site, and the risks posed by the Site, may be considerably lower.

7.9 Results of the BERA Problem Formulation

As discussed in the introduction of this section, the SLERA was the first step of a multi-step process to evaluate the potential risks posed to the ecological receptors at the Site. Because the SLERA identified the potential for unacceptable risk to certain ecological receptors, additional data analysis was warranted. To facilitate this additional analysis, a Risk Assessment Work Plan (RAWP) was developed that described the process to refine the screening process, using more Site-specific information and uptake factors, beginning with the development of the *Baseline Ecological Risk Assessment Problem Formulation* document. This document was completed in December 2007 and is available under separate cover. The following section summarizes the process and results of the BERA problem formulation.

7.9.1 BERA Problem Formulation Process and Results

Activities supporting preparation of the BERA Problem Formulation included the following:

- Refining the list of chemicals of potential ecological concern set forth in the SLERA;

- Further characterizing ecological effects of contaminants;

- Reviewing and refining information on contaminant fate and transport, complete exposure pathways, and ecosystems potentially at risk;

- Selecting assessment endpoints; and

- Developing a refined conceptual site model with risk questions that further investigation can address.

The COPEC list was refined using a multi-step process. A community-level analysis was conducted to evaluate the effects on soil flora and fauna and benthic invertebrates. Screening values were updated using the most recent guidance or scientific literature and were compared with chemical concentrations in surface soil, subsurface soil, and sediment collected from all investigations that were conducted at the Site. The frequency of detection and benchmark exceedances were also examined to determine the final list of COPECs for each community. The following summarizes the COPECs for each community:

- Surface soil flora: 11 metals and 13 PAHs;
- Surface soil fauna (invertebrates): 8 metals and 12 PAHs;
- Subsurface soil flora: 13 metals and 11 PAHs;
- Subsurface soil fauna: 9 metals and 13 PAHs;
- Benthic invertebrates: 12 metals, 8 pesticides, 3 PCBs, 1 VOC, and 17 SVOCs (including 15 PAHs); and
- Pelagic aquatic life: 5 metals.

To evaluate potential effects on wildlife, the SLERA assumed that the Site was a closed system and that all food and habitat requirements were supplied by the Site. It also assumed that wildlife were exposed continuously to the maximum contaminant concentrations and that all contaminants were 100% bioavailable. To refine the COPEC list for wildlife, the length of time of exposure and the percentage of a bird's or animal's home range represented by the Site was factored into the evaluation.

The next step involved calculating more refined contaminant concentrations to which the wildlife would be exposed. Then, species-specific exposure parameters were updated and included in the evaluation. In addition, the amount of a contaminant that is likely to enter wildlife food was estimated using the best available models from the literature. NOAELs and LOAELs were updated. The final list of wildlife COPECs for each species evaluated is as follows:

- Meadow vole: aluminum, antimony, and iron;
- Short-tailed shrew: aluminum, antimony, cadmium, chromium, copper, iron, lead, nickel, selenium, vanadium, PCB-1254, PCB-1260, acenaphthene, and fluoranthene;
- American robin: aluminum, cadmium, chromium, copper, iron, lead, nickel, vanadium, PCB-1254, and PCB-1260;
- Red-tailed hawk: None;

- Red fox: aluminum and iron; and
- Great blue heron: None.

This problem formulation eliminated many COPECs from further consideration, but it also indicated that there are potential ecological risks associated with contamination in surface and subsurface soil at the Site. Two approaches could be taken as the next steps in the process. In the first, additional data collection should be considered to further characterize the Site, evaluate Site-specific bioavailability and toxicity, and refine the ecological risk assessment. Specifically, such steps would involve the following:

- Collect surface/subsurface soil and sediment samples for bioassay analysis;
- Collect and analyze wildlife food items for metals, PCBs, and PAHs;
- Collect and analyze on-site soil samples for pH and total organic content; and
- Determine local background values for metals in soil for which no background data are available.

Alternatively, Site-specific Preliminary Remediation Goals (PRGs) could be derived using the available data and the results of this problem formulation. These PRGs would be conservative and represent the acceptable contaminant level for which there would be no observed adverse effect for wildlife and community-level receptors.

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8 Data Interpretation and Conclusions

8.1 Introduction

The RI at Kenilworth Park South Landfill consisted of field activities conducted in 2001 and evaluation and interpretation of the collected data. This evaluation included a human health risk assessment and a screening-level ecological risk assessment.

The purpose of this RI was to determine the nature and extent of contamination present at the Site, and to evaluate the extent to which the contamination may pose a threat to human health or the environment. The RI further evaluated the major points of concern raised during the PA/SI, which included PCB levels at the nearby Thomas Elementary School and in sediments of the Anacostia River.

Below is a summary of the results from all previous activities (including the 1998 sampling event, the 2000 PA/SI investigation, and the 2001 RI investigation field activities). These are based on analytical data from soil, sediment, groundwater, and surface water analyses, groundwater flow pattern interpretations, physical characteristics findings and interpretations, and human health and ecological risk assessments.

8.2 Site Characteristics

The Site is comprised of four primary horizontal layers of materials: the underlying natural sediments composed of fine sand, silt and clay; the municipal waste that constitutes the former District landfill; the cap to the former District landfill; and the 1997/1998 deposited material place on top of the cap. These layers do not extend laterally over equal areas. The underlying sediments extend across the entire Site. The cap covers landfill wastes and extends beyond the edges of the landfill material to the underlying sediments and partially into the surrounding surface water bodies, i.e., the Anacostia River, Watts Branch, and the unnamed stream/ditch along the eastern edge of the Site. The 1997/1998 deposited material covers a portion of the cap with between 2 to more than 20 feet of material. This material covers much of the west side of the Site with approximately 20 acres west of Deane Avenue and much of the southeast corner of the Site comprising approximately 7 acres east of Deane Avenue. The cap is not covered by 1997/1998 deposited material in the northeast corner of the Site or in the heavily vegetated outer edges of the Site.

The geophysical investigation found that the regrading of the Site and the subsequent introduction of a pond increased the opportunity for surface water infiltration into the landfill. Although the landfill contains groundwater, it is not hydraulically connected to the underlying Patuxent aquifer. Due to the hydraulic head of the Patuxent aquifer, groundwater in the landfill will travel laterally from the landfill to the adjacent water bodies, rather than percolate downwards.

8.3 Nature and Source of Contamination

During previous investigations of the Site, as well as the current investigation, VOCs, SVOCs, pesticides, PCBs, and metals were detected in several media at concentrations above screening levels. The following summarizes the determinations about the nature of contamination at the Site:

- VOCs were detected at concentrations below the screening values in surface water and subsurface soils. They were not analyzed in surface soils. Several VOCs—benzene and 1,4-dichlorobenzene—have been detected in groundwater at concentrations above their respective screening values.

- PAHs were detected above screening in all sediment samples. However, there is no apparent pattern to the PAH distribution in sediments. There is no apparent pattern in the total PAH or benzo(a)pyrene distribution in soil, subsurface soil, or sediments, suggesting that there are different sources in each media. PAHs were not detected in groundwater.

- Pesticides were not analyzed in all media. They were detected above their respective screening values in groundwater and sediments. The detections above screening were in 2 locations in groundwater. In sediments, most of the samples had detections of pesticides over screening values.

- Both Aroclor 1254 and 1260 were found in surface and subsurface soil and sediment. Not all the surface soils were analyzed for PCBs. Aroclor 1254 and 1260 were found in most sediment samples. Aroclor 1242 was detected in subsurface soils, sediments, and one groundwater sample (MW-12). This suggests that Aroclor 1242 was in the landfill material and not in the landfill cap. There is no apparent pattern to the distribution of Aroclors in subsurface soils, except that there does not appear to be PCBs present in the center of the western side of the Site.

- Although many metals were detected, arsenic, iron, and lead were detected in most media in excess of screening criteria. Arsenic was detected in all media above screening levels. However, it was only detected above the sediment screening criteria at one location. In general, arsenic concentrations in subsurface soils were similar to levels found in surface soils. There is no apparent pattern to the arsenic detections in groundwater. Iron was detected in subsurface soil, sediment, and groundwater media above screening values. Concentrations in subsurface soils were higher than in surface soils. The subsurface soils and groundwater pattern of distribution of high levels of iron is similar.

Iron is likely leaching from landfill materials into the groundwater. This, combined with overland flow from the landfill surface, may explain the presence of elevated levels of iron in sediment samples. Lead also was detected in sediment, subsurface soil, and groundwater samples above screening values. No surface soil samples contained lead levels exceeded screening values. The landfill materials are the primary source of lead.

The analytical results indicate that both the landfill cap and materials are heterogeneous. The same contaminants exist in all media, but there is no clear relationship between contaminant concentrations in the surface soils, subsurface soils, groundwater, and sediments. Contaminant migration pathways are limited based on the limited infiltration, impermeability of the underlying clays, and vegetative cover, which limits runoff.

Sediment contamination may result from surface runoff in isolated locations devoid of vegetation. Both the tidal nature of the water bodies surrounding the landfill and the inputs from the storm drains are likely to be contributing some of the contamination seen in sediment samples.

In general, patterns of contaminant distribution in surface soils are independent of each other.

Subsurface soils did not show a pattern of contamination, nor did they reflect the contamination found in overlying surface soils. Concentrations of metals were often greater in subsurface soils in comparison with surface soils. The highest levels of organics were found in the subsurface soils, but there is a distinct pattern between surface and subsurface soils.

Groundwater may reflect contamination mobilized by infiltration from the surface soil but is more likely to reflect contact with the contents of the landfill because the groundwater remains in contact with the fill for long periods.

In general, there is little evidence of migration of contaminants from the Site. The presence and levels of contamination in the Site and on its surface appear to reflect the content of materials brought to and deposited in or on the landfill.

8.4 Risks to Human Health and the Environment

8.4.1 Potential Targets

The Site is not fully fenced and pedestrian access is unrestricted. Approximately 2,000 residents live within 0.5 miles of the Site and could be exposed to direct contact with the soil, or less probably, to dust blown off the 1997/1998 deposited material.

Immediately adjoining the Site, although fenced off from it, is Thomas Elementary School, on Anacostia Avenue. The school has approximately 450 students and 45 staff (Scudder, 2000).

Presently, there are no water supply wells-- municipal, commercial or domestic-- in use to be impacted by the Site through groundwater migration.

No use is made of the tidal Anacostia River as a source of drinking water due to its impaired condition and the availability of other sources (Palmer 2000). The combined sewer overflow problems prevent swimming or water contact sports, and floating trash is also a major problem (MWCOG, 1998). A fish advisory has been issued for this section of the Anacostia River (USEPA 2000a).

There is only one formerly federally listed endangered or threatened species known to occur within a 4-mile radius of the Site, the Peregrine falcon, which was subsequently removed from the list (U.S. Department of the Interior, 1999).

8.4.2 Human Health Risk Assessment Results

Most of the surface construction debris has been removed and the physical hazards of the Site have been reduced.

Based on the risk assessment conducted for the Site, potential risk exists for humans from direct contact with on-site soils and sediments under existing conditions. These risks are 4.5×10^{-7} for Site Workers and 2.6×10^{-5} for Site Visitors for carcinogenic contaminants and a HI of 0.2 to 2.3 for noncarcinogens. When separated by target organ, no hazard index exceeds unity.

The quantitative risk estimates do not include possible health effects from lead, because lead has no approved toxicity values. Based on comparison of screening levels for lead in soil, concentrations of lead in subsurface soils (from the landfill cap or landfill materials) along the eastern and western edges of the Site could pose human health risks. Should soil excavation activities occur in those areas, exposed workers could potentially experience increased blood lead levels leading to adverse health effects.

8.4.3 Ecological Risk Assessment Results

Terrestrial and aquatic habitats exist on and near the Site where ecological receptors have the potential to be found. For example, some areas of the Site that are heavily vegetated, wetlands on and near the Site, and the proximity to the Anacostia River all represent habitats where ecological receptors might occur.

The results of the SLERA suggest that wildlife that forage on-site, and in the river and drainage ditches on and near the Site, may be adversely affected by Site-related contamination in surface soil and sediment. The potential ecological risks are largely driven by the estimated exposure from diet and to a lesser extent by the estimated exposure from incidental ingestion of sediment and/or soil.

Most analytes detected in the surface soil and sediment at the Site exceeded the screening levels, which are based upon the lowest screening value from a combi-

nation of sources and are considered to be protective of the most sensitive organism in a medium.

8.5 Conclusions

8.5.1 Summary of Findings

The landfill material has been found to be a source of metals, PAHs, a phthalate, and PCB contamination, but this material is capped and potential exposure to these wastes is limited due to the cap and the 1997/1998 deposited material. The main concern related to this source is the migration of contaminants to surface water via groundwater. This migration has been found to be small as suggested by the evidence that only low levels of contamination were found in the groundwater and the groundwater migration to the surface water through the low hydraulic conductivity layers within the landfill is slow.

The 1997/1998 deposited materials and surface soils contain PAHs, PCBs, and arsenic above screening levels, although the range of arsenic levels in on-site surface soil samples was comparable to background concentrations. The main concern related to this source is the risk of contact with the contamination at the Site, as well as potential for the contamination to migrate to surface water via storm water runoff. Runoff and erosion control measures have been implemented at the Site, however, to reduce the runoff to the surface water migration pathway.

8.6 Recommendations for Future Work

Based on all the results of the RI and previous investigations, the following activities should be completed to support the feasibility study:

- Given the conclusions of the HHRA and SLERA, appropriate target risk levels for Site contaminants should be identified and PRGs developed.
- In order to establish remedial action goals, an analysis of applicable or relevant and appropriate requirements (ARARs) should be completed.
- Due to the presence of methane in the KPN Landfill and the KPS Landfill, a methane survey of the Site should be conducted to evaluate the potential impacts of any remedial actions.

Based on the findings of the RI, the feasibility study should focus at a minimum on the following issues:

- Reduction/elimination of contact with contaminated soil;
- Reduction/elimination of infiltration through the landfill cap (if waste material is to remain in place); and
- Attainment of ARARs.

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References

EPAs Standards and Practices for All Appropriate Inquiries (AAI), section 312.24, identifies the historical sources of information necessary to achieve the objectives and performance factors of section 312.20. According to AAI, *"historical documents and records may include, but are not limited to, aerial photographs, fire insurance maps, building department records, chain of title documents, and land use records."*

To meet the prior use requirements of ASTM E 1527-05, Section 8.3.2, the following standard *historical sources* may be used: aerial photographs, fire insurance maps, property tax files, land title records (although these cannot be the sole historical source consulted), topographic maps, city directories, building department records, or zoning/land use records. ASTM E 1527-05, Section 8.3 on Historical Use Information, identifies the prior use requirements for a Phase I environmental site assessment. ASTM E 1527-05 requires *"All obvious uses of the property shall be identified from the present, back to the property's first developed use, or back to 1940, whichever is earlier. This task requires reviewing only as many of the standard historcal sources as are necessary and both reasonably ascertainable and likely to be useful."* (ASTM E 1527-05, Section 8.3.2) *Reasonably ascertainable means information that is publicly available, obtainable from a source within reasonable time and cost constraints, and practically reviewable.*

Data Gaps

In order to address *data gaps*, additional sources of information may be consulted. According the AAI, Section 312.20 (g), *"to the extent there are data gaps (as defined in section 312.10) in the information developed...that affect the ability of persons (including the environmental professional) conducting the all appropriate inquiries to identify conditions indicative of releases or threatened releases...such persons should identify such data gaps, identify the sources of information consulted to address such data gaps, and comment upon the significance of such data gaps."* According to ASTM E 1527-05, Section 8.3.2.3, *"historical research is complete when either: (1) the objectives in 8.3.1 through 8.3.2.2 are achieved; or (2) data failure is encountered. Data failure occurs when all of the standard historical sources that are reasonably ascertainable and likely to be useful have been reviewed and yet the objectives have not been met....If data failure is encountered, the report shall document the failure and, if any of the standard historical sources were excluded, give the reasons for their exclusion."*

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with any questions or comments.

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Date EDR Searched Historical Sources:

Aerial Photography March 22, 2006

Target Property:

Deane Avenue

Washington, DC 20019

Year	***Scale***	***Details***	***Source***
1957	Aerial Photograph. Scale: 1"=750'	Panel #: 2438076-H8/Flight Date: June 15, 1957	EDR
1963	Aerial Photograph. Scale: 1"=750'	Panel #: 2438076-H8/Flight Date: October 15, 1963	EDR
1970	Aerial Photograph. Scale: 1"=750'	Panel #: 2438076-H8/Flight Date: September 01, 1970	EDR
1980	Aerial Photograph. Scale: 1"=833'	Panel #: 2438076-H8/Flight Date: May 16, 1980	EDR
1988	Aerial Photograph. Scale: 1"=833'	Panel #: 2438076-H8/Flight Date: April 05, 1988	EDR

AHV- 1
INQUIRY #: 1637516.1
YEAR: 1957
= 750'
N
EDR Environmental Data Resources Inc

INQUIRY #: 1637516.1
YEAR: 1963
= 750'
N

INQUIRY #: 1637516.1
YEAR: 1970
= 750'
N
EDR Environmental Data Resources Inc

INQUIRY #: 1637516.1
YEAR: 1980
= 833'
N

INQUIRY #: 1637516.1
YEAR: 1988
= 833'
N

B Previous Investigations

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Report on Sampling the Kenilworth Site National Park Service N.E. Washington, D.C.

Contract No.: 1443CX0001-95-003
Task Order No.:1443PX300098A03

December 1998

Prepared for:

NATIONAL PARK SERVICE
National Capital Region

Prepared by:
ECOLOGY AND ENVIRONMENT, INC.
1700 North Moore Street
Arlington, Virginia 22209

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Executive Summary

NPS
National Park Service

E & E
Ecology and Environment

RBCs
Risk Based Concentrations

PAHs
polyaromatic hydrocarbons

Under Contract No. 1443CX0001-95-003 the National Park Service, National Capital Region (NPS) tasked Ecology and Environment, Inc. (E & E), to sample at and around a former District of Columbia landfill located on NPS property (Kenilworth Park) in northeast Washington, D.C. E & E sampled material in an area of recent fill placed by the Driggs Company and found that some of the fill exceeded Risk Based Concentrations (RBCs) for polyaromatic hydrocarbons (PAHs) for both industrial and residential soils. Analysis of samples from the historic landfill found elevated levels of heavy metals, especially lead. This fill would be potentially a significant source of contamination to its surrounding environment. Sediments around the site had elevated PAHs and lead. Groundwater had high levels of heavy metals, especially lead, but much of this was in suspended particulates as the samples were very turbid, being collected from Geoprobe® bores, and not from groundwater monitoring wells.

1

Introduction and Site Setting

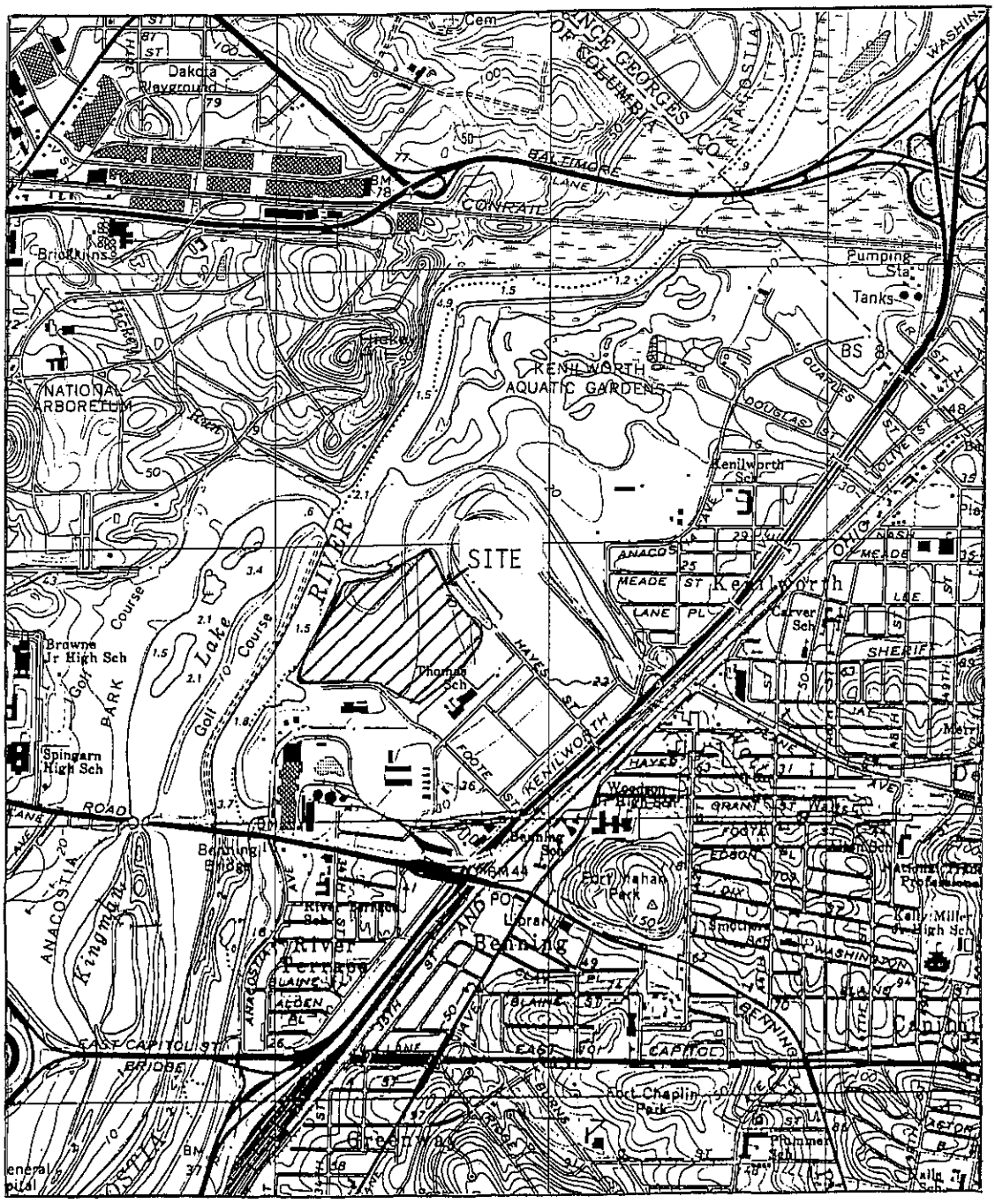
NPS
National Park Service

The Kenilworth Site is owned by the National Park Service (NPS), and is part of Kenilworth Park (Figure 1). Part of the park was a swampy area adjacent to the Anacostia River, that the District of Columbia (the District) was allowed to use for the disposal of garbage generated within the District. Prior to the early 1970's the site had been used as an open dump with open burning. The dump was closed; however no records are available as to how it was closed. It was partly covered but not provided with an engineered cap. At one time the fill had a methane collection system, used to heat nearby NPS greenhouses, but this no longer exists (Hewitt, 1998 personal communication).

The Kenilworth Park superintendent later entered into agreements with several companies to allow covering of the old landfill site with construction fill. This began in early 1997 and continued through much of 1998. Few records are available as to the amount of fill and its source and quality. Some of the companies dumping fill at the site provided analytical data with respect to the material they dumped and others did not.

The site is divided into two parts, east and west of Deane Avenue which basically runs North - South through the site . Field observation by E & E of the site during September 1998 showed that the fill was not "clean." It contained a large proportion of demolition debris including concrete, rebar, brick, lumber, angle iron, asphalt, fabric, carpet, glass, etc. The part of the landfill west of Deane Avenue has been graded and covered with topsoil. It is intended for use as ball fields. The thickness of recent fill is estimated at 10 to 30 feet. This is based on the estimated elevations of the present fill and the elevations (less than 10 feet) shown over much of the site on the topographic map (USGS 7.5 minute topographic map, Washington East, D.C., Md 1966, photo revised 1979).

On the east side of Deane Avenue, there were two area of fill, one showed older fill to the north, covered with grass and weeds, and the other an area of new fill to the south. The newer fill consists largely of demolition debris and was placed by Driggs Company. It is referred to as the Driggs Landfill.



USGS Topographic Map. Washington East D.C.-M.D.

Fig 1. Site Location Map, Kenilworth Landfill
Scale 1:24,000

E & E
Ecology and Environment

SI
Site Investigation

1.1 Scope of Work

The National Park Service, National Capital Region, under Contract No. 1443CX0001-95-0031 Purchase Order #1443PX300098A03 required Ecology and Environment, Inc., (E & E) to perform two separate tasks as part of a single Site Investigation (SI).

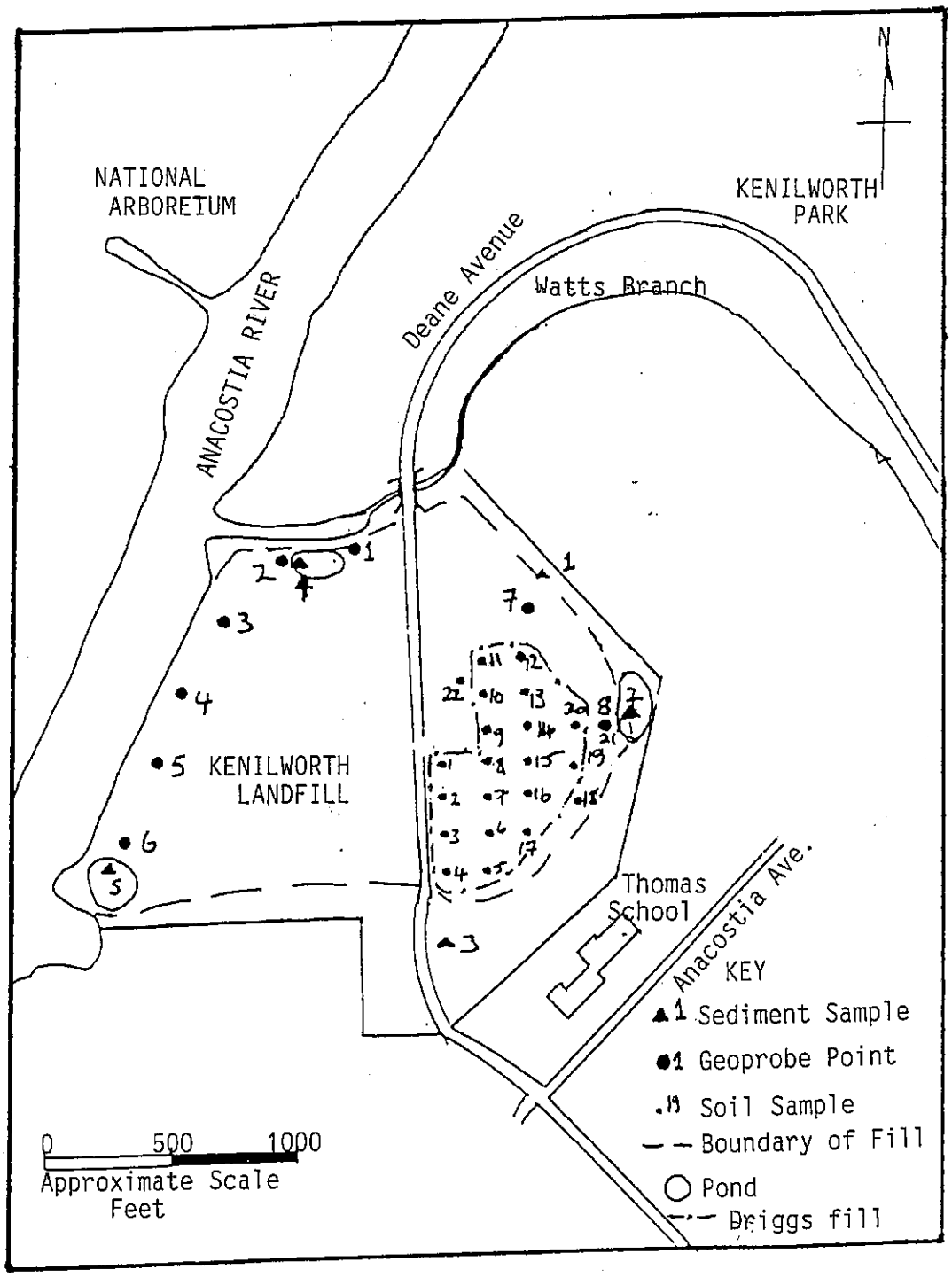
The first task was to characterize the recent fill (1997-98) placed on top of the old landfill on the southeast portion of the site by the Driggs Company. This was accomplished by sampling surface materials at nineteen locations from the nodes of a randomly placed square grid placed to cover the entire area of the fill. Total area of the Driggs fill is approximately 9-10 acres, so each sample represented approximately 0.5 acres.

The second task was to characterize the potential and actual impact on the environment represented by the historic District of Columbia wastes.

E & E determined that access for a drilling rig would be very difficult and that cost considerations would reduce the number of samples that could be collected with a drill rig to very few. Four monitoring wells were estimated. E & E therefore proposed the use of a track mounted vehicle with Geoprobe® sampling equipment mounted on it to optimize the number of samples that could be collected. The second task was accomplished by sampling subsurface materials and groundwater around the outside of the fill with a Geoprobe® and with a hand auger at two inaccessible sites; and by sampling sediments in the locations affected by surface runoff and/or ground water discharge from the historic fill area.

The Geoprobe® equipment was used to collect subsurface samples from eight locations around the toe of the recent fill. Six samples were collected from locations between the major part of the fill west of Deane Avenue and the Anacostia River/Watts Branch surface water to the west and north. Two Geoprobe® sampling locations were placed between the newer fill east of Deane Avenue and the wetland/ditch east of the fill (Figure 2).

A grid was laid out on top of the Driggs Landfill and surface material collected from the nodes of the grid except where only coarse demolition debris was found, as at Node 18. Surface soils west and east of the fill were collected for comparison.



Ecology and Environment,Inc. 1998

Fig 2. Sketch map of Kenilworth Site with Sampling Locations.

Sediments were collected from locations in the ditch draining the east side of the landfill in locations above and below the areas most probable impacted by the fill. Sediment samples were also collected from the three silt ponds excavated to intercept runoff from the 1997-98 filling operation (sediment samples 2, 4, and 5).

1.2 Analytical Program

Surface soils, subsurface soils, and sediments were analyzed for Total Recoverable Petroleum Hydrocarbons (TRPH); Base/Neutral Acid Extractible (BNA) organics; and Resource Conservation and Recovery Act (RCRA) metals, comprised of arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver.

Groundwater was sampled for the same parameters and, in addition, was analyzed for Volatile Organics (VOAs).

TRPH
Total Recoverable Petroleum Hydrocarbons

BNA
Base/Neutral Acid Extractible

RCRA
Resource Conservation and Recovery Act

VOA
Volatile Organics

1.3 Deviations from Planned Work

E & E collected samples of groundwater from auger holes placed west of Geoprobe® bores #4 and #6, in order to replace samples broken during shipment. The auger holes were placed immediately adjacent to the Anacostia River (within 10 feet), to avoid going through any substantial thickness of landfill material. The auger hole west of Geoprobe® #6 was sampled for BNAs, and the auger hole west of Geoprobe® #4 was analyzed for TRPH.

2 Results of Fieldwork

2.1 Kenilworth Landfill-Driggs Site

The primary objective of the sampling was to characterize the new fill placed by the Driggs Company.

In total 24 samples were collected with SS-18, SS-21, and SS-21 duplicate collected from below the toe of the landfill and SS-22 collected on the grassy area west of the landfill. The remaining 20 samples were taken from the recent fill. They were collected from or close to the nodes of a square grid with a spacing of 130 feet and oriented essentially north-south. The origin was an arbitrary point approximately 30 feet southwest of the southwest corner of the public toilets building near the entrance to the landfill.

Four lines of samples were laid out, and surface soil samples were numbered consecutively from 1 to 23 and collected in that order. Sample SS-23 was a duplicate from the location of sample 11. All samples were analyzed for semi-volatiles and a number of toxic metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver). Results were reported as milligrams/kilogram dry weight for metals and micrograms per kilogram dry weight for organics. The results were compared to risk based concentration (RBCs) for residential soils, prepared by the US Environmental Protection Agency Region III (1998).

2.1.1 Results of Analyses

All analytical results are attached as Appendix A.

Organics (Table 1)

Sixteen surface soil samples (fill) exceeded the RBCs for benzo(a)pyrene, as did SS-18 and SS-21/21 duplicate taken from below the toe of the landfill. Other polynuclear aromatic hydrocarbons (PAHs) exceeding RBCs included benzo(a)anthracene, chyrsene, benzo(b)fluoranthene, benzo(k)fluoranthene, and indeno(1,2,3-cd)pyrene. Highest concentrations were in SS-16, which contained over 370 milligrams/kilogram of total PAHs. The

next most concentrated sample was SS-19, which had a total of over 69 mg/kg PAHs. Benzo(a)pyrene exceeded the RBC for industrial soils (780 mg/kg), at SS-16, SS-20, SS-21 and SS-23. Three of these were surface samples of the newly placed fill (SS-16, SS-20 and SS-23), and SS-21 was a sample of surface soil from just below the toe of the landfill.

Metals (Table 2)

Eight toxic metals were selected for analysis; arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver. Only one sample location exceeded the USEPA action level for lead in residential soils; SS-21 and its duplicate SS-21. These were not samples of newly placed fill, but of soils just below the toe of the new fill.

2.2 Kenilworth Landfill Historic Fill

The Geoprobe® borehole soil and groundwater samples were collected to determine the nature of the former District of Columbia landfill waste and their possible impacts on the environment. The sediment samples were collected to determine if there is impact on surface water occurring from the District landfill waste.

In the case of sediment samples No. 4 and No. 5 from the silt ponds north and south of the newly filled area, the sediment is probably dominantly derived from the new fill, and probably does not reflect impacts from the former open dump/landfill.

RBCs
Risk Based Concentrations

All soil and sediment samples are compared to Risk Based Concentrations (RBCs) for Residential Soils, (as calculated by the U.S. Environmental Protection Agency Region III). These are not directly applicable to site conditions, but since there are no RBCs for subsurface soils or sediments the Residential Soils RBCs act as a conservative basis for comparison. Since there is no RBC for lead, E & E used the USEPA action level (400 mg/kg) as a basis for comparison.

The "groundwater" from the Geoprobe® bores was not directly comparable to water from a properly developed monitoring well, and there is no aquifer within the depth sampled. Comparison of the water analyses to drinking water is inappropriate, and because of high turbidity, the water is only an indication of what compounds or elements could be migrating with the groundwater, not of which are migrating.

Table 1 Semi-volatiles in Surface Soils at Kenilworth Landfill (µg/kg)

Parameter	Sample Identification SS-1	SS-2	SS-3	SS-4	SS-5	SS-6	SS-7	SS-8	RBCs (µg/kg)
Phenols									
Phenol	—	—	—	—	—	—	—	—	47,000,000
2-methylphenol	—	—	—	—	—	—	—	—	3,900,000
4- methylphenol	—	—	—	—	—	—	—	—	390,000
2,4-dimethylphenol	—	—	—	—	—	—	—	—	1,600,000
PAHs									
Acenaphthylene	—	—	—	—	—	—	—	—	NA
4-chloroaniline	—	—	—	—	—	—	—	—	310
Naphthalene	—	—	76 J	72 J	—	110 J	—	—	3,100.000
2-methylnaphthalene	—	—	47 J	38 J	—	81 J	—	—	3,100,000
Acenaphthene	60 J	—	100 J	76 J	—	180 J	—	89 J	4,700,000
Fluorene	65 J	—	120 J	96 J	—	190 J	—	73 J	3,100,000
Phenanthrene	620	47 J	810	760	100 J	1,000	140 J	580	NA
Anthracene	160	—	220 J	220 J	—	320 J	38 J	150 J	23,000,000
Fluoranthene	830	94 J	940	570	180 J	1,100	240 J	820	3,100,000
Pyrene	1,200	110 J	1,000	1,100	150 J	1,400	320 J	1,000	23,000,000
Benzo(a)anthracene	580	60 J	560	630	92 J	770	160 J	520	870
Chrysene	620	70 J	520	610	100 J	240 J	160 J	500	870
Benzo(b)fluoranthene	510	70 J	490	1,100	98 J	710	140 J	420	870
Benzo(a)pyrene	490	58 J	470	550	82 J	590	150 J	430	87
Indeno(1,2,3-cd) pyrene	95	—	98 J	120 J	46 J	100 J	—	96 J	870
Dibenzo(a,h)anthracene	110	—	—	—	—	—	—	—	87
Benzo(g,h,i)perylene	170	—	140 J	170 J	51 J	160 J	—	150 J	NA
Benzo(k)fluoranthene	690	—	570	—	79 J	600	190 J	460	8,700
Dibenzofuran	43 J	51 J	99 J	78 J	—	150 J	—	—	310,000
Phthalates									
Butylbenzylphthalate	180	—	—	—	—	78	—	—	16,000,000
Di-n-octylphthalate	—	—	—	—	—	—	—	—	1,600,000
Bis(2-ethylhexyl)phthalate	400	41 J	180 J	200 J	—	—	—	190 J	46,000

Table 1 (CONT.) Semi-volatiles in Surface Soils at Kenilworth Landfill (µg/kg)

Parameter	Sample Identification SS-9	SS-10	SS-11	SS-12	SS-13	SS-14	SS-15	SS-16	RBCs (µg/kg)
Phenols									
Phenol	—	—	—	—	—	—	—	120 J	47,000,000
2-methylphenol	—	—	—	—	—	—	—	64 J	3,900,000
4- methylphenol	—	—	—	—	—	—	—	200 J	390,000
2,4-dimethylphenol	—	—	—	—	—	—	—	64 J	1,600,000
PAHs									
Acenaphthylene	—	—	—	—	—	—	—	6,500	NA
4-chloroaniline	—	—	—	—	—	—	—	—	310
Naphthalene	—	38 J	120 J	—	—	—	—	1,600	3,100.000
2-methylnaphthalene	—	—	50 J	—	—	—	—	1,600	3,100,000
Acenaphthene	—	—	110 J	—	—	—	46 J	1,800	4,700,000
Fluorthene	—	39 J	120 J	—	—	—	46 J	15,000	3,100,000
Phenanthrene	130 J	310 J	1,000	390	140 J	—	450	80,000	NA
Anthracene	40 J	83 J	280 J	88 J	—	—	120 J	26,000	23,000,000
Fluoranthene	250 J	460	1,300	620	230 J	57 J	590	72,000	3,100,000
Pyrene	300 J	440	1,200	610	—	—	930	57,000	23,000,000
Benzo(a)anthracene	160 J	320 J	820	360 J	150 J	—	410	29,000	870
Chrysene	190 J	320 J	840	360 J	150 J	55 J	420	25,000	870
Benzo(b)fluoranthene	180 J	280 J	710	250 J	160 J	—	400	13,000	870
Benzo(a)pyrene	180 J	250 J	640	290 J	130 J	—	360	20,000	87
Indeno(1,2,3-cd) pyrene	46 J	98 J	190 J	79 J	—	—	62 J	7,600	870
Dibenzo(a,h)anthra-cene	—	—	—	—	—	—	—	—	87
Benzo(g,h,i)perylene	72 J	98 J	220 J	87 J	41 J	—	120 J	2,700	NA
Benzo(k)fluoranthene	170 J	250	640	340 J	130 J	—	400	21,000	8,700
Dibenzofuran	—	—	96 J	—	—	—	—	9,800	310,000
Phthalates									
Butylbenzylphthalate	75 J	—	—	—	—	—	—	—	16,000,000
Di-n-octylphthalate	—	—	—	—	—	—	—	—	1,600,000
Bis (2-ethylhexyl)phthalate	280 J	69 J	—	—	79 J	—	170 J	200	46,000

Table 1 (CONT.) Semi-volatiles in Surface Soils at Kenilworth Landfill (µg/kg)

Parameter	Sample Identification SS-17	SS-18	SS-19	SS-20	SS-21	SS-21D	SS-22	SS-23	RBCs (µg/kg)
Phenols									
Phenol	—	—	—	—	—	—	—	—	47,000,000
2-methylphenol	—	—	—	—	—	—	—	—	3,900,000
4- methylphenol	—	—	—	—	—	—	—	—	390,000
2,4-dimethylphenol	—	—	—	—	—	—	—	—	1,600,000
PAHs									
Acenaphthylene	—	—	—	—	—	—	—	45 J	NA
4-chloroaniline	—	—	—	—	56 J	—	260 J	—	310
Naphthalene	—	—	—	—	350 J	—	—	110 J	3,100,000
2-methylnaphthalene	—	—	—	—	170 J	—	—	59 J	3,100,000
Acenaphthene	—	—	—	330 J	410	46 J	—	130 J	4,700,000
Fluorene	—	—	—	320 J	620	63 J	—	160 J	3,100,000
Phenanthrene	270 J	260 J	—	4,800	4,000	850	130 J	1,200	NA
Anthracene	57 J	67 J	—	700 J	1,200	200 J	—	330 J	23,000,000
Fluoranthene	360 J	470	—	10,000	3,000	940	2,300	1,500	3,100,000
Pyrene	460	510	—	9,600	4,000	1,600	340 J	2,000	23,000,000
Benzo(a)anthracene	200 J	250 J	—	5,100	1,600	550	140 J	1,100	870
Chrysene	210 J	260 J	—	6,500	1,400	640	170 J	1,000	870
Benzo(b)fluoranthene	210 J	310 J	—	7,800	1,200	680	190 J	2,000	870
Benzo(a)pyrene	170 J	240 J	—	7,700	1,200	510		920	87
Indeno(1,2,3-cd) pyrene	—	74 J	—	1,800	170 J	77 J	—	120 J	870
Dibenzo(a,h)anthra-cene	—	—	—	—	—	—	—	—	87
Benzo(g,h,i)perylene	50 J	110 J	—	4,200	320 J	160 J	61 J	260 J	NA
Benzo(k)fluoranthene	210 J	290 J	—	10,000	1,300	600	190 J	—	8,700
Dibenzofuran	—	—	—	220 J	480	—	120 J	120 J	310,000
Phthalates									
Butylbenzylphthalate	180 J	—	—	260 J	—	46 J	41 J	—	16,000,000
Di-n-octylphthalate	80 J	—	—	—	—	—	—	—	1,600,000
Bis(2-ethylhexyl)phthalate	100 J	130 J	—	670 J	100 J	280 J	360 J	270 J	46,000

Table 1 (CONT.) Semi-volatiles in Surface Soils at Kenilworth Landfill (μg/kg)

Key:

[a] = Risk-Based Concentrations (USEPA Region III 1998).
NA = Not available.
— = Not detected.
J = Estimated.
Bolded figures exceed RBCs.

Table 2 Surface Soil Sampling Results for Metals (milligram per kilogram) Kenilworth Landfill

	Sample Identification												
Parameter	SS-1	SS-2	SS-3	SS-4	SS-5	SS-6	SS-7	SS-8	SS-9	SS-10	SS-11	SS-12	RBC[1]
Arsenic	2.0	0.94	0.84	0.96	1.0	1.6	1.9	1.9	2.7	1.1	0.94	0.98	43
Barium	54	54	120	120	20	94	68	68	80	41	99	28	5,500
Cadmium	2.8	3.4	3.2	2.3	0.75	1.2	2.8	2.8	3.5	1.6	2.0	1.4	39
Chromium	48	28	44	24	11	14	37	46	69	20	22	16	78,000[b]
Lead	45	13	44	29	9.2	30	20	24	56	18	63	17	400[c]
Mercury	0.08	—	—	—	—	0.066	—	0.056	0.67	—	0.068	0.045	23[d]
Selenium	2.8	2.0	1.5	—	—	—	1.9	3.2	1.3	—	—	—	390
Silver	—	—	—	—	—	—	—	—	5.9	—	—	—	390

Table 2 (CONT.) Surface Soil Sampling Results for Metals (milligram per kilogram) Kenilworth Landfill

Parameter	Sample Identification												
	SS-13	SS-14	SS-15	SS-16	SS-17	SS-18	SS-19	SS-20	SS-21	SS-21D	SS-22	SS-23	RBC[1]
Arsenic	2.1	3.0	3.4	6.9	2.4	3.6	16	2.0	6.7	4.5	4.0	1.7	43
Barium	57	17	74	180	79	360	87	63	860	500	320	140	5,500
Cadmium	3.4	2.8	2.6	2.2	2.7	4.9	2.6	2.4	6.4	5.3	6.4	1.8	39
Chromium	50	11	24	18	19	76	27	20	87	85	250	24	78,000[b]
Lead	24	8.3	120	81	46	300	11	32	940	880	230	82	400[c]
Mercury	0.034	—	0.090	0.070	1.9	—	—	0.043	1.8	0.058	—	0.045	23[d]
Selenium	1.9	1.4	1.9	3.3	1.5	1.6	1.9	3.2	3.0	2.0	1.3	—	390[d]
Silver	—	—	—	—	—	21	—	—	15	21	37	—	390[d]

Key:

[a] Risk-Based Concentration for residential soils. (US environmental Protection Agency Region III)
[b] For trivalent chromium.
[c] USEPA action level standards for residential soils.
[d] Based on mercuric chloride.

— = Not detected.

2.2.1 Analytical Results: TRPH and Metals

Sediments (see Table 3)

Of the compounds or metals in the five sediments samples collected, only lead, in SD-1 and SD-2 exceeded the RBCs. Since SD-2 was taken from a silt pond installed apparently within the area occupied by the former waste disposal area of the D.C. dump, this result is most probably not the result of runoff from recent fill. SD-1 is downgradient of the historic fill, and this level's expected given the amount of lead in the historic fill.

The duplicate of SD-4 showed very comparable levels of all metals except mercury, which was a factor of 20 times higher in concentration in the duplicate (1.8 mg/kg compared to 0.086 mg/kg). This illustrates the heterogeneity of material in and around the landfill.

TRPH averaged 90 mg/kg in sediments from the ditch and wetland east of the landfill and was notably higher at the downstream end of the ditch. It was non-detect in the silt ponds north and south of the landfill.

Subsurface Soils (see Table 3)

The Geoprobe® samples were collected from between eight to 15 feet below ground surface. All but the sample from GS-7 appeared to be of landfill materials. The heterogenous nature of the materials penetrated is illustrated by the fact that an attempt to collect a duplicate sample from one foot away from the first Geoprobe® hole at GS-7 encountered obviously different material (fill) at the same depth, so the attempt was abandoned.

Of the Geoprobe® samples, two (GS-5 and GS-6) exceeded the RBC for cadmium, and four (GS-4, GS-5, GS-6 and GS-8), exceeded the RBC for lead. Clearly the landfill materials from the old District open dump do have significantly elevated heavy metals and could be a potentially significant source of heavy metals. TRPH are not notably high, averaging 134 mg/kg in the samples taken on the west side of the fill and non-detect on the east side.

Groundwater (Table 4)

All the samples of groundwater from the Geoprobe® boreholes were highly turbid, and all of them, probably as a consequence, showed relatively high levels of heavy metals, notably lead (Table 4). Lead ranged from 380 to 17,000 µg/l. If it had been dissolved lead, three of the samples would technically have been hazardous waste, since they exceeded 5,000 µg/l. The

Table 3 Geoprobe® and Sediment Sampling Results (mg/kg) [a] for Metals and TRPH, Kenilworth Landfill, Northeast Washington, D.C.

	Sample Identification														
Parameter	SD-1	SD-2	SD-3	SD-4	SD-4D	SD-5	GS-1	GS-2	GS-3	GS-4	GS-5	GS-6	GS-7	GS-8	RBC[b]
Percent solids	47	42	79	70	67	61	72	76	78	83	84	79	75	66	NA
TRPH (mg/kg)	200	42	26	—	—	—	—	120	160	45	360	120	—	—	None
Arsenic	11	6.5	4.0	1.4	1.6	2.5	2.8	2.3	1.2	16	12	—	3.3	3.2	43
Barium	140	480	110	98	100	110	130	66	51	1,200	420	760	89	760	5,500
Cadmium	4.8	6.7	3.1	3.9	4.1	4.5	3.5	2.1	1.5	28	190	42	4.6	11	39
Chromium	57	89	35	46	42	47	23	34	25	87	130	180	33	55	78,000[b]
Lead	500	520	97	40	41	49	120	38	30	4,300	1,100	4,200	21	1,100	400[c]
Mercury	0.87	0.58	0.16	0.086	1.8	0.098	0.12	0.092	0.81	0.35	0.28	—	0.053	3.7	23[d]
Selenium	—	—	—	—	—	—	3.1	—	—	14	13	25	26	—	390
Silver	—	7.6	1.6	—	—	—	—	—	—	12	9.4	18	—	—	390

[a] Except as otherwise specified.
[b] For trivalent chromium.
[c] USEPA action level for residential soils.
[d] Based on mercuric chloride.

Key:

GS = Geoprobe® soil sample.
NA = Not applicable.
RBC = Risk-Based Concentration for Residential Soils (U.S. Environmental Protection Agency, Region III, 1998).
SD = Sediment.
— = Not detected.

almost tenfold variation between GW-1 and its duplicate shows that the metals in the samples is mostly in suspended solids.

What these samples illustrate is the potential for migration of heavy metals from the landfill into Watts Branch and the Anacostia River.

TRPH was noticeably low in the groundwater, although also variable. GW-4 and its duplicate showed non-detect and 6.3 mg/liter, respectively. Overall average was less than two milligrams/liter (Table 4).

2.2.2 Analytical Results: Organics

Sediments and Subsurface Soils (Table 5)

The organics found in the sediments and subsurface soils around the landfill were almost exclusively low levels of polyaromatic hydrocarbons (PAHs) and some phthalates. The one exception was GS-6 which showed 1,3-dichlorobenzene (97 J µg/kg) and 1,2,4-trichlorobenzene (1,200 µg/kg) (see Table 5).

Benzoic acid showed up in most samples, but it is an impurity in the solvent used to extract the samples and is disregarded.

Groundwater

The groundwater is remarkable for essentially being free of organics in the volatile and semivolatile groups.

The low levels of acetone may be laboratory artifacts, since it is a common laboratory solvent but was not found in the blank and cannot be dismissed as such. The phthalate was found in the blank and the other compounds found are in the low parts per billion range, 1,2-dichloroethane (2.6 J µg/L); 2-butanone (9.8 J µg/L); total xylenes (1.4 J µg/L), and benzoic acid (2.0 J µg/L) (Table 6).

Table 4 Groundwater[a] Analyses for Metals and TRPH (micrograms per liter), Kenilworth Landfill, Northeast Washington, D.C.

	Sample Identification									
Parameter	GW-1	GW-1D	GW-2	GW-3	GW-4	GW-5	GW-6	GW-7	GW-8	Blank
Arsenic	42	73	55	ND	46	—	17	200	350	—
Barium	2,500	930	3,200	5,000	3,600	850	1,600	1,100	27,000	—
Cadmium	43	6.0	100	41	82	8.0	41	94	220	—
Chromium	270	39	900	140	250	21	160	800	1,400	—
Lead	4,600	490	5,100	2,100	5,800	500	3,600	380	17,000	—
Mercury	—	—	2.9	2.1	2.1	—	0.97	1.0	2.7	—
Selenium	11	—	50	43	44	16	26	58	38	—
Silver	34	—	40	38	77	—	37	—	370	—
TRPH	1.0	NS	5.6	—	—[b]	—	1.7	—	15	—

[a] Samples were collected from Geoprobe® boreholes and were highly turbid.
[b] GW-4 duplicate showed 6.3 mg/L.

Key:

NS = Not sampled.
— = Not detected.

Table 5 Organics in Sediment and Subsurface Soils at Kenilworth Landfill, Northeast Washington, D.C. (µg/kg)

Parameter	Sample Identification													
	SD-1	SD-2	SD-3	SD-4	SD-5	GS-1	GS-2	GS-3	GS-4	GS-5	GS-6	GS-7	GS-8	RBCs[1]
1,3-dichlorobenzene	—	—	—	—	—	—	—	—	—	—	970 J	—	—	2,300,000
Phenol	—	—	—	—	—	—	—	—	—	—	58 J	—	—	47,000,000
1,2,4-trichlorobenzene	—	—	—	—	—	—	—	—	—	—	1,200	—	—	780,000
4-methyl phenol	—	—	—	—	—	—	46 J	—	—	—	—	—	—	390,000
PAHs														
Acenaphthylene	—	—	—	51 J	—	—	160 J	46 J	—	—	—	—	—	—
Naphthalene	—	—	—	—	76 J	—	86 J	—	—	—	100 J	—	—	3,100,000
2-methylnaphthalene	110 J	—	—	—	85 J	—	130 J	62 J	—	—	60 J	—	—	3,100,000
Acenaphthene	—	—	84 J	77 J	—	—	53 J	—	—	—	60 J	—	—	4,700,000
Fluorene	—	—	71 J	74 J	56 J	—	100 J	—	—	—	64 J	—	—	3,100,000
Phenanthrene	410 J	320 J	830	780	490 J	150 J	890	120 J	—	180 J	380 J	—	110 J	NA
Anthracene	110 J	95 J	210 J	210	130 J	—	280 J	42 J	—	—	96 J	—	—	23,000,000
Fluoranthene	740	450 J	960	1,300	720	190 J	1,300	180 J	64 J	260 J	570	—	95 J	3,100,000
Pyrene	1,400	720 J	950	1,300	1,000	170 J	2,100	250 J	53 J	620	620	—	79 J	2,300,000
Benzo(a)anthracene	460	270 J	510	790	430 J	87 J	1,000	120 J	53 J	290 J	450	—	—	870
Chrysene	610	310 J	520	790	440 J	82 J	1,000	130 J	62 J	410	470	—	53 J	870
Benzo(b)fluoranthene	770	410 J	390 J	760	610	80 J	980	150 J	95 J	380 J	470	—	—	870
Benzo(a)pyrene	480	310 J	400 J	680	410 J	72 J	920	140 J	66 J	290 J	410 J	—	—	87
Indeno(1,2,3-cd)pyrene	91	—	130 J	270 J	62 J	—	190	43 J	—	45 J	120 J	—	—	870
Dibenzo(a,h)anthracene	—	—	100 J	—	—	—	—	—	—	—	—	—	—	87
Benzo(g,h,i)perylene	210	—	150 J	290 J	120 J	—	300	70 J	—	98 J	150 J	—	—	NA
Benzo(k)fluoranthene	530	300 J	370 J	580	390 J	63 J	820	130 J	62 J	200 J	440	—	—	—
Dibenzofuran	—	—	53 J	54 J	—	—	45 J	—	—	—	48 J	—	—	310,000

Table 5 Organics in Sediment and Subsurface Soils at Kenilworth Landfill, Northeast Washington, D.C. (µg/kg)

Parameter	Sample Identification													
	SD-1	SD-2	SD-3	SD-4	SD-5	GS-1	GS-2	GS-3	GS-4	GS-5	GS-6	GS-7	GS-8	RBCs[a]
Phthalates														
Butylbenzyl phthalate	190 J	—	76 J	—	—	—	—	—	—	—	—	—	—	16,000,000
Bis(2-ethylhexyl) phthalate	800	96 J	—	—	200 J	50 J	—	—	210 J	100 J	920	—	—	46,000

[a] Risk-Based Concentrations for residential soil (USEPA Region III 1998).

Key:

J = Estimated.
NS = Not available.
— = Not detected.

Table 6 Groundwater[a] Analyses for Organics [b] (micrograms/liter), Kenilworth Landfill, Northeast Washington, D.C.

Parameter	Sample Identification									
	GW-1	GW-1D	GW-2	GW-3	GW-4	GW-5	GW-6	GW-7	GW-8	Blank
Volatiles (Method 8260 B)										
Acetone	15	—	18	11	—	—	12	13	—	—
1,2-dichloroethene (total)	—	—	2.6 J	—	—	—	—	—	—	—
2-butanone	—	—	9.8 J	—	—	—	—	—	—	—
Total xylenes	—	—	—	—	—	—	—	1.4 J	—	—
BNAs (Method 8270 C)										
bis(2-ethylhexyl) phthalate	3.2 J	—	—	—	—	—	—	—	—	46
Benzoic acid	—	—	—	—	—	—	2.0 J	—	—	—

[a] Water was taken from Geoprobe® holes except for GW-4 and GW-4D for TRPH and GW-6 for BNAs. Geoprobe® samples were highly turbid.
[b] Only TRPH, volatiles, and BNAs were analyzed.

Key:

BNAs = Base/neutral acid extractables.
J = Estimated.
— = Not detected.

3 Conclusions

Portions of the fill placed by Driggs exceeds risk based concentrations for industrial soil because of its content of PAHs.

The District of Columbia waste has probably impacted sediments around the site with PAHs and lead. The content of heavy metals, especially lead, in the historic waste represents a significant potential threat to the environment.

1. Hewitt, Julia, National Park Service, National Capital Region
1100 Ohio Drive, S. W. Washington D.C. 20242

2. U.S. Environmental Protection Agency 4/1/98, Risk-Based Concentration Table, Region III
841 Chestnut Building, Philadelphia PA. 19107

3. U.S. Geological Survey, (USGS), 1965, 7.5 minute Topographic Series, Washington East D.C.-MD, 1965 Photo Revised 1979

A

Analytical Results and Quality Assurance Kenilworth Landfill, Northeast Washington, D.C.

ecology and environment, inc.
International Specialists in the Environment

BUFFALO CORPORATE CENTER
368 Pleasant View Drive, Lancaster, New York 14086
Tel: 716/684-8060, Fax: 716/684-0844

Memorandum

To: Hussein Aldis - Arlington

From: Tony Bogolin, Project Manager TB

Date: November 18, 1998

Subject: YM-4000 Kenilworth

RE: 9802.592

CC: Lab File

Attached is the laboratory report of the analysis conducted on twenty samples received at the Analytical Services Center on October 16, 1998. Analysis was performed according to the procedures set forth in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, Update III, June 1997, USEPA.

The chain of custody form provided herein is integral to this report and must be included with the analytical results forms upon transferal to another data user.

All samples on which this report is based will be retained by E & E for a period of 30 days from the date of this report, unless otherwise instructed by the client. If additional storage of samples is requested by the client, a storage fee of $1.00 per sample container per month will be charged for each sample, with such charges accruing until destruction of the samples is authorized by the client.

TB/jk
Enclosure

CHAIN OF CUSTODY RECORD

ASC analytical services center

Ecology and Environment, Inc., Analytical Services Center
4493 Walden Avenue, Lancaster, New York, 14086, Tel: 716/685-8080, Fax 716/685-0852
Where Scientific Excellence and Efficiency Meet

Cooler No: 1
Lab:

Page: 1 of 3

PROJECT No: YM04
SITE NAME: Kenilworth
LOCATION: (Include State) Wash, DC
CLIENT: National Parc Services
PROJECT MANAGER: Hussein Aldis
OFFICE No: C 40
FIELD TEAM LEADER: Hussein Aldis
PHONE No: (703)5226065
SAMPLERS: (PRINT) Hussein Aldis, Sylvie Gomis

CONTAINER TYPE AND PRESERVATIVE: 8oz/ice

REQUESTED ANALYSIS: BNA TRPH metals

TURNAROUND TIME: 24-HOUR ☐ 48-HOUR ☐ 1-WEEK ☐ STANDARD ☐ RUSH (R U S H) RUSH _____ days OTHER _____

(FOR LAB USE ONLY)
Lab Job No:
Report type:
Batch QC: Yes No

DATE	TIME	SAMPLE ID	SAMPLE MATRIX	CHECK FOR MS/MSD	SAMPLE TYPE	No. OF CONTAINERS	BNA TRPH metals							OVA/HNU READINGS (PPM)	BEGINNING DEPTH (FEET BGS)	ENDING DEPTH (FEET BGS)	REMARKS
10/13	1000	KS-SS-1	SS		O	1	✓										
	1010	KS-SS-2	SS		O	1	✓										
	1020	KS-SS-3	SS		O	1	✓										
	1030	KS-SS-4	SS		O	1	✓										
	1040	KS-SS-5	SS		O	1	✓										
	1050	KS-SS-6	SS		O	1	✓										
	1100	KS-SS-7	SS		O	1	✓										
	1110	KS-SS-8	SS		O	1	✓										
	1110	KS-SS-9	SS		O	1	✓										
	1120	KS-SS-10	SS		O	1	✓										

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	Ship Via:	Date:	Temperature Blank Info.
[signature]	10/14/98			Airborne		Enclosed: Yes No
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time: 10-16-98 1020	BL/Airbill Number:		(FOR LAB USE ONLY) Date: _____ Time: _____ Temperature: _____ °C

Distribution: White - Lab original Yellow - Field team leader

0881297

CHAIN OF CUSTODY RECORD

ASC analytical services center

Ecology and Environment, Inc., Analytical Services Center
4493 Walden Avenue, Lancaster, New York, 14086, Tel: 716/685-8080, Fax 716/685-0852
Where Scientific Excellence and Efficiency Meet

Cooler No: 1
Lab:

Page: 2 of 3

PROJECT No: YM04
SITE NAME: Kenilworth
LOCATION: (Include State) Wash, DC
CLIENT: National Parc Services
PROJECT MANAGER: Hussein Aldis
OFFICE No: 40
FIELD TEAM LEADER: Hussein Aldis
PHONE No: (703)5226065
SAMPLERS: (PRINT) Hussein Aldis, Sylvie Gomis

CONTAINER TYPE AND PRESERVATIVE: 8oz/ice

REQUESTED ANALYSIS: 8VATPH metals

TURNAROUND TIME: 24-HOUR, 48-HOUR, 1-WEEK, STANDARD, RUSH ____ days, OTHER ____

(FOR LAB USE ONLY)
Lab Job No:
Report type:
Batch QC: Yes No

DATE	TIME	SAMPLE ID	SAMPLE MATRIX	CHECK FOR MS/MSD	SAMPLE TYPE	No. OF CONTAINERS	8VATPH metals	OVA/HNU READINGS (PPM)	BEGINNING DEPTH (FEET BGS)	ENDING DEPTH (FEET BGS)	REMARKS
10/13	1130	KS-SS-11	SS		0	1	✓				
	1140	KS-SS-12	SS		0	1	✓				
	1150	KS-SS-13	SS		0	1	✓				
	1200	KS-SS-14	SS		0	1	✓				
	1300	KS-SS-15	SS		0	1	✓				
	1310	KS-SS-16	SS		0	1	✓				
	1320	KS-SS-17	SS		0	1	✓				
	1330	KS-SS-18	SS		0	1	✓				
	1340	KS-SS-19	SS		0	1	✓				
	1350	KS-SS-20	SS		0	1	✓				

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	Ship Via:	Date:	Temperature Blank Info. Enclosed: Yes No
[signature]	10/14			Airborn		(FOR LAB USE ONLY) Date: ____ Time: ____
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time: 10/16/96 1020	BL/Airbill Number:		Temperature: ____ °C

Distribution: White - Lab original Yellow - Field team leader

0881297

Ecology and Environment, Inc. Analytical Services Center

Cooler Receipt Form

PACKAGE RECEIPT #: 1887 NUMBER OF COOLERS: 1 DATE RECEIVED: 10-15-98

E & E PROJECT #: YM 4000 PROJECT OR SITE NAME: Kenilworth

A. Preliminary Examination Phase

CIRCLE ONE

1. Did coolers come with airbill or packing slip? _____ YES NO NA

   Enter carrier here and print airbill # below: _____

2. Did cooler(s) have custody seals? _____ YES NO NA

   If YES, how many and where? 2 on Seam

3. Were custody seals unbroken and intact on receipt? _____ YES NO* NA

4. Were custody seals dated and signed? _____ YES NO NA

   If YES, enter date: _____ Name: _____

5. Sign here to acknowledge receipt of cooler (s): _____

   Date cooler(s) opened: 10-15-98 C-O-C numbers: _____

   Cooler(s) opened by (print): Kelly Gordon Signature: _____

6. Were the C-O-C forms received? _____ YES NO* NA

7. Was the project identifiable from the C-O-C form? _____ YES NO* NA
   If YES, enter the project number and name in the heading above.

Please record Temperature Blank or Cooler Temperature for Each Cooler. Range (2 - 5°C)*

AIRBILL #	TEMP. °C	AIRBILL #	TEMP. °C	AIRBILL #	TEMP. °C
806636056700	3.5				
	3.5				
596 002 3941	5.0				

Thermometer # 116 Correction Factor 0.0 * If No or Temperature Outside of Acceptable Range, a CAF must be filed. CAF # _____

B. Unpacking Phase

8. Was enough packing material used in cooler(s)? _____ YES NO NA
   Type of material: Vermiculite Bubble Wrap Other

9. If required, was enough ice used? _____ YES NO NA
   If YES, type of ice used: Wet Dry Blue Other

10. Was a temperature blank included inside cooler(s)? _____ YES NO NA
    If YES, indicate temperature blank temperature in table above. If NO, indicate cooler temperature in table above.

11. Were all containers sealed in separate plastic bags? _____ YES NO NA

12. Did all containers arrive unbroken and in good condition? _____ YES NO* NA

C. Login Phase

Samples Logged in By (print): Kelly Gordon Signature: _____ Date: 10-16-98

13. Were all container labels complete (e.g. date, time preserv)? _____ YES NO* NA

14. Were all C-O-C forms filled out properly in ink and signed? _____ YES NO* NA

15. Did the C-O-C form agree with containers received? _____ YES NO* NA

16. Were the correct containers used for the tests requested? _____ YES NO* NA

17. Were the correct preservatives listed on the sample labels? _____ YES NO* NA

18. Was a sufficient sample volume sent for the tests requested? _____ YES NO* NA

19. Were all volatile samples received without head space? _____ YES NO* NA

JOB NUMBER : 9802.592

Ecology and Environment, Inc.
SAMPLE TRACKING REPORT

SAMPLE NUMBER	CLIENT SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED
8270C BNA	-S			
17007.01	KS-SS-1	10/13/98	10/22/98	11/01/98
17008.01	KS-SS-2	10/13/98	10/22/98	11/01/98
17009.01	KS-SS-3	10/13/98	10/22/98	11/01/98
17010.01	KS-SS-4	10/13/98	10/22/98	11/01/98
17011.01	KS-SS-5	10/13/98	10/22/98	11/01/98
17012.01	KS-SS-6	10/13/98	10/22/98	11/01/98
17013.01	KS-SS-7	10/13/98	10/22/98	11/01/98
17014.01	KS-SS-8	10/13/98	10/22/98	11/01/98
17015.01	KS-SS-9	10/13/98	10/22/98	11/02/98
17016.01	KS-SS-10	10/13/98	10/22/98	11/02/98
17017.01	KS-SS-11	10/13/98	10/22/98	11/02/98
17018.01	KS-SS-12	10/13/98	10/22/98	11/02/98
17019.01	KS-SS-13	10/13/98	10/22/98	11/02/98
17020.01	KS-SS-14	10/13/98	10/22/98	11/02/98
17021.01	KS-SS-15	10/13/98	10/22/98	11/02/98
17022.01	KS-SS-16	10/13/98	10/22/98	11/02/98
17023.01	KS-SS-17	10/13/98	10/22/98	11/02/98
17024.01	KS-SS-18	10/13/98	10/22/98	11/02/98
17025.01	KS-SS-19	10/13/98	10/22/98	11/02/98
17026.01	KS-SS-20	10/13/98	10/22/98	11/02/98

TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 88 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17007 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-1

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		370
bis(2-Chloroethyl)ether	ND		370
2-Chlorophenol	ND		370
1,3-Dichlorobenzene	ND		370
1,4-Dichlorobenzene	ND		370
Benzyl alcohol	ND		370
1,2-Dichlorobenzene	ND		370
2-Methylphenol	ND		370
2,2'-oxybis(1-Chloropropane)	ND		370
4-Methylphenol	ND		370
n-Nitroso-di-n-propylamine	ND		370
Hexachloroethane	ND		370
Nitrobenzene	ND		370
Isophorone	ND		370
2-Nitrophenol	ND		370
2,4-Dimethylphenol	ND		370
Benzoic acid	ND		1800
bis(2-Chloroethoxy)methane	ND		370
2,4-Dichlorophenol	ND		370
1,2,4-Trichlorobenzene	ND		370
Naphthalene	ND		370
4-Chloroaniline	ND		370
Hexachlorobutadiene	ND		370
4-Chloro-3-methylphenol	ND		370
2-Methylnaphthalene	ND		370
Hexachlorocyclopentadiene	ND		1900
2,4,6-Trichlorophenol	ND		370
2,4,5-Trichlorophenol	ND		1800
2-Chloronaphthalene	ND		370
2-Nitroaniline	ND		1800

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 88 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17007 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-1

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		370
Acenaphthylene	ND		370
3-Nitroaniline	ND		1800
Acenaphthene	60	J	370
2,4-Dinitrophenol	ND		1800
4-Nitrophenol	ND		1800
Dibenzofuran	43	J	370
2,4-Dinitrotoluene	ND		370
2,6-Dinitrotoluene	ND		370
Diethylphthalate	ND		370
4-Chlorophenylphenylether	ND		370
Fluorene	65	J	370
4-Nitroaniline	ND		1800
4,6-Dinitro-2-methylphenol	ND		1800
n-Nitrosodiphenylamine	ND		370
4-Bromophenylphenylether	ND		370
Hexachlorobenzene	ND		370
Pentachlorophenol	ND		1800
Phenanthrene	620		370
Anthracene	160	J	370
Fluoranthene	830		370
di-n-Butylphthalate	ND		370
Pyrene	1200		370
Butylbenzylphthalate	180	J	370
3,3'-Dichlorobenzidine	ND		740
Benzo(a)anthracene	580		370
bis(2-Ethylhexyl)phthalate	490		370
Chrysene	620		370
di-n-Octylphthalate	ND		370
Benzo(b)fluoranthene	510		370
Benzo(k)fluoranthene	690		370
Benzo(a)pyrene	490		370
Indeno(1,2,3-cd)pyrene	95	J	370
Dibenzo(a,h)anthracene	110	J	370
Benzo(ghi)perylene	170	J	370

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 75 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17008 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-2

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		430
bis(2-Chloroethyl)ether	ND		430
2-Chlorophenol	ND		430
1,3-Dichlorobenzene	ND		430
1,4-Dichlorobenzene	ND		430
Benzyl alcohol	ND		430
1,2-Dichlorobenzene	ND		430
2-Methylphenol	ND		430
2,2'-oxybis(1-Chloropropane)	ND		430
4-Methylphenol	ND		430
n-Nitroso-di-n-propylamine	ND		430
Hexachloroethane	ND		430
Nitrobenzene	ND		430
Isophorone	ND		430
2-Nitrophenol	ND		430
2,4-Dimethylphenol	ND		430
Benzoic acid	ND		2100
bis(2-Chloroethoxy)methane	ND		430
2,4-Dichlorophenol	ND		430
1,2,4-Trichlorobenzene	ND		430
Naphthalene	ND		430
4-Chloroaniline	ND		430
Hexachlorobutadiene	ND		430
4-Chloro-3-methylphenol	ND		430
2-Methylnaphthalene	ND		430
Hexachlorocyclopentadiene	ND		2200
2,4,6-Trichlorophenol	ND		430
2,4,5-Trichlorophenol	ND		2100
2-Chloronaphthalene	ND		430
2-Nitroaniline	ND		2100

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 75 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17008 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-2

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		430
Acenaphthylene	ND		430
3-Nitroaniline	ND		2100
Acenaphthene	ND		430
2,4-Dinitrophenol	ND		2100
4-Nitrophenol	ND		2100
Dibenzofuran	ND		430
2,4-Dinitrotoluene	ND		430
2,6-Dinitrotoluene	ND		430
Diethylphthalate	ND		430
4-Chlorophenylphenylether	ND		430
Fluorene	ND		430
4-Nitroaniline	ND		2100
4,6-Dinitro-2-methylphenol	ND		2100
n-Nitrosodiphenylamine	ND		430
4-Bromophenylphenylether	ND		430
Hexachlorobenzene	ND		430
Pentachlorophenol	ND		2100
Phenanthrene	47	J	430
Anthracene	ND		430
Fluoranthene	94	J	430
di-n-Butylphthalate	ND		430
Pyrene	110	J	430
Butylbenzylphthalate	ND		430
3,3'-Dichlorobenzidine	ND		860
Benzo(a)anthracene	60	J	430
bis(2-Ethylhexyl)phthalate	46	J	430
Chrysene	70	J	430
di-n-Octylphthalate	ND		430
Benzo(b)fluoranthene	70	J	430
Benzo(k)fluoranthene	51	J	430
Benzo(a)pyrene	58	J	430
Indeno(1,2,3-cd)pyrene	ND		430
Dibenzo(a,h)anthracene	ND		430
Benzo(ghi)perylene	ND		430

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
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TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 74 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17009 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-3

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		430
bis(2-Chloroethyl)ether	ND		430
2-Chlorophenol	ND		430
1,3-Dichlorobenzene	ND		430
1,4-Dichlorobenzene	ND		430
Benzyl alcohol	ND		430
1,2-Dichlorobenzene	ND		430
2-Methylphenol	ND		430
2,2'-oxybis(1-Chloropropane)	ND		430
4-Methylphenol	ND		430
n-Nitroso-di-n-propylamine	ND		430
Hexachloroethane	ND		430
Nitrobenzene	ND		430
Isophorone	ND		430
2-Nitrophenol	ND		430
2,4-Dimethylphenol	ND		430
Benzoic acid	ND		2100
bis(2-Chloroethoxy)methane	ND		430
2,4-Dichlorophenol	ND		430
1,2,4-Trichlorobenzene	ND		430
Naphthalene	76	J	430
4-Chloroaniline	ND		430
Hexachlorobutadiene	ND		430
4-Chloro-3-methylphenol	ND		430
2-Methylnaphthalene	47	J	430
Hexachlorocyclopentadiene	ND		2200
2,4,6-Trichlorophenol	ND		430
2,4,5-Trichlorophenol	ND		2100
2-Chloronaphthalene	ND		430
2-Nitroaniline	ND		2100

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 74 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17009 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-3

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		430
Acenaphthylene	ND		430
3-Nitroaniline	ND		2100
Acenaphthene	100	J	430
2,4-Dinitrophenol	ND		2100
4-Nitrophenol	ND		2100
Dibenzofuran	99	J	430
2,4-Dinitrotoluene	ND		430
2,6-Dinitrotoluene	ND		430
Diethylphthalate	ND		430
4-Chlorophenylphenylether	ND		430
Fluorene	120	J	430
4-Nitroaniline	ND		2100
4,6-Dinitro-2-methylphenol	ND		2100
n-Nitrosodiphenylamine	ND		430
4-Bromophenylphenylether	ND		430
Hexachlorobenzene	ND		430
Pentachlorophenol	ND		2100
Phenanthrene	810		430
Anthracene	220	J	430
Fluoranthene	940		430
di-n-Butylphthalate	ND		430
Pyrene	1000		430
Butylbenzylphthalate	ND		430
3,3'-Dichlorobenzidine	ND		860
Benzo(a)anthracene	560		430
bis(2-Ethylhexyl)phthalate	180	J	430
Chrysene	520		430
di-n-Octylphthalate	ND		430
Benzo(b)fluoranthene	490		430
Benzo(k)fluoranthene	570		430
Benzo(a)pyrene	470		430
Indeno(1,2,3-cd)pyrene	98	J	430
Dibenzo(a,h)anthracene	ND		430
Benzo(ghi)perylene	140	J	430

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 88 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17010 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-4

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		380
bis(2-Chloroethyl)ether	ND		380
2-Chlorophenol	ND		380
1,3-Dichlorobenzene	ND		380
1,4-Dichlorobenzene	ND		380
Benzyl alcohol	ND		380
1,2-Dichlorobenzene	ND		380
2-Methylphenol	ND		380
2,2'-oxybis(1-Chloropropane)	ND		380
4-Methylphenol	ND		380
n-Nitroso-di-n-propylamine	ND		380
Hexachloroethane	ND		380
Nitrobenzene	ND		380
Isophorone	ND		380
2-Nitrophenol	ND		380
2,4-Dimethylphenol	ND		380
Benzoic acid	ND		1800
bis(2-Chloroethoxy)methane	ND		380
2,4-Dichlorophenol	ND		380
1,2,4-Trichlorobenzene	ND		380
Naphthalene	72	J	380
4-Chloroaniline	ND		380
Hexachlorobutadiene	ND		380
4-Chloro-3-methylphenol	ND		380
2-Methylnaphthalene	38	J	380
Hexachlorocyclopentadiene	ND		1900
2,4,6-Trichlorophenol	ND		380
2,4,5-Trichlorophenol	ND		1800
2-Chloronaphthalene	ND		380
2-Nitroaniline	ND		1800

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 88 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17010 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-4

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		380
Acenaphthylene	ND		380
3-Nitroaniline	ND		1800
Acenaphthene	76	J	380
2,4-Dinitrophenol	ND		1800
4-Nitrophenol	ND		1800
Dibenzofuran	78	J	380
2,4-Dinitrotoluene	ND		380
2,6-Dinitrotoluene	ND		380
Diethylphthalate	ND		380
4-Chlorophenylphenylether	ND		380
Fluorene	96	J	380
4-Nitroaniline	ND		1800
4,6-Dinitro-2-methylphenol	ND		1800
n-Nitrosodiphenylamine	ND		380
4-Bromophenylphenylether	ND		380
Hexachlorobenzene	ND		380
Pentachlorophenol	ND		1800
Phenanthrene	760		380
Anthracene	220	J	380
Fluoranthene	970		380
di-n-Butylphthalate	ND		380
Pyrene	1100		380
Butylbenzylphthalate	ND		380
3,3'-Dichlorobenzidine	ND		750
Benzo(a)anthracene	630		380
bis(2-Ethylhexyl)phthalate	200	J	380
Chrysene	610		380
di-n-Octylphthalate	ND		380
Benzo(b)fluoranthene	1100		380
Benzo(k)fluoranthene	ND		380
Benzo(a)pyrene	550		380
Indeno(1,2,3-cd)pyrene	120	J	380
Dibenzo(a,h)anthracene	ND		380
Benzo(ghi)perylene	170	J	380

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 88 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17011 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-5

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		370
bis(2-Chloroethyl)ether	ND		370
2-Chlorophenol	ND		370
1,3-Dichlorobenzene	ND		370
1,4-Dichlorobenzene	ND		370
Benzyl alcohol	ND		370
1,2-Dichlorobenzene	ND		370
2-Methylphenol	ND		370
2,2'-oxybis(1-Chloropropane)	ND		370
4-Methylphenol	ND		370
n-Nitroso-di-n-propylamine	ND		370
Hexachloroethane	ND		370
Nitrobenzene	ND		370
Isophorone	ND		370
2-Nitrophenol	ND		370
2,4-Dimethylphenol	ND		370
Benzoic acid	ND		1800
bis(2-Chloroethoxy)methane	ND		370
2,4-Dichlorophenol	ND		370
1,2,4-Trichlorobenzene	ND		370
Naphthalene	ND		370
4-Chloroaniline	ND		370
Hexachlorobutadiene	ND		370
4-Chloro-3-methylphenol	ND		370
2-Methylnaphthalene	ND		370
Hexachlorocyclopentadiene	ND		1800
2,4,6-Trichlorophenol	ND		370
2,4,5-Trichlorophenol	ND		1800
2-Chloronaphthalene	ND		370
2-Nitroaniline	ND		1800

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 88 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17011 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-5

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		370
Acenaphthylene	ND		370
3-Nitroaniline	ND		1800
Acenaphthene	ND		370
2,4-Dinitrophenol	ND		1800
4-Nitrophenol	ND		1800
Dibenzofuran	ND		370
2,4-Dinitrotoluene	ND		370
2,6-Dinitrotoluene	ND		370
Diethylphthalate	ND		370
4-Chlorophenylphenylether	ND		370
Fluorene	ND		370
4-Nitroaniline	ND		1800
4,6-Dinitro-2-methylphenol	ND		1800
n-Nitrosodiphenylamine	ND		370
4-Bromophenylphenylether	ND		370
Hexachlorobenzene	ND		370
Pentachlorophenol	ND		1800
Phenanthrene	100	J	370
Anthracene	ND		370
Fluoranthene	180	J	370
di-n-Butylphthalate	ND		370
Pyrene	150	J	370
Butylbenzylphthalate	ND		370
3,3'-Dichlorobenzidine	ND		740
Benzo(a)anthracene	92	J	370
bis(2-Ethylhexyl)phthalate	ND		370
Chrysene	100	J	370
di-n-Octylphthalate	ND		370
Benzo(b)fluoranthene	98	J	370
Benzo(k)fluoranthene	79	J	370
Benzo(a)pyrene	82	J	370
Indeno(1,2,3-cd)pyrene	46	J	370
Dibenzo(a,h)anthracene	ND		370
Benzo(ghi)perylene	51	J	370

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 91 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17012 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-6

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		360
bis(2-Chloroethyl)ether	ND		360
2-Chlorophenol	ND		360
1,3-Dichlorobenzene	ND		360
1,4-Dichlorobenzene	ND		360
Benzyl alcohol	ND		360
1,2-Dichlorobenzene	ND		360
2-Methylphenol	ND		360
2,2'-oxybis(1-Chloropropane)	ND		360
4-Methylphenol	ND		360
n-Nitroso-di-n-propylamine	ND		360
Hexachloroethane	ND		360
Nitrobenzene	ND		360
Isophorone	ND		360
2-Nitrophenol	ND		360
2,4-Dimethylphenol	ND		360
Benzoic acid	ND		1700
bis(2-Chloroethoxy)methane	ND		360
2,4-Dichlorophenol	ND		360
1,2,4-Trichlorobenzene	ND		360
Naphthalene	110	J	360
4-Chloroaniline	ND		360
Hexachlorobutadiene	ND		360
4-Chloro-3-methylphenol	ND		360
2-Methylnaphthalene	81	J	360
Hexachlorocyclopentadiene	ND		1800
2,4,6-Trichlorophenol	ND		360
2,4,5-Trichlorophenol	ND		1700
2-Chloronaphthalene	ND		360
2-Nitroaniline	ND		1700

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 91 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17012 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-6

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		360
Acenaphthylene	ND		360
3-Nitroaniline	ND		1700
Acenaphthene	180	J	360
2,4-Dinitrophenol	ND		1700
4-Nitrophenol	ND		1700
Dibenzofuran	150	J	360
2,4-Dinitrotoluene	ND		360
2,6-Dinitrotoluene	ND		360
Diethylphthalate	ND		360
4-Chlorophenylphenylether	ND		360
Fluorene	190	J	360
4-Nitroaniline	ND		1700
4,6-Dinitro-2-methylphenol	ND		1700
n-Nitrosodiphenylamine	ND		360
4-Bromophenylphenylether	ND		360
Hexachlorobenzene	ND		360
Pentachlorophenol	ND		1700
Phenanthrene	1000		360
Anthracene	320	J	360
Fluoranthene	1100		360
di-n-Butylphthalate	ND		360
Pyrene	1400		360
Butylbenzylphthalate	78	J	360
3,3'-Dichlorobenzidine	ND		720
Benzo(a)anthracene	770		360
bis(2-Ethylhexyl)phthalate	240	J	360
Chrysene	760		360
di-n-Octylphthalate	ND		360
Benzo(b)fluoranthene	710		360
Benzo(k)fluoranthene	600		360
Benzo(a)pyrene	590		360
Indeno(1,2,3-cd)pyrene	100	J	360
Dibenzo(a,h)anthracene	ND		360
Benzo(ghi)perylene	160	J	360

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 90 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17013 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-7

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		360
bis(2-Chloroethyl)ether	ND		360
2-Chlorophenol	ND		360
1,3-Dichlorobenzene	ND		360
1,4-Dichlorobenzene	ND		360
Benzyl alcohol	ND		360
1,2-Dichlorobenzene	ND		360
2-Methylphenol	ND		360
2,2'-oxybis(1-Chloropropane)	ND		360
4-Methylphenol	ND		360
n-Nitroso-di-n-propylamine	ND		360
Hexachloroethane	ND		360
Nitrobenzene	ND		360
Isophorone	ND		360
2-Nitrophenol	ND		360
2,4-Dimethylphenol	ND		360
Benzoic acid	ND		1800
bis(2-Chloroethoxy)methane	ND		360
2,4-Dichlorophenol	ND		360
1,2,4-Trichlorobenzene	ND		360
Naphthalene	ND		360
4-Chloroaniline	ND		360
Hexachlorobutadiene	ND		360
4-Chloro-3-methylphenol	ND		360
2-Methylnaphthalene	ND		360
Hexachlorocyclopentadiene	ND		1800
2,4,6-Trichlorophenol	ND		360
2,4,5-Trichlorophenol	ND		1800
2-Chloronaphthalene	ND		360
2-Nitroaniline	ND		1800

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 90 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17013 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-7

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		360
Acenaphthylene	ND		360
3-Nitroaniline	ND		1800
Acenaphthene	ND		360
2,4-Dinitrophenol	ND		1800
4-Nitrophenol	ND		1800
Dibenzofuran	ND		360
2,4-Dinitrotoluene	ND		360
2,6-Dinitrotoluene	ND		360
Diethylphthalate	ND		360
4-Chlorophenylphenylether	ND		360
Fluorene	ND		360
4-Nitroaniline	ND		1800
4,6-Dinitro-2-methylphenol	ND		1800
n-Nitrosodiphenylamine	ND		360
4-Bromophenylphenylether	ND		360
Hexachlorobenzene	ND		360
Pentachlorophenol	ND		1800
Phenanthrene	140	J	360
Anthracene	38	J	360
Fluoranthene	240	J	360
di-n-Butylphthalate	ND		360
Pyrene	320	J	360
Butylbenzylphthalate	ND		360
3,3'-Dichlorobenzidine	ND		730
Benzo(a)anthracene	160	J	360
bis(2-Ethylhexyl)phthalate	ND		360
Chrysene	160	J	360
di-n-Octylphthalate	ND		360
Benzo(b)fluoranthene	140	J	360
Benzo(k)fluoranthene	190	J	360
Benzo(a)pyrene	150	J	360
Indeno(1,2,3-cd)pyrene	ND		360
Dibenzo(a,h)anthracene	ND		360
Benzo(ghi)perylene	46	J	360

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 90 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17014 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-8

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		360
bis(2-Chloroethyl)ether	ND		360
2-Chlorophenol	ND		360
1,3-Dichlorobenzene	ND		360
1,4-Dichlorobenzene	ND		360
Benzyl alcohol	ND		360
1,2-Dichlorobenzene	ND		360
2-Methylphenol	ND		360
2,2'-oxybis(1-Chloropropane)	ND		360
4-Methylphenol	ND		360
n-Nitroso-di-n-propylamine	ND		360
Hexachloroethane	ND		360
Nitrobenzene	ND		360
Isophorone	ND		360
2-Nitrophenol	ND		360
2,4-Dimethylphenol	ND		360
Benzoic acid	ND		1800
bis(2-Chloroethoxy)methane	ND		360
2,4-Dichlorophenol	ND		360
1,2,4-Trichlorobenzene	ND		360
Naphthalene	ND		360
4-Chloroaniline	ND		360
Hexachlorobutadiene	ND		360
4-Chloro-3-methylphenol	ND		360
2-Methylnaphthalene	ND		360
Hexachlorocyclopentadiene	ND		1800
2,4,6-Trichlorophenol	ND		360
2,4,5-Trichlorophenol	ND		1800
2-Chloronaphthalene	ND		360
2-Nitroaniline	ND		1800

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 90 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17014 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-8

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		360
Acenaphthylene	ND		360
3-Nitroaniline	ND		1800
Acenaphthene	89	J	360
2,4-Dinitrophenol	ND		1800
4-Nitrophenol	ND		1800
Dibenzofuran	ND		360
2,4-Dinitrotoluene	ND		360
2,6-Dinitrotoluene	ND		360
Diethylphthalate	ND		360
4-Chlorophenylphenylether	ND		360
Fluorene	73	J	360
4-Nitroaniline	ND		1800
4,6-Dinitro-2-methylphenol	ND		1800
n-Nitrosodiphenylamine	ND		360
4-Bromophenylphenylether	ND		360
Hexachlorobenzene	ND		360
Pentachlorophenol	ND		1800
Phenanthrene	580		360
Anthracene	150	J	360
Fluoranthene	820		360
di-n-Butylphthalate	ND		360
Pyrene	1000		360
Butylbenzylphthalate	ND		360
3,3'-Dichlorobenzidine	ND		730
Benzo(a)anthracene	520		360
bis(2-Ethylhexyl)phthalate	190	J	360
Chrysene	500		360
di-n-Octylphthalate	ND		360
Benzo(b)fluoranthene	420		360
Benzo(k)fluoranthene	460		360
Benzo(a)pyrene	430		360
Indeno(1,2,3-cd)pyrene	96	J	360
Dibenzo(a,h)anthracene	ND		360
Benzo(ghi)perylene	150	J	360

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 90 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17015 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-9

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		360
bis(2-Chloroethyl)ether	ND		360
2-Chlorophenol	ND		360
1,3-Dichlorobenzene	ND		360
1,4-Dichlorobenzene	ND		360
Benzyl alcohol	ND		360
1,2-Dichlorobenzene	ND		360
2-Methylphenol	ND		360
2,2'-oxybis(1-Chloropropane)	ND		360
4-Methylphenol	ND		360
n-Nitroso-di-n-propylamine	ND		360
Hexachloroethane	ND		360
Nitrobenzene	ND		360
Isophorone	ND		360
2-Nitrophenol	ND		360
2,4-Dimethylphenol	ND		360
Benzoic acid	ND		1700
bis(2-Chloroethoxy)methane	ND		360
2,4-Dichlorophenol	ND		360
1,2,4-Trichlorobenzene	ND		360
Naphthalene	ND		360
4-Chloroaniline	ND		360
Hexachlorobutadiene	ND		360
4-Chloro-3-methylphenol	ND		360
2-Methylnaphthalene	ND		360
Hexachlorocyclopentadiene	ND		1800
2,4,6-Trichlorophenol	ND		360
2,4,5-Trichlorophenol	ND		1700
2-Chloronaphthalene	ND		360
2-Nitroaniline	ND		1700

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 90 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17015 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-9

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		360
Acenaphthylene	ND		360
3-Nitroaniline	ND		1700
Acenaphthene	ND		360
2,4-Dinitrophenol	ND		1700
4-Nitrophenol	ND		1700
Dibenzofuran	ND		360
2,4-Dinitrotoluene	ND		360
2,6-Dinitrotoluene	ND		360
Diethylphthalate	ND		360
4-Chlorophenylphenylether	ND		360
Fluorene	ND		360
4-Nitroaniline	ND		1700
4,6-Dinitro-2-methylphenol	ND		1700
n-Nitrosodiphenylamine	ND		360
4-Bromophenylphenylether	ND		360
Hexachlorobenzene	ND		360
Pentachlorophenol	ND		1700
Phenanthrene	130	J	360
Anthracene	40	J	360
Fluoranthene	250	J	360
di-n-Butylphthalate	ND		360
Pyrene	300	J	360
Butylbenzylphthalate	75	J	360
3,3'-Dichlorobenzidine	ND		720
Benzo(a)anthracene	160	J	360
bis(2-Ethylhexyl)phthalate	280	J	360
Chrysene	190	J	360
di-n-Octylphthalate	ND		360
Benzo(b)fluoranthene	180	J	360
Benzo(k)fluoranthene	170	J	360
Benzo(a)pyrene	180	J	360
Indeno(1,2,3-cd)pyrene	46	J	360
Dibenzo(a,h)anthracene	ND		360
Benzo(ghi)perylene	72	J	360

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 88 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17016 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-10

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		380
bis(2-Chloroethyl)ether	ND		380
2-Chlorophenol	ND		380
1,3-Dichlorobenzene	ND		380
1,4-Dichlorobenzene	ND		380
Benzyl alcohol	ND		380
1,2-Dichlorobenzene	ND		380
2-Methylphenol	ND		380
2,2'-oxybis(1-Chloropropane)	ND		380
4-Methylphenol	ND		380
n-Nitroso-di-n-propylamine	ND		380
Hexachloroethane	ND		380
Nitrobenzene	ND		380
Isophorone	ND		380
2-Nitrophenol	ND		380
2,4-Dimethylphenol	ND		380
Benzoic acid	ND		1800
bis(2-Chloroethoxy)methane	ND		380
2,4-Dichlorophenol	ND		380
1,2,4-Trichlorobenzene	ND		380
Naphthalene	38	J	380
4-Chloroaniline	ND		380
Hexachlorobutadiene	ND		380
4-Chloro-3-methylphenol	ND		380
2-Methylnaphthalene	ND		380
Hexachlorocyclopentadiene	ND		1900
2,4,6-Trichlorophenol	ND		380
2,4,5-Trichlorophenol	ND		1800
2-Chloronaphthalene	ND		380
2-Nitroaniline	ND		1800

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 88 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17016 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-10

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		380
Acenaphthylene	ND		380
3-Nitroaniline	ND		1800
Acenaphthene	ND		380
2,4-Dinitrophenol	ND		1800
4-Nitrophenol	ND		1800
Dibenzofuran	ND		380
2,4-Dinitrotoluene	ND		380
2,6-Dinitrotoluene	ND		380
Diethylphthalate	ND		380
4-Chlorophenylphenylether	ND		380
Fluorene	39	J	380
4-Nitroaniline	ND		1800
4,6-Dinitro-2-methylphenol	ND		1800
n-Nitrosodiphenylamine	ND		380
4-Bromophenylphenylether	ND		380
Hexachlorobenzene	ND		380
Pentachlorophenol	ND		1800
Phenanthrene	310	J	380
Anthracene	83	J	380
Fluoranthene	460		380
di-n-Butylphthalate	ND		380
Pyrene	440		380
Butylbenzylphthalate	ND		380
3,3'-Dichlorobenzidine	ND		750
Benzo(a)anthracene	320	J	380
bis(2-Ethylhexyl)phthalate	69	J	380
Chrysene	320	J	380
di-n-Octylphthalate	ND		380
Benzo(b)fluoranthene	280	J	380
Benzo(k)fluoranthene	250	J	380
Benzo(a)pyrene	250	J	380
Indeno(1,2,3-cd)pyrene	95	J	380
Dibenzo(a,h)anthracene	ND		380
Benzo(ghi)perylene	98	J	380

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TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 88 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17017 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-11

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		370
bis(2-Chloroethyl)ether	ND		370
2-Chlorophenol	ND		370
1,3-Dichlorobenzene	ND		370
1,4-Dichlorobenzene	ND		370
Benzyl alcohol	ND		370
1,2-Dichlorobenzene	ND		370
2-Methylphenol	ND		370
2,2'-oxybis(1-Chloropropane)	ND		370
4-Methylphenol	ND		370
n-Nitroso-di-n-propylamine	ND		370
Hexachloroethane	ND		370
Nitrobenzene	ND		370
Isophorone	ND		370
2-Nitrophenol	ND		370
2,4-Dimethylphenol	ND		370
Benzoic acid	ND		1800
bis(2-Chloroethoxy)methane	ND		370
2,4-Dichlorophenol	ND		370
1,2,4-Trichlorobenzene	ND		370
Naphthalene	120	J	370
4-Chloroaniline	ND		370
Hexachlorobutadiene	ND		370
4-Chloro-3-methylphenol	ND		370
2-Methylnaphthalene	50	J	370
Hexachlorocyclopentadiene	ND		1900
2,4,6-Trichlorophenol	ND		370
2,4,5-Trichlorophenol	ND		1800
2-Chloronaphthalene	ND		370
2-Nitroaniline	ND		1800

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 88 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17017 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-11

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		370
Acenaphthylene	ND		370
3-Nitroaniline	ND		1800
Acenaphthene	110	J	370
2,4-Dinitrophenol	ND		1800
4-Nitrophenol	ND		1800
Dibenzofuran	96	J	370
2,4-Dinitrotoluene	ND		370
2,6-Dinitrotoluene	ND		370
Diethylphthalate	ND		370
4-Chlorophenylphenylether	ND		370
Fluorene	120	J	370
4-Nitroaniline	ND		1800
4,6-Dinitro-2-methylphenol	ND		1800
n-Nitrosodiphenylamine	ND		370
4-Bromophenylphenylether	ND		370
Hexachlorobenzene	ND		370
Pentachlorophenol	ND		1800
Phenanthrene	1000		370
Anthracene	280	J	370
Fluoranthene	1300		370
di-n-Butylphthalate	ND		370
Pyrene	1200		370
Butylbenzylphthalate	ND		370
3,3'-Dichlorobenzidine	ND		750
Benzo(a)anthracene	820		370
bis(2-Ethylhexyl)phthalate	320	J	370
Chrysene	840		370
di-n-Octylphthalate	ND		370
Benzo(b)fluoranthene	710		370
Benzo(k)fluoranthene	640		370
Benzo(a)pyrene	640		370
Indeno(1,2,3-cd)pyrene	190	J	370
Dibenzo(a,h)anthracene	ND		370
Benzo(ghi)perylene	220	J	370

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 88 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17018 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-12

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		360
bis(2-Chloroethyl)ether	ND		360
2-Chlorophenol	ND		360
1,3-Dichlorobenzene	ND		360
1,4-Dichlorobenzene	ND		360
Benzyl alcohol	ND		360
1,2-Dichlorobenzene	ND		360
2-Methylphenol	ND		360
2,2'-oxybis(1-Chloropropane)	ND		360
4-Methylphenol	ND		360
n-Nitroso-di-n-propylamine	ND		360
Hexachloroethane	ND		360
Nitrobenzene	ND		360
Isophorone	ND		360
2-Nitrophenol	ND		360
2,4-Dimethylphenol	ND		360
Benzoic acid	ND		1700
bis(2-Chloroethoxy)methane	ND		360
2,4-Dichlorophenol	ND		360
1,2,4-Trichlorobenzene	ND		360
Naphthalene	ND		360
4-Chloroaniline	ND		360
Hexachlorobutadiene	ND		360
4-Chloro-3-methylphenol	ND		360
2-Methylnaphthalene	ND		360
Hexachlorocyclopentadiene	ND		1800
2,4,6-Trichlorophenol	ND		360
2,4,5-Trichlorophenol	ND		1700
2-Chloronaphthalene	ND		360
2-Nitroaniline	ND		1700

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
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A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 88 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17018 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-12

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		360
Acenaphthylene	ND		360
3-Nitroaniline	ND		1700
Acenaphthene	ND		360
2,4-Dinitrophenol	ND		1700
4-Nitrophenol	ND		1700
Dibenzofuran	ND		360
2,4-Dinitrotoluene	ND		360
2,6-Dinitrotoluene	ND		360
Diethylphthalate	ND		360
4-Chlorophenylphenylether	ND		360
Fluorene	ND		360
4-Nitroaniline	ND		1700
4,6-Dinitro-2-methylphenol	ND		1700
n-Nitrosodiphenylamine	ND		360
4-Bromophenylphenylether	ND		360
Hexachlorobenzene	ND		360
Pentachlorophenol	ND		1700
Phenanthrene	390		360
Anthracene	88	J	360
Fluoranthene	620		360
di-n-Butylphthalate	ND		360
Pyrene	610		360
Butylbenzylphthalate	ND		360
3,3'-Dichlorobenzidine	ND		720
Benzo(a)anthracene	360	J	360
bis(2-Ethylhexyl)phthalate	ND		360
Chrysene	360	J	360
di-n-Octylphthalate	ND		360
Benzo(b)fluoranthene	250	J	360
Benzo(k)fluoranthene	340	J	360
Benzo(a)pyrene	290	J	360
Indeno(1,2,3-cd)pyrene	79	J	360
Dibenzo(a,h)anthracene	ND		360
Benzo(ghi)perylene	87	J	360

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 88 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17019 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-13

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		380
bis(2-Chloroethyl)ether	ND		380
2-Chlorophenol	ND		380
1,3-Dichlorobenzene	ND		380
1,4-Dichlorobenzene	ND		380
Benzyl alcohol	ND		380
1,2-Dichlorobenzene	ND		380
2-Methylphenol	ND		380
2,2'-oxybis(1-Chloropropane)	ND		380
4-Methylphenol	ND		380
n-Nitroso-di-n-propylamine	ND		380
Hexachloroethane	ND		380
Nitrobenzene	ND		380
Isophorone	ND		380
2-Nitrophenol	ND		380
2,4-Dimethylphenol	ND		380
Benzoic acid	ND		1800
bis(2-Chloroethoxy)methane	ND		380
2,4-Dichlorophenol	ND		380
1,2,4-Trichlorobenzene	ND		380
Naphthalene	ND		380
4-Chloroaniline	ND		380
Hexachlorobutadiene	ND		380
4-Chloro-3-methylphenol	ND		380
2-Methylnaphthalene	ND		380
Hexachlorocyclopentadiene	ND		1900
2,4,6-Trichlorophenol	ND		380
2,4,5-Trichlorophenol	ND		1800
2-Chloronaphthalene	ND		380
2-Nitroaniline	ND		1800

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
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A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 88 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17019 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-13

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		380
Acenaphthylene	ND		380
3-Nitroaniline	ND		1800
Acenaphthene	ND		380
2,4-Dinitrophenol	ND		1800
4-Nitrophenol	ND		1800
Dibenzofuran	ND		380
2,4-Dinitrotoluene	ND		380
2,6-Dinitrotoluene	ND		380
Diethylphthalate	ND		380
4-Chlorophenylphenylether	ND		380
Fluorene	ND		380
4-Nitroaniline	ND		1800
4,6-Dinitro-2-methylphenol	ND		1800
n-Nitrosodiphenylamine	ND		380
4-Bromophenylphenylether	ND		380
Hexachlorobenzene	ND		380
Pentachlorophenol	ND		1800
Phenanthrene	140	J	380
Anthracene	ND		380
Fluoranthene	230	J	380
di-n-Butylphthalate	ND		380
Pyrene	250	J	380
Butylbenzylphthalate	ND		380
3,3'-Dichlorobenzidine	ND		750
Benzo(a)anthracene	150	J	380
bis(2-Ethylhexyl)phthalate	79	J	380
Chrysene	150	J	380
di-n-Octylphthalate	ND		380
Benzo(b)fluoranthene	160	J	380
Benzo(k)fluoranthene	130	J	380
Benzo(a)pyrene	130	J	380
Indeno(1,2,3-cd)pyrene	ND		380
Dibenzo(a,h)anthracene	ND		380
Benzo(ghi)perylene	41	J	380

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 85 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17020 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-14

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		390
bis(2-Chloroethyl)ether	ND		390
2-Chlorophenol	ND		390
1,3-Dichlorobenzene	ND		390
1,4-Dichlorobenzene	ND		390
Benzyl alcohol	ND		390
1,2-Dichlorobenzene	ND		390
2-Methylphenol	ND		390
2,2'-oxybis(1-Chloropropane)	ND		390
4-Methylphenol	ND		390
n-Nitroso-di-n-propylamine	ND		390
Hexachloroethane	ND		390
Nitrobenzene	ND		390
Isophorone	ND		390
2-Nitrophenol	ND		390
2,4-Dimethylphenol	ND		390
Benzoic acid	ND		1900
bis(2-Chloroethoxy)methane	ND		390
2,4-Dichlorophenol	ND		390
1,2,4-Trichlorobenzene	ND		390
Naphthalene	ND		390
4-Chloroaniline	ND		390
Hexachlorobutadiene	ND		390
4-Chloro-3-methylphenol	ND		390
2-Methylnaphthalene	ND		390
Hexachlorocyclopentadiene	ND		1900
2,4,6-Trichlorophenol	ND		390
2,4,5-Trichlorophenol	ND		1900
2-Chloronaphthalene	ND		390
2-Nitroaniline	ND		1900

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 85 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17020 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-14

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		390
Acenaphthylene	ND		390
3-Nitroaniline	ND		1900
Acenaphthene	ND		390
2,4-Dinitrophenol	ND		1900
4-Nitrophenol	ND		1900
Dibenzofuran	ND		390
2,4-Dinitrotoluene	ND		390
2,6-Dinitrotoluene	ND		390
Diethylphthalate	ND		390
4-Chlorophenylphenylether	ND		390
Fluorene	ND		390
4-Nitroaniline	ND		1900
4,6-Dinitro-2-methylphenol	ND		1900
n-Nitrosodiphenylamine	ND		390
4-Bromophenylphenylether	ND		390
Hexachlorobenzene	ND		390
Pentachlorophenol	ND		1900
Phenanthrene	ND		390
Anthracene	ND		390
Fluoranthene	57	J	390
di-n-Butylphthalate	ND		390
Pyrene	55	J	390
Butylbenzylphthalate	ND		390
3,3'-Dichlorobenzidine	ND		770
Benzo(a)anthracene	ND		390
bis(2-Ethylhexyl)phthalate	ND		390
Chrysene	ND		390
di-n-Octylphthalate	ND		390
Benzo(b)fluoranthene	ND		390
Benzo(k)fluoranthene	ND		390
Benzo(a)pyrene	ND		390
Indeno(1,2,3-cd)pyrene	ND		390
Dibenzo(a,h)anthracene	ND		390
Benzo(ghi)perylene	ND		390

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 89 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17021 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-15

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		370
bis(2-Chloroethyl)ether	ND		370
2-Chlorophenol	ND		370
1,3-Dichlorobenzene	ND		370
1,4-Dichlorobenzene	ND		370
Benzyl alcohol	ND		370
1,2-Dichlorobenzene	ND		370
2-Methylphenol	ND		370
2,2'-oxybis(1-Chloropropane)	ND		370
4-Methylphenol	ND		370
n-Nitroso-di-n-propylamine	ND		370
Hexachloroethane	ND		370
Nitrobenzene	ND		370
Isophorone	ND		370
2-Nitrophenol	ND		370
2,4-Dimethylphenol	ND		370
Benzoic acid	ND		1800
bis(2-Chloroethoxy)methane	ND		370
2,4-Dichlorophenol	ND		370
1,2,4-Trichlorobenzene	ND		370
Naphthalene	ND		370
4-Chloroaniline	ND		370
Hexachlorobutadiene	ND		370
4-Chloro-3-methylphenol	ND		370
2-Methylnaphthalene	ND		370
Hexachlorocyclopentadiene	ND		1800
2,4,6-Trichlorophenol	ND		370
2,4,5-Trichlorophenol	ND		1800
2-Chloronaphthalene	ND		370
2-Nitroaniline	ND		1800

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 89 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17021 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-15

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		370
Acenaphthylene	ND		370
3-Nitroaniline	ND		1800
Acenaphthene	46	J	370
2,4-Dinitrophenol	ND		1800
4-Nitrophenol	ND		1800
Dibenzofuran	ND		370
2,4-Dinitrotoluene	ND		370
2,6-Dinitrotoluene	ND		370
Diethylphthalate	ND		370
4-Chlorophenylphenylether	ND		370
Fluorene	46	J	370
4-Nitroaniline	ND		1800
4,6-Dinitro-2-methylphenol	ND		1800
n-Nitrosodiphenylamine	ND		370
4-Bromophenylphenylether	ND		370
Hexachlorobenzene	ND		370
Pentachlorophenol	ND		1800
Phenanthrene	450		370
Anthracene	120	J	370
Fluoranthene	590		370
di-n-Butylphthalate	ND		370
Pyrene	930		370
Butylbenzylphthalate	ND		370
3,3'-Dichlorobenzidine	ND		740
Benzo(a)anthracene	410		370
bis(2-Ethylhexyl)phthalate	170	J	370
Chrysene	420		370
di-n-Octylphthalate	ND		370
Benzo(b)fluoranthene	420		370
Benzo(k)fluoranthene	400		370
Benzo(a)pyrene	360	J	370
Indeno(1,2,3-cd)pyrene	62	J	370
Dibenzo(a,h)anthracene	ND		370
Benzo(ghi)perylene	120	J	370

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TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17022 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-16

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	120	J	380
bis(2-Chloroethyl)ether	ND		380
2-Chlorophenol	ND		380
1,3-Dichlorobenzene	ND		380
1,4-Dichlorobenzene	ND		380
Benzyl alcohol	ND		380
1,2-Dichlorobenzene	ND		380
2-Methylphenol	64	J	380
2,2'-oxybis(1-Chloropropane)	ND		380
4-Methylphenol	200	J	380
n-Nitroso-di-n-propylamine	ND		380
Hexachloroethane	ND		380
Nitrobenzene	ND		380
Isophorone	ND		380
2-Nitrophenol	ND		380
2,4-Dimethylphenol	64	J	380
Benzoic acid	ND		1800
bis(2-Chloroethoxy)methane	ND		380
2,4-Dichlorophenol	ND		380
1,2,4-Trichlorobenzene	ND		380
Naphthalene	1600		380
4-Chloroaniline	ND		380
Hexachlorobutadiene	ND		380
4-Chloro-3-methylphenol	ND		380
2-Methylnaphthalene	1600		380
Hexachlorocyclopentadiene	ND		1900
2,4,6-Trichlorophenol	ND		380
2,4,5-Trichlorophenol	ND		1800
2-Chloronaphthalene	ND		380
2-Nitroaniline	ND		1800

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17022 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-16

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		380
Acenaphthylene	6500	J	15000
3-Nitroaniline	ND		1800
Acenaphthene	1800		380
2,4-Dinitrophenol	ND		1800
4-Nitrophenol	ND		1800
Dibenzofuran	9800	J	15000
2,4-Dinitrotoluene	ND		380
2,6-Dinitrotoluene	ND		380
Diethylphthalate	ND		380
4-Chlorophenylphenylether	ND		380
Fluorene	15000		15000
4-Nitroaniline	ND		1800
4,6-Dinitro-2-methylphenol	ND		1800
n-Nitrosodiphenylamine	ND		380
4-Bromophenylphenylether	ND		380
Hexachlorobenzene	ND		380
Pentachlorophenol	ND		1800
Phenanthrene	80000		15000
Anthracene	26000		15000
Fluoranthene	72000		15000
di-n-Butylphthalate	ND		380
Pyrene	57000		15000
Butylbenzylphthalate	ND		380
3,3'-Dichlorobenzidine	ND		750
Benzo(a)anthracene	29000		15000
bis(2-Ethylhexyl)phthalate	2000		380
Chrysene	25000		15000
di-n-Octylphthalate	ND		380
Benzo(b)fluoranthene	13000	J	15000
Benzo(k)fluoranthene	21000		15000
Benzo(a)pyrene	20000		15000
Indeno(1,2,3-cd)pyrene	7600	J	15000
Dibenzo(a,h)anthracene	ND		380
Benzo(ghi)perylene	2700		380

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 90 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17023 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-17

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		370
bis(2-Chloroethyl)ether	ND		370
2-Chlorophenol	ND		370
1,3-Dichlorobenzene	ND		370
1,4-Dichlorobenzene	ND		370
Benzyl alcohol	ND		370
1,2-Dichlorobenzene	ND		370
2-Methylphenol	ND		370
2,2'-oxybis(1-Chloropropane)	ND		370
4-Methylphenol	ND		370
n-Nitroso-di-n-propylamine	ND		370
Hexachloroethane	ND		370
Nitrobenzene	ND		370
Isophorone	ND		370
2-Nitrophenol	ND		370
2,4-Dimethylphenol	ND		370
Benzoic acid	ND		1800
bis(2-Chloroethoxy)methane	ND		370
2,4-Dichlorophenol	ND		370
1,2,4-Trichlorobenzene	ND		370
Naphthalene	ND		370
4-Chloroaniline	ND		370
Hexachlorobutadiene	ND		370
4-Chloro-3-methylphenol	ND		370
2-Methylnaphthalene	ND		370
Hexachlorocyclopentadiene	ND		1800
2,4,6-Trichlorophenol	ND		370
2,4,5-Trichlorophenol	ND		1800
2-Chloronaphthalene	ND		370
2-Nitroaniline	ND		1800

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 90 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17023 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-17

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		370
Acenaphthylene	ND		370
3-Nitroaniline	ND		1800
Acenaphthene	ND		370
2,4-Dinitrophenol	ND		1800
4-Nitrophenol	ND		1800
Dibenzofuran	ND		370
2,4-Dinitrotoluene	ND		370
2,6-Dinitrotoluene	ND		370
Diethylphthalate	ND		370
4-Chlorophenylphenylether	ND		370
Fluorene	ND		370
4-Nitroaniline	ND		1800
4,6-Dinitro-2-methylphenol	ND		1800
n-Nitrosodiphenylamine	ND		370
4-Bromophenylphenylether	ND		370
Hexachlorobenzene	ND		370
Pentachlorophenol	ND		1800
Phenanthrene	270	J	370
Anthracene	57	J	370
Fluoranthene	360	J	370
di-n-Butylphthalate	ND		370
Pyrene	460		370
Butylbenzylphthalate	ND		370
3,3'-Dichlorobenzidine	ND		730
Benzo(a)anthracene	200	J	370
bis(2-Ethylhexyl)phthalate	100	J	370
Chrysene	210	J	370
di-n-Octylphthalate	80	J	370
Benzo(b)fluoranthene	210	J	370
Benzo(k)fluoranthene	210	J	370
Benzo(a)pyrene	170	J	370
Indeno(1,2,3-cd)pyrene	ND		370
Dibenzo(a,h)anthracene	ND		370
Benzo(ghi)perylene	50	J	370

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 83 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17024 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-18

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		400
bis(2-Chloroethyl)ether	ND		400
2-Chlorophenol	ND		400
1,3-Dichlorobenzene	ND		400
1,4-Dichlorobenzene	ND		400
Benzyl alcohol	ND		400
1,2-Dichlorobenzene	ND		400
2-Methylphenol	ND		400
2,2'-oxybis(1-Chloropropane)	ND		400
4-Methylphenol	ND		400
n-Nitroso-di-n-propylamine	ND		400
Hexachloroethane	ND		400
Nitrobenzene	ND		400
Isophorone	ND		400
2-Nitrophenol	ND		400
2,4-Dimethylphenol	ND		400
Benzoic acid	42	JB	1900
bis(2-Chloroethoxy)methane	ND		400
2,4-Dichlorophenol	ND		400
1,2,4-Trichlorobenzene	ND		400
Naphthalene	ND		400
4-Chloroaniline	ND		400
Hexachlorobutadiene	ND		400
4-Chloro-3-methylphenol	ND		400
2-Methylnaphthalene	ND		400
Hexachlorocyclopentadiene	ND		2000
2,4,6-Trichlorophenol	ND		400
2,4,5-Trichlorophenol	ND		1900
2-Chloronaphthalene	ND		400
2-Nitroaniline	ND		1900

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
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N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 83 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17024 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-18

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		400
Acenaphthylene	ND		400
3-Nitroaniline	ND		1900
Acenaphthene	ND		400
2,4-Dinitrophenol	ND		1900
4-Nitrophenol	ND		1900
Dibenzofuran	ND		400
2,4-Dinitrotoluene	ND		400
2,6-Dinitrotoluene	ND		400
Diethylphthalate	ND		400
4-Chlorophenylphenylether	ND		400
Fluorene	ND		400
4-Nitroaniline	ND		1900
4,6-Dinitro-2-methylphenol	ND		1900
n-Nitrosodiphenylamine	ND		400
4-Bromophenylphenylether	ND		400
Hexachlorobenzene	ND		400
Pentachlorophenol	ND		1900
Phenanthrene	260	J	400
Anthracene	67	J	400
Fluoranthene	470		400
di-n-Butylphthalate	ND		400
Pyrene	510		400
Butylbenzylphthalate	ND		400
3,3'-Dichlorobenzidine	ND		790
Benzo(a)anthracene	250	J	400
bis(2-Ethylhexyl)phthalate	130	J	400
Chrysene	260	J	400
di-n-Octylphthalate	ND		400
Benzo(b)fluoranthene	310	J	400
Benzo(k)fluoranthene	290	J	400
Benzo(a)pyrene	240	J	400
Indeno(1,2,3-cd)pyrene	74	J	400
Dibenzo(a,h)anthracene	ND		400
Benzo(ghi)perylene	110	J	400

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 73 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17025 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-19

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		450
bis(2-Chloroethyl)ether	ND		450
2-Chlorophenol	ND		450
1,3-Dichlorobenzene	ND		450
1,4-Dichlorobenzene	ND		450
Benzyl alcohol	ND		450
1,2-Dichlorobenzene	ND		450
2-Methylphenol	ND		450
2,2'-oxybis(1-Chloropropane)	ND		450
4-Methylphenol	ND		450
n-Nitroso-di-n-propylamine	ND		450
Hexachloroethane	ND		450
Nitrobenzene	ND		450
Isophorone	ND		450
2-Nitrophenol	ND		450
2,4-Dimethylphenol	ND		450
Benzoic acid	ND		2200
bis(2-Chloroethoxy)methane	ND		450
2,4-Dichlorophenol	ND		450
1,2,4-Trichlorobenzene	ND		450
Naphthalene	ND		450
4-Chloroaniline	ND		450
Hexachlorobutadiene	ND		450
4-Chloro-3-methylphenol	ND		450
2-Methylnaphthalene	ND		450
Hexachlorocyclopentadiene	ND		2200
2,4,6-Trichlorophenol	ND		450
2,4,5-Trichlorophenol	ND		2200
2-Chloronaphthalene	ND		450
2-Nitroaniline	ND		2200

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TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 73 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17025 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-19

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		450
Acenaphthylene	ND		450
3-Nitroaniline	ND		2200
Acenaphthene	ND		450
2,4-Dinitrophenol	ND		2200
4-Nitrophenol	ND		2200
Dibenzofuran	ND		450
2,4-Dinitrotoluene	ND		450
2,6-Dinitrotoluene	ND		450
Diethylphthalate	ND		450
4-Chlorophenylphenylether	ND		450
Fluorene	ND		450
4-Nitroaniline	ND		2200
4,6-Dinitro-2-methylphenol	ND		2200
n-Nitrosodiphenylamine	ND		450
4-Bromophenylphenylether	ND		450
Hexachlorobenzene	ND		450
Pentachlorophenol	ND		2200
Phenanthrene	ND		450
Anthracene	ND		450
Fluoranthene	ND		450
di-n-Butylphthalate	ND		450
Pyrene	ND		450
Butylbenzylphthalate	ND		450
3,3'-Dichlorobenzidine	ND		900
Benzo(a)anthracene	ND		450
bis(2-Ethylhexyl)phthalate	ND		450
Chrysene	ND		450
di-n-Octylphthalate	ND		450
Benzo(b)fluoranthene	ND		450
Benzo(k)fluoranthene	ND		450
Benzo(a)pyrene	ND		450
Indeno(1,2,3-cd)pyrene	ND		450
Dibenzo(a,h)anthracene	ND		450
Benzo(ghi)perylene	ND		450

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 92 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17026 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-20

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		1800
bis(2-Chloroethyl)ether	ND		1800
2-Chlorophenol	ND		1800
1,3-Dichlorobenzene	ND		1800
1,4-Dichlorobenzene	ND		1800
Benzyl alcohol	ND		1800
1,2-Dichlorobenzene	ND		1800
2-Methylphenol	ND		1800
2,2'-oxybis(1-Chloropropane)	ND		1800
4-Methylphenol	ND		1800
n-Nitroso-di-n-propylamine	ND		1800
Hexachloroethane	ND		1800
Nitrobenzene	ND		1800
Isophorone	ND		1800
2-Nitrophenol	ND		1800
2,4-Dimethylphenol	ND		1800
Benzoic acid	ND		8700
bis(2-Chloroethoxy)methane	ND		1800
2,4-Dichlorophenol	ND		1800
1,2,4-Trichlorobenzene	ND		1800
Naphthalene	ND		1800
4-Chloroaniline	ND		1800
Hexachlorobutadiene	ND		1800
4-Chloro-3-methylphenol	ND		1800
2-Methylnaphthalene	ND		1800
Hexachlorocyclopentadiene	ND		1800
2,4,6-Trichlorophenol	ND		1800
2,4,5-Trichlorophenol	ND		8700
2-Chloronaphthalene	ND		1800
2-Nitroaniline	ND		8700

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 92 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17026 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-20

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		1800
Acenaphthylene	ND		1800
3-Nitroaniline	ND		8700
Acenaphthene	330	J	1800
2,4-Dinitrophenol	ND		8700
4-Nitrophenol	ND		8700
Dibenzofuran	220	J	1800
2,4-Dinitrotoluene	ND		1800
2,6-Dinitrotoluene	ND		1800
Diethylphthalate	ND		1800
4-Chlorophenylphenylether	ND		1800
Fluorene	320	J	1800
4-Nitroaniline	ND		8700
4,6-Dinitro-2-methylphenol	ND		8700
n-Nitrosodiphenylamine	ND		1800
4-Bromophenylphenylether	ND		1800
Hexachlorobenzene	ND		1800
Pentachlorophenol	ND		8700
Phenanthrene	4800		1800
Anthracene	700	J	1800
Fluoranthene	10000		1800
di-n-Butylphthalate	ND		1800
Pyrene	9600		7200
Butylbenzylphthalate	260	J	1800
3,3'-Dichlorobenzidine	ND		3600
Benzo(a)anthracene	5100		1800
bis(2-Ethylhexyl)phthalate	670	J	1800
Chrysene	6500		1800
di-n-Octylphthalate	ND		1800
Benzo(b)fluoranthene	7800		1800
Benzo(k)fluoranthene	10000		1800
Benzo(a)pyrene	7700		1800
Indeno(1,2,3-cd)pyrene	1800		1800
Dibenzo(a,h)anthracene	ND		1800
Benzo(ghi)perylene	4200		1800

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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GC/MS Spike Summary Form

SV Data

Instrument ID : 7002B.i
Batch : 981103421r
Units: ng

Compound	Original 9802.592 17007.01 B8390.d	Amount Added	Limits	MS MS 9802.592 17007.01 B8423.d Amt Det	MS Rec	MSD MSD9802.592 17007.01 B8424.d Amt Det	MSD Rec	%RPD
Phenol	< 0.00	120.00	20.5->132.1	99.11	82.6	104.58	87.2	5.37
2-Chlorophenol	< 0.00	120.00	20.4->131.6	107.82	89.8	112.52	93.8	4.27
1,4-Dichlorobenzene	< 0.00	100.00	12.0-> 99.4	75.44	75.4	74.82	74.8	0.83
n-Nitroso-di-n-propylamine	< 0.00	100.00	30.4->106.4	75.76	75.8	78.18	78.2	3.14
1,2,4-Trichlorobenzene	< 0.00	100.00	17.4->105.6	78.35	78.3	75.89	75.9	3.19
4-Chloro-3-methylphenol	< 0.00	120.00	33.2->113.1	98.19	81.8	98.63	82.2	0.44
Acenaphthene	3.20	100.00	30.7->108.8	76.13	72.9	74.84	71.6	1.79
4-Nitrophenol	< 0.00	120.00	10.0->115.0	92.17	76.8	93.18	77.6	1.09
2,4-Dinitrotoluene	< 0.00	100.00	33.2-> 95.1	60.26	60.3	59.43	59.4	1.38
Pentachlorophenol	< 0.00	120.00	34.3->116.5	28.59	23.8 L	43.73	36.4	41.86
Pyrene	64.79	100.00	31.4->125.7	164.49	99.7	201.53	136.7 H	31.33

GC/MS Spike Summary Form

SV Data

Instrument ID : 7002B.i
Batch : 981101421r
Units: ng

Compound	Detection Limit	Amount Added	Limits	MS LCS 1344-125-2 B8389.d Amt Det	Rec
Phenol	< 0.00	120.00	25.0->115.0	96.75	80.6
2-Chlorophenol	< 0.00	120.00	42.4->115.0	101.69	84.7
1,4-Dichlorobenzene	< 0.00	100.00	25.0->115.0	67.06	67.1
n-Nitroso-di-n-propylamine	< 0.00	100.00	34.1->105.1	66.25	66.2
1,2,4-Trichlorobenzene	< 0.00	100.00	50.9->100.6	69.69	69.7
4-Chloro-3-methylphenol	< 0.00	120.00	43.6->113.7	97.74	81.5
Acenaphthene	< 0.00	100.00	45.3->109.3	66.40	66.4
4-Nitrophenol	< 0.00	120.00	10.0->115.0	103.00	85.8
2,4-Dinitrotoluene	< 0.00	100.00	44.8->121.3	71.97	72.0
Pentachlorophenol	< 0.00	120.00	37.8->110.8	87.77	73.1
Pyrene	< 0.00	100.00	42.7->110.6	53.79	53.8

GC/MS Surrogate Summary Form

SV Data

Instrument ID : 7002B.i
Batch : 981101421r
Units: ng

Surrogate:	2-Fluorophenol		Phenol-d5		Nitrobenzene-d5		2-Fluorobipheny		2,4,6-Tribromop		Terphenyl-d14	
Amount Added:	120.0		120.0		100.0		100.0		120.0		100.0	
Limits:	25.0--> 121.0		24.0--> 113.0		23.0--> 120.0		30.0--> 115.0		19.0--> 122.0		18.0--> 137.0	
Job/Sample Number	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec
B8388.d BLK 1344-125-1	99.00	82.5	87.50	72.9	67.90	67.9	72.70	72.7	96.40	80.3	73.90	73.9
B8389.d LCS 1344-125-2	107.00	89.4	95.00	79.1	73.40	73.4	78.20	78.2	97.30	81.0	73.00	73.0
B8390.d 9802.592 17007.01	124.00	104.0	110.00	91.4	80.50	80.5	85.10	85.1	103.00	86.2	108.00	108.0
B8423.d MS 9802.592 17007.01	121.00	101.0	99.10	82.6	79.00	79.0	83.80	83.8	89.50	74.6	127.00	127.0
B8424.d MSD9802.592 17007.01	122.00	102.0	100.00	83.4	79.40	79.4	82.40	82.4	85.80	71.5	126.00	126.0
B8391.d 9802.592 17008.01	107.00	89.5	97.40	81.2	70.90	70.9	73.70	73.7	93.30	77.8	88.20	88.2
B8392.d 9802.592 17009.01	109.00	91.1	107.00	89.2	74.90	74.9	83.90	83.9	98.60	82.2	92.90	92.9
B8393.d 9802.592 17010.01	126.00	105.0	112.00	93.0	87.70	87.7	91.70	91.7	115.00	95.6	101.00	101.0
B8493.d RA 9802.592 17011.01	116.00	97.0	105.00	87.4	87.20	87.2	93.70	93.7	99.50	82.9	83.30	83.3
B8395.d 9802.592 17012.01	112.00	93.3	101.00	84.1	79.80	79.8	86.80	86.8	118.00	98.0	107.00	107.0
B8396.d 9802.592 17013.01	118.00	98.1	106.00	88.6	79.70	79.7	82.00	82.0	102.00	85.4	102.00	102.0

GC/MS Surrogate Summary Form

SV Data

Instrument ID : 7002B.i
Batch : 981101421r
Units: ng

Surrogate:	2-Fluorophenol		Phenol-d5		Nitrobenzene-d5		2-Fluorobipheny		2,4,6-Tribromop		Terphenyl-d14	
Amount Added:	120.0		120.0		100.0		100.0		120.0		100.0	
Limits:	25.0--> 121.0		24.0--> 113.0		23.0--> 120.0		30.0--> 115.0		19.0--> 122.0		18.0--> 137.0	
Job/Sample Number	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec
B8397.d 9802.592 17014.01	118.00	98.0	106.00	88.4	67.90	67.9	77.20	77.2	99.10	82.6	89.70	89.7
B8403.d 9802.592 17015.01	109.00	90.6	94.20	78.5	74.80	74.8	77.40	77.4	97.60	81.4	89.70	89.7
B8404.d 9802.592 17016.01	104.00	86.3	105.00	87.3	81.80	81.8	91.70	91.7	75.70	63.1	88.30	88.3
B8405.d 9802.592 17017.01	101.00	84.1	88.30	73.6	70.30	70.3	76.80	76.8	88.70	73.9	71.90	71.9
B8406.d 9802.592 17018.01	111.00	92.7	93.20	77.6	75.20	75.2	78.70	78.7	104.00	87.0	76.70	76.7
B8407.d 9802.592 17019.01	101.00	84.1	93.10	77.6	73.60	73.6	77.80	77.8	79.20	66.0	81.80	81.8
B8408.d 9802.592 17020.01	88.80	74.0	81.10	67.6	64.60	64.6	68.10	68.1	69.20	57.6	67.30	67.3
B8409.d 9802.592 17021.01	112.00	93.2	97.80	81.5	79.40	79.4	83.80	83.8	93.30	77.7	105.00	105.0
B8411.d 9802.592 17022.01	102.00	85.3	91.20	76.0	73.40	73.4	78.20	78.2	74.00	61.7	198.00	198.0 H
B8410.d 9802.592 17023.01	107.00	89.5	96.10	80.1	76.40	76.4	85.90	85.9	93.20	77.7	103.00	103.0
B8417.d 9802.592 17024.01	102.00	84.8	91.80	76.5	67.60	67.6	75.90	75.9	102.00	85.0	80.30	80.3

GC/MS Surrogate Summary Form

SV Data

Instrument ID : 7002B.i
Batch : 981103421r
Units: ng

Surrogate:	2-Fluorophenol		Phenol-d5		Nitrobenzene-d5		2-Fluorobipheny		2,4,6-Tribromop		Terphenyl-d14	
Amount Added:	120.0		120.0		100.0		100.0		120.0		100.0	
Limits:	25.0--> 121.0		24.0--> 113.0		23.0--> 120.0		30.0--> 115.0		19.0--> 122.0		18.0--> 137.0	
Job/Sample Number	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec
B8416.d 9802.592 17025.01	115.00	95.8	99.20	82.7	78.00	78.0	87.70	87.7	118.00	98.6	78.00	78.0
B8464.d RA 9802.592 17026.01	111.00	92.7	99.90	83.2	85.60	85.6	107.00	107.0	126.00	105.0	151.00	151.0 H

TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : METHOD BLANK MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		330
bis(2-Chloroethyl)ether	ND		330
2-Chlorophenol	ND		330
1,3-Dichlorobenzene	ND		330
1,4-Dichlorobenzene	ND		330
Benzyl alcohol	ND		330
1,2-Dichlorobenzene	ND		330
2-Methylphenol	ND		330
2,2'-oxybis(1-Chloropropane)	ND		330
4-Methylphenol	ND		330
n-Nitroso-di-n-propylamine	ND		330
Hexachloroethane	ND		330
Nitrobenzene	ND		330
Isophorone	ND		330
2-Nitrophenol	ND		330
2,4-Dimethylphenol	ND		330
Benzoic acid	42	J	1600
bis(2-Chloroethoxy)methane	ND		330
2,4-Dichlorophenol	ND		330
1,2,4-Trichlorobenzene	ND		330
Naphthalene	ND		330
4-Chloroaniline	ND		330
Hexachlorobutadiene	ND		330
4-Chloro-3-methylphenol	ND		330
2-Methylnaphthalene	ND		330
Hexachlorocyclopentadiene	ND		1600
2,4,6-Trichlorophenol	ND		330
2,4,5-Trichlorophenol	ND		1600
2-Chloronaphthalene	ND		330
2-Nitroaniline	ND		1600

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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TEST CODE :SBNA0A1 JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : METHOD BLANK MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		330
Acenaphthylene	ND		330
3-Nitroaniline	ND		1600
Acenaphthene	ND		330
2,4-Dinitrophenol	ND		1600
4-Nitrophenol	ND		1600
Dibenzofuran	ND		330
2,4-Dinitrotoluene	ND		330
2,6-Dinitrotoluene	ND		330
Diethylphthalate	ND		330
4-Chlorophenylphenylether	ND		330
Fluorene	ND		330
4-Nitroaniline	ND		1600
4,6-Dinitro-2-methylphenol	ND		1600
n-Nitrosodiphenylamine	ND		330
4-Bromophenylphenylether	ND		330
Hexachlorobenzene	ND		330
Pentachlorophenol	ND		1600
Phenanthrene	ND		330
Anthracene	ND		330
Fluoranthene	ND		330
di-n-Butylphthalate	159	J	330
Pyrene	ND		330
Butylbenzylphthalate	ND		330
3,3'-Dichlorobenzidine	ND		660
Benzo(a)anthracene	ND		330
bis(2-Ethylhexyl)phthalate	ND		330
Chrysene	ND		330
di-n-Octylphthalate	ND		330
Benzo(b)fluoranthene	ND		330
Benzo(k)fluoranthene	ND		330
Benzo(a)pyrene	ND		330
Indeno(1,2,3-cd)pyrene	ND		330
Dibenzo(a,h)anthracene	ND		330
Benzo(ghi)perylene	ND		330

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

JOB NUMBER : 9802.592

Ecology and Environment, Inc.
SAMPLE TRACKING REPORT

SAMPLE NUMBER	CLIENT SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED
MERCURY	(CVAP)-S			
17007.01	KS-SS-1	10/13/98		10/20/98
17008.01	KS-SS-2	10/13/98		10/20/98
17009.01	KS-SS-3	10/13/98		10/20/98
17010.01	KS-SS-4	10/13/98		10/20/98
17011.01	KS-SS-5	10/13/98		10/20/98
17012.01	KS-SS-6	10/13/98		10/20/98
17013.01	KS-SS-7	10/13/98		10/20/98
17014.01	KS-SS-8	10/13/98		10/20/98
17015.01	KS-SS-9	10/13/98		10/20/98
17016.01	KS-SS-10	10/13/98		10/20/98
17017.01	KS-SS-11	10/13/98		10/20/98
17018.01	KS-SS-12	10/13/98		10/20/98
17019.01	KS-SS-13	10/13/98		10/20/98
17020.01	KS-SS-14	10/13/98		10/20/98
17021.01	KS-SS-15	10/13/98		10/20/98
17022.01	KS-SS-16	10/13/98		10/20/98
17023.01	KS-SS-17	10/13/98		10/20/98
17024.01	KS-SS-18	10/13/98		10/20/98
17025.01	KS-SS-19	10/13/98		10/20/98
17026.01	KS-SS-20	10/13/98		10/20/98
RCRA METALS	-S			
17007.01	KS-SS-1	10/13/98	10/20/98	10/20/98
17008.01	KS-SS-2	10/13/98	10/20/98	10/20/98
17009.01	KS-SS-3	10/13/98	10/20/98	10/20/98
17010.01	KS-SS-4	10/13/98	10/20/98	10/20/98
17011.01	KS-SS-5	10/13/98	10/20/98	10/20/98
17012.01	KS-SS-6	10/13/98	10/20/98	10/20/98
17013.01	KS-SS-7	10/13/98	10/20/98	10/20/98
17014.01	KS-SS-8	10/13/98	10/20/98	10/20/98
17015.01	KS-SS-9	10/13/98	10/20/98	10/20/98
17016.01	KS-SS-10	10/13/98	10/20/98	10/20/98
17017.01	KS-SS-11	10/13/98	10/20/98	10/20/98
17018.01	KS-SS-12	10/13/98	10/20/98	10/20/98
17019.01	KS-SS-13	10/13/98	10/20/98	10/20/98
17020.01	KS-SS-14	10/13/98	10/20/98	10/20/98
17021.01	KS-SS-15	10/13/98	10/20/98	10/20/98
17022.01	KS-SS-16	10/13/98	10/20/98	10/20/98
17023.01	KS-SS-17	10/13/98	10/20/98	10/20/98
17024.01	KS-SS-18	10/13/98	10/20/98	10/20/98
17025.01	KS-SS-19	10/13/98	10/20/98	10/20/98
17026.01	KS-SS-20	10/13/98	10/20/98	10/20/98

METALS SECTION

JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 88 %
SAMPLE ID LAB : EE-98-17007
MATRIX: SOLID
SAMPLE ID CLIENT: KS-SS-1

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	ND		1.1	MG/KG
Arsenic	2.0		0.57	MG/KG
Barium	54		2.3	MG/KG
Cadmium	2.8		0.57	MG/KG
Chromium	48		1.1	MG/KG
Lead	45		0.57	MG/KG
Selenium	2.8		1.1	MG/KG
Mercury	0.080		0.034	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

METALS SECTION

JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 75 %
SAMPLE ID LAB : EE-98-17008
MATRIX: SOLID
SAMPLE ID CLIENT: KS-SS-2

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	ND		1.3	MG/KG
Arsenic	0.94		0.67	MG/KG
Barium	54		2.7	MG/KG
Cadmium	3.4		0.67	MG/KG
Chromium	28		1.3	MG/KG
Lead	13		0.67	MG/KG
Selenium	2.0		1.3	MG/KG
Mercury	ND		0.040	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

METALS SECTION

JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 74 %
SAMPLE ID LAB : EE-98-17009
MATRIX: SOLID
SAMPLE ID CLIENT: KS-SS-3

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	ND		1.4	MG/KG
Arsenic	0.84		0.68	MG/KG
Barium	120		2.7	MG/KG
Cadmium	3.2		0.68	MG/KG
Chromium	44		1.4	MG/KG
Lead	44		0.68	MG/KG
Selenium	1.5		1.4	MG/KG
Mercury	ND		0.040	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

METALS SECTION

JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 88 %
SAMPLE ID LAB : EE-98-17010
MATRIX: SOLID
SAMPLE ID CLIENT: KS-SS-4

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	ND		1.1	MG/KG
Arsenic	0.96		0.57	MG/KG
Barium	120		2.3	MG/KG
Cadmium	2.3		0.57	MG/KG
Chromium	24		1.1	MG/KG
Lead	29		0.57	MG/KG
Selenium	ND		1.1	MG/KG
Mercury	ND		0.034	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

METALS SECTION

JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 88 %
SAMPLE ID LAB : EE-98-17011
MATRIX: SOLID
SAMPLE ID CLIENT: KS-SS-5

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	ND		1.1	MG/KG
Arsenic	1.0		0.57	MG/KG
Barium	20		2.3	MG/KG
Cadmium	0.75		0.57	MG/KG
Chromium	11		1.1	MG/KG
Lead	9.2		0.57	MG/KG
Selenium	ND		1.1	MG/KG
Mercury	ND		0.034	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

METALS SECTION

JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 91 %
SAMPLE ID LAB : EE-98-17012
MATRIX: SOLID
SAMPLE ID CLIENT: KS-SS-6

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	ND		1.1	MG/KG
Arsenic	1.6		0.55	MG/KG
Barium	94		2.2	MG/KG
Cadmium	1.2		0.55	MG/KG
Chromium	14		1.1	MG/KG
Lead	30		0.55	MG/KG
Selenium	ND		1.1	MG/KG
Mercury	0.066		0.033	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

METALS SECTION

JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 90 %
SAMPLE ID LAB : EE-98-17013
MATRIX: SOLID
SAMPLE ID CLIENT: KS-SS-7

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	ND		1.1	MG/KG
Arsenic	1.9		0.56	MG/KG
Barium	68		2.2	MG/KG
Cadmium	2.1		0.56	MG/KG
Chromium	37		1.1	MG/KG
Lead	20		0.56	MG/KG
Selenium	1.9		1.1	MG/KG
Mercury	ND		0.033	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

METALS SECTION

JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 90 %
SAMPLE ID LAB : EE-98-17014
MATRIX: SOLID
SAMPLE ID CLIENT: KS-SS-8

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	ND		1.1	MG/KG
Arsenic	1.9		0.56	MG/KG
Barium	68		2.2	MG/KG
Cadmium	2.8		0.56	MG/KG
Chromium	46		1.1	MG/KG
Lead	24		0.56	MG/KG
Selenium	3.2		1.1	MG/KG
Mercury	0.056		0.033	MG/KG

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
ND = NOT DETECTED

METALS SECTION

JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 90 %
SAMPLE ID LAB : EE-98-17015
MATRIX: SOLID
SAMPLE ID CLIENT: KS-SS-9

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	5.9		1.1	MG/KG
Arsenic	2.7		0.56	MG/KG
Barium	80		2.2	MG/KG
Cadmium	3.5		0.56	MG/KG
Chromium	69		1.1	MG/KG
Lead	56		0.56	MG/KG
Selenium	1.3		1.1	MG/KG
Mercury	0.67		0.033	MG/KG

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
ND = NOT DETECTED

METALS SECTION

JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 88 %
SAMPLE ID LAB : EE-98-17016
MATRIX: SOLID
SAMPLE ID CLIENT: KS-SS-10

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	ND		1.1	MG/KG
Arsenic	1.1		0.57	MG/KG
Barium	41		2.3	MG/KG
Cadmium	1.6		0.57	MG/KG
Chromium	20		1.1	MG/KG
Lead	18		0.57	MG/KG
Selenium	ND		1.1	MG/KG
Mercury	ND		0.034	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

METALS SECTION

JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 88 %
SAMPLE ID LAB : EE-98-17017
MATRIX: SOLID
SAMPLE ID CLIENT: KS-SS-11

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	ND		1.1	MG/KG
Arsenic	0.94		0.57	MG/KG
Barium	99		2.3	MG/KG
Cadmium	2.0		0.57	MG/KG
Chromium	22		1.1	MG/KG
Lead	63		0.57	MG/KG
Selenium	ND		1.1	MG/KG
Mercury	0.068		0.034	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

METALS SECTION

JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 88 %
SAMPLE ID LAB : EE-98-17018
MATRIX: SOLID
SAMPLE ID CLIENT: KS-SS-12

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	ND		1.1	MG/KG
Arsenic	0.98		0.57	MG/KG
Barium	28		2.3	MG/KG
Cadmium	1.4		0.57	MG/KG
Chromium	16		1.1	MG/KG
Lead	17		0.57	MG/KG
Selenium	ND		1.1	MG/KG
Mercury	0.045		0.034	MG/KG

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
ND = NOT DETECTED

METALS SECTION

JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
SAMPLE ID LAB : EE-98-17019
SAMPLE ID CLIENT: KS-SS-13

%SOLIDS : 88 %
MATRIX: SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	ND		1.1	MG/KG
Arsenic	2.1		0.57	MG/KG
Barium	57		2.3	MG/KG
Cadmium	3.4		0.57	MG/KG
Chromium	50		1.1	MG/KG
Lead	24		0.57	MG/KG
Selenium	1.9		1.1	MG/KG
Mercury	0.034		0.034	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

METALS SECTION

JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 85 %
SAMPLE ID LAB : EE-98-17020
MATRIX: SOLID
SAMPLE ID CLIENT: KS-SS-14

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	ND		1.2	MG/KG
Arsenic	3.0		0.59	MG/KG
Barium	17		2.4	MG/KG
Cadmium	2.8		0.59	MG/KG
Chromium	11		1.2	MG/KG
Lead	8.3		0.59	MG/KG
Selenium	1.4		1.2	MG/KG
Mercury	ND		0.035	MG/KG

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
ND = NOT DETECTED

METALS SECTION

JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 89 %
SAMPLE ID LAB : EE-98-17021
MATRIX: SOLID
SAMPLE ID CLIENT: KS-SS-15

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	ND		1.1	MG/KG
Arsenic	3.4		0.56	MG/KG
Barium	74		2.2	MG/KG
Cadmium	2.6		0.56	MG/KG
Chromium	24		1.1	MG/KG
Lead	120		0.56	MG/KG
Selenium	1.9		1.1	MG/KG
Mercury	0.090		0.034	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

METALS SECTION

JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 86 %
SAMPLE ID LAB : EE-98-17022
MATRIX: SOLID
SAMPLE ID CLIENT: KS-SS-16

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	ND		1.2	MG/KG
Arsenic	6.9		0.58	MG/KG
Barium	180		2.3	MG/KG
Cadmium	2.2		0.58	MG/KG
Chromium	18		1.2	MG/KG
Lead	81		0.58	MG/KG
Selenium	3.3		1.2	MG/KG
Mercury	0.070		0.035	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

METALS SECTION

JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 90 %
SAMPLE ID LAB : EE-98-17023
MATRIX: SOLID
SAMPLE ID CLIENT: KS-SS-17

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	ND		1.1	MG/KG
Arsenic	2.4		0.56	MG/KG
Barium	79		2.2	MG/KG
Cadmium	2.7		0.56	MG/KG
Chromium	19		1.1	MG/KG
Lead	46		0.56	MG/KG
Selenium	1.5		1.1	MG/KG
Mercury	1.9		0.033	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

METALS SECTION

JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 83 %
SAMPLE ID LAB : EE-98-17024
MATRIX: SOLID
SAMPLE ID CLIENT: KS-SS-18

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	21		1.2	MG/KG
Arsenic	3.6		0.60	MG/KG
Barium	360		2.4	MG/KG
Cadmium	4.9		0.60	MG/KG
Chromium	76		1.2	MG/KG
Lead	300		0.60	MG/KG
Selenium	1.6		1.2	MG/KG
Mercury	ND		0.036	MG/KG

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
ND = NOT DETECTED

METALS SECTION

JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 73 %
SAMPLE ID LAB : EE-98-17025
MATRIX: SOLID
SAMPLE ID CLIENT: KS-SS-19

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	ND		1.4	MG/KG
Arsenic	16		0.68	MG/KG
Barium	87		2.7	MG/KG
Cadmium	2.6		0.68	MG/KG
Chromium	27		1.4	MG/KG
Lead	11		0.68	MG/KG
Selenium	1.9		1.4	MG/KG
Mercury	ND		0.041	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

METALS SECTION

JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 92 %
SAMPLE ID LAB : EE-98-17026
MATRIX: SOLID
SAMPLE ID CLIENT: KS-SS-20

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	ND		1.1	MG/KG
Arsenic	2.0		0.54	MG/KG
Barium	63		2.2	MG/KG
Cadmium	2.4		0.54	MG/KG
Chromium	20		1.1	MG/KG
Lead	32		0.54	MG/KG
Selenium	3.2		1.1	MG/KG
Mercury	0.043		0.033	MG/KG

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
ND = NOT DETECTED

QUALITY CONTROL FOR ACCURACY AND PRECISION:
PERCENT RECOVERY AND RELATIVE PERCENT DIFFERENCE (RPD)
OF SOLID MATRIX SPIKE (MS) AND MATRIX SPIKE DUPLICATE (MSD)
(Sample # 17007)

9802.592

(mg/kg as received)

Compound	Original Result	Amount Added MS	Amount Added MSD	Amount Determined MS	Amount Determined MSD	Percent Recovery MS	Percent Recovery MSD	RPD
Arsenic	1.73	145	112	138	99.6	93.9	87.6	6.9
Barium	48.0	145	112	176	140	88.3	82.5	6.8
Cadmium	2.51	3.62	2.79	5.43	5.28	80.4	98.8	20.5
Chromium	42.0	14.5	11.2	46.4	44.6	30.2*	22.6*	29.4
Lead	39.4	36.2	27.9	71.0	106	86.9	238*	93.3*
Selenium	2.48	145	112	132	98.3	89.3	85.8	4.0
Silver	ND	3.62	2.79	3.50	2.83	96.6	101	4.4

WITH THE EXCEPTION OF THE VALUES FLAGGED (*), THESE RECOVERIES AND RPDs ARE WITHIN E & E, INC. QC TARGETS. RECOVERIES REPORTED ARE DERIVED FROM INSTRUMENT RAW DATA WHICH MAY VARY FROM THOSE CALCULATED USING ROUNDED VALUES ON THE QC PAGES.

ND = NOT DETECTED

QUALITY CONTROL FOR PRECISION
RESULTS OF ANALYSIS OF DUPLICATE
ANALYSES OF SOLID SAMPLES

9802.592

(mg/kg as received)

Parameter	E & E Laboratory No. 98-17026	Spike Sample Result	Spike Duplicate Result	Relative Percent Difference (RPD)
Mercury		0.37	0.30	20.8

THIS RPD IS WITHIN E & E, INC. QC TARGETS.

QUALITY CONTROL FOR ACCURACY: PERCENT RECOVERY
FOR SPIKED SOLID SAMPLES

9802.592

(mg/kg as received)

Parameter	E & E Laboratory No. 98-17026	Sample Result	Spiked Sample Result	Spike Amount	Percent Recovery
Mercury		0.0400	0.300	0.333	78.0 *

THIS RECOVERY IS NOT WITHIN E & E, INC. QC TARGETS.

LABORATORY CONTROL SAMPLE (832-156-1)

9802.592

(µg/L)

Analyte	Found Value	True Value	Percent Recovery
Arsenic	985	1000	98.5
Barium	982	1000	98.2
Cadmium	971	1000	97.1
Chromium	973	1000	97.3
Lead	975	1000	97.5
Selenium	960	1000	96.0

THESE RECOVERIES ARE WITHIN E & E, INC. QC TARGETS (80% - 120%).

LABORATORY CONTROL SAMPLE (10/20/98)

9802.592

(mg/kg)

ANALYTE	FOUND VALUE	TRUE VALUE	PERCENT RECOVERY
Mercury	1.87	1.75	107

THIS RECOVERY IS WITHIN E & E, INC. QC TARGETS.

METALS SECTION

JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
SAMPLE ID LAB : METHOD BLANK (832-156-1) MATRIX: SOLID
DATE OF ANALYSIS: 10/20/98
ASSOCIATED SAMPLES: 17007, 17007 MS, 17007 MSD, 17008, 17009, 17010, 17011, 17012, 17013, 17014, 17015, 17016, 17017, 17018, 17019, 17020, 17021, 17022, 17023, 17024, 17025 AND 17026

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	ND		1.0	MG/KG
Arsenic	ND		0.50	MG/KG
Barium	ND		2.0	MG/KG
Cadmium	ND		0.50	MG/KG
Chromium	ND		1.0	MG/KG
Lead	ND		0.50	MG/KG
Selenium	ND		1.0	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

METALS SECTION

JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
SAMPLE ID LAB : METHOD BLANK (10/20/98) MATRIX: SOLID
DATE OF ANALYSIS: 10/20/98
ASSOCIATED SAMPLES: 17007, 17008, 17009, 17010, 17011, 17012, 17013, 17014, 17015, 17016, 17017, 17018, 17019, 17020, 17021, 17022, 17023, 17024, 17025, 17026, 17026 DUP AND 17026 SPK

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Mercury	ND		0.030	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

JOB NUMBER : 9802.592

Ecology and Environment, Inc.
SAMPLE TRACKING REPORT

SAMPLE NUMBER	CLIENT SAMPLE ID		DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED
SOLIDS TOTAL		-S			
17007.01	KS-SS-1		10/13/98		10/19/98
17008.01	KS-SS-2		10/13/98		10/19/98
17009.01	KS-SS-3		10/13/98		10/19/98
17010.01	KS-SS-4		10/13/98		10/19/98
17011.01	KS-SS-5		10/13/98		10/19/98
17012.01	KS-SS-6		10/13/98		10/19/98
17013.01	KS-SS-7		10/13/98		10/19/98
17014.01	KS-SS-8		10/13/98		10/19/98
17015.01	KS-SS-9		10/13/98		10/19/98
17016.01	KS-SS-10		10/13/98		10/19/98
17017.01	KS-SS-11		10/13/98		10/19/98
17018.01	KS-SS-12		10/13/98		10/19/98
17019.01	KS-SS-13		10/13/98		10/19/98
17020.01	KS-SS-14		10/13/98		10/19/98
17021.01	KS-SS-15		10/13/98		10/19/98
17022.01	KS-SS-16		10/13/98		10/19/98
17023.01	KS-SS-17		10/13/98		10/19/98
17024.01	KS-SS-18		10/13/98		10/19/98
17025.01	KS-SS-19		10/13/98		10/19/98
17026.01	KS-SS-20		10/13/98		10/19/98
TRPH		-S			
17007.01	KS-SS-1		10/13/98		10/27/98
17008.01	KS-SS-2		10/13/98		10/27/98
17009.01	KS-SS-3		10/13/98		10/27/98
17010.01	KS-SS-4		10/13/98		10/27/98
17011.01	KS-SS-5		10/13/98		10/27/98
17012.01	KS-SS-6		10/13/98		10/27/98
17013.01	KS-SS-7		10/13/98		10/27/98
17014.01	KS-SS-8		10/13/98		10/27/98
17015.01	KS-SS-9		10/13/98		10/27/98
17016.01	KS-SS-10		10/13/98		10/27/98
17017.01	KS-SS-11		10/13/98		10/27/98
17018.01	KS-SS-12		10/13/98		10/27/98
17019.01	KS-SS-13		10/13/98		10/27/98
17020.01	KS-SS-14		10/13/98		10/27/98
17021.01	KS-SS-15		10/13/98		10/27/98
17022.01	KS-SS-16		10/13/98		10/27/98
17023.01	KS-SS-17		10/13/98		10/27/98
17024.01	KS-SS-18		10/13/98		10/27/98
17025.01	KS-SS-19		10/13/98		10/27/98
17026.01	KS-SS-20		10/13/98		10/27/98

TEST CODE :STS 1

JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : SOLIDS TOTAL
PARAMETER : Solids-Total

UNITS : %

SAMPLE ID	RESULTS	Q
EE-98-17007 KS-SS-1	88	
EE-98-17008 KS-SS-2	75	
EE-98-17009 KS-SS-3	74	
EE-98-17010 KS-SS-4	88	
EE-98-17011 KS-SS-5	88	
EE-98-17012 KS-SS-6	91	
EE-98-17013 KS-SS-7	90	
EE-98-17014 KS-SS-8	90	
EE-98-17015 KS-SS-9	90	
EE-98-17016 KS-SS-10	88	
EE-98-17017 KS-SS-11	88	
EE-98-17018 KS-SS-12	88	
EE-98-17019 KS-SS-13	88	

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
ND = NOT DETECTED

TEST CODE :STS 1

JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : SOLIDS TOTAL
PARAMETER : Solids-Total

UNITS : %

SAMPLE ID	RESULTS	Q
EE-98-17020 KS-SS-14	85	
EE-98-17021 KS-SS-15	89	
EE-98-17022 KS-SS-16	86	
EE-98-17023 KS-SS-17	90	
EE-98-17024 KS-SS-18	83	
EE-98-17025 KS-SS-19	73	
EE-98-17026 KS-SS-20	92	

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
ND = NOT DETECTED

QUALITY CONTROL FOR PRECISION
RESULTS OF ANALYSIS OF DUPLICATE
ANALYSES OF SOLID SAMPLES

9802.592

(%)

Parameter	E & E Laboratory No. 98-	Sample Result	Duplicate Result	Relative Percent Difference (RPD)
Solids-Total	17025	73.0	72.3	1.0

THIS RPD IS WITHIN E & E, INC. QC TARGETS.

TEST CODE :SPETHY1

JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH

RESULTS IN DRY WEIGHT
UNITS : MG/KG

TEST NAME : TRPH
PARAMETER : Petroleum Hydrocarbons

SAMPLE ID	RESULTS	Q	QNT. LIMIT
EE-98-17007 KS-SS-1	740		23
EE-98-17008 KS-SS-2	220		27
EE-98-17009 KS-SS-3	88		27
EE-98-17010 KS-SS-4	76		23
EE-98-17011 KS-SS-5	52		23
EE-98-17012 KS-SS-6	73		22
EE-98-17013 KS-SS-7	230		22
EE-98-17014 KS-SS-8	340		22
EE-98-17015 KS-SS-9	390		22
EE-98-17016 KS-SS-10	64		23
EE-98-17017 KS-SS-11	97		23
EE-98-17018 KS-SS-12	26		23
EE-98-17019 KS-SS-13	30		23

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
NA = NOT APPLICABLE
ND = NOT DETECTED

TEST CODE :SPETHY1

JOB NUMBER :9802.592
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH

RESULTS IN DRY WEIGHT
UNITS : MG/KG

TEST NAME : TRPH
PARAMETER : Petroleum Hydrocarbons

SAMPLE ID	RESULTS	Q	QNT. LIMIT
EE-98-17020 KS-SS-14	ND		24
EE-98-17021 KS-SS-15	190		22
EE-98-17022 KS-SS-16	800		23
EE-98-17023 KS-SS-17	25		22
EE-98-17024 KS-SS-18	66		24
EE-98-17025 KS-SS-19	ND		27
EE-98-17026 KS-SS-20	3800		22
METHOD BLANK	ND		20

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
NA = NOT APPLICABLE

ND = NOT DETECTED

QUALITY CONTROL FOR PRECISION
RESULTS OF ANALYSIS OF DUPLICATE
ANALYSES OF SOLID SAMPLES

9802.592

(mg/kg as received)

Parameter	E & E Laboratory No. 98-	Sample Result	Duplicate Result	Relative Percent Difference (RPD)
TRPH	17015	352	361	2.52

THIS RPD IS WITHIN E & E, INC. QC TARGETS.

ND = NOT DETECTED

NC = NOT CALCULABLE

LABORATORY CONTROL SAMPLE (1286-012-1)

9802.592

(mg/kg)

ANALYTE	FOUND VALUE	TRUE VALUE	PERCENT RECOVERY
TRPH	176	167	105

THIS RECOVERY IS WITHIN E & E, INC. QC TARGETS.

ND= NOT DETECTED

NC= NOT CALCULABLE

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International Specialists in the Environment

ANALYTICAL SERVICES CENTER
4493 Walden Avenue
Lancaster, New York 14086
Tel. (716) 685-8080, Fax: (716) 685-0852

Memorandum

To: Hussein Aldis - Arlington

From: Tony Bogolin, Project Manager TB/jk

Date: November 25, 1998

Subject: YM-4000 Kenilworth

RE: 9802.593

CC: Lab File

Attached is the laboratory report of the analysis conducted on eighteen samples received at the Analytical Services Center on October 16, 1998. Analysis was performed according to the procedures set forth in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, Update III, June 1997, USEPA, and "Methods for the Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983.

The chain of custody form provided herein is integral to this report and must be included with the analytical results forms upon transferal to another data user.

All samples on which this report is based will be retained by E & E for a period of 30 days from the date of this report, unless otherwise instructed by the client. If additional storage of samples is requested by the client, a storage fee of $1.00 per sample container per month will be charged for each sample, with such charges accruing until destruction of the samples is authorized by the client.

TB/jk
Enclosure

ecology and environment, inc.

Analytical Services Center
4493 Walden Avenue, Lancaster, New York, 14086, Tel. 716/685-8080, Fax 716/685-0852
International Specialists in the Environment

cooler # 1

CHAIN-OF-CUSTODY RECORD

Project No.: YM04
Project Name: Kenilworth
Project Manager: Hussein Aldis
Samplers: (Signatures) Hussein Aldis, Sylvie Gomis
Field Team Leader: Hussein Aldis

STATION NUMBER	DATE	TIME	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE TYPE AIR	SAMPLE INFORMATION / EXPECTED COMPOUNDS (Concentration)*	STATION LOCATION	NUMBER OF CONTAINERS	8oz clear glass	REMARKS
21	10/8	1400		✓		BNA TRPH metals /lab	KS-SS-21	1		
22	↓	1410		✓		"	KS-SS-22	1		
23	↓	1420		✓		"	KS-SS-23	1		
24	↓	1430		✓		" "	~~KS~~-SS-duplic.	1		

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Ship Via:
[signature]	10/14/98					Airborne
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	BL/Airbill Number: / Date:
Relinquished By: (Signature)	Date/Time: 1020 10-16-98	Received For Laboratory By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received For Laboratory By: (Signature)	

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files
*See CONCENTRATION RANGE on back of form.

0571194

CHAIN OF CUSTODY RECORD

ASC analytical services center

Ecology and Environment, Inc., Analytical Services Center
4493 Walden Avenue, Lancaster, New York, 14086, Tel: 716/685-8080, Fax 716/685-0852
Where Scientific Excellence and Efficiency Meet

Cooler No: 1
Lab:
Page: 1 of 1

PROJECT No: YM04
SITE NAME: Kenilworth
LOCATION: (Include State) Wash, DC
CLIENT: National Parc Services
PROJECT MANAGER: Hussein Aldis
OFFICE No: 40/11
FIELD TEAM LEADER: Hussein Aldis
PHONE No: (703) 5226065
SAMPLERS: (PRINT) Hussein Aldis, Sylvie Gomis

CONTAINER TYPE AND PRESERVATIVE: 8 oz/ice

REQUESTED ANALYSIS: BNA TRPH metals

TURNAROUND TIME
24-HOUR ☐
48-HOUR ☐
1-WEEK ☐
STANDARD ☑
RUSH ☐ days
OTHER

(FOR LAB USE ONLY)
Lab Job No:
Report type:
Batch QC: Yes No

DATE	TIME	SAMPLE ID	SAMPLE MATRIX	CHECK FOR MS/MSD	SAMPLE TYPE	No. OF CONTAINERS	BNA TRPH metals							OVA/HNU READINGS (PPM)	BEGINNING DEPTH (FEET BGS)	ENDING DEPTH (FEET BGS)	REMARKS
10/14	0800	KS-SD-1	SD		0	1	✓										
	0810	KS-SD-2	SD		0	1	✓										
	0820	KS-SD-3	SD		0	1	✓										
	0830	~~KS-SD-3~~	~~SD~~		~~0~~	~~1~~	~~✓~~										
	0850	KS-SD-4	SD		0	1	✓										
	0900	KS-SD-5	SD		0	1	✓										
	0910	KS-SD-duplic 4	SD		0	1	✓										

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	Ship Via:	Date:	Temperature Blank Info.
Sylvie Gomis	10/14/98 1430			Airborne		Enclosed: Yes No
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time: 10-16-98 1020	BL/Airbill Number:		(FOR LAB USE ONLY) Date: Time: Temperature: °C

Distribution: White - Lab original Yellow - Field team leader

0881297

CHAIN OF CUSTODY RECORD

ASC analytical services center

Ecology and Environment, Inc., Analytical Services Center
4493 Walden Avenue, Lancaster, New York, 14086, Tel: 716/685-8080, Fax 716/685-0852
Where Scientific Excellence and Efficiency Meet

Cooler No: 1
Lab:

Page: ____ of ____

PROJECT No: YM04
SITE NAME: Kenilworth
LOCATION: (Include State) Wash, DC
CLIENT: National Parc Services
PROJECT MANAGER: Hussein Aldis
OFFICE No: 40
FIELD TEAM LEADER: Hussein Aldis
PHONE No: (703) 522 6065
SAMPLERS: (PRINT) Hussein Aldis, Sylvie Gomis

CONTAINER TYPE AND PRESERVATIVE: 8 oz/1d

REQUESTED ANALYSIS: PAH/BNA/RCRAmet TRPH/% Solids

TURNAROUND TIME: 24-HOUR ☐ 48-HOUR ☐ 1-WEEK ☐ STANDARD ☑ (RUSH) RUSH ____ days OTHER ____

(FOR LAB USE ONLY) Lab Job No: Report type: Batch QC: Yes No

DATE	TIME	SAMPLE ID	SAMPLE MATRIX	CHECK FOR MS/MSD	SAMPLE TYPE	No. OF CONTAINERS	PAH/BNA/RCRAmet TRPH/% Solids	OVA/HNU READINGS (PPM)	BEGINNING DEPTH (FEET BGS)	ENDING DEPTH (FEET BGS)	REMARKS
		KS-GS-1	SB		O	1	✓				Geoprobe
		KS-GS-2	SB		O	1	✓				
		KS-GS-3	SB		O	1	✓				
		KS-GS-4	SB		O	1	✓				
		KS-GS-5	SB		O	1	✓				
		KS-GS-6	SB		O	1	✓				
		KS-GS-7	SB		O	1	✓				
		KS-GS-8	SB		O	1	✓				
		KS-GS-Duplicate	SB		O	1	✓				

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	Ship Via:	Date:
[signature]	10/14 1530	[signature]		Airborne	
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time: 1020 10-16-98	BL/Airbill Number:	

Temperature Blank Info. Enclosed: Yes No

(FOR LAB USE ONLY) Date: ____ Time: ____ Temperature: ____ °C

Distribution: White - Lab original Yellow - Field team leader

0881297

ecology and environment, inc.

Analytical Services Center
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International Specialists in the Environment

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project No.: M4010
Project Name: Kenilworth
Project Manager: Hussein Aldis
Samplers: (Signatures) Mike Gomes + Hussein Aldis
Field Team Leader: Hussein Aldis

STATION NUMBER	DATE	TIME	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE TYPE AIR	SAMPLE INFORMATION / EXPECTED COMPOUNDS (Concentration)*	STATION LOCATION	NUMBER OF CONTAINERS	1 L poly + preser	32 oz amber	8 oz bottle	1 L poly	4 oz		REMARKS
B-129	10/14	1030		✓		TRPH BNA RCRAmetals VOAs	KS-GW-7	4	✓	✓					
		1130		✓		— " — " —	KS-GW-8	4	✓	✓					
		1230		✓		~~PAH~~ / BNA / RCRA met / TRPH / % solid	KS-GS-7	1			✓	1			
		1330		✓		— " — " — " —	KS-GS-8	1			✓	1			
	10/13	1600		✓		~~TRPH~~ ~~BNA~~ RCRA metals ~~VOA~~		7				✓	✓		
	10/13	1200		✓		VOAs		16					✓		

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Ship Via:
Mike Gomes	10/14 1700					
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	BL/Airbill Number: / Date:
Relinquished By: (Signature)	Date/Time: 10-26-98 1022	Received For Laboratory By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received For Laboratory By: (Signature)	

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files
*See CONCENTRATION RANGE on back of form.

0571194

Ecology and Environment, Inc. Analytical Services Center

Cooler Receipt Form

PACKAGE RECEIPT #: 1887 NUMBER OF COOLERS: 1 DATE RECEIVED: 10-15-98

E & E PROJECT #: YM 4000 PROJECT OR SITE NAME: Kenilworth

A. Preliminary Examination Phase

CIRCLE ONE

1. Did coolers come with airbill or packing slip? — YES NO NA

   Enter carrier here and print airbill # below:

2. Did cooler(s) have custody seals? — YES NO NA

   If YES, how many and where? 2 on Seam

3. Were custody seals unbroken and intact on receipt? — YES NO* NA

4. Were custody seals dated and signed? — YES NO NA

   If YES, enter date: Name:

5. Sign here to acknowledge receipt of cooler (s):

   Date cooler(s) opened: 10-15-98 C-O-C numbers:

   Cooler(s) opened by (print): Kelly Gordon Signature:

6. Were the C-O-C forms received? — YES NO* NA

7. Was the project identifiable from the C-O-C form? — YES NO* NA

   If YES, enter the project number and name in the heading above.

Please record Temperature Blank or Cooler Temperature for Each Cooler. Range (2 - 5°C)*

AIRBILL #	TEMP. °C	AIRBILL #	TEMP. °C	AIRBILL #	TEMP. °C
806636056700	3.5				

Thermometer # 116 Correction Factor 0.0 * If No or Temperature Outside of Acceptable Range, a CAF must be filed. CAF #

B. Unpacking Phase

8. Was enough packing material used in cooler(s)? — YES NO NA

   Type of material: Vermiculite Bubble Wrap Other

9. If required, was enough ice used? — YES NO NA

   If YES, type of ice used: Wet Dry Blue Other

10. Was a temperature blank included inside cooler(s)? — YES NO NA

    If YES, indicate temperature blank temperature in table above. If NO, indicate cooler temperature in table above.

11. Were all containers sealed in separate plastic bags? — YES NO NA

12. Did all containers arrive unbroken and in good condition? — YES NO* NA

C. Login Phase

Samples Logged in By (print): Kelly Gordon Signature: Date: 10-16-98

13. Were all container labels complete (e.g. date, time preserv)? — YES NO* NA

14. Were all C-O-C forms filled out properly in ink and signed? — YES NO* NA

15. Did the C-O-C form agree with containers received? — YES NO* NA

16. Were the correct containers used for the tests requested? — YES NO* NA

17. Were the correct preservatives listed on the sample labels? — YES NO* NA

18. Was a sufficient sample volume sent for the tests requested? — YES NO* NA

19. Were all volatile samples received without head space? — YES NO* NA

JOB NUMBER : 9802.593

Ecology and Environment, Inc.
SAMPLE TRACKING REPORT

SAMPLE NUMBER	CLIENT SAMPLE ID		DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED
SOLIDS TOTAL		-S			
17027.01	KS-SD-1		10/14/98		10/19/98
17028.01	KS-SD-2		10/14/98		10/19/98
17029.01	KS-SD-3		10/14/98		10/19/98
17030.01	KS-SD-4		10/14/98		10/19/98
17031.01	KS-SD-5		10/14/98		10/19/98
17032.01	KS-SD-4D		10/14/98		10/19/98
17033.01	KS-SS-21		10/13/98		10/19/98
17034.01	KS-SS-21D		10/13/98		10/19/98
17035.01	KS-SS-23		10/13/98		10/19/98
17036.01	KS-GS-1		10/14/98		10/19/98
17037.01	KS-GS-2		10/14/98		10/19/98
17038.01	KS-GS-3		10/14/98		10/19/98
17039.01	KS-GS-4		10/14/98		10/19/98
17040.01	KS-GS-5		10/14/98		10/19/98
17041.01	KS-GS-6		10/14/98		10/19/98
17042.01	KS-GS-7		10/14/98		10/19/98
17043.01	KS-GS-8		10/14/98		10/19/98
17044.01	KS-SS-22		10/13/98		10/19/98
TRPH		-S			
17027.01	KS-SD-1		10/14/98		10/27/98
17028.01	KS-SD-2		10/14/98		10/27/98
17029.01	KS-SD-3		10/14/98		10/27/98
17030.01	KS-SD-4		10/14/98		10/27/98
17031.01	KS-SD-5		10/14/98		10/27/98
17032.01	KS-SD-4D		10/14/98		10/27/98
17033.01	KS-SS-21		10/13/98		10/27/98
17034.01	KS-SS-21D		10/13/98		10/27/98
17035.01	KS-SS-23		10/13/98		10/27/98
17036.01	KS-GS-1		10/14/98		10/28/98
17037.01	KS-GS-2		10/14/98		10/28/98
17038.01	KS-GS-3		10/14/98		10/28/98
17039.01	KS-GS-4		10/14/98		10/28/98
17040.01	KS-GS-5		10/14/98		10/28/98
17041.01	KS-GS-6		10/14/98		10/28/98
17042.01	KS-GS-7		10/14/98		10/28/98
17043.01	KS-GS-8		10/14/98		10/28/98
17044.01	KS-SS-22		10/13/98		10/28/98

TEST CODE :STS 1 JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : SOLIDS TOTAL UNITS : %
PARAMETER : Solids-Total

SAMPLE ID	RESULTS	Q
EE-98-17027 KS-SD-1	47	
EE-98-17028 KS-SD-2	42	
EE-98-17029 KS-SD-3	79	
EE-98-17030 KS-SD-4	70	
EE-98-17031 KS-SD-5	61	
EE-98-17032 KS-SD-4D	67	
EE-98-17033 KS-SS-21	86	
EE-98-17034 KS-SS-21D	86	
EE-98-17035 KS-SS-23	89	
EE-98-17036 KS-GS-1	72	
EE-98-17037 KS-GS-2	76	
EE-98-17038 KS-GS-3	78	
EE-98-17039 KS-GS-4	83	

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

TEST CODE :STS 1 JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : SOLIDS TOTAL UNITS : %
PARAMETER : Solids-Total

SAMPLE ID	RESULTS	Q
EE-98-17040 KS-GS-5	84	
EE-98-17041 KS-GS-6	79	
EE-98-17042 KS-GS-7	75	
EE-98-17043 KS-GS-8	66	
EE-98-17044 KS-SS-22	84	

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

QUALITY CONTROL FOR PRECISION
RESULTS OF ANALYSIS OF DUPLICATE
ANALYSES OF SOLID SAMPLES

9802.593

(%)

Parameter	E & E Laboratory No. 98-	Sample Result	Duplicate Result	Relative Percent Difference (RPD)
Solids-Total	17044	84.5	83.6	1.1

THIS RPD IS WITHIN E & E, INC. QC TARGETS.

TEST CODE :SPETHY1

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH

RESULTS IN DRY WEIGHT
UNITS : MG/KG

TEST NAME : TRPH
PARAMETER : Petroleum Hydrocarbons

SAMPLE ID	RESULTS	Q	QNT. LIMIT
EE-98-17027 KS-SD-1	200		42
EE-98-17028 KS-SD-2	48		46
EE-98-17029 KS-SD-3	26		25
EE-98-17030 KS-SD-4	ND		28
EE-98-17031 KS-SD-5	ND		33
EE-98-17032 KS-SD-4D	ND		30
EE-98-17033 KS-SS-21	63		23
EE-98-17034 KS-SS-21D	43		23
EE-98-17035 KS-SS-23	90		22
EE-98-17036 KS-GS-1	ND		28
EE-98-17037 KS-GS-2	120		26
EE-98-17038 KS-GS-3	160		26
EE-98-17039 KS-GS-4	45		24

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
NA = NOT APPLICABLE
ND = NOT DETECTED

TEST CODE :SPETHY1 JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH

RESULTS IN DRY WEIGHT
UNITS : MG/KG

TEST NAME : TRPH
PARAMETER : Petroleum Hydrocarbons

SAMPLE ID	RESULTS	Q	QNT. LIMIT
EE-98-17040 KS-GS-5	360		24
EE-98-17041 KS-GS-6	120		25
EE-98-17042 KS-GS-7	ND		27
EE-98-17043 KS-GS-8	ND		31
EE-98-17044 KS-SS-22	75		24

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE
NA = NOT APPLICABLE

TEST CODE :SPETHY1 JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : TRPH UNITS : MG/KG
PARAMETER : Petroleum Hydrocarbons

SAMPLE ID	RESULTS	Q	QNT. LIMIT
Method Blank (10/27/98)	ND		20
Method Blank (10/28/98)	ND		20

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE
NA = NOT APPLICABLE

QUALITY CONTROL FOR ACCURACY: PERCENT RECOVERY
FOR SPIKED SOLID SAMPLES

9802.593

(mg/kg as received)

Parameter	E & E Laboratory No. 98-	Sample Result	Spiked Sample Result	Spike Amount	Percent Recovery
TRPH	17044	64.0	252	167	113

THIS RECOVERY IS WITHIN E & E, INC. QC TARGETS.

ND = NOT DETECTED

4X = RECOVERY NOT DETERMINED BECAUSE SAMPLE AMOUNT IS FOUR OR MORE TIMES GREATER THAN SPIKE AMOUNT.

QUALITY CONTROL FOR PRECISION
RESULTS OF ANALYSIS OF DUPLICATE
ANALYSES OF SOLID SAMPLES

8802.593

(mg/kg as received)

Parameter	E & E Laboratory No. 98-	Sample Result	Duplicate Result	Relative Percent Difference (RPD)
TRPH	17035	80.0	129	47
	17044	64.0	86.5	30

* THESE VALUES ARE WITHIN E & E, INC. QC TARGETS.

ND = NOT DETECTED

NC = NOT CALCULABLE

LABORATORY CONTROL SAMPLE (10/27)

9802.593

(mg/kg)

ANALYTE	FOUND VALUE	TRUE VALUE	PERCENT RECOVERY
TRPH	176	167	105

THIS RECOVERY IS WITHIN E & E, INC. QC TARGETS.

LABORATORY CONTROL SAMPLE (10/28)

9802.593

(mg/kg)

ANALYTE	FOUND VALUE	TRUE VALUE	PERCENT RECOVERY
TRPH	170	167	102

THIS RECOVERY IS WITHIN E & E, INC. QC TARGETS.

JOB NUMBER : 9802.593

Ecology and Environment, Inc.
SAMPLE TRACKING REPORT

SAMPLE NUMBER	CLIENT SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED
MERCURY	(CVAP)-S			
17027.01	KS-SD-1	10/14/98		10/20/98
17028.01	KS-SD-2	10/14/98		10/20/98
17029.01	KS-SD-3	10/14/98		10/20/98
17030.01	KS-SD-4	10/14/98		10/20/98
17031.01	KS-SD-5	10/14/98		10/20/98
17032.01	KS-SD-4D	10/14/98		10/20/98
17033.01	KS-SS-21	10/13/98		10/20/98
17034.01	KS-SS-21D	10/13/98		10/20/98
17035.01	KS-SS-23	10/13/98		10/20/98
17036.01	KS-GS-1	10/14/98		10/20/98
17037.01	KS-GS-2	10/14/98		10/20/98
17038.01	KS-GS-3	10/14/98		10/20/98
17039.01	KS-GS-4	10/14/98		10/20/98
17040.01	KS-GS-5	10/14/98		10/20/98
17041.01	KS-GS-6	10/14/98		10/20/98
17042.01	KS-GS-7	10/14/98		10/20/98
17043.01	KS-GS-8	10/14/98		10/20/98
17044.01	KS-SS-22	10/13/98		10/20/98
RCRA METALS	-S			
17027.01	KS-SD-1	10/14/98	10/20/98	10/20/98
17028.01	KS-SD-2	10/14/98	10/20/98	10/20/98
17029.01	KS-SD-3	10/14/98	10/20/98	10/20/98
17030.01	KS-SD-4	10/14/98	10/20/98	10/20/98
17031.01	KS-SD-5	10/14/98	10/20/98	10/20/98
17032.01	KS-SD-4D	10/14/98	10/20/98	10/20/98
17033.01	KS-SS-21	10/13/98	10/20/98	10/20/98
17034.01	KS-SS-21D	10/13/98	10/20/98	10/20/98
17035.01	KS-SS-23	10/13/98	10/20/98	10/20/98
17036.01	KS-GS-1	10/14/98	10/20/98	10/20/98
17037.01	KS-GS-2	10/14/98	10/20/98	10/20/98
17038.01	KS-GS-3	10/14/98	10/20/98	10/20/98
17039.01	KS-GS-4	10/14/98	10/20/98	10/20/98
17040.01	KS-GS-5	10/14/98	10/20/98	10/20/98
17041.01	KS-GS-6	10/14/98	10/20/98	10/20/98
17042.01	KS-GS-7	10/14/98	10/20/98	10/20/98
17043.01	KS-GS-8	10/14/98	10/20/98	10/20/98
17044.01	KS-SS-22	10/13/98	10/20/98	10/20/98

METALS SECTION

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 47 %
SAMPLE ID LAB : EE-98-17027
MATRIX: SOLID
SAMPLE ID CLIENT: KS-SD-1

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	ND		2.1	MG/KG
Arsenic	11		1.1	MG/KG
Barium	140		4.2	MG/KG
Cadmium	4.8		1.1	MG/KG
Chromium	57		2.1	MG/KG
Lead	500		1.1	MG/KG
Selenium	ND		2.1	MG/KG
Mercury	0.87		0.064	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

METALS SECTION

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 43 %
SAMPLE ID LAB : EE-98-17028
MATRIX: SOLID
SAMPLE ID CLIENT: KS-SD-2

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	7.6		2.3	MG/KG
Arsenic	6.5		1.2	MG/KG
Barium	480		4.6	MG/KG
Cadmium	6.7		1.2	MG/KG
Chromium	89		2.3	MG/KG
Lead	520		1.2	MG/KG
Selenium	ND		2.3	MG/KG
Mercury	0.58		0.070	MG/KG

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
ND = NOT DETECTED

METALS SECTION

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 79 %
SAMPLE ID LAB : EE-98-17029
MATRIX: SOLID
SAMPLE ID CLIENT: KS-SD-3

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	1.6		1.3	MG/KG
Arsenic	4.0		0.63	MG/KG
Barium	110		2.5	MG/KG
Cadmium	3.1		0.63	MG/KG
Chromium	35		1.3	MG/KG
Lead	97		0.63	MG/KG
Selenium	ND		1.3	MG/KG
Mercury	0.16		0.038	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

METALS SECTION

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 70 %
SAMPLE ID LAB : EE-98-17030
MATRIX: SOLID
SAMPLE ID CLIENT: KS-SD-4

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	ND		1.4	MG/KG
Arsenic	1.4		0.71	MG/KG
Barium	98		2.8	MG/KG
Cadmium	3.9		0.71	MG/KG
Chromium	46		1.4	MG/KG
Lead	40		0.71	MG/KG
Selenium	ND		1.4	MG/KG
Mercury	0.086		0.043	MG/KG

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
ND = NOT DETECTED

METALS SECTION

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 61 %
SAMPLE ID LAB : EE-98-17031
MATRIX: SOLID
SAMPLE ID CLIENT: KS-SD-5

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	ND		1.6	MG/KG
Arsenic	2.5		0.82	MG/KG
Barium	110		3.3	MG/KG
Cadmium	4.5		0.82	MG/KG
Chromium	47		1.6	MG/KG
Lead	49		0.82	MG/KG
Selenium	ND		1.6	MG/KG
Mercury	0.098		0.049	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

METALS SECTION

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 67 %
SAMPLE ID LAB : EE-98-17032
MATRIX: SOLID
SAMPLE ID CLIENT: KS-SD-4D

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	ND		1.5	MG/KG
Arsenic	1.6		0.75	MG/KG
Barium	100		3.0	MG/KG
Cadmium	4.1		0.75	MG/KG
Chromium	42		1.5	MG/KG
Lead	41		0.75	MG/KG
Selenium	ND		1.5	MG/KG
Mercury	1.8		0.045	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

METALS SECTION

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 86 %
SAMPLE ID LAB : EE-98-17033
MATRIX: SOLID
SAMPLE ID CLIENT: KS-SS-21

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	15		1.2	MG/KG
Arsenic	6.7		0.58	MG/KG
Barium	860		2.3	MG/KG
Cadmium	6.4		0.58	MG/KG
Chromium	87		1.2	MG/KG
Lead	940		0.58	MG/KG
Selenium	3.0		1.2	MG/KG
Mercury	1.8		0.035	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

METALS SECTION

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 86 %
SAMPLE ID LAB : EE-98-17034
MATRIX: SOLID
SAMPLE ID CLIENT: KS-SS-21D

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	21		1.2	MG/KG
Arsenic	4.5		0.58	MG/KG
Barium	500		2.3	MG/KG
Cadmium	5.3		0.58	MG/KG
Chromium	85		1.2	MG/KG
Lead	880		0.58	MG/KG
Selenium	2.0		1.2	MG/KG
Mercury	0.058		0.035	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

METALS SECTION

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
SAMPLE ID LAB : EE-98-17035
SAMPLE ID CLIENT: KS-SS-23

%SOLIDS : 89 %
MATRIX: SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	ND		1.1	MG/KG
Arsenic	1.7		0.56	MG/KG
Barium	140		2.2	MG/KG
Cadmium	1.8		0.56	MG/KG
Chromium	24		1.1	MG/KG
Lead	82		0.56	MG/KG
Selenium	ND		1.1	MG/KG
Mercury	0.045		0.034	MG/KG

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
ND = NOT DETECTED

METALS SECTION

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 72 %
SAMPLE ID LAB : EE-98-17036
MATRIX: SOLID
SAMPLE ID CLIENT: KS-GS-1

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	ND		1.4	MG/KG
Arsenic	2.8		0.69	MG/KG
Barium	130		2.8	MG/KG
Cadmium	3.5		0.69	MG/KG
Chromium	23		1.4	MG/KG
Lead	120		0.69	MG/KG
Selenium	3.1		1.4	MG/KG
Mercury	0.12		0.042	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

METALS SECTION

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 76 %
SAMPLE ID LAB : EE-98-17037
MATRIX: SOLID
SAMPLE ID CLIENT: KS-GS-2

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	ND		1.3	MG/KG
Arsenic	2.3		0.66	MG/KG
Barium	66		2.6	MG/KG
Cadmium	2.1		0.66	MG/KG
Chromium	34		1.3	MG/KG
Lead	38		0.66	MG/KG
Selenium	ND		1.3	MG/KG
Mercury	0.092		0.039	MG/KG

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
ND = NOT DETECTED

METALS SECTION

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 78 %
SAMPLE ID LAB : EE-98-17038
MATRIX: SOLID
SAMPLE ID CLIENT: KS-GS-3

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	ND		1.3	MG/KG
Arsenic	1.2		0.64	MG/KG
Barium	51		2.6	MG/KG
Cadmium	1.5		0.64	MG/KG
Chromium	25		1.3	MG/KG
Lead	30		0.64	MG/KG
Selenium	ND		1.3	MG/KG
Mercury	0.81		0.038	MG/KG

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
ND = NOT DETECTED

METALS SECTION

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 83 %
SAMPLE ID LAB : EE-98-17039
MATRIX: SOLID
SAMPLE ID CLIENT: KS-GS-4

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	12		1.2	MG/KG
Arsenic	16		0.60	MG/KG
Barium	1200		2.4	MG/KG
Cadmium	28		0.60	MG/KG
Chromium	87		1.2	MG/KG
Lead	4300		0.60	MG/KG
Selenium	14		1.2	MG/KG
Mercury	0.35		0.036	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

METALS SECTION

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 84 %
SAMPLE ID LAB : EE-98-17040
MATRIX: SOLID
SAMPLE ID CLIENT: KS-GS-5

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	9.4		1.2	MG/KG
Arsenic	12		0.60	MG/KG
Barium	420		2.4	MG/KG
Cadmium	190		0.60	MG/KG
Chromium	130		1.2	MG/KG
Lead	1100		0.60	MG/KG
Selenium	13		1.2	MG/KG
Mercury	0.28		0.036	MG/KG

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
ND = NOT DETECTED

METALS SECTION

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
SAMPLE ID LAB : EE-98-17041
SAMPLE ID CLIENT: KS-GS-6

%SOLIDS : 79 %
MATRIX: SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	18		1.3	MG/KG
Arsenic	ND		0.63	MG/KG
Barium	760		2.5	MG/KG
Cadmium	42		0.63	MG/KG
Chromium	180		1.3	MG/KG
Lead	4200		0.63	MG/KG
Selenium	25		1.3	MG/KG
Mercury	ND		0.038	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

METALS SECTION

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
SAMPLE ID LAB : EE-98-17042
SAMPLE ID CLIENT: KS-GS-7

%SOLIDS : 75 %
MATRIX: SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	ND		1.3	MG/KG
Arsenic	3.3		0.67	MG/KG
Barium	89		2.7	MG/KG
Cadmium	4.6		0.67	MG/KG
Chromium	33		1.3	MG/KG
Lead	21		0.67	MG/KG
Selenium	2.6		1.3	MG/KG
Mercury	0.053		0.040	MG/KG

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE

ND = NOT DETECTED

METALS SECTION

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
SAMPLE ID LAB : EE-98-17043
SAMPLE ID CLIENT: KS-GS-8

%SOLIDS : 65 %
MATRIX: SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	ND		1.5	MG/KG
Arsenic	3.2		0.77	MG/KG
Barium	760		3.1	MG/KG
Cadmium	11		0.77	MG/KG
Chromium	55		1.5	MG/KG
Lead	1100		0.77	MG/KG
Selenium	ND		1.5	MG/KG
Mercury	3.7		0.046	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

METALS SECTION

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 85 %
SAMPLE ID LAB : EE-98-17044
MATRIX: SOLID
SAMPLE ID CLIENT: KS-SS-22

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	37		1.2	MG/KG
Arsenic	4.0		0.59	MG/KG
Barium	320		2.4	MG/KG
Cadmium	6.4		0.59	MG/KG
Chromium	250		1.2	MG/KG
Lead	230		0.59	MG/KG
Selenium	1.3		1.2	MG/KG
Mercury	ND		0.035	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

QUALITY CONTROL FOR ACCURACY AND PRECISION:
PERCENT RECOVERY AND RELATIVE PERCENT DIFFERENCE (RPD)
OF SOLID MATRIX SPIKE (MS) AND MATRIX SPIKE DUPLICATE (MSD)
(Sample # 17044)

9802.593

(mg/kg as received)

Compound	Original Result	Amount Added MS	Amount Added MSD	Amount Determined MS	Amount Determined MSD	Percent Recovery MS	Percent Recovery MSD	RPD
Arsenic	3.43	149	146	162	155	106	104	1.9
Barium	269	149	146	309	338	29.9*	47.7*	45.9*
Cadmium	5.48	3.73	3.65	8.00	8.07	67.4*	70.9*	5.1
Chromium	212	14.9	14.6	133	167	4X	4X	NC
Lead	194	37.3	36.5	151	179	4X	4X	NC
Selenium	1.10	149	146	154	151	103	103	0.0
Silver	31.2	3.73	3.65	27.9	34.9	4X	4X	NC

WITH THE EXCEPTION OF THE VALUES FLAGGED (*), THESE RECOVERIES AND RPDs ARE WITHIN E & E, INC. QC TARGETS. RECOVERIES REPORTED ARE DERIVED FROM INSTRUMENT RAW DATA WHICH MAY VARY FROM THOSE CALCULATED USING ROUNDED VALUES ON THE QC PAGES.

ND = NOT DETECTED

NC = NOT CALCULABLE

4X = RECOVERY NOT DETERMINED BECAUSE SAMPLE AMOUNT IS FOUR OR MORE TIMES GREATER THAN SPIKE AMOUNT.

QUALITY CONTROL FOR PRECISION
RESULTS OF ANALYSIS OF DUPLICATE
ANALYSES OF SOLID SAMPLES

9802.593

(mg/kg as received)

Parameter	E & E Laboratory No. 98- Batch QC	Spike Sample Result	Spike Duplicate Result	Relative Percent Difference (RPD)
Mercury		0.37	0.30	20.8

THIS RPD IS WITHIN E & E, INC. QC TARGETS.

QUALITY CONTROL FOR ACCURACY: PERCENT RECOVERY
FOR SPIKED SOLID SAMPLES

9802.593

(mg/kg as received)

Parameter	E & E Laboratory No. 98- Batch QC	Sample Result	Spiked Sample Result	Spike Amount	Percent Recovery
Mercury		0.0400	0.300	0.333	78.0*

THIS RECOVERY IS NOT WITHIN E & E, INC. QC TARGETS.

LABORATORY CONTROL SAMPLE (832-157-1)

9802.593

(µg/L)

Analyte	Found Value	True Value	Percent Recovery
Arsenic	1040	1000	104
Barium	1010	1000	101
Cadmium	993	1000	99.3
Chromium	998	1000	99.8
Lead	1000	1000	100
Selenium	1000	1000	100

THESE RECOVERIES ARE WITHIN E & E, INC. QC TARGETS (80% - 120%).

LABORATORY CONTROL SAMPLE (10/20/98)

9802.593

(mg/kg)

ANALYTE	FOUND VALUE	TRUE VALUE	PERCENT RECOVERY
Mercury	1.87	1.75	107

THIS RECOVERY IS WITHIN E & E, INC. QC TARGETS.

METALS SECTION

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
SAMPLE ID LAB : METHOD BLANK (832-157-1) MATRIX: SOLID
DATE OF ANALYSIS: 10/20/98
ASSOCIATED SAMPLES: 17027, 17028, 17029, 17030, 17031, 17032, 17033, 17034, 17035, 17036, 17037, 17038, 17039, 17040, 17041, 17042, 17043, 17044, 17044 MS AND 17044 MSD

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	ND		1.0	MG/KG
Arsenic	ND		0.50	MG/KG
Barium	ND		2.0	MG/KG
Cadmium	ND		0.50	MG/KG
Chromium	ND		1.0	MG/KG
Lead	ND		0.50	MG/KG
Selenium	ND		1.0	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

METALS SECTION

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
SAMPLE ID LAB : METHOD BLANK (832-157-1) MATRIX: SOLID
DATE OF ANALYSIS: 10/20/98
ASSOCIATED SAMPLES: 17027, 17028, 17029, 17030, 17031, 17032, 17033, 17034, 17035, 17036, 17037, 17038, 17039, 17040, 17041, 17042, 17043 AND 17044

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Mercury	ND		0.030	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

JOB NUMBER : 9802.593

Ecology and Environment, Inc.
SAMPLE TRACKING REPORT

SAMPLE NUMBER	CLIENT SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED
8270C BNA	-S			
17027.01	KS-SD-1	10/14/98	10/22/98	11/05/98
17028.01	KS-SD-2	10/14/98	10/22/98	11/06/98
17029.01	KS-SD-3	10/14/98	10/22/98	11/06/98
17030.01	KS-SD-4	10/14/98	10/22/98	11/05/98
17031.01	KS-SD-5	10/14/98	10/22/98	11/06/98
17032.01	KS-SD-4D	10/14/98	10/22/98	11/06/98
17033.01	KS-SS-21	10/13/98	10/22/98	11/06/98
17034.01	KS-SS-21D	10/13/98	10/22/98	11/06/98
17035.01	KS-SS-23	10/13/98	10/22/98	11/06/98
17036.01	KS-GS-1	10/14/98	10/22/98	11/03/98
17037.01	KS-GS-2	10/14/98	10/22/98	11/03/98
17038.01	KS-GS-3	10/14/98	10/22/98	11/03/98
17039.01	KS-GS-4	10/14/98	10/22/98	11/03/98
17040.01	KS-GS-5	10/14/98	10/22/98	11/05/98
17041.01	KS-GS-6	10/14/98	10/22/98	11/05/98
17042.01	KS-GS-7	10/14/98	10/22/98	11/05/98
17043.01	KS-GS-8	10/14/98	10/22/98	11/05/98
17044.01	KS-SS-22	10/13/98	10/22/98	11/05/98

TEST CODE :SBNA0A1

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8270C BNA
SAMPLE ID LAB : EE-98-17027
SAMPLE ID CLIENT: KS-SD-1

%SOLIDS : 47 %
UNITS : UG/KG
MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		640
bis(2-Chloroethyl)ether	ND		640
2-Chlorophenol	ND		640
1,3-Dichlorobenzene	ND		640
1,4-Dichlorobenzene	ND		640
Benzyl alcohol	ND		640
1,2-Dichlorobenzene	ND		640
2-Methylphenol	ND		640
2,2'-oxybis(1-Chloropropane)	ND		640
4-Methylphenol	ND		640
n-Nitroso-di-n-propylamine	ND		640
Hexachloroethane	ND		640
Nitrobenzene	ND		640
Isophorone	ND		640
2-Nitrophenol	ND		640
2,4-Dimethylphenol	ND		640
Benzoic acid	130	J	3100
bis(2-Chloroethoxy)methane	ND		640
2,4-Dichlorophenol	ND		640
1,2,4-Trichlorobenzene	ND		640
Naphthalene	ND		640
4-Chloroaniline	ND		640
Hexachlorobutadiene	ND		640
4-Chloro-3-methylphenol	ND		640
2-Methylnaphthalene	110	J	640
Hexachlorocyclopentadiene	ND		3200
2,4,6-Trichlorophenol	ND		640
2,4,5-Trichlorophenol	ND		3100
2-Chloronaphthalene	ND		640
2-Nitroaniline	ND		3100

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

ND = NOT DETECTED
B = ALSO PRESENT IN BLANK

TEST CODE :SBNA0A1

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8270C BNA
SAMPLE ID LAB : EE-98-17027
SAMPLE ID CLIENT: KS-SD-1

%SOLIDS : 47 %
UNITS : UG/KG
MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		640
Acenaphthylene	ND		640
3-Nitroaniline	ND		3100
Acenaphthene	ND		640
2,4-Dinitrophenol	ND		3100
4-Nitrophenol	ND		3100
Dibenzofuran	ND		640
2,4-Dinitrotoluene	ND		640
2,6-Dinitrotoluene	ND		640
Diethylphthalate	ND		640
4-Chlorophenylphenylether	ND		640
Fluorene	ND		640
4-Nitroaniline	ND		3100
4,6-Dinitro-2-methylphenol	ND		3100
n-Nitrosodiphenylamine	ND		640
4-Bromophenylphenylether	ND		640
Hexachlorobenzene	ND		640
Pentachlorophenol	ND		3100
Phenanthrene	410	J	640
Anthracene	110	J	640
Fluoranthene	740		640
di-n-Butylphthalate	ND		640
Pyrene	1400		640
Butylbenzylphthalate	190	J	640
3,3'-Dichlorobenzidine	ND		1300
Benzo(a)anthracene	460	J	640
bis(2-Ethylhexyl)phthalate	800		640
Chrysene	610	J	640
di-n-Octylphthalate	ND		640
Benzo(b)fluoranthene	770		640
Benzo(k)fluoranthene	530	J	640
Benzo(a)pyrene	480	J	640
Indeno(1,2,3-cd)pyrene	91	J	640
Dibenzo(a,h)anthracene	ND		640
Benzo(ghi)perylene	210	J	640

QUALIFIERS: C = COMMENT
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TEST CODE :SBNA0A1

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8270C BNA
SAMPLE ID LAB : EE-98-17028
SAMPLE ID CLIENT: KS-SD-2

%SOLIDS : 43 %
UNITS : UG/KG
MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		730
bis(2-Chloroethyl)ether	ND		730
2-Chlorophenol	ND		730
1,3-Dichlorobenzene	ND		730
1,4-Dichlorobenzene	ND		730
Benzyl alcohol	ND		730
1,2-Dichlorobenzene	ND		730
2-Methylphenol	ND		730
2,2'-oxybis(1-Chloropropane)	ND		730
4-Methylphenol	ND		730
n-Nitroso-di-n-propylamine	ND		730
Hexachloroethane	ND		730
Nitrobenzene	ND		730
Isophorone	ND		730
2-Nitrophenol	ND		730
2,4-Dimethylphenol	ND		730
Benzoic acid	ND		3500
bis(2-Chloroethoxy)methane	ND		730
2,4-Dichlorophenol	ND		730
1,2,4-Trichlorobenzene	ND		730
Naphthalene	ND		730
4-Chloroaniline	ND		730
Hexachlorobutadiene	ND		730
4-Chloro-3-methylphenol	ND		730
2-Methylnaphthalene	ND		730
Hexachlorocyclopentadiene	ND		3600
2,4,6-Trichlorophenol	ND		730
2,4,5-Trichlorophenol	ND		3500
2-Chloronaphthalene	ND		730
2-Nitroaniline	ND		3500

QUALIFIERS: C = COMMENT
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TEST CODE :SBNA0A1

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8270C BNA
SAMPLE ID LAB : EE-98-17028
SAMPLE ID CLIENT: KS-SD-2

%SOLIDS : 43 %
UNITS : UG/KG
MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		730
Acenaphthylene	ND		730
3-Nitroaniline	ND		3500
Acenaphthene	ND		730
2,4-Dinitrophenol	ND		3500
4-Nitrophenol	ND		3500
Dibenzofuran	ND		730
2,4-Dinitrotoluene	ND		730
2,6-Dinitrotoluene	ND		730
Diethylphthalate	ND		730
4-Chlorophenylphenylether	ND		730
Fluorene	ND		730
4-Nitroaniline	ND		3500
4,6-Dinitro-2-methylphenol	ND		3500
n-Nitrosodiphenylamine	ND		730
4-Bromophenylphenylether	ND		730
Hexachlorobenzene	ND		730
Pentachlorophenol	ND		3500
Phenanthrene	320	J	730
Anthracene	95	J	730
Fluoranthene	450	J	730
di-n-Butylphthalate	ND		730
Pyrene	720	J	730
Butylbenzylphthalate	ND		730
3,3'-Dichlorobenzidine	ND		1400
Benzo(a)anthracene	270	J	730
bis(2-Ethylhexyl)phthalate	96	J	730
Chrysene	310	J	730
di-n-Octylphthalate	ND		730
Benzo(b)fluoranthene	410	J	730
Benzo(k)fluoranthene	300	J	730
Benzo(a)pyrene	310	J	730
Indeno(1,2,3-cd)pyrene	ND		730
Dibenzo(a,h)anthracene	ND		730
Benzo(ghi)perylene	ND		730

QUALIFIERS: C = COMMENT
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TEST CODE :SBNA0A1

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8270C BNA
SAMPLE ID LAB : EE-98-17029
SAMPLE ID CLIENT: KS-SD-3

%SOLIDS : 79 %
UNITS : UG/KG
MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		400
bis(2-Chloroethyl)ether	ND		400
2-Chlorophenol	ND		400
1,3-Dichlorobenzene	ND		400
1,4-Dichlorobenzene	ND		400
Benzyl alcohol	ND		400
1,2-Dichlorobenzene	ND		400
2-Methylphenol	ND		400
2,2'-oxybis(1-Chloropropane)	ND		400
4-Methylphenol	ND		400
n-Nitroso-di-n-propylamine	ND		400
Hexachloroethane	ND		400
Nitrobenzene	ND		400
Isophorone	ND		400
2-Nitrophenol	ND		400
2,4-Dimethylphenol	ND		400
Benzoic acid	ND		2000
bis(2-Chloroethoxy)methane	ND		400
2,4-Dichlorophenol	ND		400
1,2,4-Trichlorobenzene	ND		400
Naphthalene	ND		400
4-Chloroaniline	ND		400
Hexachlorobutadiene	ND		400
4-Chloro-3-methylphenol	ND		400
2-Methylnaphthalene	ND		400
Hexachlorocyclopentadiene	ND		2000
2,4,6-Trichlorophenol	ND		400
2,4,5-Trichlorophenol	ND		2000
2-Chloronaphthalene	ND		400
2-Nitroaniline	ND		2000

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

ND = NOT DETECTED
B = ALSO PRESENT IN BLANK

TEST CODE :SBNA0A1

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8270C BNA
SAMPLE ID LAB : EE-98-17029
SAMPLE ID CLIENT: KS-SD-3

%SOLIDS : 79 %
UNITS : UG/KG
MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		400
Acenaphthylene	ND		400
3-Nitroaniline	ND		2000
Acenaphthene	84	J	400
2,4-Dinitrophenol	ND		2000
4-Nitrophenol	ND		2000
Dibenzofuran	53	J	400
2,4-Dinitrotoluene	ND		400
2,6-Dinitrotoluene	ND		400
Diethylphthalate	ND		400
4-Chlorophenylphenylether	ND		400
Fluorene	71	J	400
4-Nitroaniline	ND		2000
4,6-Dinitro-2-methylphenol	ND		2000
n-Nitrosodiphenylamine	ND		400
4-Bromophenylphenylether	ND		400
Hexachlorobenzene	ND		400
Pentachlorophenol	ND		2000
Phenanthrene	830		400
Anthracene	210	J	400
Fluoranthene	960		400
di-n-Butylphthalate	ND		400
Pyrene	950		400
Butylbenzylphthalate	76	J	400
3,3'-Dichlorobenzidine	ND		800
Benzo(a)anthracene	510		400
bis(2-Ethylhexyl)phthalate	ND		400
Chrysene	520		400
di-n-Octylphthalate	ND		400
Benzo(b)fluoranthene	390	J	400
Benzo(k)fluoranthene	370	J	400
Benzo(a)pyrene	400	J	400
Indeno(1,2,3-cd)pyrene	130	J	400
Dibenzo(a,h)anthracene	100	J	400
Benzo(ghi)perylene	150	J	400

QUALIFIERS: C = COMMENT
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TEST CODE :SBNA0A1

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8270C BNA
SAMPLE ID LAB : EE-98-17030
SAMPLE ID CLIENT: KS-SD-4

%SOLIDS : 70 %
UNITS : UG/KG
MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		470
bis(2-Chloroethyl)ether	ND		470
2-Chlorophenol	ND		470
1,3-Dichlorobenzene	ND		470
1,4-Dichlorobenzene	ND		470
Benzyl alcohol	ND		470
1,2-Dichlorobenzene	ND		470
2-Methylphenol	ND		470
2,2'-oxybis(1-Chloropropane)	ND		470
4-Methylphenol	ND		470
n-Nitroso-di-n-propylamine	ND		470
Hexachloroethane	ND		470
Nitrobenzene	ND		470
Isophorone	ND		470
2-Nitrophenol	ND		470
2,4-Dimethylphenol	ND		470
Benzoic acid	51	J	2300
bis(2-Chloroethoxy)methane	ND		470
2,4-Dichlorophenol	ND		470
1,2,4-Trichlorobenzene	ND		470
Naphthalene	ND		470
4-Chloroaniline	ND		470
Hexachlorobutadiene	ND		470
4-Chloro-3-methylphenol	ND		470
2-Methylnaphthalene	ND		470
Hexachlorocyclopentadiene	ND		2300
2,4,6-Trichlorophenol	ND		470
2,4,5-Trichlorophenol	ND		2300
2-Chloronaphthalene	ND		470
2-Nitroaniline	ND		2300

QUALIFIERS: C = COMMENT
ND = NOT DETECTED
J = ESTIMATED VALUE
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TEST CODE :SBNA0A1

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8270C BNA
SAMPLE ID LAB : EE-98-17030
SAMPLE ID CLIENT: KS-SD-4

%SOLIDS : 70 %
UNITS : UG/KG
MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		470
Acenaphthylene	51	J	470
3-Nitroaniline	ND		2300
Acenaphthene	77	J	470
2,4-Dinitrophenol	ND		2300
4-Nitrophenol	ND		2300
Dibenzofuran	54	J	470
2,4-Dinitrotoluene	ND		470
2,6-Dinitrotoluene	ND		470
Diethylphthalate	ND		470
4-Chlorophenylphenylether	ND		470
Fluorene	74	J	470
4-Nitroaniline	ND		2300
4,6-Dinitro-2-methylphenol	ND		2300
n-Nitrosodiphenylamine	ND		470
4-Bromophenylphenylether	ND		470
Hexachlorobenzene	ND		470
Pentachlorophenol	ND		2300
Phenanthrene	780		470
Anthracene	210	J	470
Fluoranthene	1300		470
di-n-Butylphthalate	ND		470
Pyrene	1300		470
Butylbenzylphthalate	ND		470
3,3'-Dichlorobenzidine	ND		940
Benzo(a)anthracene	790		470
bis(2-Ethylhexyl)phthalate	ND		470
Chrysene	790		470
di-n-Octylphthalate	ND		470
Benzo(b)fluoranthene	760		470
Benzo(k)fluoranthene	580		470
Benzo(a)pyrene	680		470
Indeno(1,2,3-cd)pyrene	270	J	470
Dibenzo(a,h)anthracene	ND		470
Benzo(ghi)perylene	290	J	470

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

ND = NOT DETECTED
B = ALSO PRESENT IN BLANK

TEST CODE :SBNA0A1

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8270C BNA
SAMPLE ID LAB : EE-98-17031
SAMPLE ID CLIENT: KS-SD-5

%SOLIDS : 61 %
UNITS : UG/KG
MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		530
bis(2-Chloroethyl)ether	ND		530
2-Chlorophenol	ND		530
1,3-Dichlorobenzene	ND		530
1,4-Dichlorobenzene	ND		530
Benzyl alcohol	ND		530
1,2-Dichlorobenzene	ND		530
2-Methylphenol	ND		530
2,2'-oxybis(1-Chloropropane)	ND		530
4-Methylphenol	ND		530
n-Nitroso-di-n-propylamine	ND		530
Hexachloroethane	ND		530
Nitrobenzene	ND		530
Isophorone	ND		530
2-Nitrophenol	ND		530
2,4-Dimethylphenol	ND		530
Benzoic acid	ND		2600
bis(2-Chloroethoxy)methane	ND		530
2,4-Dichlorophenol	ND		530
1,2,4-Trichlorobenzene	ND		530
Naphthalene	76	J	530
4-Chloroaniline	ND		530
Hexachlorobutadiene	ND		530
4-Chloro-3-methylphenol	ND		530
2-Methylnaphthalene	85	J	530
Hexachlorocyclopentadiene	ND		2600
2,4,6-Trichlorophenol	ND		530
2,4,5-Trichlorophenol	ND		2600
2-Chloronaphthalene	ND		530
2-Nitroaniline	ND		2600

QUALIFIERS: C = COMMENT
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A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8270C BNA
SAMPLE ID LAB : EE-98-17031
SAMPLE ID CLIENT: KS-SD-5

%SOLIDS : 61 %
UNITS : UG/KG
MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		530
Acenaphthylene	ND		530
3-Nitroaniline	ND		2600
Acenaphthene	ND		530
2,4-Dinitrophenol	ND		2600
4-Nitrophenol	ND		2600
Dibenzofuran	ND		530
2,4-Dinitrotoluene	ND		530
2,6-Dinitrotoluene	ND		530
Diethylphthalate	ND		530
4-Chlorophenylphenylether	ND		530
Fluorene	56	J	530
4-Nitroaniline	ND		2600
4,6-Dinitro-2-methylphenol	ND		2600
n-Nitrosodiphenylamine	ND		530
4-Bromophenylphenylether	ND		530
Hexachlorobenzene	ND		530
Pentachlorophenol	ND		2600
Phenanthrene	490	J	530
Anthracene	130	J	530
Fluoranthene	720		530
di-n-Butylphthalate	ND		530
Pyrene	1000		530
Butylbenzylphthalate	ND		530
3,3'-Dichlorobenzidine	ND		1100
Benzo(a)anthracene	430	J	530
bis(2-Ethylhexyl)phthalate	200	J	530
Chrysene	440	J	530
di-n-Octylphthalate	ND		530
Benzo(b)fluoranthene	610		530
Benzo(k)fluoranthene	390	J	530
Benzo(a)pyrene	410	J	530
Indeno(1,2,3-cd)pyrene	62	J	530
Dibenzo(a,h)anthracene	ND		530
Benzo(ghi)perylene	120	J	530

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TEST CODE :SBNA0A1

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8270C BNA
SAMPLE ID LAB : EE-98-17032
SAMPLE ID CLIENT: KS-SD-4D

%SOLIDS : 67 %
UNITS : UG/KG
MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		490
bis(2-Chloroethyl)ether	ND		490
2-Chlorophenol	ND		490
1,3-Dichlorobenzene	ND		490
1,4-Dichlorobenzene	ND		490
Benzyl alcohol	ND		490
1,2-Dichlorobenzene	ND		490
2-Methylphenol	ND		490
2,2'-oxybis(1-Chloropropane)	ND		490
4-Methylphenol	ND		490
n-Nitroso-di-n-propylamine	ND		490
Hexachloroethane	ND		490
Nitrobenzene	ND		490
Isophorone	ND		490
2-Nitrophenol	ND		490
2,4-Dimethylphenol	ND		490
Benzoic acid	ND		2400
bis(2-Chloroethoxy)methane	ND		490
2,4-Dichlorophenol	ND		490
1,2,4-Trichlorobenzene	ND		490
Naphthalene	54	J	490
4-Chloroaniline	ND		490
Hexachlorobutadiene	ND		490
4-Chloro-3-methylphenol	ND		490
2-Methylnaphthalene	51	J	490
Hexachlorocyclopentadiene	ND		2500
2,4,6-Trichlorophenol	ND		490
2,4,5-Trichlorophenol	ND		2400
2-Chloronaphthalene	ND		490
2-Nitroaniline	ND		2400

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

ND = NOT DETECTED
B = ALSO PRESENT IN BLANK

TEST CODE :SBNA0A1

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8270C BNA
SAMPLE ID LAB : EE-98-17032
SAMPLE ID CLIENT: KS-SD-4D

%SOLIDS : 67 %
UNITS : UG/KG
MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		490
Acenaphthylene	ND		490
3-Nitroaniline	ND		2400
Acenaphthene	78	J	490
2,4-Dinitrophenol	ND		2400
4-Nitrophenol	ND		2400
Dibenzofuran	51	J	490
2,4-Dinitrotoluene	ND		490
2,6-Dinitrotoluene	ND		490
Diethylphthalate	ND		490
4-Chlorophenylphenylether	ND		490
Fluorene	57	J	490
4-Nitroaniline	ND		2400
4,6-Dinitro-2-methylphenol	ND		2400
n-Nitrosodiphenylamine	ND		490
4-Bromophenylphenylether	ND		490
Hexachlorobenzene	ND		490
Pentachlorophenol	ND		2400
Phenanthrene	610		490
Anthracene	160	J	490
Fluoranthene	880		490
di-n-Butylphthalate	ND		490
Pyrene	1200		490
Butylbenzylphthalate	ND		490
3,3'-Dichlorobenzidine	ND		980
Benzo(a)anthracene	500		490
bis(2-Ethylhexyl)phthalate	ND		490
Chrysene	530		490
di-n-Octylphthalate	ND		490
Benzo(b)fluoranthene	590		490
Benzo(k)fluoranthene	420	J	490
Benzo(a)pyrene	480	J	490
Indeno(1,2,3-cd)pyrene	75	J	490
Dibenzo(a,h)anthracene	ND		490
Benzo(ghi)perylene	150	J	490

QUALIFIERS: C = COMMENT
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X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8270C BNA
SAMPLE ID LAB : EE-98-17033
SAMPLE ID CLIENT: KS-SS-21

%SOLIDS : 86 %
UNITS : UG/KG
MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		380
bis(2-Chloroethyl)ether	ND		380
2-Chlorophenol	ND		380
1,3-Dichlorobenzene	ND		380
1,4-Dichlorobenzene	ND		380
Benzyl alcohol	ND		380
1,2-Dichlorobenzene	ND		380
2-Methylphenol	ND		380
2,2'-oxybis(1-Chloropropane)	ND		380
4-Methylphenol	ND		380
n-Nitroso-di-n-propylamine	ND		380
Hexachloroethane	ND		380
Nitrobenzene	ND		380
Isophorone	ND		380
2-Nitrophenol	ND		380
2,4-Dimethylphenol	ND		380
Benzoic acid	ND		1800
bis(2-Chloroethoxy)methane	ND		380
2,4-Dichlorophenol	ND		380
1,2,4-Trichlorobenzene	ND		380
Naphthalene	350	J	380
4-Chloroaniline	56	J	380
Hexachlorobutadiene	ND		380
4-Chloro-3-methylphenol	ND		380
2-Methylnaphthalene	170	J	380
Hexachlorocyclopentadiene	ND		1900
2,4,6-Trichlorophenol	ND		380
2,4,5-Trichlorophenol	ND		1800
2-Chloronaphthalene	ND		380
2-Nitroaniline	ND		1800

QUALIFIERS: C = COMMENT
ND = NOT DETECTED
J = ESTIMATED VALUE
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X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8270C BNA
SAMPLE ID LAB : EE-98-17033
SAMPLE ID CLIENT: KS-SS-21

%SOLIDS : 86 %
UNITS : UG/KG
MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		380
Acenaphthylene	ND		380
3-Nitroaniline	ND		1800
Acenaphthene	410		380
2,4-Dinitrophenol	ND		1800
4-Nitrophenol	ND		1800
Dibenzofuran	480		380
2,4-Dinitrotoluene	ND		380
2,6-Dinitrotoluene	ND		380
Diethylphthalate	ND		380
4-Chlorophenylphenylether	ND		380
Fluorene	620		380
4-Nitroaniline	ND		1800
4,6-Dinitro-2-methylphenol	ND		1800
n-Nitrosodiphenylamine	ND		380
4-Bromophenylphenylether	ND		380
Hexachlorobenzene	ND		380
Pentachlorophenol	ND		1800
Phenanthrene	4100		770
Anthracene	1200		380
Fluoranthene	3000		380
di-n-Butylphthalate	ND		380
Pyrene	4000		770
Butylbenzylphthalate	ND		380
3,3'-Dichlorobenzidine	ND		760
Benzo(a)anthracene	1600		380
bis(2-Ethylhexyl)phthalate	100	J	380
Chrysene	1400		380
di-n-Octylphthalate	ND		380
Benzo(b)fluoranthene	1200		380
Benzo(k)fluoranthene	1300		380
Benzo(a)pyrene	1200		380
Indeno(1,2,3-cd)pyrene	170	J	380
Dibenzo(a,h)anthracene	ND		380
Benzo(ghi)perylene	320	J	380

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

ND = NOT DETECTED
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TEST CODE :SBNA0A1

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8270C BNA
SAMPLE ID LAB : EE-98-17034
SAMPLE ID CLIENT: KS-SS-21D

%SOLIDS : 86 %
UNITS : UG/KG
MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		380
bis(2-Chloroethyl)ether	ND		380
2-Chlorophenol	ND		380
1,3-Dichlorobenzene	ND		380
1,4-Dichlorobenzene	ND		380
Benzyl alcohol	ND		380
1,2-Dichlorobenzene	ND		380
2-Methylphenol	ND		380
2,2'-oxybis(1-Chloropropane)	ND		380
4-Methylphenol	ND		380
n-Nitroso-di-n-propylamine	ND		380
Hexachloroethane	ND		380
Nitrobenzene	ND		380
Isophorone	ND		380
2-Nitrophenol	ND		380
2,4-Dimethylphenol	ND		380
Benzoic acid	ND		1800
bis(2-Chloroethoxy)methane	ND		380
2,4-Dichlorophenol	ND		380
1,2,4-Trichlorobenzene	ND		380
Naphthalene	ND		380
4-Chloroaniline	ND		380
Hexachlorobutadiene	ND		380
4-Chloro-3-methylphenol	ND		380
2-Methylnaphthalene	ND		380
Hexachlorocyclopentadiene	ND		1900
2,4,6-Trichlorophenol	ND		380
2,4,5-Trichlorophenol	ND		1800
2-Chloronaphthalene	ND		380
2-Nitroaniline	ND		1800

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

ND = NOT DETECTED
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TEST CODE :SBNA0A1

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8270C BNA
SAMPLE ID LAB : EE-98-17034
SAMPLE ID CLIENT: KS-SS-21D

%SOLIDS : 86 %
UNITS : UG/KG
MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		380
Acenaphthylene	ND		380
3-Nitroaniline	ND		1800
Acenaphthene	46	J	380
2,4-Dinitrophenol	ND		1800
4-Nitrophenol	ND		1800
Dibenzofuran	ND		380
2,4-Dinitrotoluene	ND		380
2,6-Dinitrotoluene	ND		380
Diethylphthalate	ND		380
4-Chlorophenylphenylether	ND		380
Fluorene	63	J	380
4-Nitroaniline	ND		1800
4,6-Dinitro-2-methylphenol	ND		1800
n-Nitrosodiphenylamine	ND		380
4-Bromophenylphenylether	ND		380
Hexachlorobenzene	ND		380
Pentachlorophenol	ND		1800
Phenanthrene	850		380
Anthracene	200	J	380
Fluoranthene	940		380
di-n-Butylphthalate	ND		380
Pyrene	1600		380
Butylbenzylphthalate	46	J	380
3,3'-Dichlorobenzidine	ND		760
Benzo(a)anthracene	550		380
bis(2-Ethylhexyl)phthalate	280	J	380
Chrysene	640		380
di-n-Octylphthalate	ND		380
Benzo(b)fluoranthene	680		380
Benzo(k)fluoranthene	600		380
Benzo(a)pyrene	510		380
Indeno(1,2,3-cd)pyrene	77	J	380
Dibenzo(a,h)anthracene	ND		380
Benzo(ghi)perylene	160	J	380

QUALIFIERS: C = COMMENT
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N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

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TEST CODE :SBNA0A1

JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8270C BNA
SAMPLE ID LAB : EE-98-17035
SAMPLE ID CLIENT: KS-SS-23

%SOLIDS : 89 %
UNITS : UG/KG
MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		340
bis(2-Chloroethyl)ether	ND		340
2-Chlorophenol	ND		340
1,3-Dichlorobenzene	ND		340
1,4-Dichlorobenzene	ND		340
Benzyl alcohol	ND		340
1,2-Dichlorobenzene	ND		340
2-Methylphenol	ND		340
2,2'-oxybis(1-Chloropropane)	ND		340
4-Methylphenol	ND		340
n-Nitroso-di-n-propylamine	ND		340
Hexachloroethane	ND		340
Nitrobenzene	ND		340
Isophorone	ND		340
2-Nitrophenol	ND		340
2,4-Dimethylphenol	ND		340
Benzoic acid	ND		1700
bis(2-Chloroethoxy)methane	ND		340
2,4-Dichlorophenol	ND		340
1,2,4-Trichlorobenzene	ND		340
Naphthalene	110	J	340
4-Chloroaniline	ND		340
Hexachlorobutadiene	ND		340
4-Chloro-3-methylphenol	ND		340
2-Methylnaphthalene	59	J	340
Hexachlorocyclopentadiene	ND		1700
2,4,6-Trichlorophenol	ND		340
2,4,5-Trichlorophenol	ND		1700
2-Chloronaphthalene	ND		340
2-Nitroaniline	ND		1700

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
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N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

ND = NOT DETECTED
B = ALSO PRESENT IN BLANK

TEST CODE :SBNA0A1 JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 89 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17035 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-23

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		340
Acenaphthylene	45	J	340
3-Nitroaniline	ND		1700
Acenaphthene	130	J	340
2,4-Dinitrophenol	ND		1700
4-Nitrophenol	ND		1700
Dibenzofuran	120	J	340
2,4-Dinitrotoluene	ND		340
2,6-Dinitrotoluene	ND		340
Diethylphthalate	ND		340
4-Chlorophenylphenylether	ND		340
Fluorene	160	J	340
4-Nitroaniline	ND		1700
4,6-Dinitro-2-methylphenol	ND		1700
n-Nitrosodiphenylamine	ND		340
4-Bromophenylphenylether	ND		340
Hexachlorobenzene	ND		340
Pentachlorophenol	ND		1700
Phenanthrene	1200		340
Anthracene	330	J	340
Fluoranthene	1500		340
di-n-Butylphthalate	ND		340
Pyrene	2000		740
Butylbenzylphthalate	43	J	340
3,3'-Dichlorobenzidine	ND		690
Benzo(a)anthracene	1100		340
bis(2-Ethylhexyl)phthalate	270	J	340
Chrysene	1000		340
di-n-Octylphthalate	ND		340
Benzo(b)fluoranthene	2000		340
Benzo(k)fluoranthene	ND		370
Benzo(a)pyrene	920		340
Indeno(1,2,3-cd)pyrene	120	J	340
Dibenzo(a,h)anthracene	ND		340
Benzo(ghi)perylene	260	J	340

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 72 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17036 MATRIX : SOLID
SAMPLE ID CLIENT: KS-GS-1

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		440
bis(2-Chloroethyl)ether	ND		440
2-Chlorophenol	ND		440
1,3-Dichlorobenzene	ND		440
1,4-Dichlorobenzene	ND		440
Benzyl alcohol	ND		440
1,2-Dichlorobenzene	ND		440
2-Methylphenol	ND		440
2,2'-oxybis(1-Chloropropane)	ND		440
4-Methylphenol	ND		440
n-Nitroso-di-n-propylamine	ND		440
Hexachloroethane	ND		440
Nitrobenzene	ND		440
Isophorone	ND		440
2-Nitrophenol	ND		440
2,4-Dimethylphenol	ND		440
Benzoic acid	ND		2100
bis(2-Chloroethoxy)methane	ND		440
2,4-Dichlorophenol	ND		440
1,2,4-Trichlorobenzene	ND		440
Naphthalene	ND		440
4-Chloroaniline	ND		440
Hexachlorobutadiene	ND		440
4-Chloro-3-methylphenol	ND		440
2-Methylnaphthalene	ND		440
Hexachlorocyclopentadiene	ND		2200
2,4,6-Trichlorophenol	ND		440
2,4,5-Trichlorophenol	ND		2100
2-Chloronaphthalene	ND		440
2-Nitroaniline	ND		2100

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 72 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17036 MATRIX : SOLID
SAMPLE ID CLIENT: KS-GS-1

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		440
Acenaphthylene	ND		440
3-Nitroaniline	ND		2100
Acenaphthene	ND		440
2,4-Dinitrophenol	ND		2100
4-Nitrophenol	ND		2100
Dibenzofuran	ND		440
2,4-Dinitrotoluene	ND		440
2,6-Dinitrotoluene	ND		440
Diethylphthalate	ND		440
4-Chlorophenylphenylether	ND		440
Fluorene	ND		440
4-Nitroaniline	ND		2100
4,6-Dinitro-2-methylphenol	ND		2100
n-Nitrosodiphenylamine	ND		440
4-Bromophenylphenylether	ND		440
Hexachlorobenzene	ND		440
Pentachlorophenol	ND		2100
Phenanthrene	150	J	440
Anthracene	ND		440
Fluoranthene	190	J	440
di-n-Butylphthalate	ND		440
Pyrene	170	J	440
Butylbenzylphthalate	ND		440
3,3'-Dichlorobenzidine	ND		880
Benzo(a)anthracene	87	J	440
bis(2-Ethylhexyl)phthalate	50	J	440
Chrysene	82	J	440
di-n-Octylphthalate	ND		440
Benzo(b)fluoranthene	80	J	440
Benzo(k)fluoranthene	63	J	440
Benzo(a)pyrene	72	J	440
Indeno(1,2,3-cd)pyrene	ND		440
Dibenzo(a,h)anthracene	ND		440
Benzo(ghi)perylene	ND		440

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 76 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17037 MATRIX : SOLID
SAMPLE ID CLIENT: KS-GS-2

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		430
bis(2-Chloroethyl)ether	ND		430
2-Chlorophenol	ND		430
1,3-Dichlorobenzene	ND		430
1,4-Dichlorobenzene	ND		430
Benzyl alcohol	ND		430
1,2-Dichlorobenzene	ND		430
2-Methylphenol	ND		430
2,2'-oxybis(1-Chloropropane)	ND		430
4-Methylphenol	46	J	430
n-Nitroso-di-n-propylamine	ND		430
Hexachloroethane	ND		430
Nitrobenzene	ND		430
Isophorone	ND		430
2-Nitrophenol	ND		430
2,4-Dimethylphenol	ND		430
Benzoic acid	ND		2100
bis(2-Chloroethoxy)methane	ND		430
2,4-Dichlorophenol	ND		430
1,2,4-Trichlorobenzene	ND		430
Naphthalene	86	J	430
4-Chloroaniline	ND		430
Hexachlorobutadiene	ND		430
4-Chloro-3-methylphenol	ND		430
2-Methylnaphthalene	130	J	430
Hexachlorocyclopentadiene	ND		2200
2,4,6-Trichlorophenol	ND		430
2,4,5-Trichlorophenol	ND		2100
2-Chloronaphthalene	ND		430
2-Nitroaniline	ND		2100

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 76 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17037 MATRIX : SOLID
SAMPLE ID CLIENT: KS-GS-2

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		430
Acenaphthylene	160	J	430
3-Nitroaniline	ND		2100
Acenaphthene	53	J	430
2,4-Dinitrophenol	ND		2100
4-Nitrophenol	ND		2100
Dibenzofuran	45	J	430
2,4-Dinitrotoluene	ND		430
2,6-Dinitrotoluene	ND		430
Diethylphthalate	ND		430
4-Chlorophenylphenylether	ND		430
Fluorene	100	J	430
4-Nitroaniline	ND		2100
4,6-Dinitro-2-methylphenol	ND		2100
n-Nitrosodiphenylamine	ND		430
4-Bromophenylphenylether	ND		430
Hexachlorobenzene	ND		430
Pentachlorophenol	ND		2100
Phenanthrene	890		430
Anthracene	280	J	430
Fluoranthene	1300		430
di-n-Butylphthalate	ND		430
Pyrene	2100		430
Butylbenzylphthalate	ND		430
3,3'-Dichlorobenzidine	ND		860
Benzo(a)anthracene	1000		430
bis(2-Ethylhexyl)phthalate	ND		430
Chrysene	1000		430
di-n-Octylphthalate	ND		430
Benzo(b)fluoranthene	980		430
Benzo(k)fluoranthene	820		430
Benzo(a)pyrene	920		430
Indeno(1,2,3-cd)pyrene	190	J	430
Dibenzo(a,h)anthracene	ND		430
Benzo(ghi)perylene	300	J	430

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 78 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17038 MATRIX : SOLID
SAMPLE ID CLIENT: KS-GS-3

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		420
bis(2-Chloroethyl)ether	ND		420
2-Chlorophenol	ND		420
1,3-Dichlorobenzene	ND		420
1,4-Dichlorobenzene	ND		420
Benzyl alcohol	ND		420
1,2-Dichlorobenzene	ND		420
2-Methylphenol	ND		420
2,2'-oxybis(1-Chloropropane)	ND		420
4-Methylphenol	ND		420
n-Nitroso-di-n-propylamine	ND		420
Hexachloroethane	ND		420
Nitrobenzene	ND		420
Isophorone	ND		420
2-Nitrophenol	ND		420
2,4-Dimethylphenol	ND		420
Benzoic acid	ND		2000
bis(2-Chloroethoxy)methane	ND		420
2,4-Dichlorophenol	ND		420
1,2,4-Trichlorobenzene	ND		420
Naphthalene	ND		420
4-Chloroaniline	ND		420
Hexachlorobutadiene	ND		420
4-Chloro-3-methylphenol	ND		420
2-Methylnaphthalene	62	J	420
Hexachlorocyclopentadiene	ND		2100
2,4,6-Trichlorophenol	ND		420
2,4,5-Trichlorophenol	ND		2000
2-Chloronaphthalene	ND		420
2-Nitroaniline	ND		2000

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 78 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17038 MATRIX : SOLID
SAMPLE ID CLIENT: KS-GS-3

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		420
Acenaphthylene	46	J	420
3-Nitroaniline	ND		2000
Acenaphthene	ND		420
2,4-Dinitrophenol	ND		2000
4-Nitrophenol	ND		2000
Dibenzofuran	ND		420
2,4-Dinitrotoluene	ND		420
2,6-Dinitrotoluene	ND		420
Diethylphthalate	ND		420
4-Chlorophenylphenylether	ND		420
Fluorene	ND		420
4-Nitroaniline	ND		2000
4,6-Dinitro-2-methylphenol	ND		2000
n-Nitrosodiphenylamine	ND		420
4-Bromophenylphenylether	ND		420
Hexachlorobenzene	ND		420
Pentachlorophenol	ND		2000
Phenanthrene	120	J	420
Anthracene	42	J	420
Fluoranthene	180	J	420
di-n-Butylphthalate	ND		420
Pyrene	250	J	420
Butylbenzylphthalate	ND		420
3,3'-Dichlorobenzidine	ND		830
Benzo(a)anthracene	120	J	420
bis(2-Ethylhexyl)phthalate	ND		420
Chrysene	130	J	420
di-n-Octylphthalate	ND		420
Benzo(b)fluoranthene	150	J	420
Benzo(k)fluoranthene	130	J	420
Benzo(a)pyrene	140	J	420
Indeno(1,2,3-cd)pyrene	43	J	420
Dibenzo(a,h)anthracene	ND		420
Benzo(ghi)perylene	70	J	420

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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TEST CODE :SBNA0A1 JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 83 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17039 MATRIX : SOLID
SAMPLE ID CLIENT: KS-GS-4

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		390
bis(2-Chloroethyl)ether	ND		390
2-Chlorophenol	ND		390
1,3-Dichlorobenzene	ND		390
1,4-Dichlorobenzene	ND		390
Benzyl alcohol	ND		390
1,2-Dichlorobenzene	ND		390
2-Methylphenol	ND		390
2,2'-oxybis(1-Chloropropane)	ND		390
4-Methylphenol	ND		390
n-Nitroso-di-n-propylamine	ND		390
Hexachloroethane	ND		390
Nitrobenzene	ND		390
Isophorone	ND		390
2-Nitrophenol	ND		390
2,4-Dimethylphenol	ND		390
Benzoic acid	51	J	1900
bis(2-Chloroethoxy)methane	ND		390
2,4-Dichlorophenol	ND		390
1,2,4-Trichlorobenzene	ND		390
Naphthalene	ND		390
4-Chloroaniline	ND		390
Hexachlorobutadiene	ND		390
4-Chloro-3-methylphenol	ND		390
2-Methylnaphthalene	ND		390
Hexachlorocyclopentadiene	ND		2000
2,4,6-Trichlorophenol	ND		390
2,4,5-Trichlorophenol	ND		1900
2-Chloronaphthalene	ND		390
2-Nitroaniline	ND		1900

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 83 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17039 MATRIX : SOLID
SAMPLE ID CLIENT: KS-GS-4

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		390
Acenaphthylene	ND		390
3-Nitroaniline	ND		1900
Acenaphthene	ND		390
2,4-Dinitrophenol	ND		1900
4-Nitrophenol	ND		1900
Dibenzofuran	ND		390
2,4-Dinitrotoluene	ND		390
2,6-Dinitrotoluene	ND		390
Diethylphthalate	ND		390
4-Chlorophenylphenylether	ND		390
Fluorene	ND		390
4-Nitroaniline	ND		1900
4,6-Dinitro-2-methylphenol	ND		1900
n-Nitrosodiphenylamine	ND		390
4-Bromophenylphenylether	ND		390
Hexachlorobenzene	ND		390
Pentachlorophenol	ND		1900
Phenanthrene	50	J	390
Anthracene	ND		390
Fluoranthene	69	J	390
di-n-Butylphthalate	ND		390
Pyrene	100	J	390
Butylbenzylphthalate	ND		390
3,3'-Dichlorobenzidine	ND		790
Benzo(a)anthracene	53	J	390
bis(2-Ethylhexyl)phthalate	210	J	390
Chrysene	62	J	390
di-n-Octylphthalate	ND		390
Benzo(b)fluoranthene	95	J	390
Benzo(k)fluoranthene	62	J	390
Benzo(a)pyrene	66	J	390
Indeno(1,2,3-cd)pyrene	ND		390
Dibenzo(a,h)anthracene	ND		390
Benzo(ghi)perylene	ND		390

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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TEST CODE :SBNA0A1 JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 84 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17040 MATRIX : SOLID
SAMPLE ID CLIENT: KS-GS-5

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		390
bis(2-Chloroethyl)ether	ND		390
2-Chlorophenol	ND		390
1,3-Dichlorobenzene	ND		390
1,4-Dichlorobenzene	ND		390
Benzyl alcohol	ND		390
1,2-Dichlorobenzene	ND		390
2-Methylphenol	ND		390
2,2'-oxybis(1-Chloropropane)	ND		390
4-Methylphenol	ND		390
n-Nitroso-di-n-propylamine	ND		390
Hexachloroethane	ND		390
Nitrobenzene	ND		390
Isophorone	ND		390
2-Nitrophenol	ND		390
2,4-Dimethylphenol	ND		390
Benzoic acid	48	J	1900
bis(2-Chloroethoxy)methane	ND		390
2,4-Dichlorophenol	ND		390
1,2,4-Trichlorobenzene	ND		390
Naphthalene	ND		390
4-Chloroaniline	ND		390
Hexachlorobutadiene	ND		390
4-Chloro-3-methylphenol	ND		390
2-Methylnaphthalene	ND		390
Hexachlorocyclopentadiene	ND		2000
2,4,6-Trichlorophenol	ND		390
2,4,5-Trichlorophenol	ND		1900
2-Chloronaphthalene	ND		390
2-Nitroaniline	ND		1900

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 84 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17040 MATRIX : SOLID
SAMPLE ID CLIENT: KS-GS-5

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		390
Acenaphthylene	ND		390
3-Nitroaniline	ND		1900
Acenaphthene	ND		390
2,4-Dinitrophenol	ND		1900
4-Nitrophenol	ND		1900
Dibenzofuran	ND		390
2,4-Dinitrotoluene	ND		390
2,6-Dinitrotoluene	ND		390
Diethylphthalate	ND		390
4-Chlorophenylphenylether	ND		390
Fluorene	ND		390
4-Nitroaniline	ND		1900
4,6-Dinitro-2-methylphenol	ND		1900
n-Nitrosodiphenylamine	ND		390
4-Bromophenylphenylether	ND		390
Hexachlorobenzene	ND		390
Pentachlorophenol	ND		1900
Phenanthrene	180	J	390
Anthracene	ND		390
Fluoranthene	260	J	390
di-n-Butylphthalate	ND		390
Pyrene	620		390
Butylbenzylphthalate	ND		390
3,3'-Dichlorobenzidine	ND		780
Benzo(a)anthracene	290	J	390
bis(2-Ethylhexyl)phthalate	100	J	390
Chrysene	410		390
di-n-Octylphthalate	ND		390
Benzo(b)fluoranthene	380	J	390
Benzo(k)fluoranthene	200	J	390
Benzo(a)pyrene	290	J	390
Indeno(1,2,3-cd)pyrene	45	J	390
Dibenzo(a,h)anthracene	ND		390
Benzo(ghi)perylene	98	J	390

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TEST CODE :SBNA0A1 JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 79 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17041 MATRIX : SOLID
SAMPLE ID CLIENT: KS-GS-6

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	58	J	420
bis(2-Chloroethyl)ether	ND		420
2-Chlorophenol	ND		420
1,3-Dichlorobenzene	97	J	420
1,4-Dichlorobenzene	ND		420
Benzyl alcohol	ND		420
1,2-Dichlorobenzene	ND		420
2-Methylphenol	ND		420
2,2'-oxybis(1-Chloropropane)	ND		420
4-Methylphenol	ND		420
n-Nitroso-di-n-propylamine	ND		420
Hexachloroethane	ND		420
Nitrobenzene	ND		420
Isophorone	ND		420
2-Nitrophenol	ND		420
2,4-Dimethylphenol	ND		420
Benzoic acid	430	J	2000
bis(2-Chloroethoxy)methane	ND		420
2,4-Dichlorophenol	ND		420
1,2,4-Trichlorobenzene	1200		420
Naphthalene	100	J	420
4-Chloroaniline	ND		420
Hexachlorobutadiene	ND		420
4-Chloro-3-methylphenol	ND		420
2-Methylnaphthalene	60	J	420
Hexachlorocyclopentadiene	ND		2100
2,4,6-Trichlorophenol	ND		420
2,4,5-Trichlorophenol	ND		2000
2-Chloronaphthalene	ND		420
2-Nitroaniline	ND		2000

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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TEST CODE :SBNA0A1 JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 79 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17041 MATRIX : SOLID
SAMPLE ID CLIENT: KS-GS-6

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		420
Acenaphthylene	ND		420
3-Nitroaniline	ND		2000
Acenaphthene	60	J	420
2,4-Dinitrophenol	ND		2000
4-Nitrophenol	ND		2000
Dibenzofuran	48	J	420
2,4-Dinitrotoluene	ND		420
2,6-Dinitrotoluene	ND		420
Diethylphthalate	ND		420
4-Chlorophenylphenylether	ND		420
Fluorene	64	J	420
4-Nitroaniline	ND		2000
4,6-Dinitro-2-methylphenol	ND		2000
n-Nitrosodiphenylamine	ND		420
4-Bromophenylphenylether	ND		420
Hexachlorobenzene	ND		420
Pentachlorophenol	ND		2000
Phenanthrene	380	J	420
Anthracene	96	J	420
Fluoranthene	570		420
di-n-Butylphthalate	ND		420
Pyrene	620		420
Butylbenzylphthalate	ND		420
3,3'-Dichlorobenzidine	ND		830
Benzo(a)anthracene	450		420
bis(2-Ethylhexyl)phthalate	920		420
Chrysene	470		420
di-n-Octylphthalate	ND		420
Benzo(b)fluoranthene	470		420
Benzo(k)fluoranthene	440		420
Benzo(a)pyrene	410	J	420
Indeno(1,2,3-cd)pyrene	120	J	420
Dibenzo(a,h)anthracene	ND		420
Benzo(ghi)perylene	150	J	420

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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TEST CODE :SBNA0A1 JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 75 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17042 MATRIX : SOLID
SAMPLE ID CLIENT: KS-GS-7

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		430
bis(2-Chloroethyl)ether	ND		430
2-Chlorophenol	ND		430
1,3-Dichlorobenzene	ND		430
1,4-Dichlorobenzene	ND		430
Benzyl alcohol	ND		430
1,2-Dichlorobenzene	ND		430
2-Methylphenol	ND		430
2,2'-oxybis(1-Chloropropane)	ND		430
4-Methylphenol	ND		430
n-Nitroso-di-n-propylamine	ND		430
Hexachloroethane	ND		430
Nitrobenzene	ND		430
Isophorone	ND		430
2-Nitrophenol	ND		430
2,4-Dimethylphenol	ND		430
Benzoic acid	97	J	2100
bis(2-Chloroethoxy)methane	ND		430
2,4-Dichlorophenol	ND		430
1,2,4-Trichlorobenzene	ND		430
Naphthalene	ND		430
4-Chloroaniline	ND		430
Hexachlorobutadiene	ND		430
4-Chloro-3-methylphenol	ND		430
2-Methylnaphthalene	ND		430
Hexachlorocyclopentadiene	ND		2200
2,4,6-Trichlorophenol	ND		430
2,4,5-Trichlorophenol	ND		2100
2-Chloronaphthalene	ND		430
2-Nitroaniline	ND		2100

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 75 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17042 MATRIX : SOLID
SAMPLE ID CLIENT: KS-GS-7

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		430
Acenaphthylene	ND		430
3-Nitroaniline	ND		2100
Acenaphthene	ND		430
2,4-Dinitrophenol	ND		2100
4-Nitrophenol	ND		2100
Dibenzofuran	ND		430
2,4-Dinitrotoluene	ND		430
2,6-Dinitrotoluene	ND		430
Diethylphthalate	ND		430
4-Chlorophenylphenylether	ND		430
Fluorene	ND		430
4-Nitroaniline	ND		2100
4,6-Dinitro-2-methylphenol	ND		2100
n-Nitrosodiphenylamine	ND		430
4-Bromophenylphenylether	ND		430
Hexachlorobenzene	ND		430
Pentachlorophenol	ND		2100
Phenanthrene	ND		430
Anthracene	ND		430
Fluoranthene	ND		430
di-n-Butylphthalate	ND		430
Pyrene	ND		430
Butylbenzylphthalate	ND		430
3,3'-Dichlorobenzidine	ND		870
Benzo(a)anthracene	ND		430
bis(2-Ethylhexyl)phthalate	ND		430
Chrysene	ND		430
di-n-Octylphthalate	ND		430
Benzo(b)fluoranthene	ND		430
Benzo(k)fluoranthene	ND		430
Benzo(a)pyrene	ND		430
Indeno(1,2,3-cd)pyrene	ND		430
Dibenzo(a,h)anthracene	ND		430
Benzo(ghi)perylene	ND		430

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 65 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17043 MATRIX : SOLID
SAMPLE ID CLIENT: KS-GS-8

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		490
bis(2-Chloroethyl)ether	ND		490
2-Chlorophenol	ND		490
1,3-Dichlorobenzene	ND		490
1,4-Dichlorobenzene	ND		490
Benzyl alcohol	ND		490
1,2-Dichlorobenzene	ND		490
2-Methylphenol	ND		490
2,2'-oxybis(1-Chloropropane)	ND		490
4-Methylphenol	ND		490
n-Nitroso-di-n-propylamine	ND		490
Hexachloroethane	ND		490
Nitrobenzene	ND		490
Isophorone	ND		490
2-Nitrophenol	ND		490
2,4-Dimethylphenol	ND		490
Benzoic acid	320	J	2400
bis(2-Chloroethoxy)methane	ND		490
2,4-Dichlorophenol	ND		490
1,2,4-Trichlorobenzene	ND		490
Naphthalene	ND		490
4-Chloroaniline	ND		490
Hexachlorobutadiene	ND		490
4-Chloro-3-methylphenol	ND		490
2-Methylnaphthalene	ND		490
Hexachlorocyclopentadiene	ND		2400
2,4,6-Trichlorophenol	ND		490
2,4,5-Trichlorophenol	ND		2400
2-Chloronaphthalene	ND		490
2-Nitroaniline	ND		2400

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 65 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17043 MATRIX : SOLID
SAMPLE ID CLIENT: KS-GS-8

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		490
Acenaphthylene	ND		490
3-Nitroaniline	ND		2400
Acenaphthene	ND		490
2,4-Dinitrophenol	ND		2400
4-Nitrophenol	ND		2400
Dibenzofuran	ND		490
2,4-Dinitrotoluene	ND		490
2,6-Dinitrotoluene	ND		490
Diethylphthalate	ND		490
4-Chlorophenylphenylether	ND		490
Fluorene	ND		490
4-Nitroaniline	ND		2400
4,6-Dinitro-2-methylphenol	ND		2400
n-Nitrosodiphenylamine	ND		490
4-Bromophenylphenylether	ND		490
Hexachlorobenzene	ND		490
Pentachlorophenol	ND		2400
Phenanthrene	110	J	490
Anthracene	ND		490
Fluoranthene	95	J	490
di-n-Butylphthalate	ND		490
Pyrene	79	J	490
Butylbenzylphthalate	ND		490
3,3'-Dichlorobenzidine	ND		980
Benzo(a)anthracene	ND		490
bis(2-Ethylhexyl)phthalate	ND		490
Chrysene	53	J	490
di-n-Octylphthalate	ND		490
Benzo(b)fluoranthene	ND		490
Benzo(k)fluoranthene	ND		490
Benzo(a)pyrene	ND		490
Indeno(1,2,3-cd)pyrene	ND		490
Dibenzo(a,h)anthracene	ND		490
Benzo(ghi)perylene	ND		490

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 85 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17044 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-22

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		390
bis(2-Chloroethyl)ether	ND		390
2-Chlorophenol	ND		390
1,3-Dichlorobenzene	ND		390
1,4-Dichlorobenzene	ND		390
Benzyl alcohol	ND		390
1,2-Dichlorobenzene	ND		390
2-Methylphenol	ND		390
2,2'-oxybis(1-Chloropropane)	ND		390
4-Methylphenol	ND		390
n-Nitroso-di-n-propylamine	ND		390
Hexachloroethane	ND		390
Nitrobenzene	ND		390
Isophorone	ND		390
2-Nitrophenol	ND		390
2,4-Dimethylphenol	ND		390
Benzoic acid	68	J	1900
bis(2-Chloroethoxy)methane	ND		390
2,4-Dichlorophenol	ND		390
1,2,4-Trichlorobenzene	ND		390
Naphthalene	ND		390
4-Chloroaniline	260	J	390
Hexachlorobutadiene	ND		390
4-Chloro-3-methylphenol	ND		390
2-Methylnaphthalene	ND		390
Hexachlorocyclopentadiene	ND		1900
2,4,6-Trichlorophenol	ND		390
2,4,5-Trichlorophenol	ND		1900
2-Chloronaphthalene	ND		390
2-Nitroaniline	ND		1900

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 85 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-98-17044 MATRIX : SOLID
SAMPLE ID CLIENT: KS-SS-22

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		390
Acenaphthylene	ND		390
3-Nitroaniline	ND		1900
Acenaphthene	ND		390
2,4-Dinitrophenol	ND		1900
4-Nitrophenol	ND		1900
Dibenzofuran	ND		390
2,4-Dinitrotoluene	ND		390
2,6-Dinitrotoluene	ND		390
Diethylphthalate	ND		390
4-Chlorophenylphenylether	ND		390
Fluorene	ND		390
4-Nitroaniline	ND		1900
4,6-Dinitro-2-methylphenol	ND		1900
n-Nitrosodiphenylamine	ND		390
4-Bromophenylphenylether	ND		390
Hexachlorobenzene	ND		390
Pentachlorophenol	ND		1900
Phenanthrene	130	J	390
Anthracene	ND		390
Fluoranthene	230	J	390
di-n-Butylphthalate	ND		390
Pyrene	340	J	390
Butylbenzylphthalate	41	J	390
3,3'-Dichlorobenzidine	ND		780
Benzo(a)anthracene	140	J	390
bis(2-Ethylhexyl)phthalate	360	J	390
Chrysene	170	J	390
di-n-Octylphthalate	ND		390
Benzo(b)fluoranthene	190	J	390
Benzo(k)fluoranthene	190	J	390
Benzo(a)pyrene	ND		390
Indeno(1,2,3-cd)pyrene	ND		390
Dibenzo(a,h)anthracene	ND		390
Benzo(ghi)perylene	61	J	390

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

GC/MS Spike Summary Form

SV Data

Instrument ID : 7002B.i
Batch : 981105421r
Units: ng

Compound	Original 9802.593 17027.01 B8455.d	Amount Added	Limits	MS MS 9802.593 17027.01 B8456.d Amt Det	MS Rec	MSD MSD9802.593 17027.01 B8457.d Amt Det	MSD Rec	%RPD	
Phenol	< 0.00	120.00	20.5->132.1	84.23	70.2	87.38	72.8	3.68	
2-Chlorophenol	< 0.00	120.00	20.4->131.6	94.78	79.0	101.16	84.3	6.51	
1,4-Dichlorobenzene	< 0.00	100.00	12.0-> 99.4	57.58	57.6	64.44	64.4	11.24	
n-Nitroso-di-n-propylamine	< 0.00	100.00	30.4->106.4	67.47	67.5	73.50	73.5	8.56	
1,2,4-Trichlorobenzene	< 0.00	100.00	17.4->105.6	67.62	67.6	76.91	76.9	12.86	
4-Chloro-3-methylphenol	< 0.00	120.00	33.2->113.1	93.26	77.7	103.24	86.0	10.16	
Acenaphthene	< 0.00	100.00	30.7->108.8	64.00	64.0	67.87	67.9	5.87	
4-Nitrophenol	< 0.00	120.00	10.0->115.0	92.74	77.3	98.78	82.3	6.31	
2,4-Dinitrotoluene	< 0.00	100.00	33.2-> 95.1	53.87	53.9	55.46	55.5	2.90	
Pentachlorophenol	< 0.00	120.00	34.3->116.5	87.49	72.9	96.48	80.4	9.77	
Pyrene	44.11	100.00	31.4->125.7	117.10	73.0	151.57	107.5	38.21	H

GC/MS Spike Summary Form

SV Data

Instrument ID : 7002B.i
Batch : 981102421r
Units: ng

Compound	Detection Limit	Amount Added	Limits	MS LCS 1344-127-2 B8402.d Amt Det	Rec
Phenol	< 0.00	120.00	25.0->115.0	89.74	74.8
2-Chlorophenol	< 0.00	120.00	42.4->115.0	98.93	82.4
1,4-Dichlorobenzene	< 0.00	100.00	25.0->115.0	70.58	70.6
n-Nitroso-di-n-propylamine	< 0.00	100.00	34.1->105.1	71.56	71.6
1,2,4-Trichlorobenzene	< 0.00	100.00	50.9->100.6	78.62	78.6
4-Chloro-3-methylphenol	< 0.00	120.00	43.6->113.7	98.57	82.1
Acenaphthene	< 0.00	100.00	45.3->109.3	73.93	73.9
4-Nitrophenol	< 0.00	120.00	10.0->115.0	89.59	74.7
2,4-Dinitrotoluene	< 0.00	100.00	44.8->121.3	69.57	69.6
Pentachlorophenol	< 0.00	120.00	37.8->110.8	95.72	79.8
Pyrene	< 0.00	100.00	42.7->110.6	58.96	59.0

GC/MS Surrogate Summary Form

SV Data

Instrument ID : 7002B.i
Batch : 981102421r
Units: ng

Surrogate:	2-Fluorophenol		Phenol-d5		Nitrobenzene-d5		2-Fluorobipheny		2,4,6-Tribromop		Terphenyl-d14	
Amount Added:	120.0		120.0		100.0		100.0		120.0		100.0	
Limits:	25.0--> 121.0		24.0--> 113.0		23.0--> 120.0		30.0--> 115.0		19.0--> 122.0		18.0--> 137.0	
Job/Sample Number	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec
B8401.d BLK 1344-127-1	103.00	85.8	88.80	74.0	71.80	71.8	79.30	79.3	90.20	75.1	74.80	74.8
B8402.d LCS 1344-127-2	108.00	90.2	93.70	78.1	79.90	79.9	86.30	86.3	97.80	81.4	77.40	77.4
B8455.d 9802.593 17027.01	95.30	79.4	86.70	72.3	64.40	64.4	69.90	69.9	105.00	87.9	108.00	108.0
B8465.d 9802.593 17028.01	85.80	71.5	73.70	61.4	60.90	60.9	67.10	67.1	94.40	78.7	84.50	84.5
B8462.d RA 9802.593 17029.01	80.50	67.1	69.70	58.1	56.30	56.3	61.80	61.8	91.30	76.1	60.80	60.8
B8448.d 9802.593 17030.01	114.00	95.5	102.00	84.7	76.80	76.8	85.20	85.2	123.00	103.0	79.60	79.6
B8466.d 9802.593 17031.01	110.00	91.6	101.00	84.5	81.30	81.3	97.70	97.7	137.00	114.0	133.00	133.0
B8467.d 9802.593 17032.01	102.00	84.8	90.90	75.8	71.50	71.5	86.10	86.1	108.00	90.2	105.00	105.0
B8468.d 9802.593 17033.01	120.00	100.0	102.00	84.8	81.70	81.7	87.30	87.3	124.00	103.0	127.00	127.0
B8469.d 9802.593 17034.01	116.00	96.9	104.00	86.4	85.10	85.1	95.30	95.3	127.00	106.0	148.00	148.0 H
B8470.d 9802.593 17035.01	115.00	96.0	104.00	86.9	84.30	84.3	99.50	99.5	115.00	95.6	130.00	130.0

GC/MS Surrogate Summary Form

SV Data

Instrument ID : 7002B.i
Batch : 981103421r
Units: ng

Surrogate:	2-Fluorophenol		Phenol-d5		Nitrobenzene-d5		2-Fluorobipheny		2,4,6-Tribromop		Terphenyl-d14	
Amount Added:	120.0		120.0		100.0		100.0		120.0		100.0	
Limits:	25.0--> 121.0		24.0--> 113.0		23.0--> 120.0		30.0--> 115.0		19.0--> 122.0		18.0--> 137.0	
Job/Sample Number	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec
B8418.d 9802.593 17036.01	92.60	77.2	83.80	69.8	70.20	70.2	74.40	74.4	87.60	73.0	73.70	73.7
B8419.d 9802.593 17037.01	109.00	90.9	97.40	81.2	77.60	77.6	85.20	85.2	102.00	84.7	93.80	93.8
B8420.d 9802.593 17038.01	95.60	79.6	86.90	72.4	62.80	62.8	72.20	72.2	93.10	77.6	82.00	82.0
B8425.d 9802.593 17039.01	88.40	73.7	76.30	63.6	61.90	61.9	67.20	67.2	78.70	65.6	86.90	86.9
B8452.d 9802.593 17040.01	96.30	80.3	84.40	70.4	69.00	69.0	75.10	75.1	97.80	81.5	96.60	96.6
B8451.d 9802.593 17041.01	105.00	87.2	91.10	75.9	69.30	69.3	71.30	71.3	107.00	89.5	69.60	69.6
B8449.d 9802.593 17042.01	106.00	88.3	91.50	76.3	69.30	69.3	76.70	76.7	131.00	109.0	69.60	69.6
B8450.d 9802.593 17043.01	163.00	136.0 H	162.00	135.0 H	81.50	81.5	75.50	75.5	150.00	125.0 H	76.80	76.8
B8453.d 9802.593 17044.01	114.00	95.2	100.00	83.8	75.40	75.4	80.40	80.4	124.00	103.0	115.00	115.0
B8456.d MS 9802.593 17027.01	101.00	84.3	87.20	72.6	65.80	65.8	73.30	73.3	107.00	89.2	111.00	111.0
B8457.d MSD9802.593 17027.01	104.00	86.4	95.20	79.3	72.80	72.8	77.00	77.0	112.00	92.9	137.00	137.0 H

TEST CODE :SBNA0A1 JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : METHOD BLANK MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		330
bis(2-Chloroethyl)ether	ND		330
2-Chlorophenol	ND		330
1,3-Dichlorobenzene	ND		330
1,4-Dichlorobenzene	ND		330
Benzyl alcohol	ND		330
1,2-Dichlorobenzene	ND		330
2-Methylphenol	ND		330
2,2'-oxybis(1-Chloropropane)	ND		330
4-Methylphenol	ND		330
n-Nitroso-di-n-propylamine	ND		330
Hexachloroethane	ND		330
Nitrobenzene	ND		330
Isophorone	ND		330
2-Nitrophenol	ND		330
2,4-Dimethylphenol	ND		330
Benzoic acid	ND		1600
bis(2-Chloroethoxy)methane	ND		330
2,4-Dichlorophenol	ND		330
1,2,4-Trichlorobenzene	ND		330
Naphthalene	ND		330
4-Chloroaniline	ND		330
Hexachlorobutadiene	ND		330
4-Chloro-3-methylphenol	ND		330
2-Methylnaphthalene	ND		330
Hexachlorocyclopentadiene	ND		1600
2,4,6-Trichlorophenol	ND		330
2,4,5-Trichlorophenol	ND		1600
2-Chloronaphthalene	ND		330
2-Nitroaniline	ND		1600

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9802.593
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : METHOD BLANK MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		330
Acenaphthylene	ND		330
3-Nitroaniline	ND		1600
Acenaphthene	ND		330
2,4-Dinitrophenol	ND		1600
4-Nitrophenol	ND		1600
Dibenzofuran	ND		330
2,4-Dinitrotoluene	ND		330
2,6-Dinitrotoluene	ND		330
Diethylphthalate	ND		330
4-Chlorophenylphenylether	ND		330
Fluorene	ND		330
4-Nitroaniline	ND		1600
4,6-Dinitro-2-methylphenol	ND		1600
n-Nitrosodiphenylamine	ND		330
4-Bromophenylphenylether	ND		330
Hexachlorobenzene	ND		330
Pentachlorophenol	ND		1600
Phenanthrene	ND		330
Anthracene	ND		330
Fluoranthene	ND		330
di-n-Butylphthalate	130	J	330
Pyrene	ND		330
Butylbenzylphthalate	ND		330
3,3'-Dichlorobenzidine	ND		660
Benzo(a)anthracene	ND		330
bis(2-Ethylhexyl)phthalate	ND		330
Chrysene	ND		330
di-n-Octylphthalate	ND		330
Benzo(b)fluoranthene	ND		330
Benzo(k)fluoranthene	ND		330
Benzo(a)pyrene	ND		330
Indeno(1,2,3-cd)pyrene	ND		330
Dibenzo(a,h)anthracene	ND		330
Benzo(ghi)perylene	ND		330

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
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ecology and environment, inc.
International Specialists in the Environment

ANALYTICAL SERVICES CENTER
4493 Walden Avenue
Lancaster, New York 14086
Tel. (716) 685-8080, Fax: (716) 685-0852

Memorandum

To: Hussein Aldis - Arlington

From: Tony Bogolin, Project Manager TB/jk

Date: November 25, 1998

Subject: YM-4000 Kenilworth

RE: 9802.594

CC: Lab File

Attached is the laboratory report of the analysis conducted on nine samples received at the Analytical Services Center on October 16, 1998. Analysis was performed according to the procedures set forth in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, Update III, June 1997, USEPA, and "Methods for the Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983.

Several sample containers arrived broken. You were notified on 10/16/98. Extra volume in other containers was used to replace broken containers. No extra volume existed for TRPH analysis for sample "KS-GW-4" and BNA analysis for sample "KS-GW-6". These samples were recollected along with a field duplicate for "KS-GW-4" and reported under ASC job number 9802.660.

The chain of custody form provided herein is integral to this report and must be included with the analytical results forms upon transferal to another data user.

Metals samples were unfiltered and contained varying amounts of sediment in the bottles. Elevated metals results may be due to this sediment.

All samples on which this report is based will be retained by E & E for a period of 30 days from the date of this report, unless otherwise instructed by the client. If additional storage of samples is requested by the client, a storage fee of $1.00 per sample container per month will be charged for each sample, with such charges accruing until destruction of the samples is authorized by the client.

TB/jk
Enclosure

ecology and environment, inc.

Analytical Services Center
4493 Walden Avenue, Lancaster, New York, 14086, Tel. 716/685-8080, Fax 716/685-0852
International Specialists in the Environment

CHAIN-OF-CUSTODY RECORD

Page ____ of ____.

Project No.: YM4010
Project Name: Kenilworth
Project Manager: Hussein Aldis
Samplers (Signatures): Mike Gomes + Hussein Aldis
Field Team Leader: Hussein Aldis

STATION NUMBER	DATE	TIME	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE TYPE AIR	SAMPLE INFORMATION / EXPECTED COMPOUNDS (Concentration)*	STATION LOCATION	NUMBER OF CONTAINERS	1 L poly + preser	3x32 oz amber	8 oz bottle	1 L poly	4 oz		REMARKS
	10/14	1030		✓		TRPH BNA RCRA metals VOAs	KS-GW-7	4	✓	✓					
		1130		✓		—— " —— " ——	KS-GW-8	4							
		1230		✓		~~PAH~~ / BNA / RCRA met / TRPH / % solid	KS-GS-7	1			✓				
		1330		✓		—— " —— " —— " ——	KS-GS'-8	1			✓				
	10/13	1600		✓		~~TRPH~~ ~~BNA~~ RCRA metals ~~VOAs~~		7				✓	✓		
	10/13	1200		✓		VOAs		16					✓		

See Job 7002593

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Ship Via:
Mike Gomes	10/14 1700					
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	BL/Airbill Number: / Date:
Relinquished By: (Signature)	Date/Time: 10-26-98 1025	Received For Laboratory By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received For Laboratory By: (Signature)	

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files
*See CONCENTRATION RANGE on back of form.

0571194

B-212

ecology and environment, inc.
Analytical Services Center
4493 Walden Avenue, Lancaster, New York, 14086, Tel. 716/685-8080, Fax 716/685-0852
International Specialists in the Environment

CHAIN-OF-CUSTODY RECORD

Project No.: YM04
Project Name: Kenilworth
Project Manager: Hussein Aldis
Samplers: (Signatures) Hussein Aldis Sylvie Gomis
Field Team Leader: Hussein Aldis

STATION NUMBER	DATE	TIME	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE TYPE AIR	SAMPLE INFORMATION / EXPECTED COMPOUNDS (Concentration)*	STATION LOCATION	NUMBER OF CONTAINERS	amber bottle + preserv 3202	amber bottle 3202	[illegible]	40 ml	40 ml	amber bottle 3202	REMARKS
	10/13	1030		✓		TRPH BNA RCRA metals VOAs	KS-GW-1	5	✓	✓	✓	✓	✓	✓	
		1100				" " " "	KS-GW-2	5	✓	✓	✓	✓	✓	✓	
		1130				" " " "	KS-GW-3	5	✓	✓	✓	✓	✓	✓	
		1200				" " " "	KS-GW-4	5	✓	✓	✓	✓	✓	✓	1
	10/14	930				" " " "	KS-GW-5	5	✓	✓	✓	✓	✓	✓	
		1000				" " " "	KS-GW-6	5	✓	✓	✓	✓	✓	✓	1
		1030				" " " "	KS-GW-7	5	✓	✓	✓	✓	✓	✓	X
		1100				" " " "	KS-GW-8	5	✓	✓	✓	✓	✓	✓	X
	10/13	1030		✓		" " " "	KS-GW1-duplic	5	✓	✓	✓	✓	✓	✓	*1

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Ship Via:
[illegible]	10/14 1600					
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	BL/Airbill Number: / Date:
Relinquished By: (Signature)	Date/Time: 10-16-98 1020	Received For Laboratory By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received For Laboratory By: (Signature)	

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files
*See CONCENTRATION RANGE on back of form.

0571194

Ecology and Environment, Inc. Analytical Services Center

Cooler Receipt Form

PACKAGE RECEIPT #: 1887 NUMBER OF COOLERS: 1 DATE RECEIVED: 10-15-98

E & E PROJECT #: YM 4000 PROJECT OR SITE NAME: Kenilworth

A. Preliminary Examination Phase

CIRCLE ONE

1. Did coolers come with airbill or packing slip? — YES NO NA

   Enter carrier here and print airbill # below:

2. Did cooler(s) have custody seals? — YES NO NA

   If YES, how many and where? 2 on Seam

3. Were custody seals unbroken and intact on receipt? — YES NO* NA

4. Were custody seals dated and signed? — YES NO NA

   If YES, enter date: Name:

5. Sign here to acknowledge receipt of cooler (s):

   Date cooler(s) opened: 10-15-98 C-O-C numbers:

   Cooler(s) opened by (print): Kelly Gordon Signature:

6. Were the C-O-C forms received? — YES NO* NA

7. Was the project identifiable from the C-O-C form? — YES NO* NA
   If YES, enter the project number and name in the heading above.

Please record Temperature Blank or Cooler Temperature for Each Cooler. Range (2 - 5°C)*

AIRBILL #	TEMP. °C	AIRBILL #	TEMP. °C	AIRBILL #	TEMP. °C
806636056700	3.5				

Thermometer # 116 Correction Factor 0.0 * If No or Temperature Outside of Acceptable Range, a CAF must be filed. CAF #

B. Unpacking Phase

8. Was enough packing material used in cooler(s)? — YES NO NA
   Type of material: Vermiculite Bubble Wrap Other

9. If required, was enough ice used? — YES NO NA
   If YES, type of ice used: Wet Dry Blue Other

10. Was a temperature blank included inside cooler(s)? — YES NO NA
    If YES, indicate temperature blank temperature in table above. If NO, indicate cooler temperature in table above.

11. Were all containers sealed in separate plastic bags? — YES NO NA

12. Did all containers arrive unbroken and in good condition? — YES NO* NA

C. Login Phase

Samples Logged in By (print): Signature: Date:

13. Were all container labels complete (e.g. date, time preserv)? — YES NO* NA

14. Were all C-O-C forms filled out properly in ink and signed? — YES NO* NA

15. Did the C-O-C form agree with containers received? — YES NO* NA

16. Were the correct containers used for the tests requested? — YES NO* NA

17. Were the correct preservatives listed on the sample labels? — YES NO* NA

18. Was a sufficient sample volume sent for the tests requested? — YES NO* NA

19. Were all volatile samples received without head space? — YES NO* NA

JOB NUMBER : 9802.594

Ecology and Environment, Inc.
SAMPLE TRACKING REPORT

SAMPLE NUMBER	CLIENT SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED
TRPH	-W			
17045.05	KS-GW-1	10/13/98		10/23/98
17046.05	KS-GW-2	10/14/98		10/23/98
17047.05	KS-GW-3	10/14/98		10/23/98
17049.05	KS-GW-5	10/14/98		10/23/98
17050.05	KS-GW-6	10/14/98		10/23/98
17051.05	KS-GW-7	10/14/98		10/23/98
17052.05	KS-GW-8	10/14/98		10/23/98

TEST CODE :WPETHY1

JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : TRPH
PARAMETER : Petroleum Hydrocarbons

UNITS : MG/L

SAMPLE ID	RESULTS	Q	QNT. LIMIT
EE-98-17045 KS-GW-1	1.0		1.0
EE-98-17046 KS-GW-2	5.6		1.0
EE-98-17047 KS-GW-3	ND		1.0
EE-98-17049 KS-GW-5	ND		1.0
EE-98-17050 KS-GW-6	1.7		1.0
EE-98-17051 KS-GW-7	ND		1.0
EE-98-17052 KS-GW-8	1.5		1.0
METHOD BLANK	ND		1.0

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
NA = NOT APPLICABLE

ND = NOT DETECTED

LABORATORY CONTROL SAMPLE (1286-11-1)

9802.594

(mg/L)

ANALYTE	FOUND VALUE	TRUE VALUE	PERCENT RECOVERY
TRPH	15.42	16.72	92

THIS RECOVERY IS WITHIN E & E, INC. QC TARGETS.

JOB NUMBER : 9802.594

Ecology and Environment, Inc.
SAMPLE TRACKING REPORT

SAMPLE NUMBER	CLIENT SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED
8260B VOA	TCL LIST -W			
17045.01	KS-GW-1	10/13/98		10/27/98
17046.01	KS-GW-2	10/14/98		10/27/98
17047.01	KS-GW-3	10/14/98		10/27/98
17048.01	KS-GW-4	10/14/98		10/27/98
17049.01	KS-GW-5	10/14/98		10/27/98
17050.01	KS-GW-6	10/14/98		10/27/98
17051.01	KS-GW-7	10/14/98		10/28/98
17052.01	KS-GW-8	10/14/98		10/28/98
17053.01	KS-GW-1D	10/14/98		10/28/98

TEST CODE :WVOA0A1 JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8260B VOA TCL LIS UNITS : UG/L
SAMPLE ID LAB : EE-98-17045 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-1

SAMPLE WEIGHT/VOL.(gm/ml): 5.0 DATE COLLECTED: 10/13/98
FINAL EXTRACT VOLUME: DATE RECEIVED : 10/16/98
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 10/27/98

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		10
Bromomethane	ND		10
Vinyl chloride	ND		10
Chloroethane	ND		10
Methylene chloride	ND		5.0
Acetone	15		10
Carbon disulfide	ND		5.0
1,1-Dichloroethene	ND		5.0
1,1-Dichloroethane	ND		5.0
1,2-Dichloroethene (total)	ND		5.0
Chloroform	ND		5.0
1,2-Dichloroethane	ND		5.0
2-Butanone	ND		10
1,1,1-Trichloroethane	ND		5.0
Carbon tetrachloride	ND		5.0
Vinyl acetate	ND		10
Bromodichloromethane	ND		5.0
1,2-Dichloropropane	ND		5.0
cis-1,3-Dichloropropene	ND		5.0
Trichloroethene	ND		5.0
Dibromochloromethane	ND		5.0
1,1,2-Trichloroethane	ND		5.0
Benzene	ND		5.0
trans-1,3,-Dichloropropene	ND		5.0
2-Chloroethylvinylether	ND		10
Bromoform	ND		5.0
4-Methyl-2-pentanone	ND		10
2-Hexanone	ND		10
Tetrachloroethene	ND		5.0
1,1,2,2-Tetrachloroethane	ND		5.0
Toluene	ND		5.0
Chlorobenzene	ND		5.0

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :WVOA0A1 JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8260B VOA TCL LIS UNITS : UG/L
SAMPLE ID LAB : EE-98-17045 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-1

SAMPLE WEIGHT/VOL.(gm/ml): 5.0 DATE COLLECTED: 10/13/98
FINAL EXTRACT VOLUME: DATE RECEIVED : 10/16/98
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 10/27/98

PARAMETER	RESULTS	Q	QNT. LIMIT
Ethylbenzene	ND		5.0
Styrene	ND		5.0
Total Xylenes	ND		5.0

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :WVOA0A1 JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8260B VOA TCL LIS UNITS : UG/L
SAMPLE ID LAB : EE-98-17046 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-2

SAMPLE WEIGHT/VOL.(gm/ml): 5.0 DATE COLLECTED: 10/14/98
FINAL EXTRACT VOLUME: DATE RECEIVED : 10/16/98
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 10/27/98

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		10
Bromomethane	ND		10
Vinyl chloride	ND		10
Chloroethane	ND		10
Methylene chloride	ND		5.0
Acetone	18		10
Carbon disulfide	ND		5.0
1,1-Dichloroethene	ND		5.0
1,1-Dichloroethane	ND		5.0
1,2-Dichloroethene (total)	2.6	J	5.0
Chloroform	ND		5.0
1,2-Dichloroethane	ND		5.0
2-Butanone	9.8	J	10
1,1,1-Trichloroethane	ND		5.0
Carbon tetrachloride	ND		5.0
Vinyl acetate	ND		10
Bromodichloromethane	ND		5.0
1,2-Dichloropropane	ND		5.0
cis-1,3-Dichloropropene	ND		5.0
Trichloroethene	ND		5.0
Dibromochloromethane	ND		5.0
1,1,2-Trichloroethane	ND		5.0
Benzene	ND		5.0
trans-1,3,-Dichloropropene	ND		5.0
2-Chloroethylvinylether	ND		10
Bromoform	ND		5.0
4-Methyl-2-pentanone	ND		10
2-Hexanone	ND		10
Tetrachloroethene	ND		5.0
1,1,2,2-Tetrachloroethane	ND		5.0
Toluene	ND		5.0
Chlorobenzene	ND		5.0

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :WVOA0A1 JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8260B VOA TCL LIS UNITS : UG/L
SAMPLE ID LAB : EE-98-17046 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-2

SAMPLE WEIGHT/VOL.(gm/ml): 5.0 DATE COLLECTED: 10/14/98
FINAL EXTRACT VOLUME: DATE RECEIVED : 10/16/98
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 10/27/98

PARAMETER	RESULTS	Q	QNT. LIMIT
Ethylbenzene	ND		5.0
Styrene	ND		5.0
Total Xylenes	ND		5.0

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :WVOA0A1 JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8260B VOA TCL LIS UNITS : UG/L
SAMPLE ID LAB : EE-98-17047 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-3

SAMPLE WEIGHT/VOL.(gm/ml): 5.0 DATE COLLECTED: 10/14/98
FINAL EXTRACT VOLUME: DATE RECEIVED : 10/16/98
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 10/27/98

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		10
Bromomethane	ND		10
Vinyl chloride	ND		10
Chloroethane	ND		10
Methylene chloride	ND		5.0
Acetone	11		10
Carbon disulfide	ND		5.0
1,1-Dichloroethene	ND		5.0
1,1-Dichloroethane	ND		5.0
1,2-Dichloroethene (total)	ND		5.0
Chloroform	ND		5.0
1,2-Dichloroethane	ND		5.0
2-Butanone	ND		10
1,1,1-Trichloroethane	ND		5.0
Carbon tetrachloride	ND		5.0
Vinyl acetate	ND		10
Bromodichloromethane	ND		5.0
1,2-Dichloropropane	ND		5.0
cis-1,3-Dichloropropene	ND		5.0
Trichloroethene	ND		5.0
Dibromochloromethane	ND		5.0
1,1,2-Trichloroethane	ND		5.0
Benzene	ND		5.0
trans-1,3,-Dichloropropene	ND		5.0
2-Chloroethylvinylether	ND		10
Bromoform	ND		5.0
4-Methyl-2-pentanone	ND		10
2-Hexanone	ND		10
Tetrachloroethene	ND		5.0
1,1,2,2-Tetrachloroethane	ND		5.0
Toluene	ND		5.0
Chlorobenzene	ND		5.0

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :WVOA0A1 JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8260B VOA TCL LIS UNITS : UG/L
SAMPLE ID LAB : EE-98-17047 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-3

SAMPLE WEIGHT/VOL.(gm/ml): 5.0 DATE COLLECTED: 10/14/98
FINAL EXTRACT VOLUME: DATE RECEIVED : 10/16/98
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 10/27/98

PARAMETER	RESULTS	Q	QNT. LIMIT
Ethylbenzene	ND		5.0
Styrene	ND		5.0
Total Xylenes	ND		5.0

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :WVOA0A1 JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8260B VOA TCL LIS UNITS : UG/L
SAMPLE ID LAB : EE-98-17048 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-4

SAMPLE WEIGHT/VOL.(gm/ml): 5.0 DATE COLLECTED: 10/14/98
FINAL EXTRACT VOLUME: DATE RECEIVED : 10/16/98
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 10/27/98

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		10
Bromomethane	ND		10
Vinyl chloride	ND		10
Chloroethane	ND		10
Methylene chloride	ND		5.0
Acetone	ND		10
Carbon disulfide	ND		5.0
1,1-Dichloroethene	ND		5.0
1,1-Dichloroethane	ND		5.0
1,2-Dichloroethene (total)	ND		5.0
Chloroform	ND		5.0
1,2-Dichloroethane	ND		5.0
2-Butanone	ND		10
1,1,1-Trichloroethane	ND		5.0
Carbon tetrachloride	ND		5.0
Vinyl acetate	ND		10
Bromodichloromethane	ND		5.0
1,2-Dichloropropane	ND		5.0
cis-1,3-Dichloropropene	ND		5.0
Trichloroethene	ND		5.0
Dibromochloromethane	ND		5.0
1,1,2-Trichloroethane	ND		5.0
Benzene	ND		5.0
trans-1,3,-Dichloropropene	ND		5.0
2-Chloroethylvinylether	ND		10
Bromoform	ND		5.0
4-Methyl-2-pentanone	ND		10
2-Hexanone	ND		10
Tetrachloroethene	ND		5.0
1,1,2,2-Tetrachloroethane	ND		5.0
Toluene	ND		5.0
Chlorobenzene	ND		5.0

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :WVOA0A1 JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8260B VOA TCL LIS UNITS : UG/L
SAMPLE ID LAB : EE-98-17048 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-4

SAMPLE WEIGHT/VOL.(gm/ml): 5.0 DATE COLLECTED: 10/14/98
FINAL EXTRACT VOLUME: DATE RECEIVED : 10/16/98
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 10/27/98

PARAMETER	RESULTS	Q	QNT. LIMIT
Ethylbenzene	ND		5.0
Styrene	ND		5.0
Total Xylenes	ND		5.0

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :WVOA0A1 JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8260B VOA TCL LIS UNITS : UG/L
SAMPLE ID LAB : EE-98-17049 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-5

SAMPLE WEIGHT/VOL.(gm/ml): 5.0 DATE COLLECTED: 10/14/98
FINAL EXTRACT VOLUME: DATE RECEIVED : 10/16/98
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 10/27/98

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		10
Bromomethane	ND		10
Vinyl chloride	ND		10
Chloroethane	ND		10
Methylene chloride	ND		5.0
Acetone	ND		10
Carbon disulfide	ND		5.0
1,1-Dichloroethene	ND		5.0
1,1-Dichloroethane	ND		5.0
1,2-Dichloroethene (total)	ND		5.0
Chloroform	ND		5.0
1,2-Dichloroethane	ND		5.0
2-Butanone	ND		10
1,1,1-Trichloroethane	ND		5.0
Carbon tetrachloride	ND		5.0
Vinyl acetate	ND		10
Bromodichloromethane	ND		5.0
1,2-Dichloropropane	ND		5.0
cis-1,3-Dichloropropene	ND		5.0
Trichloroethene	ND		5.0
Dibromochloromethane	ND		5.0
1,1,2-Trichloroethane	ND		5.0
Benzene	ND		5.0
trans-1,3,-Dichloropropene	ND		5.0
2-Chloroethylvinylether	ND		10
Bromoform	ND		5.0
4-Methyl-2-pentanone	ND		10
2-Hexanone	ND		10
Tetrachloroethene	ND		5.0
1,1,2,2-Tetrachloroethane	ND		5.0
Toluene	ND		5.0
Chlorobenzene	ND		5.0

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :WVOA0A1 JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8260B VOA TCL LIS UNITS : UG/L
SAMPLE ID LAB : EE-98-17049 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-5

SAMPLE WEIGHT/VOL.(gm/ml): 5.0 DATE COLLECTED: 10/14/98
FINAL EXTRACT VOLUME: DATE RECEIVED : 10/16/98
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 10/27/98

PARAMETER	RESULTS	Q	QNT. LIMIT
Ethylbenzene	ND		5.0
Styrene	ND		5.0
Total Xylenes	ND		5.0

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :WVOA0A1 JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8260B VOA TCL LIS UNITS : UG/L
SAMPLE ID LAB : EE-98-17050 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-6

SAMPLE WEIGHT/VOL.(gm/ml): 5.0 DATE COLLECTED: 10/14/98
FINAL EXTRACT VOLUME: DATE RECEIVED : 10/16/98
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 10/27/98

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		10
Bromomethane	ND		10
Vinyl chloride	ND		10
Chloroethane	ND		10
Methylene chloride	ND		5.0
Acetone	12		10
Carbon disulfide	ND		5.0
1,1-Dichloroethene	ND		5.0
1,1-Dichloroethane	ND		5.0
1,2-Dichloroethene (total)	ND		5.0
Chloroform	ND		5.0
1,2-Dichloroethane	ND		5.0
2-Butanone	ND		10
1,1,1-Trichloroethane	ND		5.0
Carbon tetrachloride	ND		5.0
Vinyl acetate	ND		10
Bromodichloromethane	ND		5.0
1,2-Dichloropropane	ND		5.0
cis-1,3-Dichloropropene	ND		5.0
Trichloroethene	ND		5.0
Dibromochloromethane	ND		5.0
1,1,2-Trichloroethane	ND		5.0
Benzene	ND		5.0
trans-1,3,-Dichloropropene	ND		5.0
2-Chloroethylvinylether	ND		10
Bromoform	ND		5.0
4-Methyl-2-pentanone	ND		10
2-Hexanone	ND		10
Tetrachloroethene	ND		5.0
1,1,2,2-Tetrachloroethane	ND		5.0
Toluene	ND		5.0
Chlorobenzene	ND		5.0

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :WVOA0A1 JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8260B VOA TCL LIS UNITS : UG/L
SAMPLE ID LAB : EE-98-17050 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-6

SAMPLE WEIGHT/VOL.(gm/ml): 5.0 DATE COLLECTED: 10/14/98
FINAL EXTRACT VOLUME: DATE RECEIVED : 10/16/98
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 10/27/98

PARAMETER	RESULTS	Q	QNT. LIMIT
Ethylbenzene	ND		5.0
Styrene	ND		5.0
Total Xylenes	ND		5.0

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :WVOA0A1 JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8260B VOA TCL LIS UNITS : UG/L
SAMPLE ID LAB : EE-98-17051 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-7

SAMPLE WEIGHT/VOL.(gm/ml): 5.0 DATE COLLECTED: 10/14/98
FINAL EXTRACT VOLUME: DATE RECEIVED : 10/16/98
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 10/28/98

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		10
Bromomethane	ND		10
Vinyl chloride	ND		10
Chloroethane	ND		10
Methylene chloride	ND		5.0
Acetone	13		10
Carbon disulfide	ND		5.0
1,1-Dichloroethene	ND		5.0
1,1-Dichloroethane	ND		5.0
1,2-Dichloroethene (total)	ND		5.0
Chloroform	ND		5.0
1,2-Dichloroethane	ND		5.0
2-Butanone	ND		10
1,1,1-Trichloroethane	ND		5.0
Carbon tetrachloride	ND		5.0
Vinyl acetate	ND		10
Bromodichloromethane	ND		5.0
1,2-Dichloropropane	ND		5.0
cis-1,3-Dichloropropene	ND		5.0
Trichloroethene	ND		5.0
Dibromochloromethane	ND		5.0
1,1,2-Trichloroethane	ND		5.0
Benzene	ND		5.0
trans-1,3,-Dichloropropene	ND		5.0
2-Chloroethylvinylether	ND		10
Bromoform	ND		5.0
4-Methyl-2-pentanone	ND		10
2-Hexanone	ND		10
Tetrachloroethene	ND		5.0
1,1,2,2-Tetrachloroethane	ND		5.0
Toluene	ND		5.0
Chlorobenzene	ND		5.0

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :WVOA0A1 JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8260B VOA TCL LIS UNITS : UG/L
SAMPLE ID LAB : EE-98-17051 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-7

SAMPLE WEIGHT/VOL.(gm/ml): 5.0 DATE COLLECTED: 10/14/98
FINAL EXTRACT VOLUME: DATE RECEIVED : 10/16/98
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 10/28/98

PARAMETER	RESULTS	Q	QNT. LIMIT
Ethylbenzene	ND		5.0
Styrene	ND		5.0
Total Xylenes	1.4	J	5.0

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :WVOA0A1 JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8260B VOA TCL LIS UNITS : UG/L
SAMPLE ID LAB : EE-98-17052 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-8

SAMPLE WEIGHT/VOL.(gm/ml): 5.0 DATE COLLECTED: 10/14/98
FINAL EXTRACT VOLUME: DATE RECEIVED : 10/16/98
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 10/28/98

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		10
Bromomethane	ND		10
Vinyl chloride	ND		10
Chloroethane	ND		10
Methylene chloride	ND		5.0
Acetone	ND		10
Carbon disulfide	ND		5.0
1,1-Dichloroethene	ND		5.0
1,1-Dichloroethane	ND		5.0
1,2-Dichloroethene (total)	ND		5.0
Chloroform	ND		5.0
1,2-Dichloroethane	ND		5.0
2-Butanone	ND		10
1,1,1-Trichloroethane	ND		5.0
Carbon tetrachloride	ND		5.0
Vinyl acetate	ND		10
Bromodichloromethane	ND		5.0
1,2-Dichloropropane	ND		5.0
cis-1,3-Dichloropropene	ND		5.0
Trichloroethene	ND		5.0
Dibromochloromethane	ND		5.0
1,1,2-Trichloroethane	ND		5.0
Benzene	ND		5.0
trans-1,3,-Dichloropropene	ND		5.0
2-Chloroethylvinylether	ND		10
Bromoform	ND		5.0
4-Methyl-2-pentanone	ND		10
2-Hexanone	ND		10
Tetrachloroethene	ND		5.0
1,1,2,2-Tetrachloroethane	ND		5.0
Toluene	ND		5.0
Chlorobenzene	ND		5.0

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :WVOA0A1 JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8260B VOA TCL LIS UNITS : UG/L
SAMPLE ID LAB : EE-98-17052 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-8

SAMPLE WEIGHT/VOL.(gm/ml): 5.0 DATE COLLECTED: 10/14/98
FINAL EXTRACT VOLUME: DATE RECEIVED : 10/16/98
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 10/28/98

PARAMETER	RESULTS	Q	QNT. LIMIT
Ethylbenzene	ND		5.0
Styrene	ND		5.0
Total Xylenes	ND		5.0

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

GC/MS Spike Summary Form

VOA Data

Instrument ID : 7001F.i
Batch : 981026461r
Units: ug/L

Compound	Original 9802.563 16822.02 F7253.d	Amount Added	Limits	MS MS 9802.563 16822.01 F7258.d Amt Det	MS Rec	MSD MSD9802.563 16822.01 F7259.d Amt Det	MSD Rec	%RPD
1,1-Dichloroethene	< 5.00	50.00	61.0->145.0	55.99	112.0	54.51	109.0	2.68
Benzene	< 5.00	50.00	76.0->127.0	56.11	112.2	55.36	110.7	1.34
Trichloroethene	< 5.00	50.00	71.0->120.0	56.67	113.3	56.05	112.1	1.11
Toluene	< 5.00	50.00	75.0->125.0	55.32	110.6	55.83	111.7	0.92
Chlorobenzene	< 5.00	50.00	75.0->130.0	55.70	111.4	56.47	112.9	1.37

GC/MS Spike Summary Form

VOA Data

Instrument ID : 7001F.i
Batch : 981026461r
Units: ug/L

Compound	Detection Limit	Amount Added	Limits	MS LCS 1308-33-1 F7252.d Amt Det	Rec
1,1-Dichloroethene	< 5.00	50.00	73.0->133.0	51.25	102.5
Benzene	< 5.00	50.00	82.0->116.0	49.11	98.2
Trichloroethene	< 5.00	50.00	68.0->118.0	52.15	104.3
Toluene	< 5.00	50.00	84.0->121.0	50.25	100.5
Chlorobenzene	< 5.00	50.00	81.0->115.0	51.16	102.3

GC/MS Surrogate Summary Form

VOA Data

Instrument ID : 7001F.i
Batch : 981026461r
Units: ug/L

Surrogate:	Dibromofluorome		1,2-Dichloroeth		Toluene-d8		Bromofluorobenz	
Amount Added:	50.0		50.0		50.0		50.0	
Limits:	84.0--> 115.0		72.0--> 114.0		79.0--> 119.0		88.0--> 120.0	
Job/Sample Number	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec
F7250.d BLK 1308-33-1	50.70	101.0	46.20	92.4	45.80	91.5	49.60	99.1
F7252.d LCS 1308-33-1	51.60	103.0	48.80	97.7	45.90	91.9	49.00	98.1
F7261.d 9802.594 17045.01	50.80	102.0	50.50	101.0	47.60	95.2	51.70	103.0
F7262.d 9802.594 17046.01	54.40	109.0	50.30	101.0	46.60	93.2	50.30	101.0
F7263.d 9802.594 17047.01	52.10	104.0	51.50	103.0	46.60	93.3	51.00	102.0
F7264.d 9802.594 17048.01	53.00	106.0	51.70	103.0	45.70	91.5	52.20	104.0

TEST CODE :WVOA0A1 JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8260B VOA TCL LIS UNITS : UG/L
SAMPLE ID LAB : METHOD BLANK MATRIX: WATER
1308-33-1

SAMPLE WEIGHT/VOL.(gm/ml): 5.0 DATE COLLECTED: NA
FINAL EXTRACT VOLUME: DATE RECEIVED : NA
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 10/26/98

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		10
Bromomethane	ND		10
Vinyl chloride	ND		10
Chloroethane	ND		10
Methylene chloride	ND		5.0
Acetone	ND		10
Carbon disulfide	ND		5.0
1,1-Dichloroethene	ND		5.0
1,1-Dichloroethane	ND		5.0
1,2-Dichloroethene (total)	ND		5.0
Chloroform	ND		5.0
1,2-Dichloroethane	ND		5.0
2-Butanone	ND		10
1,1,1-Trichloroethane	ND		5.0
Carbon tetrachloride	ND		5.0
Vinyl acetate	ND		10
Bromodichloromethane	ND		5.0
1,2-Dichloropropane	ND		5.0
cis-1,3-Dichloropropene	ND		5.0
Trichloroethene	ND		5.0
Dibromochloromethane	ND		5.0
1,1,2-Trichloroethane	ND		5.0
Benzene	ND		5.0
trans-1,3,-Dichloropropene	ND		5.0
2-Chloroethylvinylether	ND		10
Bromoform	ND		5.0
4-Methyl-2-pentanone	ND		10
2-Hexanone	ND		10
Tetrachloroethene	ND		5.0
1,1,2,2-Tetrachloroethane	ND		5.0
Toluene	ND		5.0
Chlorobenzene	ND		5.0

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :WVOA0A1 JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8260B VOA TCL LIS UNITS : UG/L
SAMPLE ID LAB : METHOD BLANK MATRIX: WATER
1308-33-1

SAMPLE WEIGHT/VOL.(gm/ml): 5.0 DATE COLLECTED: NA
FINAL EXTRACT VOLUME: DATE RECEIVED : NA
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 10/26/98

PARAMETER	RESULTS	Q	QNT. LIMIT
Ethylbenzene	ND		5.0
Styrene	ND		5.0
Total Xylenes	ND		5.0

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

GC/MS Spike Summary Form

VOA Data

Instrument ID : 7001F.i
Batch : 981027461r
Units: ug/L

Compound	Original RA 9802.594 17050.02 F7278.d	Amount Added	Limits	MS MS 9802.594 17050.02 F7279.d Amt Det	MS Rec	MSD MSD9802.594 17050.02 F7280.d Amt Det	MSD Rec	%RPD
1,1-Dichloroethene	< 5.00	50.00	61.0->145.0	48.98	98.0	50.11	100.2	2.29
Benzene	< 5.00	50.00	76.0->127.0	51.08	102.2	55.75	111.5	8.72
Trichloroethene	< 5.00	50.00	71.0->120.0	51.84	103.7	50.54	101.1	2.55
Toluene	< 5.00	50.00	75.0->125.0	50.08	100.2	50.03	100.1	0.10
Chlorobenzene	< 5.00	50.00	75.0->130.0	49.72	99.4	50.69	101.4	1.93

GC/MS Spike Summary Form

VOA Data

Instrument ID : 7001F.i
Batch : 981027461r
Units: ug/L

Compound	Detection Limit	Amount Added	Limits	MS LCS 1308-35-1 F7270.d Amt Det	Rec
1,1-Dichloroethene	< 5.00	50.00	73.0->133.0	55.20	110.4
Benzene	< 5.00	50.00	82.0->116.0	51.73	103.5
Trichloroethene	< 5.00	50.00	68.0->118.0	52.94	105.9
Toluene	< 5.00	50.00	84.0->121.0	51.16	102.3
Chlorobenzene	< 5.00	50.00	81.0->115.0	50.44	100.9

GC/MS Surrogate Summary Form

VOA Data

Instrument ID : 7001F.i
Batch : 981027461r
Units: ug/L

Surrogate:	Dibromofluorome		1,2-Dichloroeth		Toluene-d8		Bromofluorobenz	
Amount Added:	50.0		50.0		50.0		50.0	
Limits:	84.0--> 115.0		72.0--> 114.0		79.0--> 119.0		88.0--> 120.0	
Job/Sample Number	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec
F7270.d LCS 1308-35-1	52.30	105.0	51.30	103.0	46.70	93.4	52.20	104.0
F7271.d BLK 1308-35-1	51.30	102.0	46.80	93.6	46.80	93.6	51.60	103.0
F7277.d RA 9802.594 17049.02	52.00	104.0	51.80	104.0	46.70	93.4	51.40	103.0
F7278.d RA 9802.594 17050.02	52.90	106.0	54.60	109.0	46.50	93.1	52.30	105.0
F7279.d MS 9802.594 17050.02	52.60	105.0	55.00	110.0	46.60	93.3	51.80	104.0
F7280.d MSD9802.594 17050.02	52.70	105.0	58.10	116.0 H	46.40	92.7	52.00	104.0
F7281.d 9802.594 17051.01	51.70	103.0	55.30	110.0	46.90	93.8	52.30	105.0
F7282.d 9802.594 17052.01	52.60	105.0	53.20	106.0	48.00	96.0	52.40	105.0
F7283.d 9802.594 17053.01	51.60	103.0	52.40	105.0	46.90	93.9	52.00	104.0

TEST CODE :WVOA0A1 JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8260B VOA TCL LIS UNITS : UG/L
SAMPLE ID LAB : METHOD BLANK MATRIX: WATER
1308-35-1

SAMPLE WEIGHT/VOL.(gm/ml): 5.0 DATE COLLECTED: NA
FINAL EXTRACT VOLUME: DATE RECEIVED : NA
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 10/27/98

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		10
Bromomethane	ND		10
Vinyl chloride	ND		10
Chloroethane	ND		10
Methylene chloride	ND		5.0
Acetone	ND		10
Carbon disulfide	ND		5.0
1,1-Dichloroethene	ND		5.0
1,1-Dichloroethane	ND		5.0
1,2-Dichloroethene (total)	ND		5.0
Chloroform	ND		5.0
1,2-Dichloroethane	ND		5.0
2-Butanone	ND		10
1,1,1-Trichloroethane	ND		5.0
Carbon tetrachloride	ND		5.0
Vinyl acetate	ND		10
Bromodichloromethane	ND		5.0
1,2-Dichloropropane	ND		5.0
cis-1,3-Dichloropropene	ND		5.0
Trichloroethene	ND		5.0
Dibromochloromethane	ND		5.0
1,1,2-Trichloroethane	ND		5.0
Benzene	ND		5.0
trans-1,3,-Dichloropropene	ND		5.0
2-Chloroethylvinylether	ND		10
Bromoform	ND		5.0
4-Methyl-2-pentanone	ND		10
2-Hexanone	ND		10
Tetrachloroethene	ND		5.0
1,1,2,2-Tetrachloroethane	ND		5.0
Toluene	ND		5.0
Chlorobenzene	ND		5.0

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :WVOA0A1 JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8260B VOA TCL LIS UNITS : UG/L
SAMPLE ID LAB : METHOD BLANK MATRIX: WATER
1308-35-1

SAMPLE WEIGHT/VOL.(gm/ml): 5.0 DATE COLLECTED: NA
FINAL EXTRACT VOLUME: DATE RECEIVED : NA
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 10/27/98

PARAMETER	RESULTS	Q	QNT. LIMIT
Ethylbenzene	ND		5.0
Styrene	ND		5.0
Total Xylenes	ND		5.0

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

JOB NUMBER : 9802.594

Ecology and Environment, Inc.
SAMPLE TRACKING REPORT

SAMPLE NUMBER	CLIENT SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED
8270C BASE NEUTRAL -W				
17045.03	KS-GW-1	10/13/98	10/20/98	10/27/98
17046.03	KS-GW-2	10/14/98	10/20/98	10/27/98
17047.03	KS-GW-3	10/14/98	10/20/98	10/27/98
17048.03	KS-GW-4	10/14/98	10/20/98	10/27/98
17049.03	KS-GW-5	10/14/98	10/20/98	10/27/98
17051.03	KS-GW-7	10/14/98	10/20/98	10/27/98
17052.03	KS-GW-8	10/14/98	10/20/98	10/27/98
17053.03	KS-GW-1D	10/14/98	10/20/98	10/27/98

TEST CODE :WBNF0A1 JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8270C BASE NEUTRAL UNITS : UG/L
SAMPLE ID LAB : EE-98-17045 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-1

PARAMETER	RESULTS	Q	QNT. LIMIT
bis(2-Chloroethyl)ether	ND		10
1,3-Dichlorobenzene	ND		10
1,4-Dichlorobenzene	ND		10
Benzyl alcohol	ND		10
1,2-Dichlorobenzene	ND		10
2,2'-oxybis(1-Chloropropane)	ND		10
n-Nitroso-di-n-propylamine	ND		10
Hexachloroethane	ND		10
Nitrobenzene	ND		10
Isophorone	ND		10
bis(2-Chloroethoxy)methane	ND		10
1,2,4-Trichlorobenzene	ND		10
Naphthalene	ND		10
4-Chloroaniline	ND		10
Hexachlorobutadiene	ND		10
2-Methylnaphthalene	ND		10
Hexachlorocyclopentadiene	ND		10
2-Chloronaphthalene	ND		10
2-Nitroaniline	ND		50
Dimethylphthalate	ND		10
Acenaphthylene	ND		10
3-Nitroaniline	ND		50
Acenaphthene	ND		10
Dibenzofuran	ND		10
2,4-Dinitrotoluene	ND		10
2,6-Dinitrotoluene	ND		10
Diethylphthalate	ND		10
4-Chlorophenylphenylether	ND		10
Fluorene	ND		10
4-Nitroaniline	ND		50
n-Nitrosodiphenylamine	ND		10
4-Bromophenylphenylether	ND		10

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :WBNF0A1 JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8270C BASE NEUTRAL UNITS : UG/L
SAMPLE ID LAB : EE-98-17045 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-1

PARAMETER	RESULTS	Q	QNT. LIMIT
Hexachlorobenzene	ND		10
Phenanthrene	ND		10
Anthracene	ND		10
Fluoranthene	ND		10
di-n-Butylphthalate	ND		10
Pyrene	ND		10
Butylbenzylphthalate	ND		10
3,3'-Dichlorobenzidine	ND		20
Benzo(a)anthracene	ND		10
bis(2-Ethylhexyl)phthalate	3.2	J	10
Chrysene	ND		10
di-n-Octylphthalate	ND		10
Benzo(b)fluoranthene	ND		10
Benzo(k)fluoranthene	ND		10
Benzo(a)pyrene	ND		10
Indeno(1,2,3-cd)pyrene	ND		10
Dibenzo(a,h)anthracene	ND		10
Benzo(ghi)perylene	ND		10
Phenol	ND		10
2-Chlorophenol	ND		10
2-Nitrophenol	ND		10
2,4-Dimethylphenol	ND		10
2,4-Dichlorophenol	ND		10
4-Chloro-3-methylphenol	ND		10
2,4,6,-Trichlorophenol	ND		10
2,4-Dinitrophenol	ND		50
4-Nitrophenol	ND		50
4,6-Dinitro-2-methylphenol	ND		50
Pentachlorophenol	ND		50
2-Methylphenol	ND		10
4-Methylphenol	ND		10
Benzoic acid	ND		50
2,4,5-Trichlorophenol	ND		50

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :WBNF0A1 JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8270C BASE NEUTRAL UNITS : UG/L
SAMPLE ID LAB : EE-98-17046 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-2

PARAMETER	RESULTS	Q	QNT. LIMIT
bis(2-Chloroethyl)ether	ND		10
1,3-Dichlorobenzene	ND		10
1,4-Dichlorobenzene	ND		10
Benzyl alcohol	ND		10
1,2-Dichlorobenzene	ND		10
2,2'-oxybis(1-Chloropropane)	ND		10
n-Nitroso-di-n-propylamine	ND		10
Hexachloroethane	ND		10
Nitrobenzene	ND		10
Isophorone	ND		10
bis(2-Chloroethoxy)methane	ND		10
1,2,4-Trichlorobenzene	ND		10
Naphthalene	ND		10
4-Chloroaniline	ND		10
Hexachlorobutadiene	ND		10
2-Methylnaphthalene	ND		10
Hexachlorocyclopentadiene	ND		10
2-Chloronaphthalene	ND		10
2-Nitroaniline	ND		52
Dimethylphthalate	ND		10
Acenaphthylene	ND		10
3-Nitroaniline	ND		52
Acenaphthene	ND		10
Dibenzofuran	ND		10
2,4-Dinitrotoluene	ND		10
2,6-Dinitrotoluene	ND		10
Diethylphthalate	ND		10
4-Chlorophenylphenylether	ND		10
Fluorene	ND		10
4-Nitroaniline	ND		52
n-Nitrosodiphenylamine	ND		10
4-Bromophenylphenylether	ND		10

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :WBNF0A1 JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8270C BASE NEUTRAL UNITS : UG/L
SAMPLE ID LAB : EE-98-17046 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-2

PARAMETER	RESULTS	Q	QNT. LIMIT
Hexachlorobenzene	ND		10
Phenanthrene	ND		10
Anthracene	ND		10
Fluoranthene	ND		10
di-n-Butylphthalate	ND		10
Pyrene	ND		10
Butylbenzylphthalate	ND		10
3,3'-Dichlorobenzidine	ND		21
Benzo(a)anthracene	ND		10
bis(2-Ethylhexyl)phthalate	ND		10
Chrysene	ND		10
di-n-Octylphthalate	ND		10
Benzo(b)fluoranthene	ND		10
Benzo(k)fluoranthene	ND		10
Benzo(a)pyrene	ND		10
Indeno(1,2,3-cd)pyrene	ND		10
Dibenzo(a,h)anthracene	ND		10
Benzo(ghi)perylene	ND		10
Phenol	ND		10
2-Chlorophenol	ND		10
2-Nitrophenol	ND		10
2,4-Dimethylphenol	ND		10
2,4-Dichlorophenol	ND		10
4-Chloro-3-methylphenol	ND		10
2,4,6,-Trichlorophenol	ND		10
2,4-Dinitrophenol	ND		52
4-Nitrophenol	ND		52
4,6-Dinitro-2-methylphenol	ND		52
Pentachlorophenol	ND		52
2-Methylphenol	ND		10
4-Methylphenol	ND		10
Benzoic acid	ND		52
2,4,5-Trichlorophenol	ND		52

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TEST CODE :WBNF0A1 JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8270C BASE NEUTRAL UNITS : UG/L
SAMPLE ID LAB : EE-98-17047 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-3

PARAMETER	RESULTS	Q	QNT. LIMIT
bis(2-Chloroethyl)ether	ND		10
1,3-Dichlorobenzene	ND		10
1,4-Dichlorobenzene	ND		10
Benzyl alcohol	ND		10
1,2-Dichlorobenzene	ND		10
2,2'-oxybis(1-Chloropropane)	ND		10
n-Nitroso-di-n-propylamine	ND		10
Hexachloroethane	ND		10
Nitrobenzene	ND		10
Isophorone	ND		10
bis(2-Chloroethoxy)methane	ND		10
1,2,4-Trichlorobenzene	ND		10
Naphthalene	ND		10
4-Chloroaniline	ND		10
Hexachlorobutadiene	ND		10
2-Methylnaphthalene	ND		10
Hexachlorocyclopentadiene	ND		10
2-Chloronaphthalene	ND		10
2-Nitroaniline	ND		51
Dimethylphthalate	ND		10
Acenaphthylene	ND		10
3-Nitroaniline	ND		51
Acenaphthene	ND		10
Dibenzofuran	ND		10
2,4-Dinitrotoluene	ND		10
2,6-Dinitrotoluene	ND		10
Diethylphthalate	ND		10
4-Chlorophenylphenylether	ND		10
Fluorene	ND		10
4-Nitroaniline	ND		51
n-Nitrosodiphenylamine	ND		10
4-Bromophenylphenylether	ND		10

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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TEST CODE :WBNF0A1 JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8270C BASE NEUTRAL UNITS : UG/L
SAMPLE ID LAB : EE-98-17047 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-3

PARAMETER	RESULTS	Q	QNT. LIMIT
Hexachlorobenzene	ND		10
Phenanthrene	ND		10
Anthracene	ND		10
Fluoranthene	ND		10
di-n-Butylphthalate	ND		10
Pyrene	ND		10
Butylbenzylphthalate	ND		10
3,3'-Dichlorobenzidine	ND		20
Benzo(a)anthracene	ND		10
bis(2-Ethylhexyl)phthalate	ND		10
Chrysene	ND		10
di-n-Octylphthalate	ND		10
Benzo(b)fluoranthene	ND		10
Benzo(k)fluoranthene	ND		10
Benzo(a)pyrene	ND		10
Indeno(1,2,3-cd)pyrene	ND		10
Dibenzo(a,h)anthracene	ND		10
Benzo(ghi)perylene	ND		10
Phenol	ND		10
2-Chlorophenol	ND		10
2-Nitrophenol	ND		10
2,4-Dimethylphenol	ND		10
2,4-Dichlorophenol	ND		10
4-Chloro-3-methylphenol	ND		10
2,4,6,-Trichlorophenol	ND		10
2,4-Dinitrophenol	ND		51
4-Nitrophenol	ND		51
4,6-Dinitro-2-methylphenol	ND		51
Pentachlorophenol	ND		51
2-Methylphenol	ND		10
4-Methylphenol	ND		10
Benzoic acid	ND		51
2,4,5-Trichlorophenol	ND		51

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TEST CODE :WBNF0A1

JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8270C BASE NEUTRAL
SAMPLE ID LAB : EE-98-17048
SAMPLE ID CLIENT: KS-GW-4

UNITS : UG/L
MATRIX: WATER

PARAMETER	RESULTS	Q	QNT. LIMIT
bis(2-Chloroethyl)ether	ND		10
1,3-Dichlorobenzene	ND		10
1,4-Dichlorobenzene	ND		10
Benzyl alcohol	ND		10
1,2-Dichlorobenzene	ND		10
2,2'-oxybis(1-Chloropropane)	ND		10
n-Nitroso-di-n-propylamine	ND		10
Hexachloroethane	ND		10
Nitrobenzene	ND		10
Isophorone	ND		10
bis(2-Chloroethoxy)methane	ND		10
1,2,4-Trichlorobenzene	ND		10
Naphthalene	ND		10
4-Chloroaniline	ND		10
Hexachlorobutadiene	ND		10
2-Methylnaphthalene	ND		10
Hexachlorocyclopentadiene	ND		10
2-Chloronaphthalene	ND		10
2-Nitroaniline	ND		50
Dimethylphthalate	ND		10
Acenaphthylene	ND		10
3-Nitroaniline	ND		50
Acenaphthene	ND		10
Dibenzofuran	ND		10
2,4-Dinitrotoluene	ND		10
2,6-Dinitrotoluene	ND		10
Diethylphthalate	ND		10
4-Chlorophenylphenylether	ND		10
Fluorene	ND		10
4-Nitroaniline	ND		50
n-Nitrosodiphenylamine	ND		10
4-Bromophenylphenylether	ND		10

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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TEST CODE :WBNF0A1 JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8270C BASE NEUTRAL UNITS : UG/L
SAMPLE ID LAB : EE-98-17048 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-4

PARAMETER	RESULTS	Q	QNT. LIMIT
Hexachlorobenzene	ND		10
Phenanthrene	ND		10
Anthracene	ND		10
Fluoranthene	ND		10
di-n-Butylphthalate	ND		10
Pyrene	ND		10
Butylbenzylphthalate	ND		10
3,3'-Dichlorobenzidine	ND		20
Benzo(a)anthracene	ND		10
bis(2-Ethylhexyl)phthalate	ND		10
Chrysene	ND		10
di-n-Octylphthalate	ND		10
Benzo(b)fluoranthene	ND		10
Benzo(k)fluoranthene	ND		10
Benzo(a)pyrene	ND		10
Indeno(1,2,3-cd)pyrene	ND		10
Dibenzo(a,h)anthracene	ND		10
Benzo(ghi)perylene	ND		10
Phenol	ND		10
2-Chlorophenol	ND		10
2-Nitrophenol	ND		10
2,4-Dimethylphenol	ND		10
2,4-Dichlorophenol	ND		10
4-Chloro-3-methylphenol	ND		10
2,4,6,-Trichlorophenol	ND		10
2,4-Dinitrophenol	ND		50
4-Nitrophenol	ND		50
4,6-Dinitro-2-methylphenol	ND		50
Pentachlorophenol	ND		50
2-Methylphenol	ND		10
4-Methylphenol	ND		10
Benzoic acid	ND		50
2,4,5-Trichlorophenol	ND		50

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TEST CODE :WBNF0A1

JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8270C BASE NEUTRAL
SAMPLE ID LAB : EE-98-17049
SAMPLE ID CLIENT: KS-GW-5

UNITS : UG/L
MATRIX: WATER

PARAMETER	RESULTS	Q	QNT. LIMIT
bis(2-Chloroethyl)ether	ND		10
1,3-Dichlorobenzene	ND		10
1,4-Dichlorobenzene	ND		10
Benzyl alcohol	ND		10
1,2-Dichlorobenzene	ND		10
2,2'-oxybis(1-Chloropropane)	ND		10
n-Nitroso-di-n-propylamine	ND		10
Hexachloroethane	ND		10
Nitrobenzene	ND		10
Isophorone	ND		10
bis(2-Chloroethoxy)methane	ND		10
1,2,4-Trichlorobenzene	ND		10
Naphthalene	ND		10
4-Chloroaniline	ND		10
Hexachlorobutadiene	ND		10
2-Methylnaphthalene	ND		10
Hexachlorocyclopentadiene	ND		10
2-Chloronaphthalene	ND		10
2-Nitroaniline	ND		50
Dimethylphthalate	ND		10
Acenaphthylene	ND		10
3-Nitroaniline	ND		50
Acenaphthene	ND		10
Dibenzofuran	ND		10
2,4-Dinitrotoluene	ND		10
2,6-Dinitrotoluene	ND		10
Diethylphthalate	ND		10
4-Chlorophenylphenylether	ND		10
Fluorene	ND		10
4-Nitroaniline	ND		50
n-Nitrosodiphenylamine	ND		10
4-Bromophenylphenylether	ND		10

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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TEST CODE :WBNF0A1

JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8270C BASE NEUTRAL
SAMPLE ID LAB : EE-98-17049
SAMPLE ID CLIENT: KS-GW-5

UNITS : UG/L
MATRIX: WATER

PARAMETER	RESULTS	Q	QNT. LIMIT
Hexachlorobenzene	ND		10
Phenanthrene	ND		10
Anthracene	ND		10
Fluoranthene	ND		10
di-n-Butylphthalate	ND		10
Pyrene	ND		10
Butylbenzylphthalate	ND		10
3,3'-Dichlorobenzidine	ND		20
Benzo(a)anthracene	ND		10
bis(2-Ethylhexyl)phthalate	ND		10
Chrysene	ND		10
di-n-Octylphthalate	ND		10
Benzo(b)fluoranthene	ND		10
Benzo(k)fluoranthene	ND		10
Benzo(a)pyrene	ND		10
Indeno(1,2,3-cd)pyrene	ND		10
Dibenzo(a,h)anthracene	ND		10
Benzo(ghi)perylene	ND		10
Phenol	ND		10
2-Chlorophenol	ND		10
2-Nitrophenol	ND		10
2,4-Dimethylphenol	ND		10
2,4-Dichlorophenol	ND		10
4-Chloro-3-methylphenol	ND		10
2,4,6,-Trichlorophenol	ND		10
2,4-Dinitrophenol	ND		50
4-Nitrophenol	ND		50
4,6-Dinitro-2-methylphenol	ND		50
Pentachlorophenol	ND		50
2-Methylphenol	ND		10
4-Methylphenol	ND		10
Benzoic acid	ND		50
2,4,5-Trichlorophenol	ND		50

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TEST CODE :WBNF0A1

JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8270C BASE NEUTRAL
SAMPLE ID LAB : EE-98-17051
SAMPLE ID CLIENT: KS-GW-7

UNITS : UG/L
MATRIX: WATER

PARAMETER	RESULTS	Q	QNT. LIMIT
bis(2-Chloroethyl)ether	ND		10
1,3-Dichlorobenzene	ND		10
1,4-Dichlorobenzene	ND		10
Benzyl alcohol	ND		10
1,2-Dichlorobenzene	ND		10
2,2'-oxybis(1-Chloropropane)	ND		10
n-Nitroso-di-n-propylamine	ND		10
Hexachloroethane	ND		10
Nitrobenzene	ND		10
Isophorone	ND		10
bis(2-Chloroethoxy)methane	ND		10
1,2,4-Trichlorobenzene	ND		10
Naphthalene	ND		10
4-Chloroaniline	ND		10
Hexachlorobutadiene	ND		10
2-Methylnaphthalene	ND		10
Hexachlorocyclopentadiene	ND		10
2-Chloronaphthalene	ND		10
2-Nitroaniline	ND		53
Dimethylphthalate	ND		10
Acenaphthylene	ND		10
3-Nitroaniline	ND		53
Acenaphthene	ND		10
Dibenzofuran	ND		10
2,4-Dinitrotoluene	ND		10
2,6-Dinitrotoluene	ND		10
Diethylphthalate	ND		10
4-Chlorophenylphenylether	ND		10
Fluorene	ND		10
4-Nitroaniline	ND		53
n-Nitrosodiphenylamine	ND		10
4-Bromophenylphenylether	ND		10

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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TEST CODE :WBNF0A1

JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8270C BASE NEUTRAL
SAMPLE ID LAB : EE-98-17051
SAMPLE ID CLIENT: KS-GW-7

UNITS : UG/L
MATRIX: WATER

PARAMETER	RESULTS	Q	QNT. LIMIT
Hexachlorobenzene	ND		10
Phenanthrene	ND		10
Anthracene	ND		10
Fluoranthene	ND		10
di-n-Butylphthalate	ND		10
Pyrene	ND		10
Butylbenzylphthalate	ND		10
3,3'-Dichlorobenzidine	ND		21
Benzo(a)anthracene	ND		10
bis(2-Ethylhexyl)phthalate	ND		10
Chrysene	ND		10
di-n-Octylphthalate	ND		10
Benzo(b)fluoranthene	ND		10
Benzo(k)fluoranthene	ND		10
Benzo(a)pyrene	ND		10
Indeno(1,2,3-cd)pyrene	ND		10
Dibenzo(a,h)anthracene	ND		10
Benzo(ghi)perylene	ND		10
Phenol	ND		10
2-Chlorophenol	ND		10
2-Nitrophenol	ND		10
2,4-Dimethylphenol	ND		10
2,4-Dichlorophenol	ND		10
4-Chloro-3-methylphenol	ND		10
2,4,6,-Trichlorophenol	ND		10
2,4-Dinitrophenol	ND		53
4-Nitrophenol	ND		53
4,6-Dinitro-2-methylphenol	ND		53
Pentachlorophenol	ND		53
2-Methylphenol	ND		10
4-Methylphenol	ND		10
Benzoic acid	ND		53
2,4,5-Trichlorophenol	ND		53

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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TEST CODE :WBNF0A1 JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8270C BASE NEUTRAL UNITS : UG/L
SAMPLE ID LAB : EE-98-17052 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-8

PARAMETER	RESULTS	Q	QNT. LIMIT
bis(2-Chloroethyl)ether	ND		10
1,3-Dichlorobenzene	ND		10
1,4-Dichlorobenzene	ND		10
Benzyl alcohol	ND		10
1,2-Dichlorobenzene	ND		10
2,2'-oxybis(1-Chloropropane)	ND		10
n-Nitroso-di-n-propylamine	ND		10
Hexachloroethane	ND		10
Nitrobenzene	ND		10
Isophorone	ND		10
bis(2-Chloroethoxy)methane	ND		10
1,2,4-Trichlorobenzene	ND		10
Naphthalene	ND		10
4-Chloroaniline	ND		10
Hexachlorobutadiene	ND		10
2-Methylnaphthalene	ND		10
Hexachlorocyclopentadiene	ND		10
2-Chloronaphthalene	ND		10
2-Nitroaniline	ND		53
Dimethylphthalate	ND		10
Acenaphthylene	ND		10
3-Nitroaniline	ND		53
Acenaphthene	ND		10
Dibenzofuran	ND		10
2,4-Dinitrotoluene	ND		10
2,6-Dinitrotoluene	ND		10
Diethylphthalate	ND		10
4-Chlorophenylphenylether	ND		10
Fluorene	ND		10
4-Nitroaniline	ND		53
n-Nitrosodiphenylamine	ND		10
4-Bromophenylphenylether	ND		10

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TEST CODE :WBNF0A1 JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8270C BASE NEUTRAL UNITS : UG/L
SAMPLE ID LAB : EE-98-17052 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-8

PARAMETER	RESULTS	Q	QNT. LIMIT
Hexachlorobenzene	ND		10
Phenanthrene	ND		10
Anthracene	ND		10
Fluoranthene	ND		10
di-n-Butylphthalate	ND		10
Pyrene	ND		10
Butylbenzylphthalate	ND		10
3,3'-Dichlorobenzidine	ND		21
Benzo(a)anthracene	ND		10
bis(2-Ethylhexyl)phthalate	ND		10
Chrysene	ND		10
di-n-Octylphthalate	ND		10
Benzo(b)fluoranthene	ND		10
Benzo(k)fluoranthene	ND		10
Benzo(a)pyrene	ND		10
Indeno(1,2,3-cd)pyrene	ND		10
Dibenzo(a,h)anthracene	ND		10
Benzo(ghi)perylene	ND		10
Phenol	ND		10
2-Chlorophenol	ND		10
2-Nitrophenol	ND		10
2,4-Dimethylphenol	ND		10
2,4-Dichlorophenol	ND		10
4-Chloro-3-methylphenol	ND		10
2,4,6,-Trichlorophenol	ND		10
2,4-Dinitrophenol	ND		53
4-Nitrophenol	ND		53
4,6-Dinitro-2-methylphenol	ND		53
Pentachlorophenol	ND		53
2-Methylphenol	ND		10
4-Methylphenol	ND		10
Benzoic acid	ND		53
2,4,5-Trichlorophenol	ND		53

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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TEST CODE :WBNF0A1 JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8270C BASE NEUTRAL UNITS : UG/L
SAMPLE ID LAB : EE-98-17053 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-1D

PARAMETER	RESULTS	Q	QNT. LIMIT
bis(2-Chloroethyl)ether	ND		10
1,3-Dichlorobenzene	ND		10
1,4-Dichlorobenzene	ND		10
Benzyl alcohol	ND		10
1,2-Dichlorobenzene	ND		10
2,2'-oxybis(1-Chloropropane)	ND		10
n-Nitroso-di-n-propylamine	ND		10
Hexachloroethane	ND		10
Nitrobenzene	ND		10
Isophorone	ND		10
bis(2-Chloroethoxy)methane	ND		10
1,2,4-Trichlorobenzene	ND		10
Naphthalene	ND		10
4-Chloroaniline	ND		10
Hexachlorobutadiene	ND		10
2-Methylnaphthalene	ND		10
Hexachlorocyclopentadiene	ND		10
2-Chloronaphthalene	ND		10
2-Nitroaniline	ND		50
Dimethylphthalate	ND		10
Acenaphthylene	ND		10
3-Nitroaniline	ND		50
Acenaphthene	ND		10
Dibenzofuran	ND		10
2,4-Dinitrotoluene	ND		10
2,6-Dinitrotoluene	ND		10
Diethylphthalate	ND		10
4-Chlorophenylphenylether	ND		10
Fluorene	ND		10
4-Nitroaniline	ND		50
n-Nitrosodiphenylamine	ND		10
4-Bromophenylphenylether	ND		10

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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TEST CODE :WBNF0A1 JOB NUMBER :9802.594
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Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8270C BASE NEUTRAL UNITS : UG/L
SAMPLE ID LAB : EE-98-17053 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-1D

PARAMETER	RESULTS	Q	QNT. LIMIT
Hexachlorobenzene	ND		10
Phenanthrene	ND		10
Anthracene	ND		10
Fluoranthene	ND		10
di-n-Butylphthalate	ND		10
Pyrene	ND		10
Butylbenzylphthalate	ND		10
3,3'-Dichlorobenzidine	ND		20
Benzo(a)anthracene	ND		10
bis(2-Ethylhexyl)phthalate	ND		10
Chrysene	ND		10
di-n-Octylphthalate	ND		10
Benzo(b)fluoranthene	ND		10
Benzo(k)fluoranthene	ND		10
Benzo(a)pyrene	ND		10
Indeno(1,2,3-cd)pyrene	ND		10
Dibenzo(a,h)anthracene	ND		10
Benzo(ghi)perylene	ND		10
Phenol	ND		10
2-Chlorophenol	ND		10
2-Nitrophenol	ND		10
2,4-Dimethylphenol	ND		10
2,4-Dichlorophenol	ND		10
4-Chloro-3-methylphenol	ND		10
2,4,6,-Trichlorophenol	ND		10
2,4-Dinitrophenol	ND		50
4-Nitrophenol	ND		50
4,6-Dinitro-2-methylphenol	ND		50
Pentachlorophenol	ND		50
2-Methylphenol	ND		10
4-Methylphenol	ND		10
Benzoic acid	ND		50
2,4,5-Trichlorophenol	ND		50

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

GC/MS Spike Summary Form

SV Data

Instrument ID : iris.i
Batch : 981028491r
Units: ng

Compound	Detection Limit	Amount Added	Limits	MS LCS 1345-178-2 i4847.d Amt Det	Rec
Phenol	<10.00	120.00	10.0->115.0	94.12	78.4
2-Chlorophenol	<10.00	120.00	10.6->130.8	99.72	83.1
1,4-Dichlorobenzene	<10.00	100.00	22.0->115.0	69.78	69.8
N-Nitroso-di-n-propylamine	<10.00	100.00	28.0->115.0	73.46	73.5
1,2,4-Trichlorobenzene	<10.00	100.00	29.9->115.1	75.94	75.9
4-Chloro-3-methylphenol	<10.00	120.00	44.2->105.5	109.18	91.0
Acenaphthene	<10.00	100.00	50.9->115.1	76.92	76.9
2,4-Dinitrotoluene	<10.00	100.00	43.3->121.5	75.72	75.7
4-Nitrophenol	<50.00	120.00	10.1->119.9	135.04	112.5
Pentachlorophenol	<50.00	120.00	19.2->138.2	112.08	93.4
Pyrene	<10.00	100.00	48.8->120.3	65.60	65.6

GC/MS Surrogate Summary Form

SV Data

Instrument ID : iris.i
Batch : 981026491r
Units: ng

Surrogate:	2-Fluorophenol		Phenol-d5		Nitrobenzene-d5		2-Fluorobipheny		2,4,6-Tribromop		Terphenyl-d14	
Amount Added:	120.0		120.0		100.0		100.0		120.0		100.0	
Limits:	21.0--> 110.0		10.0--> 110.0		35.0--> 114.0		43.0--> 116.0		10.0--> 123.0		33.0--> 141.0	
Job/Sample Number	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec
i4817.d BLK 1345-178-1	101.00	84.4	94.30	78.6	81.20	81.2	87.00	87.0	97.80	81.5	85.20	85.2
i4847.d LCS 1345-178-2	93.30	77.8	89.20	74.3	82.00	82.0	84.00	84.0	100.00	83.6	87.20	87.2
i4834.d 9802.594 17045.03	82.60	68.9	89.30	74.4	75.90	75.9	83.30	83.3	95.50	79.6	43.90	43.9
i4835.d 9802.594 17046.03	113.00	94.4	105.00	87.5	91.50	91.5	91.70	91.7	103.00	85.7	34.60	34.6
i4836.d 9802.594 17047.03	120.00	100.0	111.00	92.6	96.70	96.7	93.10	93.1	108.00	90.1	48.80	48.8
i4829.d 9802.594 17048.03	87.50	72.9	89.70	74.7	77.40	77.4	82.70	82.7	97.10	81.0	73.60	73.6
i4830.d 9802.594 17049.03	85.30	71.1	89.20	74.3	74.90	74.9	81.90	81.9	101.00	84.4	74.40	74.4
i4831.d 9802.594 17051.03	110.00	91.6	106.00	88.4	92.40	92.4	94.50	94.5	106.00	88.7	49.20	49.2
i4832.d 9802.594 17052.03	105.00	87.2	101.00	84.2	87.30	87.3	87.80	87.8	105.00	87.8	37.20	37.2
i4833.d 9802.594 17053.03	63.80	53.2	66.80	55.7	55.60	55.6	60.60	60.6	70.70	58.9	47.70	47.7

TEST CODE :WBNF0A1 JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8270C BASE NEUTRAL UNITS : UG/L
SAMPLE ID LAB : METHOD BLANK MATRIX: WATER

PARAMETER	RESULTS	Q	QNT. LIMIT
bis(2-Chloroethyl)ether	ND		10
1,3-Dichlorobenzene	ND		10
1,4-Dichlorobenzene	ND		10
Benzyl alcohol	ND		10
1,2-Dichlorobenzene	ND		10
2,2'-oxybis(1-Chloropropane)	ND		10
n-Nitroso-di-n-propylamine	ND		10
Hexachloroethane	ND		10
Nitrobenzene	ND		10
Isophorone	ND		10
bis(2-Chloroethoxy)methane	ND		10
1,2,4-Trichlorobenzene	ND		10
Naphthalene	ND		10
4-Chloroaniline	ND		10
Hexachlorobutadiene	ND		10
2-Methylnaphthalene	ND		10
Hexachlorocyclopentadiene	ND		10
2-Chloronaphthalene	ND		10
2-Nitroaniline	ND		50
Dimethylphthalate	ND		10
Acenaphthylene	ND		10
3-Nitroaniline	ND		50
Acenaphthene	ND		10
Dibenzofuran	ND		10
2,4-Dinitrotoluene	ND		10
2,6-Dinitrotoluene	ND		10
Diethylphthalate	ND		10
4-Chlorophenylphenylether	ND		10
Fluorene	ND		10
4-Nitroaniline	ND		50
n-Nitrosodiphenylamine	ND		10
4-Bromophenylphenylether	ND		10

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :WBNF0A1 JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8270C BASE NEUTRAL UNITS : UG/L
SAMPLE ID LAB : METHOD BLANK MATRIX: WATER

PARAMETER	RESULTS	Q	QNT. LIMIT
Hexachlorobenzene	ND		10
Phenanthrene	ND		10
Anthracene	ND		10
Fluoranthene	ND		10
di-n-Butylphthalate	ND		10
Pyrene	ND		10
Butylbenzylphthalate	ND		10
3,3'-Dichlorobenzidine	ND		20
Benzo(a)anthracene	ND		10
bis(2-Ethylhexyl)phthalate	ND		10
Chrysene	ND		10
di-n-Octylphthalate	ND		10
Benzo(b)fluoranthene	ND		10
Benzo(k)fluoranthene	ND		10
Benzo(a)pyrene	ND		10
Indeno(1,2,3-cd)pyrene	ND		10
Dibenzo(a,h)anthracene	ND		10
Benzo(ghi)perylene	ND		10
Phenol	ND		10
2-Chlorophenol	ND		10
2-Nitrophenol	ND		10
2,4-Dimethylphenol	ND		10
2,4-Dichlorophenol	ND		10
4-Chloro-3-methylphenol	ND		10
2,4,6,-Trichlorophenol	ND		10
2,4-Dinitrophenol	ND		50
4-Nitrophenol	ND		50
4,6-Dinitro-2-methylphenol	ND		50
Pentachlorophenol	ND		50
2-Methylphenol	ND		10
4-Methylphenol	ND		10
Benzoic acid	ND		50
2,4,5-Trichlorophenol	ND		50

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

JOB NUMBER : 9802.594

Ecology and Environment, Inc.
SAMPLE TRACKING REPORT

SAMPLE NUMBER	CLIENT SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED
MERCURY	(CVAP)-W			
17045.06	KS-GW-1	10/13/98		10/23/98
17046.06	KS-GW-2	10/14/98		10/23/98
17047.06	KS-GW-3	10/14/98		10/23/98
17048.06	KS-GW-4	10/14/98		10/23/98
17049.06	KS-GW-5	10/14/98		10/23/98
17050.06	KS-GW-6	10/14/98		10/23/98
17051.06	KS-GW-7	10/14/98		10/23/98
17052.06	KS-GW-8	10/14/98		10/23/98
17053.06	KS-GW-1D	10/14/98		10/23/98
RCRA METALS	-W			
17045.06	KS-GW-1	10/13/98	10/23/98	10/27/98
17046.06	KS-GW-2	10/14/98	10/23/98	10/27/98
17047.06	KS-GW-3	10/14/98	10/23/98	10/27/98
17048.06	KS-GW-4	10/14/98	10/23/98	10/27/98
17049.06	KS-GW-5	10/14/98	10/23/98	10/27/98
17050.06	KS-GW-6	10/14/98	10/23/98	10/27/98
17051.06	KS-GW-7	10/14/98	10/23/98	10/27/98
17052.06	KS-GW-8	10/14/98	10/23/98	10/27/98
17053.06	KS-GW-1D	10/14/98	10/23/98	10/27/98

JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
SAMPLE ID LAB :EE-98-17045 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-1

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	34		10	UG/L
Arsenic	42		5.0	UG/L
Barium	2500		20	UG/L
Cadmium	43		5.0	UG/L
Chromium	270		10	UG/L
Lead	4600		5.0	UG/L
Selenium	11		10	UG/L
Mercury	ND		0.20	UG/L

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
SAMPLE ID LAB :EE-98-17046 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-2

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	40		10	UG/L
Arsenic	55		5.0	UG/L
Barium	3200		20	UG/L
Cadmium	100		5.0	UG/L
Chromium	900		10	UG/L
Lead	5100		5.0	UG/L
Selenium	50		10	UG/L
Mercury	2.9		0.20	UG/L

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
SAMPLE ID LAB :EE-98-17047 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-3

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	38		10	UG/L
Arsenic	ND		5.0	UG/L
Barium	5000		20	UG/L
Cadmium	41		5.0	UG/L
Chromium	140		10	UG/L
Lead	2100		5.0	UG/L
Selenium	43		10	UG/L
Mercury	2.1		0.20	UG/L

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
SAMPLE ID LAB :EE-98-17048 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-4

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	77		10	UG/L
Arsenic	46		5.0	UG/L
Barium	3600		20	UG/L
Cadmium	82		5.0	UG/L
Chromium	250		10	UG/L
Lead	5800		5.0	UG/L
Selenium	44		10	UG/L
Mercury	2.1		0.20	UG/L

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
SAMPLE ID LAB :EE-98-17049 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-5

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	ND		10	UG/L
Arsenic	ND		5.0	UG/L
Barium	850		20	UG/L
Cadmium	8.0		5.0	UG/L
Chromium	21		10	UG/L
Lead	500		5.0	UG/L
Selenium	16		10	UG/L
Mercury	ND		0.20	UG/L

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
SAMPLE ID LAB :EE-98-17050 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-6

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	37		10	UG/L
Arsenic	17		5.0	UG/L
Barium	1600		20	UG/L
Cadmium	41		5.0	UG/L
Chromium	160		10	UG/L
Lead	3600		5.0	UG/L
Selenium	26		10	UG/L
Mercury	0.97		0.20	UG/L

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
SAMPLE ID LAB :EE-98-17051 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-7

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	ND		10	UG/L
Arsenic	200		5.0	UG/L
Barium	1100		20	UG/L
Cadmium	94		5.0	UG/L
Chromium	860		10	UG/L
Lead	380		5.0	UG/L
Selenium	58		10	UG/L
Mercury	1.0		0.20	UG/L

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
SAMPLE ID LAB :EE-98-17052 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-8

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	370		10	UG/L
Arsenic	350		5.0	UG/L
Barium	27000		20	UG/L
Cadmium	220		5.0	UG/L
Chromium	1400		10	UG/L
Lead	17000		5.0	UG/L
Selenium	38		10	UG/L
Mercury	2.7		0.20	UG/L

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
SAMPLE ID LAB :EE-98-17053 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-1D

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	ND		10	UG/L
Arsenic	7.3		5.0	UG/L
Barium	930		20	UG/L
Cadmium	6.0		5.0	UG/L
Chromium	39		10	UG/L
Lead	490		5.0	UG/L
Selenium	ND		10	UG/L
Mercury	ND		0.20	UG/L

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

QUALITY CONTROL FOR ACCURACY AND PRECISION:
PERCENT RECOVERY AND RELATIVE PERCENT DIFFERENCE (RPD)
OF WATER MATRIX SPIKE (MS) AND MATRIX SPIKE DUPLICATE (MSD)

(Sample # 17053)

Job 9802.594

(µg/L)

Analyte	Original Result	Amount Added	Amount Determined MS	Amount Determined MSD	Percent Recovery MS	Percent Recovery MSD	RPD
Arsenic	7.26	2000	1880	1820	93.4	90.9	2.7
Barium	934	2000	2620	2580	84.6	82.5	1.6
Cadmium	5.96	50	52.1	50.7	92.4	90.3	2.8
Chromium	39.1	200	219	214	89.9	87.7	2.1
Lead	491	500	925	907	86.7	83.2	1.9
Selenium	ND	2000	1850	1810	92.7	90.5	2.4
Silver	ND	50	50.1	48.6	100	97.1	3.3

THESE RECOVERIES AND RPDS ARE WITHIN E & E, INC. QC TARGETS.

ND = NOT DETECTED

QUALITY CONTROL FOR PRECISION
RESULTS OF ANALYSIS OF DUPLICATE
ANALYSES OF WATER SAMPLES

9802.594

(ug/L)

Parameter	E & E Laboratory No. 98- Batch QC	Sample Result	Duplicate Result	Relative Percent Difference (RPD)
Mercury		ND	ND	NC

ND = NOT DETECTED
NC = NOT CALCULABLE

QUALITY CONTROL FOR ACCURACY: PERCENT RECOVERY
FOR SPIKED WATER SAMPLES

9802.594

(ug/L)

Parameter	E & E Laboratory No. 98- Batch QC	Sample Result	Spiked Sample Result	Spike Amount	Percent Recovery
Mercury		ND	0.946	1.00	94.6

THIS RECOVERY IS WITHIN E & E, INC. QC TARGETS.

ND = NOT DETECTED

LABORATORY CONTROL SAMPLE (832-167-1)

9802.594

(µg/L)

Analyte	Found Value	True Value	Percent Recovery
Silver	48.2	50.0	96.4
Arsenic	1040	1000	104
Barium	1030	1000	103
Cadmium	1030	1000	103
Chromium	1020	1000	102
Lead	1020	1000	102
Selenium	1030	1000	103

THESE RECOVERIES ARE WITHIN E & E, INC. QC TARGETS (80% - 120%).

LABORATORY CONTROL SAMPLE (10/23/98)

9802.594

(µg/L)

Analyte	Found Value	True Value	Percent Recovery
Mercury	5.03	5.00	101

THIS RECOVERY IS WITHIN E & E, INC. QC TARGETS (80% - 120%).

JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
SAMPLE ID LAB : METHOD BLANK (832-167-1) MATRIX: WATER
DATE OF ANALYSIS: 10/27/98
ASSOCIATED SAMPLES: 17045, 17046, 17047, 17048, 17049, 17050, 17051, 17052, 17053, 17053 MS AND 17053 MSD

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Silver	ND		10	UG/L
Arsenic	ND		5.0	UG/L
Barium	ND		20	UG/L
Cadmium	ND		5.0	UG/L
Chromium	ND		10	UG/L
Lead	ND		5.0	UG/L
Selenium	ND		10	UG/L

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

JOB NUMBER :9802.594
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
SAMPLE ID LAB : METHOD BLANK (10/23/98) MATRIX: WATER
DATE OF ANALYSIS: 10/23/98
ASSOCIATED SAMPLES: 17045, 17046, 17047, 17048, 17049, 17050, 17051, 17052 AND 17053

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Mercury	ND		0.20	UG/L

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

ecology and environment, inc.
International Specialists in the Environment

ANALYTICAL SERVICES CENTER
4493 Walden Avenue
Lancaster, New York 14086
Tel. (716) 685-8080, Fax: (716) 685-0852

Memorandum

To: Hussein Aldis - Arlington

From: Tony Bogolin, Project Manager

Date: November 24, 1998

Subject: YM-4000 Kenilworth

RE: 9802.660

CC: Lab File

Attached is the laboratory report of the analysis conducted on two samples received at the Analytical Services Center on October 21, 1998. Analysis was performed according to the procedures set forth in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, Update III, June 1997, USEPA, and "Methods for the Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983.

The chain of custody form provided herein is integral to this report and must be included with the analytical results forms upon transferal to another data user.

All samples on which this report is based will be retained by E & E for a period of 30 days from the date of this report, unless otherwise instructed by the client. If additional storage of samples is requested by the client, a storage fee of $1.00 per sample container per month will be charged for each sample, with such charges accruing until destruction of the samples is authorized by the client.

TB/jk
Enclosure

ecology and environment, inc.

Analytical Services Center
4493 Walden Avenue, Lancaster, New York, 14086, Tel. 716/685-8080, Fax 716/685-0852
International Specialists in the Environment

CHAIN-OF-CUSTODY RECORD

Project No.: YM4010
Project Name: KENILLWORTH PARK
Project Manager: HUSSEIN ALDIS
Samplers: (Signatures) AR, Hussein Aldis
Field Team Leader: H. ALDIS

STATION NUMBER	DATE	TIME	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE TYPE AIR	SAMPLE INFORMATION / EXPECTED COMPOUNDS (Concentration)*	STATION LOCATION	NUMBER OF CONTAINERS	TRPH	BNAS					REMARKS
KS-GW-4	10/19	1017		X		Petroleum hydrocarbons	KS-GW-4	1	X						Amber (1 liter)
KS-GW-4D	"	"		X		"	KS-GW-4D	1	X						Amber (1 liter)
KS-GW-6	10/20	0815		X		BNAs	KS-GW-6	2		X					Amber (1 liter)

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Ship Via:
Ahmad R	10/20/98					~~FEDEX~~ AIRBORNE EXPRESS
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	BL/Airbill Number: 6521355640 ~~9857850~~ AR — Date: 10/20/98
Relinquished By: (Signature)	Date/Time:	Received For Laboratory By: (Signature)	Relinquished By: (Signature) AIRBORNE EX	Date/Time: 10/21/98 9:15	Received For Laboratory By: (Signature) Marie Luna	

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files
*See CONCENTRATION RANGE on back of form.

0571194

B-284

Ecology and Environment, Inc. Analytical Services Center

Cooler Receipt Form

PACKAGE RECEIPT #: 1939 NUMBER OF COOLERS: 1 DATE RECEIVED: 10/21/98

E & E PROJECT #: _____ PROJECT OR SITE NAME: KENILWORTH PARK

A. Preliminary Examination Phase

CIRCLE ONE

1. Did coolers come with airbill or packing slip? _____ YES NO NA

   Enter carrier here and print airbill # below: AIRBORNE EX

2. Did cooler(s) have custody seals? _____ YES NO NA

   If YES, how many and where? 2, FRONT SEAM

3. Were custody seals unbroken and intact on receipt? _____ YES NO* NA

4. Were custody seals dated and signed? _____ YES NO NA

   If YES, enter date: 10/20/98 Name: _____

5. Sign here to acknowledge receipt of cooler (s): Mark E. Lucas

   Date cooler(s) opened: 10/21/98 C-O-C numbers: _____

   Cooler(s) opened by (print): MARK E. LUCAS Signature: Mark E. Lucas

6. Were the C-O-C forms received? _____ YES NO* NA

7. Was the project identifiable from the C-O-C form? _____ YES NO* NA

   If YES, enter the project number and name in the heading above.

Please record Temperature Blank or Cooler Temperature for Each Cooler, Range (2 - 5°C)*

AIRBILL #	TEMP. °C	AIRBILL #	TEMP. °C	AIRBILL #	TEMP. °C
65 2138564U	4.5 °C				

Thermometer # 116 Correction Factor Ø * If No or Temperature Outside of Acceptable Range, a CAF must be filed. CAF # _____

B. Unpacking Phase

8. Was enough packing material used in cooler(s)? _____ YES NO NA

   Type of material: Vermiculite Bubble Wrap Other

9. If required, was enough ice used? _____ YES NO NA

   If YES, type of ice used: Wet Dry Blue Other

10. Was a temperature blank included inside cooler(s)? _____ YES NO NA

    If YES, indicate temperature blank temperature in table above. If NO, indicate cooler temperature in table above.

11. Were all containers sealed in separate plastic bags? _____ YES NO NA

12. Did all containers arrive unbroken and in good condition? _____ YES NO* NA

C. Login Phase

Samples Logged in By (print): Kelly Gordon Signature: _____ Date: 10-21-98

13. Were all container labels complete (e.g. date, time preserv)? _____ YES NO* NA

14. Were all C-O-C forms filled out properly in ink and signed? _____ YES NO* NA

15. Did the C-O-C form agree with containers received? _____ YES NO* NA

16. Were the correct containers used for the tests requested? _____ YES NO* NA

17. Were the correct preservatives listed on the sample labels? _____ YES NO* NA

18. Was a sufficient sample volume sent for the tests requested? _____ YES NO* NA

19. Were all volatile samples received without head space? _____ YES NO* NA

JOB NUMBER : 9802.660

Ecology and Environment, Inc.
SAMPLE TRACKING REPORT

SAMPLE NUMBER	CLIENT SAMPLE ID		DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED
TRPH		-W			
17444.01	KS-GW-4		10/19/98		10/23/98
17445.01	KS-GW-4D		10/19/98		10/23/98

TEST CODE :WPETHY1

JOB NUMBER :9802.660
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : TRPH
PARAMETER : Petroleum Hydrocarbons

UNITS : MG/L

SAMPLE ID	RESULTS	Q	QNT. LIMIT
EE-98-17444 KS-GW-4	ND		1.0
EE-98-17445 KS-GW-4D	6.3		1.0
METHOD BLANK	ND		1.0

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
NA = NOT APPLICABLE

ND = NOT DETECTED

LABORATORY CONTROL SAMPLE (1286-11-1)

9802.660

(mg/L)

ANALYTE	FOUND VALUE	TRUE VALUE	PERCENT RECOVERY
TRPH	15.42	16.72	92

THIS RECOVERY IS WITHIN E & E, INC. QC TARGETS.

JOB NUMBER : 9802.660

Ecology and Environment, Inc.
SAMPLE TRACKING REPORT

SAMPLE NUMBER	CLIENT SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED
8270C BASE NEUTRAL -W				
17446.01	KS-GW-6	10/20/98	10/22/98	10/28/98

TEST CODE :WBNF0A1 JOB NUMBER :9802.660
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8270C BASE NEUTRAL UNITS : UG/L
SAMPLE ID LAB : EE-98-17446 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-6

PARAMETER	RESULTS	Q	QNT. LIMIT
bis(2-Chloroethyl)ether	ND		10
1,3-Dichlorobenzene	ND		10
1,4-Dichlorobenzene	ND		10
Benzyl alcohol	ND		10
1,2-Dichlorobenzene	ND		10
2,2'-oxybis(1-Chloropropane)	ND		10
n-Nitroso-di-n-propylamine	ND		10
Hexachloroethane	ND		10
Nitrobenzene	ND		10
Isophorone	ND		10
bis(2-Chloroethoxy)methane	ND		10
1,2,4-Trichlorobenzene	ND		10
Naphthalene	ND		10
4-Chloroaniline	ND		10
Hexachlorobutadiene	ND		10
2-Methylnaphthalene	ND		10
Hexachlorocyclopentadiene	ND		10
2-Chloronaphthalene	ND		10
2-Nitroaniline	ND		50
Dimethylphthalate	ND		10
Acenaphthylene	ND		10
3-Nitroaniline	ND		50
Acenaphthene	ND		10
Dibenzofuran	ND		10
2,4-Dinitrotoluene	ND		10
2,6-Dinitrotoluene	ND		10
Diethylphthalate	ND		10
4-Chlorophenylphenylether	ND		10
Fluorene	ND		10
4-Nitroaniline	ND		50
n-Nitrosodiphenylamine	ND		10
4-Bromophenylphenylether	ND		10

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :WBNF0A1 JOB NUMBER :9802.660
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8270C BASE NEUTRAL UNITS : UG/L
SAMPLE ID LAB : EE-98-17446 MATRIX: WATER
SAMPLE ID CLIENT: KS-GW-6

PARAMETER	RESULTS	Q	QNT. LIMIT
Hexachlorobenzene	ND		10
Phenanthrene	ND		10
Anthracene	ND		10
Fluoranthene	ND		10
di-n-Butylphthalate	ND		10
Pyrene	ND		10
Butylbenzylphthalate	ND		10
3,3'-Dichlorobenzidine	ND		20
Benzo(a)anthracene	ND		10
bis(2-Ethylhexyl)phthalate	ND		10
Chrysene	ND		10
di-n-Octylphthalate	ND		10
Benzo(b)fluoranthene	ND		10
Benzo(k)fluoranthene	ND		10
Benzo(a)pyrene	ND		10
Indeno(1,2,3-cd)pyrene	ND		10
Dibenzo(a,h)anthracene	ND		10
Benzo(ghi)perylene	ND		10
Phenol	ND		10
2-Chlorophenol	ND		10
2-Nitrophenol	ND		10
2,4-Dimethylphenol	ND		10
2,4-Dichlorophenol	ND		10
4-Chloro-3-methylphenol	ND		10
2,4,6,-Trichlorophenol	ND		10
2,4-Dinitrophenol	ND		50
4-Nitrophenol	ND		50
4,6-Dinitro-2-methylphenol	ND		50
Pentachlorophenol	ND		50
2-Methylphenol	ND		10
4-Methylphenol	ND		10
Benzoic acid	2.0	J	50
2,4,5-Trichlorophenol	ND		50

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

GC/MS Spike Summary Form

SV Data

Instrument ID : iris.i
Batch : 981028491r
Units: ng

Compound	Original 9802.649 17356.04 i4851.d	Amount Added	Limits	MS MS 9802.649 17356.03 i4852.d Amt Det	MS Rec	MSD MSD9802.649 17356.03 i4853.d Amt Det	MSD Rec	%RPD
Phenol	2.47	120.00	12.0->110.0	94.04	76.3	85.82	69.5	9.39
2-Chlorophenol	< 10.00	120.00	27.0->123.0	102.24	85.2	88.22	73.5	14.73
1,4-Dichlorobenzene	< 10.00	100.00	36.0-> 97.0	69.21	69.2	60.92	60.9	12.74
N-Nitroso-di-n-propylamine	< 10.00	100.00	41.0->116.0	63.85	63.9	46.94	46.9	30.54
1,2,4-Trichlorobenzene	< 10.00	100.00	39.0-> 98.0	74.39	74.4	66.19	66.2	11.67
4-Chloro-3-methylphenol	< 10.00	120.00	23.0-> 97.0	109.39	91.2	99.24	82.7	9.74
Acenaphthene	< 10.00	100.00	46.0->118.0	68.86	68.9	61.72	61.7	10.94
2,4-Dinitrotoluene	< 10.00	100.00	24.0-> 96.0	69.23	69.2	70.02	70.0	1.12
4-Nitrophenol	< 50.00	120.00	10.0->115.0	139.97	116.6 H	143.42	119.5 H	2.43
Pentachlorophenol	< 50.00	120.00	10.0->115.0	103.57	86.3	100.41	83.7	3.10
Pyrene	< 10.00	100.00	26.0->127.0	50.90	50.9	51.23	51.2	0.64

GC/MS Spike Summary Form

SV Data

Instrument ID : iris.i
Batch : 981028491r
Units: ng

Compound	Detection Limit	Amount Added	Limits	MS LCS 1345-180-2 i4846.d Amt Det	Rec
Phenol	<10.00	120.00	10.0->115.0	88.33	73.6
2-Chlorophenol	<10.00	120.00	10.6->130.8	95.78	79.8
1,4-Dichlorobenzene	<10.00	100.00	22.0->115.0	73.63	73.6
N-Nitroso-di-n-propylamine	<10.00	100.00	28.0->115.0	68.77	68.8
1,2,4-Trichlorobenzene	<10.00	100.00	29.9->115.1	78.57	78.6
4-Chloro-3-methylphenol	<10.00	120.00	44.2->105.5	93.99	78.3
Acenaphthene	<10.00	100.00	50.9->115.1	73.99	74.0
2,4-Dinitrotoluene	<10.00	100.00	43.3->121.5	79.37	79.4
4-Nitrophenol	<50.00	120.00	10.1->119.9	131.85	109.9
Pentachlorophenol	<50.00	120.00	19.2->138.2	103.59	86.3
Pyrene	<10.00	100.00	48.8->120.3	58.21	58.2

GC/MS Surrogate Summary Form

SV Data

Instrument ID : iris.i
Batch : 981028491r
Units: ng

Surrogate:	2-Fluorophenol		Phenol-d5		Nitrobenzene-d5		2-Fluorobipheny		2,4,6-Tribromop		Terphenyl-d14	
Amount Added:	120.0		120.0		100.0		100.0		120.0		100.0	
Limits:	21.0--> 110.0		10.0--> 110.0		35.0--> 114.0		43.0--> 116.0		10.0--> 123.0		33.0--> 141.0	
Job/Sample Number	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec
i4845.d BLK 1345-180-1	78.50	65.4	78.40	65.3	70.00	70.0	70.40	70.4	88.10	73.4	84.20	84.2
i4846.d LCS 1345-180-2	89.40	74.5	87.30	72.7	82.80	82.8	82.30	82.3	81.00	67.5	86.90	86.9
i4849.d 9802.660 17446.01	80.60	67.1	80.50	67.1	66.00	66.0	68.60	68.6	82.10	68.4	58.30	58.3

TEST CODE :WBNF0A1

JOB NUMBER :9802.660
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM-4000 KENILWORTH
TEST NAME : 8270C BASE NEUTRAL
SAMPLE ID LAB : METHOD BLANK

UNITS : UG/L
MATRIX: WATER

PARAMETER	RESULTS	Q	QNT. LIMIT
bis(2-Chloroethyl)ether	ND		10
1,3-Dichlorobenzene	ND		10
1,4-Dichlorobenzene	ND		10
Benzyl alcohol	ND		10
1,2-Dichlorobenzene	ND		10
2,2'-oxybis(1-Chloropropane)	ND		10
n-Nitroso-di-n-propylamine	ND		10
Hexachloroethane	ND		10
Nitrobenzene	ND		10
Isophorone	ND		10
bis(2-Chloroethoxy)methane	ND		10
1,2,4-Trichlorobenzene	ND		10
Naphthalene	ND		10
4-Chloroaniline	ND		10
Hexachlorobutadiene	ND		10
2-Methylnaphthalene	ND		10
Hexachlorocyclopentadiene	ND		10
2-Chloronaphthalene	ND		10
2-Nitroaniline	ND		50
Dimethylphthalate	ND		10
Acenaphthylene	ND		10
3-Nitroaniline	ND		50
Acenaphthene	ND		10
Dibenzofuran	ND		10
2,4-Dinitrotoluene	ND		10
2,6-Dinitrotoluene	ND		10
Diethylphthalate	ND		10
4-Chlorophenylphenylether	ND		10
Fluorene	ND		10
4-Nitroaniline	ND		50
n-Nitrosodiphenylamine	ND		10
4-Bromophenylphenylether	ND		10

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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TEST NAME : 8270C BASE NEUTRAL
SAMPLE ID LAB : METHOD BLANK

UNITS : UG/L
MATRIX: WATER

PARAMETER	RESULTS	Q	QNT. LIMIT
Hexachlorobenzene	ND		10
Phenanthrene	ND		10
Anthracene	ND		10
Fluoranthene	ND		10
di-n-Butylphthalate	ND		10
Pyrene	ND		10
Butylbenzylphthalate	ND		10
3,3'-Dichlorobenzidine	ND		20
Benzo(a)anthracene	ND		10
bis(2-Ethylhexyl)phthalate	46		10
Chrysene	ND		10
di-n-Octylphthalate	ND		10
Benzo(b)fluoranthene	ND		10
Benzo(k)fluoranthene	ND		10
Benzo(a)pyrene	ND		10
Indeno(1,2,3-cd)pyrene	ND		10
Dibenzo(a,h)anthracene	ND		10
Benzo(ghi)perylene	ND		10
Phenol	ND		10
2-Chlorophenol	ND		10
2-Nitrophenol	ND		10
2,4-Dimethylphenol	ND		10
2,4-Dichlorophenol	ND		10
4-Chloro-3-methylphenol	ND		10
2,4,6,-Trichlorophenol	ND		10
2,4-Dinitrophenol	ND		50
4-Nitrophenol	ND		50
4,6-Dinitro-2-methylphenol	ND		50
Pentachlorophenol	ND		50
2-Methylphenol	ND		10
4-Methylphenol	ND		10
Benzoic acid	ND		50
2,4,5-Trichlorophenol	ND		50

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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Preliminary Assessment/ Site Investigation of Kenilworth Park Landfill N.E. Washington, D.C. Volume I of III

Contract No.: 1443CX0001-95-003
Task Order No.: 1443PX300099536

June 2000

Prepared for:

NATIONAL PARK SERVICE
National Capital Region
1100 Ohio Drive S.W.
Washington, D.C. 20242

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List of Acronyms

AMSL	above mean sea level
bgs	below ground surface
BNA	base/neutral acid extractable organic
BTAG	Biological Technical Assistance Group
btoc	below top of casing
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cfs	cubic feet per second
cm /sec	centimeters per second
CSO	combined sewer overflow
DCRA	District's Department of Consumer Regulatory Affairs
EPA	United States Environmental Protection Agency
HRS	Hazardous Ranking System
LEL	Lower Explosive Limit
MCL	maximum contaminant level
µg/kg	micrograms per kilogram
mg/kg	milligrams per kilogram
µg/L	micrograms pre liter
mg/L	milligrams per liter
mph	miles per hour
MSA	Mine Safety Appliances
m/yr	meters per year
MWCOG	Metropolitan Washington Council of Government
NOV	Notices of Violation

List of Acronyms (Cont.)

NTUs	Nephelometric Turbidity Units
OVA	Organic Vapor Analyzer
PAH	polynuclear aromatic hydrocarbons
PA/SI	Preliminary Assessment/Site Investigation
PCBs	polychlorinated biphenyls
PEPCO	Potomac Electric Power Company
ppm	parts per million
pvc	polyvinyl chloride
QA/QC	quality assurance/quality control
RBCs	Risk-Based Concentrations
RCRA	Resource Conservation and Recovery Act
SARA	Superfund Amendments and Reauthorization Act
TAL	Target Analyte List
TCE	trichloroethene
TPHC	Total Petroleum Hydrocarbons
TSS	total suspended solids
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UST	Underground Storage Tank
VSU	Virginia State University

Executive Summary

NPS
National Park Service, National Capital Parks Region

E & E
Ecology and Environment, Inc.

PA/SI
Preliminary Assessment/Site Investigation

District
District of Columbia

USEPA
United States Environmental Protection Agency

NOV
Notice of Violation

Under Contract No. 1443CX0001-95-003, the National Park Service, National Capital Parks Region (NPS) directed Ecology and Environment, Inc., (E & E) to perform a Preliminary Assessment/Site Investigation (PA/SI) of a portion of Kenilworth Park in N.E. Washington, District of Columbia (the District). Additional work was performed under a modification of the same Task Order in March 2000 to address United States Environmental Protection Agency (USEPA, Region III) concerns. The Wasteland Identification number of the site is DCSFN0305462.

The site is a former District landfill with an area of approximately 50 acres. Landfill operations were discontinued in the early 1970s. The landfill was then capped and converted for use as a park. However, between 1997-1998, additional fill, in the form of construction debris/excavation material, was deposited on the site, which was not permitted for the disposal of such material. On October 30, 1998, a Notice of Violation (NOV) was issued to the NPS by the District's Environmental Health Division.

The PA included a review of National Capital Parks East and District records, historic maps, aerial photographs, and a previous E & E site assessment and sampling report. Wetlands and similar critical habitats were cataloged and a records search was completed to identify other potential hazardous waste sites within 1 mile of the Kenilworth Park Landfill. The SI included the collection and analysis of: four surface water, 26 sediment, 12 groundwater, 18 borehole soil/subsurface fill and 33 surface soil samples taken from various locations. The surface soil samples included 28 onsite locations, 3 locations at the nearby Thomas School, and 2 at the Kenilworth Aquatic Gardens. Hydraulic conductivity testing (slug tests) of installed well points/monitoring wells was conducted. The purpose of the SI was to determine the presence or absence of contaminants in site soils, sediments, surface water, and groundwater and, if present, whether pathways exist by which the contaminants could pose a risk to human health or the environment.

Findings

Based on an analysis of all available SI data, the following summarizes site conditions:

Site Groundwater

During a first round of sampling conducted in May 1999, groundwater contaminants exceeded established drinking water standards for metals within the site fill material. The turbidity of the samples and analysis of the landfill waste indicates that the metals levels are the result of suspended solids. Groundwater from the landfill discharges into the immediately adjoining surface water and does not impact any aquifer. During the second round of sampling conducted in March 2000 none of the wells when redeveloped showed significant levels of Resource Conservation and Recovery Act (RCRA) metals, indicating that the impact of groundwater from under the landfill on the adjoining surface water is negligibly low.

RCRA
Resource Conservation and Recovery Act

Site Surface Water

Although analysis of one surface water sample showed slightly elevated lead levels, when compared to the background samples, overall analytical results did not indicate any significant impact on surface water quality from the site. Discharge from site groundwater is not expected to significantly impact surface water quality due to low flow rates.

Site Soils

Analysis of original landfill surface and subsurface soil/fill indicates that the waste exceeds both residential and industrial site risk-based criteria (RBC) for PAHs in soils. While subsurface samples exceeded RBCs for lead, these soils are not readily accessible since they lie beneath the landfill cap and are further covered by the recently applied demolition debris/excavation material, which when sampled as surface soil did not exceed the RBC for lead. No contaminant concentrations in surface soils were above residential RBCs except for PAHs and arsenic the latter of which was below the range of background levels in offsite soils.

RBC
risk-based concentration

PAHs
Polynuclear aromatic hydrocarbons

DDT
dichlorodiphenyltrichloroethane

PCBs
polychlorinated biphenyls

Site Sediments

Contaminants, consisting of phthalates, polynuclear aromatic hydrocarbons (PAHs), dichlorodiphenyltrichloroethane (DDT) and its breakdown products, and polychlorinated biphenyls (PCBs) exceed screening levels that are established to protect the most sensitive aquatic organisms. Analytical results of sediment samples taken upstream were not significantly different from those adjacent to the landfill except in the case of PCB's.

Recently Applied Construction Debris/Excavation Material Fill

Lack of both adequate grading and vegetative cover has resulted in significant erosion problems for the recent fill at the site. Uncovered, protruding construction debris poses a continuing physical hazard to trespassers and the general public, due to uncontrolled pedestrian access to the site.

The mass of PAHs in surface and near-surface soils is estimated at 1200 kilograms in 110,000 tons of soil within one foot of the surface.

Conclusions

Based on an evaluation of analytical results and other pertinent information on site conditions, and the overall site setting the following conclusions can be drawn.

Site Groundwater

No aquifer is impacted by site groundwater contaminants, nor do contaminants pose a threat to human health or the environment.

Site Surface Water

Analytical results do not indicate any significant impact of the site on surface water quality due to direct site groundwater discharge. Indirect impacts on surface water quality could be caused by erosion of the new fill material if runoff from storm events is not prevented from discharging to Watts Branch and the Anacostia River. The primary concern is sedimentation, although the soils also contain low levels of PAHs, PCBs, and pesticides.

Site Soils

Although site subsurface soil/fill exceeds certain risk-based criteria for both residential and industrial sites, the contaminants in the

former District fill do not pose a threat, either now or in the foreseeable future, to human health or the environment, because they are not readily accessible as long as the landfill cap is undisturbed. Primarily as a consequence of a few instances of elevated PAH levels, some parts of the surface material may pose a slight threat to the public if left uncovered.

Site Sediments

PEPCO
Potomac Electric Power Company

Although sediments adjacent to the landfill contain levels of contaminants potentially injurious to the most sensitive aquatic organisms, the chemicals cannot definitely be attributed to the landfill site. They may, in whole or in part, be the result of unrelated sources that may include the nearby Potomac Electric Power Company (PEPCO) power station, Hickey Run, or Watts Branch, or they may have come from upstream sources. Insufficient data exist to conclude that the contaminants are directly related to the landfill site.

Recently Applied Construction Debris/Excavation Material Fill

If allowed to continue unchecked, the erosion currently occurring will increase in severity and have an adverse impact on the surface water in the immediate site vicinity. Physical injury to the general public is a clear possibility as long as pedestrian access to the site remains uncontrolled. This is due to the presence of uncovered demolition debris in proximity to adjacent residential neighborhoods. Blowing dust from the uncovered site may become a nuisance and possibly a health hazard under dry conditions.

Recommendations

Good engineering practice indicates that every effort should be made to establish and institute an effective erosion-control plan/program to correct the problems caused by the recent application of demolition debris/excavation material fill to the former landfill site. This would necessarily involve, but not be limited to, such actions as regrading of the site, storm water control, application of a final top cover, revegetation, and habitat and recreational area rehabilitation and restoration. Immediate actions should also be taken to eliminate uncontrolled pedestrian access to the site until site conditions are improved.

1 Introduction

USEPA
United States Environmental Protection Agency Region 3

CERCLA
Comprehensive Environmental Response, Compensation, and Liability Act of 1980

SARA
Superfund Amendments and Reauthorization Act of 1986

The National Park Service, National Capital Parks Region (NPS), directed Ecology and Environment, Inc., (E & E) under contract No. 1443CX0001-95-003, Task Order No. 1443PX300099536 (dated March 1, 1999), to undertake a Preliminary Assessment/Site Investigation (PA/SI), at Kenilworth Park, in N.E. Washington, D.C. Additional work was performed under a modification of the same Task Order in March 2000 to address United States Environmental Protection Agency (USEPA, Region 3) concerns.

The site was known to have been the location of landfilling by the District of Columbia (the District) on NPS land. The USEPA Wasteland Identification number of the site is DCSFN0305462. The landfill had been capped and used as park land, but in 1997-1998 additional fill had been added which greatly raised the surface elevation. This activity was the subject of a Notice of Violation from the District. The NPS directed that the environmental impact of the historic landfill and the recent additional fill should be determined to support land management decisions for the site.

The investigation was carried out in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), the Superfund Amendments and Reauthorization Act of 1986 (SARA), the National Contingency Plan of 1990, and EPA/540/6-91/013, Guidance for Performing Preliminary Assessments under CERCLA.

The PA included a review of National Capital Parks East and District files, historic maps, and aerial photographs. A previous site investigation and sampling by E & E was the basis for the design of the SI. Populations and environmental areas potentially impacted by site activities were researched and recorded, including a wetland inventory for 15 miles downstream and 1 mile upstream of the site, which is located next to the tidally influenced Anacostia River.

For ease of reference in this report, all tables and figures are grouped at the end of the section in which they are referenced. The report consists of three volumes. Volume I includes the PA/SI and appendic-

es containing supporting material. Volume II and III contain the analytical results from the first and second rounds of sampling respectively.

2

Site Location, Description, and History

2.1 Site Location and Layout

The site forms part of the Anacostia Park system, Section G (NPS 1995). Section G includes three main components, Kenilworth Aquatic Gardens and Kenilworth Park on the east bank of the Anacostia River, and Langston Golf Course both on the west bank and on the island between Kingman Lake and the river (Figure 2-1).

AMSL
above mean sea level

The Kenilworth Park Landfill site lies in Kenilworth Park south of Watts Branch, east of the Anacostia River, and north of the District's Solid Waste Reduction Center and the PEPCO electricity generating plant. Southeast of the site is the Thomas Elementary School (Thomas School), and to the east is a residential area.

The latitude and longitude of the approximate center of the new fill area are latitude 38^0 54' 12"N and longitude 76^0 57' 20" W. Entrance to the site can be made from Deane Avenue off Boroughs Road or from Foote Street off Kenilworth Avenue. The Deane Avenue entrance is open to the public during park operating hours but the road is currently blocked off at Watts Branch bridge. Access to the site is uncontrolled from the river as is pedestrian access from the roads.

2.2 Site Description

Before 1997 the site was a grassy area served by a road, with public toilets, a parking lot, and a set of exercise stations around the periphery; a fringe of trees and shrubs stood between the site and both the river and Watts Branch. The center of the site had a maximum elevation of approximately 28 feet above mean sea level (AMSL). A berm planted with trees created to screen the waste reduction center to the south end rose to 36 feet AMSL. Part of the site along the east side was a grassy, wooded wetland within the 100-year floodplain as shown on the site plan (Woodburn 1996), Figure 2-2. The volume of

After the recent (1997-1998) filling operation, the west side of Deane Avenue is covered by a thick wedge of mostly unvegetated demolition/excavation material that slopes up from Deane Avenue to the west to a height of more than 40 feet above the river. The fill slopes steeply down at up to 33 feet per 100 feet along the south, west, and north to ditches that carry runoff to silt ponds south and north of the fill, adjacent to the Anacostia River and Watts Branch, respectively.

A swath of trees and shrubs was retained along the banks of Watts Branch and the river and varies from 40 to 140 feet wide. On the east side of Deane Avenue, recent fill is confined to the south half of the site although a silt fence was placed around the entire area of proposed new fill. To the north of the new fill is an overgrown grassy area. The fill is much thinner than that west of Deane Avenue and slopes down to the east, ending at a low, 2- to 5-foot drop-off. Some mounds of fill at the south end have not been spread out, and the fill has no vegetative cover. A drainage ditch along the southeast side of the fill leads to a recently constructed silt pond just 120 feet north of the Thomas Elementary School fenceline. The pond is designed to overflow to the unnamed stream that runs between Hayes Street and the landfill. A hedgerow screens the school from the landfill, and a wooded wetland along the stream screens the Hayes Street neighborhood, known as Mayfair Terrace, from the landfill.

The maximum dimensions of the fill are approximately 1,500 feet north to south and 1,800 feet east to west. The volume of new fill is estimated as approximately 300,000 cubic yards west of Deane Avenue and less than 50,000 cubic yards east of Deane Avenue, based on contours prior too and after the recent fill was added.

2.3 Site History

USGS
United States Geological Survey

The area of Kenilworth Park, Langston Golf Course, and Kenilworth Aquatic Gardens within Section G of Anacostia Park has undergone drastic changes over the last 150 years. The most recent changes, from 1951 to 1979, can be seen in the set of five recent United States Geological Survey (USGS) topographic quadrangles in Appendix A; the profound changes that occurred between the late nineteenth century and the present are shown in Figures 2-3 and 2-4.

Figure 2-3 is a portion of a detailed map of Washington found in the National Archives (Record Group No. 77), which is on a scale of approximately 4 inches to 1 mile (1:15,840) (National Archives 1876). The major fixed features that still are present today are Benning Road and Benning Bridge. Figure 2-4 covers the same area

on the same scale as taken from the most recent USGS map (USGS 1965, photorevised 1979). The river has been dredged to make it both wider and deeper, and nearly all the wetlands adjoining the river have been filled, except where they were dredged to create ornamental lakes, such as Kingman Lake and Kenilworth Aquatic Gardens. The major dredging alongside Kenilworth Park and in what is now the Langston Golf Course on the opposite side of the river was first performed by the United States Army Corps of Engineers in 1937 (Collier, 1999). The land created has been owned and administered by the NPS. Continued dredging has occurred to maintain the channel at various times since then.

The NPS permitted the District to use parts of Section G of Anacostia Park for disposal of municipal waste. These open burning dumps initially covered what is now the west side of Langston Golf Course (Brock, 1999), west of Kingman Lake. This area was filled prior to 1937 in the area now occupied by the first nine holes of the golf course and the remainder was filled from 1945 to the early 1950s (Ibid.). Construction fill also was used to modify the island between Kingman Lake and the dredged channel of the Anacostia River to create additional golf course acreage and a driving range. Modifications of the golf course are continuing during the present year.

Kenilworth Park became the next District waste dump, and this area was filled and modified from the 1950s up until the early 1970s. The changes can be seen both from the topographic maps in Appendix A and from the aerial photographs in Appendix B. Initial patches of fill appear in 1957, while at the same time a major power transmission line (69 kilovolts) was laid across the Anacostia River and the golf course to the PEPCO plant just south of the park (PEPCO drawing TL300). By October 15, 1963, the fill area extended nearly 700 feet north-to-south from the inlet of Kenilworth Aquatic Gardens to the inlet south of the park receiving the discharge of Piney Run just north of the PEPCO plant. Watts Branch bisects the fill area. By September 1, 1970, filling is almost complete, the landfill is closed and largely capped, and the land is being converted for use as a park and ball fields. A waste transfer station is being constructed across most of the inlet south of the park. Part of Kingman Lake is being filled to extend the golf course. By May 16, 1980 the park is complete, but during 1977 and 1978 a major trunk sewer 108 inches in diameter was laid through the southern edge of the park (D.C. Utility Map LM-5-6-NE Sewer 2-7-98). The invert elevation of this

sewer is below sea level (Figure 2-2). In the April 5, 1988 aerial photograph, no further significant changes are noted (Appendix B).

Although not visible on the aerial photographs, a methane collection system was installed within the fill, and the methane was piped to Kenilworth Aquatic Gardens to heat greenhouses there. The NPS dismantled the collection system prior to the next phase of filling. Beginning in early 1997 the Kenilworth Park superintendent contracted with the Barrett Tucker Corporation and the Driggs Corporation to cover that part of the old landfill south of Watts Branch with construction/excavation fill, a practice that continued through much of 1998, raising the park surface in places by as much as 27 feet. No records are available in the NPS files of the amount of fill, or of its source or quality. The volume of fill is estimated at 400,000 cubic yards based on the survey of borehole elevations in Appendix C (Smith 1999). The recent fill is in two sections, east and west of Deane Avenue. The eastern part is lower than or equal in elevation to Deane Avenue and covers approximately 28 acres. It contains a much lesser volume of recent fill than the area to the west (less than 50,000 cubic yards). The estimated thickness of recent fill is less than 10 feet, and as little as 2 to 3 feet in places. Slopes are low except for a small but steep drop-off at the east edge of the recent fill, part of which extends into the 100-year floodplain. East of this fill is a wetland along a small, unnamed stream starting from the northwestern corner of the grounds of Thomas Elementary School. The utility map indicates that the stream is at an elevation of approximately 2 feet above sea level, so it may be running across filled land and is well below the 100-year floodplain (14.7 feet above District of Columbia Datum). The stream originates in storm drains in the vicinity of Grant Street and flows north to Watts Branch. A drainage ditch runs around the southeastern side of the landfill and discharges to a silt pond designed to overflow to this unnamed stream.

West of Deane Avenue the older District fill extends to the river, and covers an area of approximately 38 acres. The recent fill does not extend completely to the river or to Watts Branch and there is a wooded berm between this fill and the transfer station to the south. The recent fill comprises approximately 23 acres in extent and reaches a thickness of over 27 feet in places. The fill slopes up to the west from Deane Avenue and drops off sharply along the river. There is a drainage ditch along the toe of the recent fill, behind a low berm. The ditch drains south and north around the toe of the slope to silt ponds north and south of the fill. The slope is eroding, and the ditch

is becoming silted up. Heavy rainfall in 1998 breached the berm and discharged directly to the river, but the berm was repaired. The silt ponds are constructed to overflow to the Anacostia River at the south end, and to Watts Branch at the north end of the fill.

NOV
Notice of Violation

PAH
Polynuclear aromatic hydrocarbon

RBCs
Risk-Based Concentrations

BNA
base/neutral acid extractable organic

TPHC
Total Petroleum Hydrocarbons

RCRA
Resource Conservation and Recovery Act

All but a small portion of the site on the east side was already above the 100-year floodplain elevation determined by the Federal Emergency Management Agency, which is at 14.7 feet above the District of Columbia Datum at this location. Design thicknesses of fill range up to 14 feet on the east side of Deane Avenue and up to 25 feet on the west side of Deane Avenue near the river (Woodburn, 1996). After both sides of the fill had been in operation for over a year the NPS directed the Driggs Corporation to suspend operation on August 20, 1998, and gave a similar directive to the Barrett Tucker Corporation not long afterwards (Wilderman,1999). On October 30, 1998 the Environmental Health Division of the District of Columbia issued a Notice of Violation (NOV) to NPS (Ibid.).

2.4 Previous Investigation

In 1998 E & E was directed, under Contract No. 1443CX0001-95-003, to sample the newly placed fill east of Deane Avenue, the historic fill from the former District landfill, and the sediments around the former landfill, and to collect Geoprobe® samples of groundwater from boreholes around the landfill. The results of this sampling are reported in Appendix D and discussed below. Analysis of the former District landfill materials revealed elevated levels of heavy metals, especially lead and cadmium. Sediments around the site had elevated polynuclear aromatic hydrocarbons (PAHs) and lead levels. Groundwater had high levels of heavy metals, especially lead, but the very turbid nature of the samples implied that the levels of metals were more the result of suspended solids than of dissolved metal ions.

The newly placed fill exceeded Risk-Based Concentrations (RBCs) for PAHs for both industrial and residential soils in a few places (EPA 1998). Volatile organics, base/neutral acid extractable organics (BNA) other than PAHs, and Total Petroleum Hydrocarbons (TPHCs) were found at low or nondetect levels in ground-water.

2.5 Permit and Regulatory History

The District landfill was closed by the time the Resource Conservation and Recovery Act (RCRA) became law, so the landfill neither had, nor was it required to have, a permit. The recent demolition

debris and excavation material fill was not permitted and has been declared to be in violation of regulations (October 30, 1998) by the Environmental Health Division of the District's Department of Health, (Ibid.).

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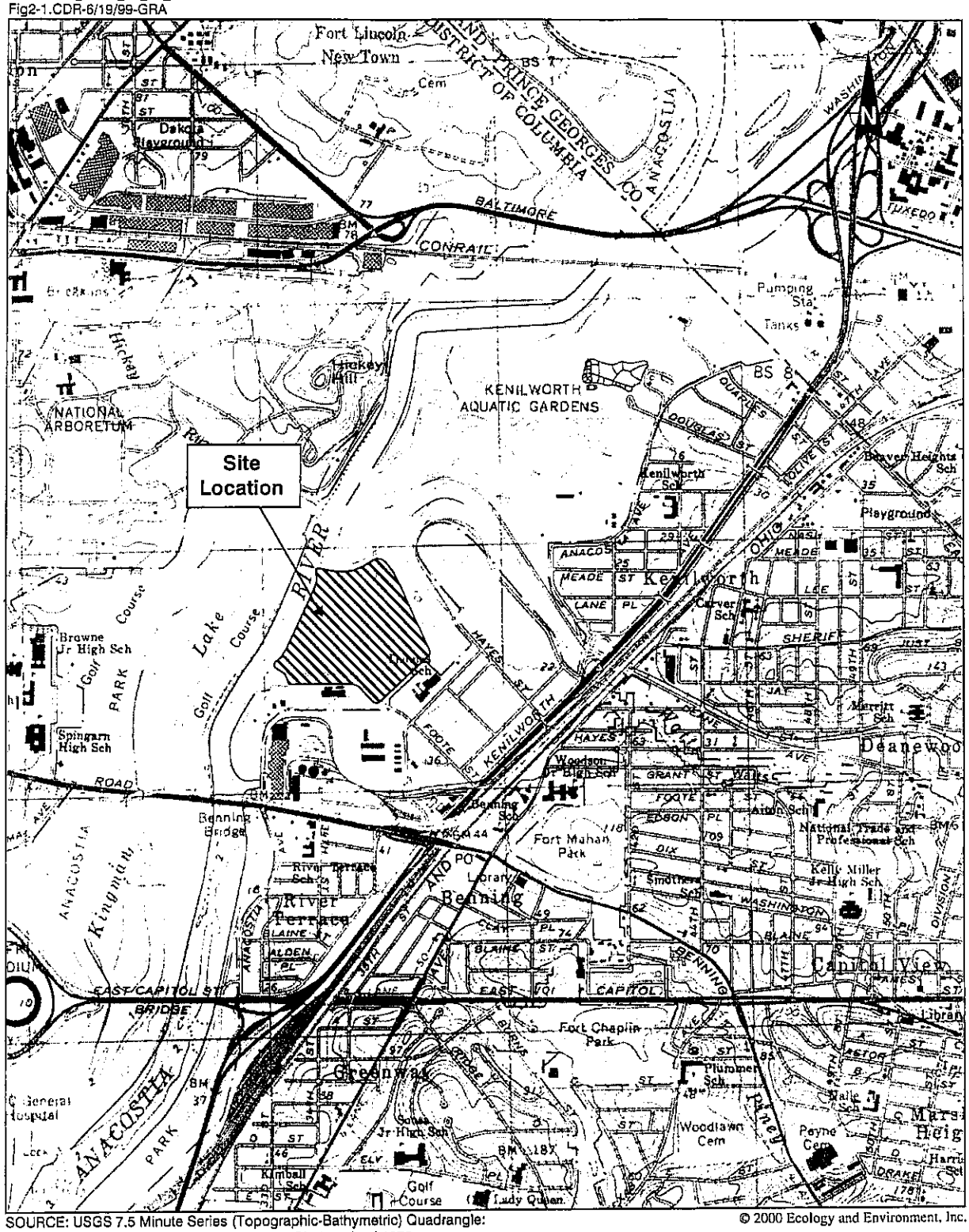

SOURCE: USGS 7.5 Minute Series (Topographic-Bathymetric) Quadrangle: Washington East, D.C., MD, 1965; Photorevised 1979.

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SCALE 1:24,000

0 ½ 1 Mile

0 .5 1 Kilometer

Figure 2-1 KENILWORTH PARK LANDFILL, SITE LOCATION MAP

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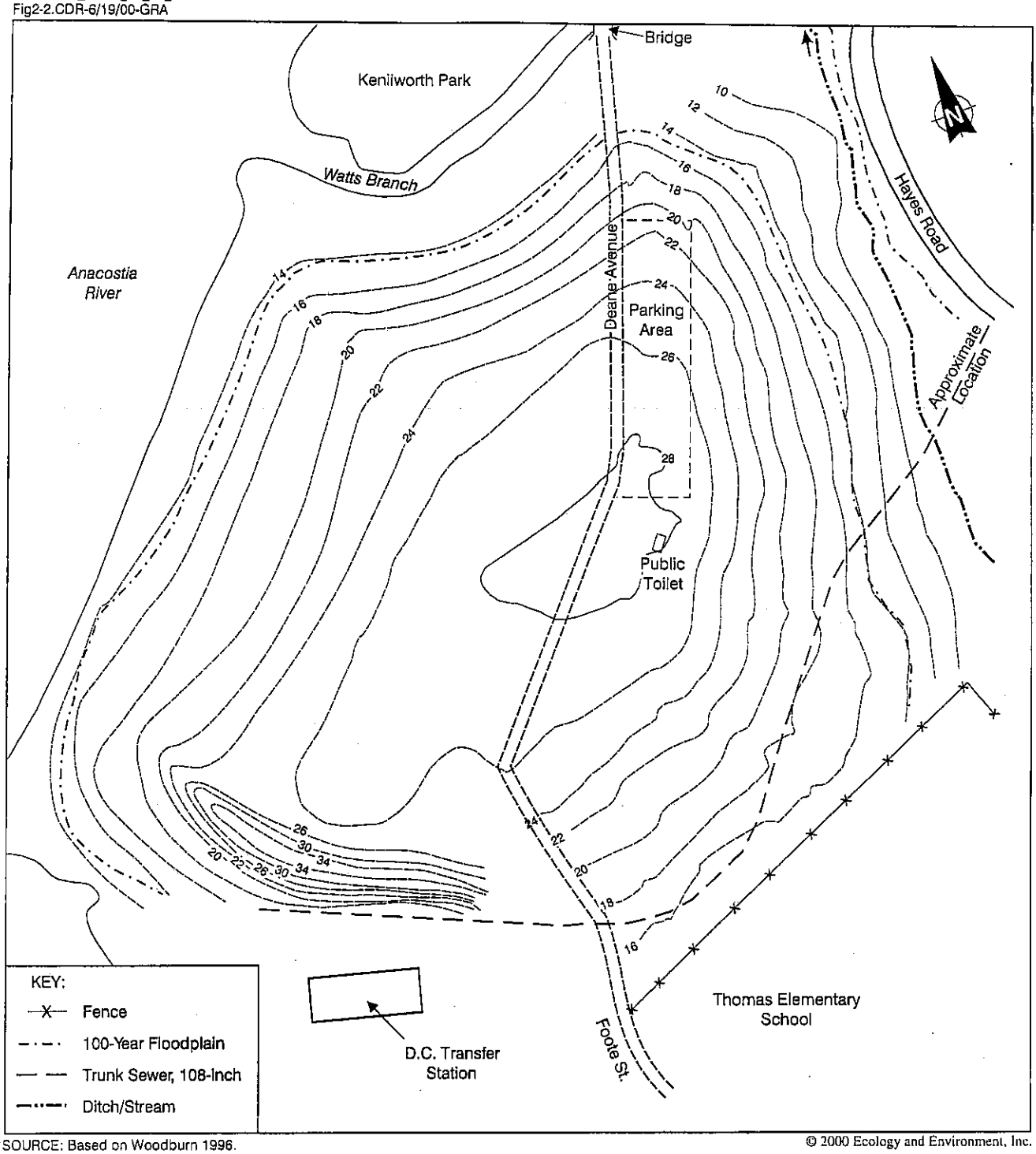
Fig2-2.CDR-6/19/00-GRA



SOURCE: Based on Woodburn 1996.

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SCALE IN FEET
0 250 500 Feet

Figure 2-2 KENILWORTH PARK LANDFILL SKETCH MAP OF SITE WITH CONTOURS PRIOR TO 1997-1998 FILL

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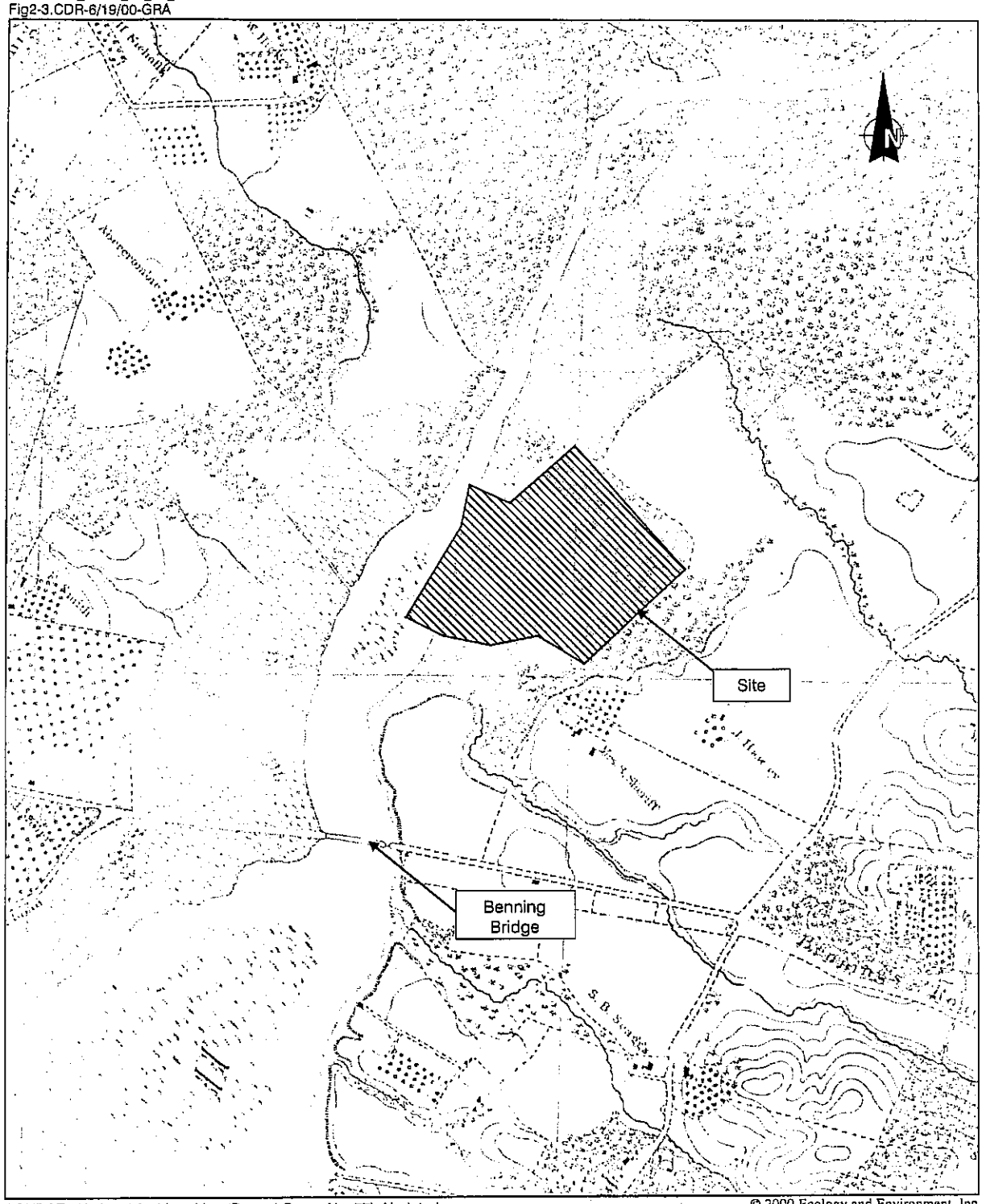
Fig2-3.CDR-6/19/00-GRA



SOURCE: National Archives Map (Record Group No. 77), Undated.

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SCALE : 1:15,840

0 ¼ ½ Miles

Figure 2-3 **KENILWORTH PARK LANDFILL MAP OF SITE AREA PRIOR TO DEVELOPMENT (CIRCA 1876)**

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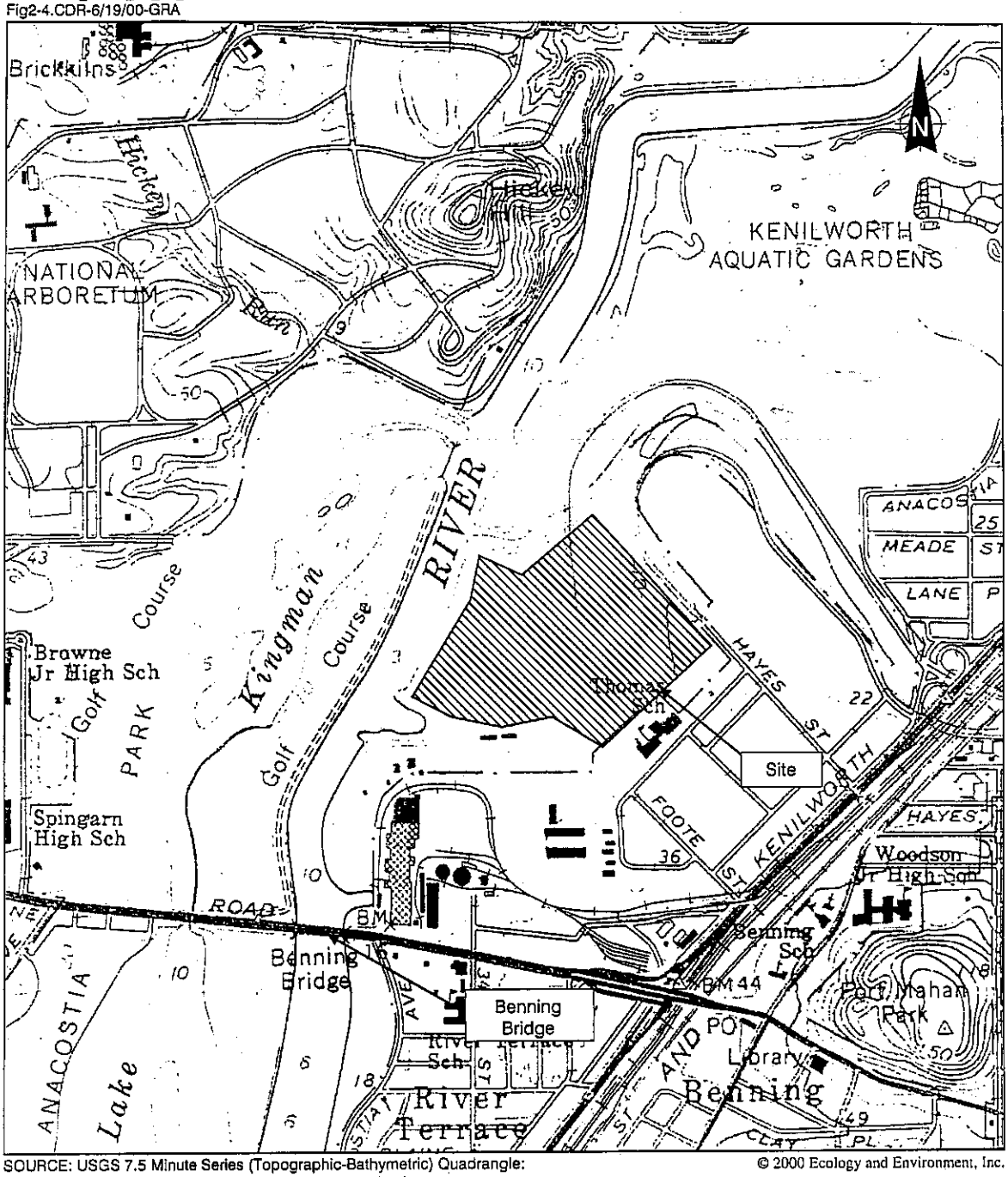
Fig2-4.CDR-6/19/00-GRA



SOURCE: USGS 7.5 Minute Series (Topographic-Bathymetric) Quadrangle: Washington East, D.C., MD, 1965; Photorevised 1979.

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SCALE : 1:15,840

0 ¼ ½ Miles

Figure 2-4 KENILWORTH PARK LANDFILL SITE LOCATION MAP ON THE SAME SCALE AS FIGURE 2-3

3

Environmental Setting

3.1 Climate

The area of the site has a mild, humid climate with an average annual temperature in the warmest month, July, of 79.1°F (26.2°C), and an average annual temperature in the coldest month, January, of 35.7°F (2.1°C) (Table 3-1).

The average annual rainfall is 39 inches with 54% of this total falling in April through September. The wettest month is August with an average of 4 inches, and two months each year (January and April) have, on average, under 2.9 inches. Snowfall (averaging 16.4 inches per year) occurs from November through March, with January and February averaging 5.3 inches each.

mph
miles per hour

Prevailing winds are southerly and southwesterly and are strongest in March (10.1 miles per hour [mph]). Average monthly wind speed is 8.7 mph and the lowest occurs in August (7.8 mph). Data are from Reagan National Airport, approximately 5 miles southwest of the site. The period of record is for the 57 years, 1941-1998 (NOAA, 1998).

3.2 Soils, Geology, and Hydrology

The site lies in the Coastal Plain geologic province approximately three miles southeast of the Fall Line marking the boundary between the Piedmont and the Coastal Plain provinces (USDA, 1976). Major fieldwork for this United States Department of Agriculture soil survey was carried out in 1974-1975, when the site was already a closed landfill/dump. The soil survey consequently shows the site underlain by U118 Udorthents, deep, with 0-8% slopes. Udorthents consist of very heterogeneous, earthy fill materials that have been placed on poorly drained to somewhat excessively drained soils on terraces and floodplains.

Beneath the fill is alluvium, and below this, Arundel Clay belonging to the Potomac group of the Cretaceous Age. The top of the

metamorphic and igneous rocks of the Piedmont and hence the base of the Cretaceous rocks is approximately 400 feet below sea level at this location. The base of the Cretaceous slopes to the southeast at approximately 150 feet per mile.

Between the Arundel clay and the bedrock is the Patuxent formation, a regional aquifer the top of which is at 150 to 200 feet below the site (see section 6). Because of the low-permeability clays underlying the site and the proximity of surface water, rainfall infiltrating into the fill will discharge to surface water within a short distance. Flow directions within the fill appear to be radial, or nearly radial, with discharge to the Anacostia River, Watts Branch, and the drainage ditches to the east and south. Because of the deposition of the latest fill material, the site may not yet be in equilibrium, and flow directions could be changing.

Hydraulic heads in the Patuxent aquifer appear to be higher than those in the on-site wells and well-points (Andreasen, 1999).

3.3 Surface Water

cfs
cubic feet per second

The Anacostia River and its banks have been profoundly altered from their original condition prior to European settlement. Many of the marshes and mudflats along the river have been filled and all tributary streams have been channeled or have had their flows modified by the now largely built-up surrounding areas. Flows measured upstream in Riverdale, Maryland (Northeast Branch) and at Hyattsville, Maryland (Northwest Branch) averaged 85.2 cubic feet per second (cfs) and 47.8 cfs, respectively (Manning, 1995). These locations are at least 4 miles upgradient from the site, so additional flow from the area below the measurement points but above the site means that average flows are probably 150 cfs opposite the site. This conclusion is based on the area of watershed downstream of the measurement points (yet upstream of the site, including the watersheds of Beaverdam Creek and Watts Branch). These areas total approximately 15 to 18 square miles. Runoff for the nearby Patuxent River averages 1 cubic foot per second for each square mile of watershed (Van der Leeden, Troise, and Todd, 1990).

The river is not used as a source of drinking water but is used for boating and fishing (EPA, 1999). Swimming is highly unlikely given the very muddy bottom, lack of access, and large quantities of trash in the river. The Anacostia is tidal in this reach of the river with an average tidal range of close to three feet.

Downstream from the site, approximately 5 miles, the Anacostia River joins the Potomac River, which has an annual flow of 11,967 cfs, or many times the probable flow of the Anacostia (Van der Leeden, Troise, and Todd, 1990).

A portion of the site is within the floodplain of the Anacostia River, both the 100-year floodplain and the 500-year floodplain. Because of the landfilling, the floodplain is now confined to a narrow strip around the site.

Because of tidal flow reversals, the site could have an impact on surface water quality and sediments upstream of the site. The U.S. Department of the Navy has researched the movement of sediments and has not been able to definitely conclude what are the extent of tidal reversals (Coffin & Polhman, 1999).

3.4 Federally Listed Endangered or Threatened Species

The only federally listed endangered or threatened species known to occur within a 4-mile radius of the Kenilworth Park Landfill site was the peregrine falcon (*Falco peregrinus*) (U.S. Department of the Interior,1999) (see Appendix E). This formerly endangered species has been documented at the Shrine of the Immaculate Conception in N.E. Washington, D.C. at Catholic University (Michigan and 4th Street NE), which is 3 miles from the site, but the species has recently been removed from the list. The potential impact of the site on this species is extremely slight.

3.5 Critical Habitats

Wetlands and similar critical habitats potentially impacted by the site were cataloged for 1 mile upstream of the site (because of tidal flow reversals), and for 15 miles downstream of the site. Table 3-2 lists these wetlands, their distances from the site, and their estimated frontages on the Anacostia and Potomac Rivers. Also included are National Wetland Inventory maps covering the entire reaches of the Anacostia and Potomac Rivers from one mile above the site to 15 miles downstream. See Figure 3-1 through 3-5. There is a small gap between the Washington - East map 3-1 and Alexandria maps, (3-2 through 3-5), in the area of the Navy Yard. No wetlands are present adjacent to this stretch of the Anacostia. No other sensitive environments are known downstream of the site.

The closest wetlands include Kenilworth Aquatic Gardens with a wetlands frontage of approximately 4,500 feet. Opposite the site is Langston Golf Course on either side of Kingman Lake with a total wetland frontage of over 19,000 feet. The Anacostia River itself is classified as a riverine, permanent tidal open water, and has an estimated area of over 100 acres, with a shoreline frontage of approximately 22,000 feet (including Kenilworth Aquatic Gardens), within 1 mile of the site.

Downstream of the site below Kingman Lake, the closest major wetlands are at Oxon Creek, 8.4 miles downstream. The most important wetlands are listed in Table 3-2.

UST
Underground Storage Tank

3.6 Other Potential Hazardous Waste Sites

E & E subcontracted with EcoSearch Environmental Resources Inc. of Indianapolis, Indiana, to prepare an environmental site assessment report (Appendix F). Their report details sites within 1 mile of the Kenilworth Park Landfill that have been subject to regulations for petroleum products and hazardous substances, wastes, and materials that might impact the environment. No site, with the possible exception of an Underground Storage Tank (UST) site along Anacostia Avenue, is close enough to directly impact the Kenilworth Park Landfill site. Sites upstream of the landfill along Watts Branch and the Anacostia River could impact the site via surface water flows.

Table 3-1 Local Climatological Data[a]
Kenilworth Park Landfill, N.E. Washington, D.C.

Month	Temperature			Precipitation	Normal Number of Days >0.01 Inch	
	Normal Maximum	Normal Minimum	Monthly Average	Average		
	°F	°F	°F	Inches	Rainfall	Snowfall
January	42.3	26.8	35.7	2.86	9.8	1.6
February	45.9	29.1	38.1	2.58	9.5	1.5
March	56.5	37.7	46.2	3.46	10.1	0.5
April	66.7	46.4	56.4	2.79	9.6	0
May	76.2	56.6	66.0	3.85	10.8	0
June	84.7	66.5	74.7	3.26	9.7	0
July	88.5	71.4	79.1	3.84	9.6	0
August	86.9	70.0	77.3	4.00	8.9	0
September	80.1	62.5	70.7	3.32	7.2	0
October	69.1	50.3	59.5	2.99	7.2	0
November	58.3	41.1	48.8	3.00	8.5	0.2
December	47.0	31.7	39.0	3.01	8.9	0.7
Annual	66.8	49.2	57.6	38.63	109.8	4.5

[a] National Oceanic and Atmospheric Administration (NOAA), 1998, Annual Summary with Comparative Data, Washington, D.C. National Airport (DCA).

Key:

°F = Degrees Fahrenheit.

Table 3-2 Wetlands Potentially Affected by the Kenilworth Park Landfill Site

Stream Miles from Presumed Point of Entry (PPE)	Named Wetlands/Area	Total Wetland Frontage (miles)
Anacostia River		
within 1 mile	Kenilworth Aquatic Gardens and Marsh, Kingman Lake and Fort Lincoln wetland (135 acres)	5.3 Miles
Potomac River		
6.5 (East bank)	Yacht Basin Bolling AFB / 3 Acres	<1,000ft
8.2 (West bank)	South end Daingerfield Island / 3 Acres	<1,000ft
8.2(Midstream)	Goose Island/ 3acres	1,000ft
8.4-9.5 (East bank)	Oxon Cove complex to south of Wilson Bridge / 50 Acres	8,000ft
9.5-9.9 (West bank)	Hunting Creek estuary complex / 70 Acres	11,000ft
10.65 (East bank)	North of Rosier Bluff / 4 Acres	<500ft
10.65-12.45 (West bank)	Unnamed shoreline complex / _175 Acres	15,000ft
12.35-12.9 (East bank)	Complex of wetlands at mouth Broad Creek / 70 Acres	6,000ft
14.6	Mouth of Swan Creek / 8 Acres	1,000ft
14.6-15.0	No significant wetlands	
TOTALS	**Approximately 520 acres**	**13.7 miles**

Note: The distance from point of entry was estimated along the most direct water path, at the center of the river to the upstream extent of the wetland frontage. Distances were estimated to the nearest 0.05 miles (264 feet). Unvegetated wetland areas classified, as "open water "or" unconsolidated bottom were not included.

Table 3-3 Key to National Wetland Inventory Maps

Park	Symbol and Type
Ecological System	P = Palustrie (marsh)
Subsystem	None
Class	EM= Emergent FO= Forested OW = Open Water SS = Scrub/Shrub
Subclass	EM1= Persistent FO1 = Broad-leaved deciduous EM5 = Narrow-leaved persistent
Modifying Terms	C = Seasonal D = Seasonal well drained E = Seasonally Saturated R = Seasonally Tidal S = Temporary Tidal
Ecological System	R = Riverine
Subsystem	1= Tidal
Class	EM = Emergent FL = Flat OW = Open Water UB = Unconsolidated Bottom
Subclass	EM2 = Non-persistent
Modifying Terms	N = Regular S = Temporary Tidal V = Permanent Tidal
Special Modifiers	X = Excavated

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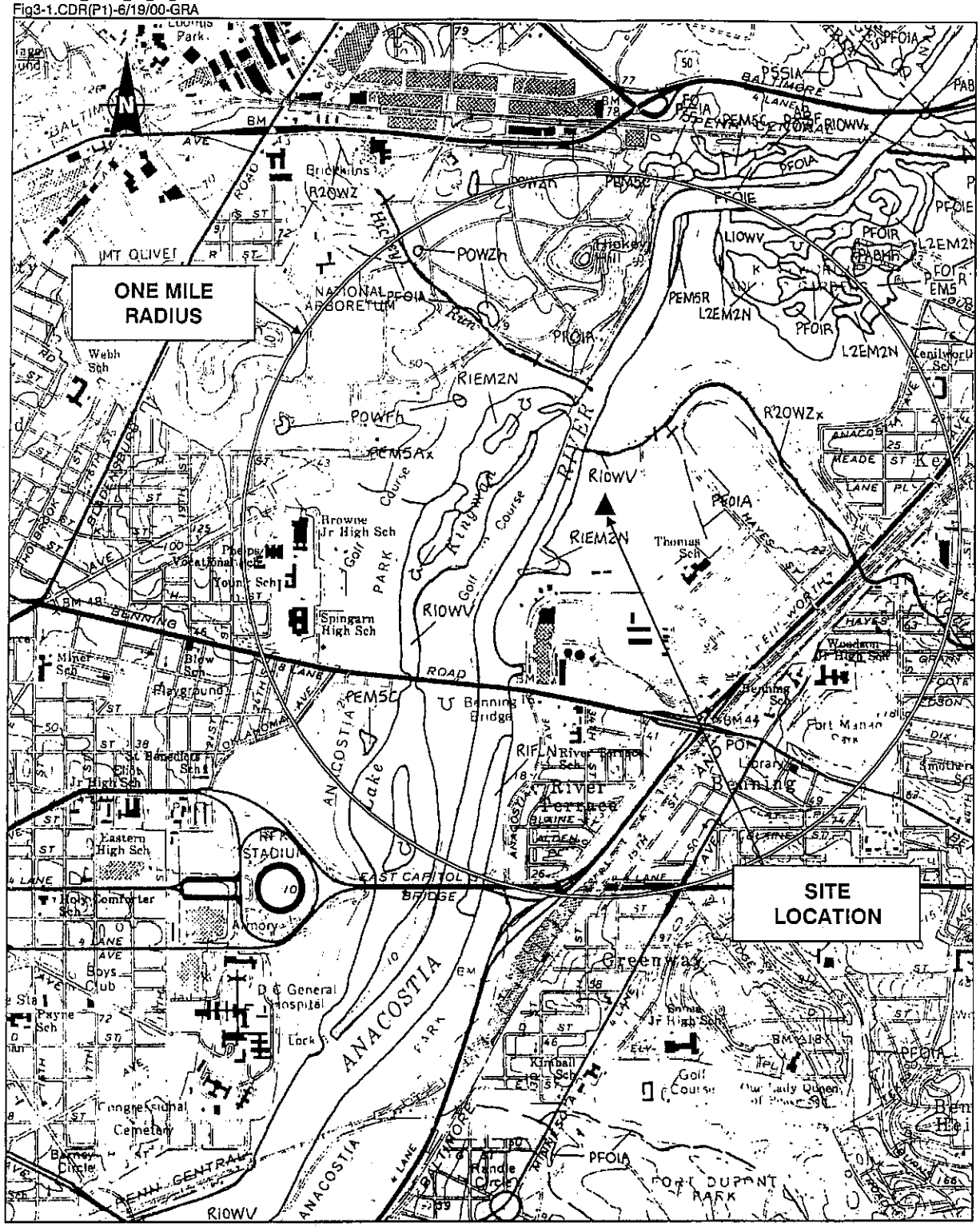
Fig3-1.CDR(P1)-6/19/00-GRA



SOURCE: Department of the Interior: Fish and Wildlife Service (Aerial Photography 04/81)

© 2000 Ecology and Environment, Inc.

SCALE 1:24,000

0 ½ 1 Mile

0 .5 1 Kilometer

Figure 3-1 NATIONAL WETLANDS INVENTORY MAP, ANACOSTIA RIVER WASHINGTON EAST (MD-D.C.)

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Fig3-2.CDR-6/19/00-GRA

SOURCE: Department of the Interior: Fish and Wildlife Service (Aerial Photography 04/81)

© 2000 Ecology and Environment, Inc.

SCALE 1:24,000

0 ½ 1 Mile

0 .5 1 Kilometer

Figure 3-2 NATIONAL WETLANDS INVENTORY MAP, HAINS POINT AREA ALEXANDRIA, VA, D.C., MD

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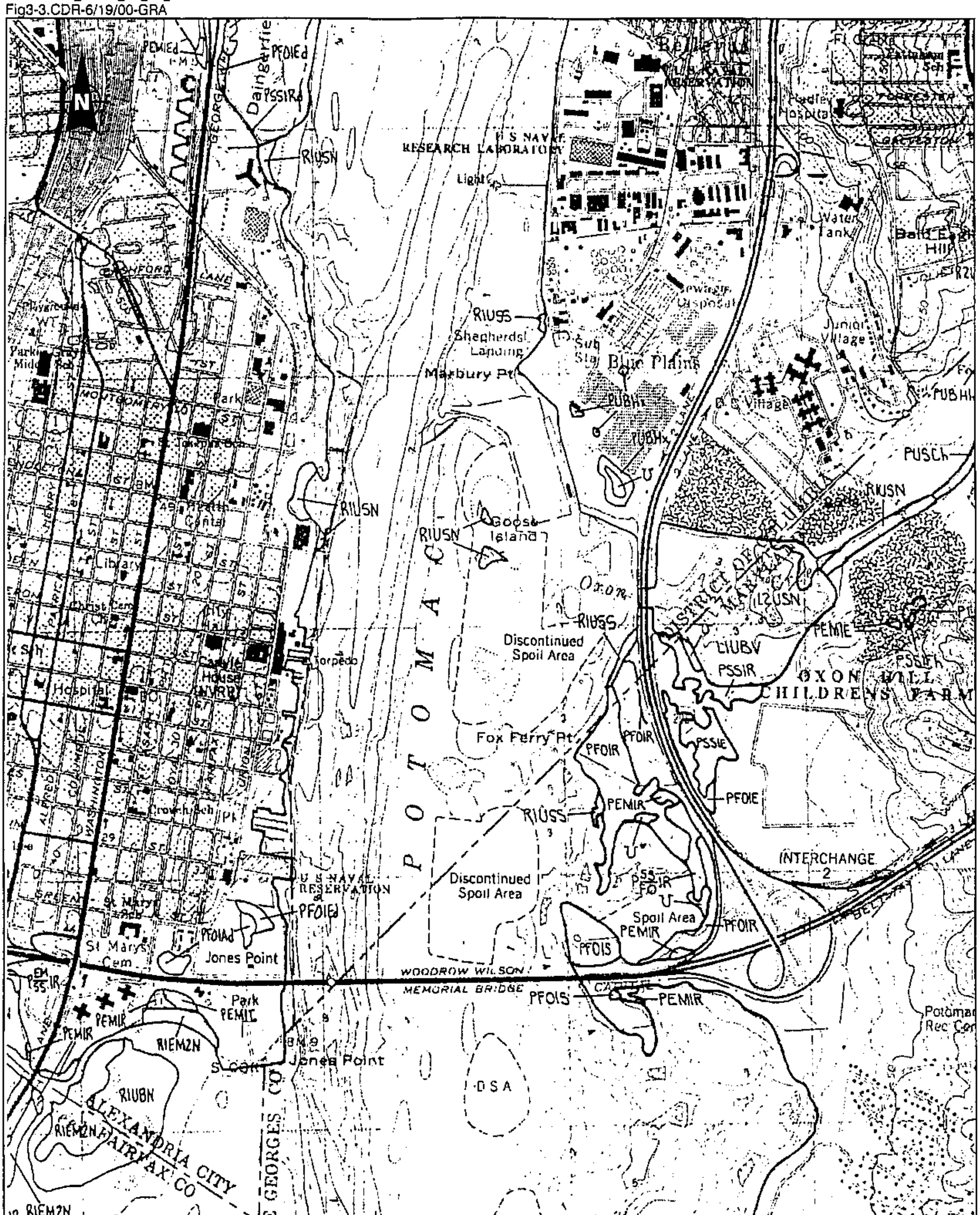
Fig3-3.CDR-6/19/00-GRA



SOURCE: Department of the Interior: Fish and Wildlife Service (Aerial Photography 04/81 and 04/88)

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SCALE 1:24,000

0 ½ 1 Mile

0 .5 1 Kilometer

Figure 3-3 NATIONAL WETLANDS INVENTORY MAP, WILSON BRIDGE AREA ALEXANDRIA, VA, D.C., MD

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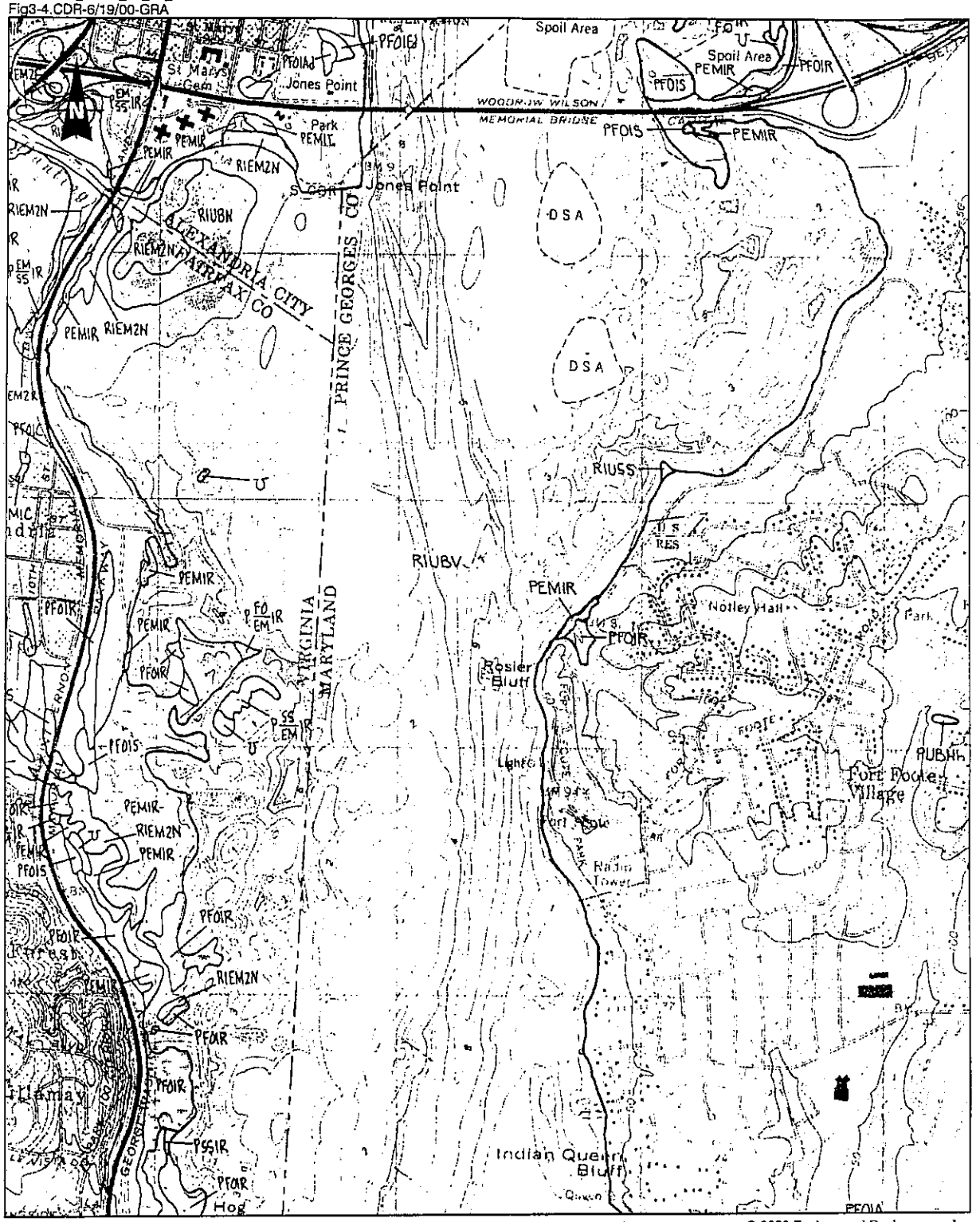
Fig3-4.CDR-6/19/00-GRA



SOURCE: Department of the Interior: Fish and Wildlife Service (Aerial Photography 04/81 and 04/88)

© 2000 Ecology and Environment, Inc.

SCALE 1:24,000

0 ½ 1 Mile

0 .5 1 Kilometer

Figure 3-4 NATIONAL WETLANDS INVENTORY MAP, ROSIER BLUFF AREA ALEXANDRIA VA, D.C., MD

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Fig3-5.CDR-6/19/00-GRA

SOURCE: Department of the Interior: Fish and Wildlife Service (Aerial Photography 04/81 and 04/88)

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SCALE 1:24,000

0 ½ 1 Mile

0 .5 1 Kilometer

Figure 3-5 NATIONAL WETLANDS INVENTORY MAP, FORT WASHINGTON AREA MOUNT VERNON VA, MD

4

Site Investigation

4.1 SI Scope of Work

The objective of the fieldwork for the SI was to obtain sufficient data to characterize the wastes on site, and to determine whether they impact or potentially could impact human health or the environment. To do the latter the potential routes of exposure and the population or environments around the site were characterized. The original scope of work for the SI involved the following tasks:

- subsurface fill and soil sampling with a hollow-stem auger drill-rig and split-spoons (18 boreholes) up to 37 feet deep, and averaging 28 feet deep;
- surface fill and soil sampling from three types of location, landfill material, adjoining surface soils including Thomas Elementary School, and background locations;
- well-point installation in hand-augered boreholes (six well points) averaging 6.25 feet in depth (MW-1 through MW-6; see Figure 4-1);
- monitoring well installation (five 2-inch wells) averaging 21 feet in depth (MW-7 through MW-11; see Figure 4-2);
- well and well-point sampling and water level measurements;
- sampling of well-points between landfill and surface water and at a background well for RCRA Metals in filtered and unfiltered samples;
- surface water and sediment sampling (four surface water and 14 sediment samples) (locations shown on Figure 4-3);
- additional sediment samples collected sufficiently upstream to be background and from locations adjacent to the site on both sides of the Anacostia River;
- sieving of all second-round sediment samples prior to analysis to produce more uniform grain size;
- hydraulic conductivity testing (slug tests) of 10 wells and well points;
- sampling of water supply wells from the Patuxent Aquifer within four miles of the site; and

- collection of sufficient background information on the site setting to allow the USEPA to perform a preliminary Hazardous Ranking System (HRS) score for the site.

4.2 Changes in Scope from the Work Plan

bgs
below ground surface

Essentially all fieldwork was performed and samples were collected as planned. However, at the direction of the NPS Project Manager, E & E added two shallow (5-foot) boreholes within the Driggs Corporation portion of the landfill east of Deane Avenue to collect one subsurface sample at each. Two sediment samples were dropped from the sampling program to compensate for the additional analytical costs. Several of the split-spoon samples of subsurface soil did not contain sufficient sample volume to allow for collection of a separate sample for analysis of volatile organics. These sample intervals were (Table 5-1):

BH 3	20-22 feet below ground surface (bgs)
BH 7	20-22 feet bgs
BH 11	25-27 feet bgs
BH 14	10-12 feet bgs
BH 15	20-22 feet bgs
BH 16	22-24 feet bgs
MW-9	12-14 feet bgs

Surface water samples KL-SW1 and KL-SW2 were recollected, due to loss in shipment. A rising-head slug test could not be performed on Monitoring Well #9 because the depth of water in the well was too shallow (less than 1 foot). Finally, no samples were collected from wells in the Patuxent Aquifer since none could be found within four miles of the site.

4.3 SI Activities

4.3.1 Well Construction and Water Levels

All the well points MW-1 through MW-6 and TMW-12 were of the same size, and consisted of 5 feet of stainless steel wire-wound screen and 2 feet of stainless steel 2-inch casing/riser. All were installed into 3-inch-diameter hand-augered holes at a depth of approximately 6 feet below ground surface (Figure 4-1).

The remaining wells were constructed of 2-inch PVC and were installed at depths between 15 feet bgs (MW-10 and MW-11) and 29 feet bgs (MW-7). Table 4-2 shows well construction details and Appendix G contains the borehole logs and construction diagrams. Water levels were measured with an electric tape accurate to 0.01 feet.

4.3.2 Well Development

All wells and well points were installed with sand packs around factory-made slotted or wire-wound screens with 0.01-foot (#10) openings. All well points were bailed repeatedly until dry (less than 1 foot of water remaining in the well) with the exception of MW-5, which could not be bailed dry. None of the wells or well points yielded clear water on development. By bailing the wells or well points and allowing them to recover or stand undisturbed, it was possible to obtain relatively clear water initially, so this procedure was followed during sampling. Table 4-1 summarizes the approximate amount of water removed from each well point (MW-1 through MW-6) or well (MW-7 through MW-11) during development and purging.

cm /sec
centimeters per second

PVC
Polyvinyl chloride

The ratio of the volume of water standing in each well to the volume removed during development and purging ranges from 3.8 to 35 in the well points (MW-1 through MW-6 and TMW-12). The well points were installed in 3-inch hand-augered holes and had low-volume sand packs around them. These wells did not recharge readily and the water sampled from them tended to be turbid.

The volumes of water removed from the 2-inch polyvinyl chloride (PVC) monitoring wells installed by the driller ranged from approximately 16.5 gallons (MW-9) to approximately 49 gallons (MW-11). Two of these wells had potable water added to them. Fifteen gallons was added to MW-8 during drilling to help soften the landfill waste which consisted of clay mixed with concrete and steel. Recharge was slow, so only 35 gallons of water was removed from this well. Five gallons of water was added to MW-9 during development, since it appeared that the screen was clogged. It may be that this well was completed in a perched water table. Water was encountered at 15 feet bgs and the well was set at 22 ft. because this level was seven feet below the initial level of saturation encountered. Water was noted at 15.75 feet bgs on completion (May 10, 1999) but the water level steadily declined to 20.03 feet bgs on May 17, 1999. The depth of water in the well (1.79 feet) made a hydraulic conductivity measurement impossible and development difficult. Only 16.5 gallons was removed from the well and the water remained extremely turbid, that is, the well was never fully developed. By May 20, 1999 only 0.2 feet of water remained in the well.

During the second round of groundwater sampling, well points MW-1 through MW-6 and the newly installed TMW-12 at Kenilworth Aquatic Gardens were developed or redeveloped by bailing until they were dry.

4.3.3 Groundwater Sampling

Prior to sampling, all wells were purged or bailed dry and allowed to recharge. Five of the first six wells are very shallow, 2-inch well points in generally low-permeability materials, with restricted connection to adjoining surface water. Consequently, these five were purged dry: MW-1, MW-2, MW-3, MW-4, and MW-6 (MW-5 was the exception and did not go dry). MW-9 in the center of the landfill also purged dry. This well appears to have been completed in what was a perched zone within landfill materials. It initially showed a depth to water of 19.08 feet (May 13, 1999), and a depth of water of five feet; after development, however, it did not recover to this level but dropped to 24.17 feet below the top of casing, which left only 0.2 feet of water standing in the well (May 20, 1999). The well became dry after 6.5 gallons were removed during development, which is nearly equal to the amount of potable water added to unblock the well screen during development (May 13, 1999).

All samples were collected into laboratory-cleaned containers with a dedicated Teflon bailer (except at MW-8 where stainless steel was used). All containers were iced and stored at approximately 4°C until they reached the laboratory.

NTUs
Nephelometric Turbidity Units

All the wells were completed at least partly with well screens opposite landfill materials, including material from the former District dump. As a result, all the wells produced turbid water, sometimes black, and always above 1,000 Nephelometric Turbidity Units (NTUs). Because of the impact of turbidity on metals levels, the wells were allowed to sit for up to several hours after purging and the first sample container filled was for metals analysis.

Preservatives were added to samples analyzed for metals (nitric acid to a pH of less than 2), for volatile organics (hydrochloric acid to a pH of less than 2), and for cyanide (sodium hydroxide to a pH of greater than 12). Well locations are shown on Figure 4-2 and details of sample containers, preservatives, and analyzes required are shown in Table 4-3.

A second round of groundwater sampling was taken from MW-1 through MW-6 and a newly installed background well, TMW-12, on March 13, 2000 at Kenilworth Aquatic Gardens. The well points were redeveloped, resampled both filtered and unfiltered, preserved with nitric acid, and analyzed for RCRA metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver).

4.3.4 Surface Water Sampling

All four surface water samples were collected from water deep enough to submerge the sample containers. Care was taken that samples were collected from water not affected by sediment disturbed by the sampler. All containers requiring preservation were preserved first and filled only to the capacity required, so as not to dilute the preservatives.

Because two samples were lost in shipment and did not arrive at the laboratory in time, those two samples (SW-1 and SW-2) were recollected. KL-SW-4 was mistakenly collected twice and two amber glass bottles were reused for the KL-SW-2 resampling. Before reuse they were rinsed twice with potable water and triple- rinsed with deionized water.

Sampling locations for all surface water samples are shown on Figure 4-3, and Table 4-3 details sample containers, preservatives, and analyzes requested. Sample KL-SW-4 was collected from the Anacostia River at the north end of Kenilworth Aquatic Gardens off the east bank, approximately 150 feet south of the railroad bridge, immediately south of the New York Avenue (Route 50) bridge and at the north of Beaverdam Creek.

4.3.5 Soil Sampling/Waste Sampling

4.3.5.1 Subsurface Soil Sampling

Except for portions of the split-spoon samples from MW-7 (23.5 to 25.5 feet bgs), MW-10 (7 to 9 feet bgs), and MW-11 (8.5 to 10.5 feet bgs), none of the initial 50 "soil" samples collected represented natural geologic materials.

Three samples of landfill material were collected with a stainless steel spoon from the augers at MW-7, MW-10, and BH16 and placed in laboratory-cleaned containers. All the other samples for analysis were collected from split spoons and placed directly into sample containers, either manually or with clean stainless steel spoons.
No preservatives were added to the containers, and all were placed on ice and stored at approximately 4°C until they reached the laboratory. Sample locations are shown in Figure 4-2.

TAL
Target Analyte List

TPHC
Total Petroleum Hydrocarbons

Part of all samples was collected in 8-ounce clear glass bottles and preserved on ice. In all cases where there was sufficient sample volume, an additional 4-ounce clear glass bottle of sample material was collected first for volatile organics analysis. Samples where 4-ounce bottles were not collected are listed in Section 4-2. The 8-ounce samples were analyzed for Target Compound List organics (excepting volatiles), for the Target Analyte List (TAL) metals and cyanide, and for total petroleum hydrocarbons (TPHC).

4.3.5.2 Surface Soil Sampling

In order to obtain an assessment of surface soil contamination, E&E conducted a second round of soil sampling restricted to sampling of the top six inches of the fill. All samples were collected with a stainless steel spoon from the top six inches of soil and/or fill material, and placed in laboratory-cleaned containers. Figure 4-2 shows all sample locations.

As with the subsurface samples, no preservatives were added to the containers, and all were placed on ice and stored at approximately 4°C until they reached the laboratory.

The 8-ounce samples were analyzed for polynuclear aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and RCRA Metals, (arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver).

4.3.6 Sediment Sampling

Because the samples were from tidally affected areas, all sediment samples were collected from sediment exposed at low tide, but below high tide level.

4.3.6.1 First Round of Sediment Sampling

Where possible, the sampler collected fine-grained sediment, but very little fine-grained material was available at the Anacostia River upstream sampling location (KL-SED-12), or upstream in Watts Branch (KL-SED-1), or at the upstream east end of the ditch east of the landfill (KL-SED-4). At all these three locations sand predominated to minimize the sand content in the sample. KL-SED-1 was collected from the toe of the bank, and KL-SED-4 and KL-SED-12 were skimmed from the film of recent silt above the sand substrate.

All samples were collected with a clean stainless steel spoon and placed directly into laboratory-cleaned containers, which were placed on ice. Containers were maintained at approximately 4°C until they

were received at the laboratory. Analyzes and preservation were the same as for the soil/landfill materials.

4.3.6.2 Second Round of Sediment Sampling

In order to obtain a more reliable background sample, and sediments more readily comparable in grain size, E&E conducted a second round of sediment sampling. With the assistance of the National Park Service, E & E took samples from north of the District line in Maryland, approximately 1.75 miles upstream of the Kenilworth Landfill, and from both sides of the Anacostia River immediately upstream, opposite, and downstream from the landfill.

All samples were sieved through a number 64 mesh sieve to remove all particles larger than very fine sand.

Analyzes and preservatives were the same as for the surface soil and landfill materials collected during the second round. All sample locations are indicated on Figure 4-3.

4.3.7 Decontamination

All well construction materials were new and used directly after removal from the manufacturer's packaging. No decontamination was required. All drilling equipment that came into contact with the soil (drill bits, augers, rods, and split spoons) was decontaminated after use. Split spoons were scrubbed with potable water and detergent and rinsed with potable water. All other drilling equipment was cleaned by removing encrusted soil by scrubbing and washing with a hot water spray of potable water between each well/borehole at which the equipment was used. Decontamination water was stored in drums and later removed for disposal off site.

4.3.8 Quality Assurance/Quality Control Sampling

4.3.8.1 QA/QC - First Round

Duplicate samples were collected from MW-7 (water) and from Borehole 10 (soil/fill from 20-22 feet below ground surface) during the first round. The extreme variability of the fill made duplicate sampling of questionable value for the soil samples.

A bottle blank was prepared in-house of deionized water and hydrochloric acid (reagent grade), using the same bottle batch in which the field samples were collected. This is a check on the possibility that the low levels of volatiles found in some water samples could have been derived from the containers.

Method blanks and spiked samples are run by the laboratory as a check on the possibility of laboratory contamination and on the reproducibility, precision, and accuracy of laboratory procedures.

4.3.8.1 QA/QC - Second Round

The same QA/QC methods described above were used during the second round. In addition, an equipment blank was prepared using commercial distilled water run through the barrel filter used to filter the groundwater.

4.3.9 Sample Documentation, Packaging, and Shipping

Samples were placed in coolers and iced in the field. Sampling locations, sample numbers, and analyzes required were noted in the field notebook along with any special conditions encountered. All sample containers were labeled with sample number, project number, date and time of collection, and type of analysis required. At the end of each sampling day coolers were packed for shipment to the E & E's laboratory. The coolers were packed with ice in watertight bags, all glass containers were wrapped in plastic bubble-wrap and taped, and a chain-of-custody form was prepared, sealed in a Ziploc bag, and taped to the underside of the cooler lid. Any additional space was packed with inert packing, and the cooler was sealed with strapping tape and custody seals. The chain-of-custody form lists the date and time of collection of each sample, the project manager's, field team leader's, and sampler's name(s), and is signed by the sampler(s). The number and type of containers is listed, and the analyzes required and the suspected levels of contaminants are noted, together with any special observations. A copy is retained in the files. All coolers were shipped via common carrier (Airborne Express or Federal Express) and were picked up from the E & E office or hand-delivered to the Federal Express office by E & E. At no time were the samples out of E & E custody until they were shipped.

4.3.10 Aquifer Testing

btoc
below top of casing

m/yr
meters per year

On site motoring wells that had a sufficient depth of standing water were tested for hydraulic conductivity; this included all wells except MW-9. This well showed a zone of saturation at 15 feet below ground surface during drilling. On completion of this well (May 10, 1999) the water table was measured at 18.1 feet below top of casing (btoc). This dropped to 19.08 feet btoc by May 13, 1999 after development, to 22.38 feet btoc by May 17, 1999, and to 22.62 feet by 05/18/99. By May 21, 1999 the water table had dropped to 23.92 feet btoc, which is essentially dry, so that no aquifer test was possible. Conversely, MW-8, which is also in the central part of the landfill,

has a depth to water of only 14 feet btoc. Because the wells were screened across the water table, only rising head slug tests were performed.

The test procedure was as follows:

- the depth to water was measured;
- a pressure transducer was lowered into the well and connected to the Hermit 2000 data logger; (In-Situ, Inc. Laramie, Wyoming) which was programmed to sample at specified intervals;
- a bailerful of water was removed from the well;
- a solid cylinder (the slug) was lowered into the well;
- the water level was allowed to stabilize until it had recovered to its original level;
- the slug was rapidly removed and the data logger simultaneously started to measure the rise of the water level; and
- the data logger collected water levels until the well had recovered to its original level, or at least to 90% of the drawdown recorded when the slug was removed.

In every case the water level recovered to within 10% of the initial level within one hour, and most recovered within 30 minutes. The longest recovery was on MW-4, which took 45 minutes.

The results of the slug tests were compared to type curves using Aqtesolv®, a proprietary program from Hydrosolv, Inc. (Duffield, 1998).

Hydraulic conductivities ranged from $1.8E^{-6}$ cm/sec to $1.88E^{-5}$ cm/sec, or 0.568 meters per year (m/yr) to 6.12 m/yr. The most permeable material was found at MW-2 and the least permeable was at MW-10. The average hydraulic conductivity was $7.49E^{-6}$, or 2.36 m/yr, a value consistent with the observed hydraulic conductivities of the silts and clays in the boreholes. Table 4-4 lists the results, and the recorded data and graphical interpretations are presented in Appendix H.

4.3.11 Site Safety Precautions

MSA
Mine Safety Appliances

OVA
Organic Vapor Analyzer

ppm
parts per million

LEL
Lower Explosive Limit

Before site work commenced each day, a Site Safety Meeting was held. The main emphasis was on physical hazards of working with heavy machinery, the potential for slips, trips, and falls, and the biological hazards of poison ivy, thorns, and brambles on the site. The boreholes and wells were monitored during drilling with a Mine Safety Appliances (MSA) explosimeter/oxygen meter and an Organic Vapor Analyzer (OVA) Foxboro Model 128. Readings above background initially were found with the OVA in MW-2 (60 parts per million [ppm]), and MW-3 (700 ppm), but these were not accompanied by any readings on the explosimeter. At no time was any reading found in the breathing zone.

The explosimeter did not register on the hand-augered holes used to install MW-1 through MW-6, but regularly exceeded the Lower Explosive Limit (LEL) in boreholes on the landfill once they penetrated the readily recognizable District landfill materials. No explosimeter readings were found within the 1997-1998 fill or in the preexisting landfill cap, which indicates that methane is contained below the cap. No explosimeter readings were obtained outside the hollow-stem augers or the well casing, and the site had shown no sign of volatile organics during the previous round of sampling. The site safety officer did not at any time upgrade respiratory protection from Level D, but required no smoking or eating on site and that drilling personnel minimize direct exposure to the boreholes during well and borehole installation.

All wells were sealed with bentonite above the sand pack, a cement/5% bentonite grout to the near-surface, and a concrete pad at surface. All boreholes were back-filled and a bentonite plug placed at surface.

No incidents involving injury occurred during drilling (May 4, 5, 6, 7,10, and 11), during sampling (May 12, 13, 14, 17, and 18), or during aquifer testing (May 19, 20, and 21).

Table 4-1 Well Development and Purging Record
Kenilworth Park Landfill, N.E. Washington, D.C.

Well No. [a]	Depth of Well (bgs)	Depth of Water [b] (feet)	Volume in Well (gallons)	Volume Removed by Bailing	Ratio
MW-1	6.0	4.29	0.70	3	4x
MW-2	5.75	4.80	0.78	3	3.8x
MW-3	6.0	4.72	0.77	5	6.5x
MW-4	6.0	4.61	0.75	5	6.6x
MW-5	5.5	3.48	0.57	20	35x
MW-6	5.6	3.86	0.63	14	22x
MW-7	29.26	8.46	1.38	30	22x
MW-8	24.88	13.45	2.20	35[d]	9x
MW-9	21.82	1.79[c]	0.3	16.5[e]	38x
MW-10	14.97	5.93	0.97	26	27x
MW-11	15.10	6.06	0.99	49	49x

[a] Wells MW-1 to MW-6 are hand-installed well points.
[b] May 17, 1999.
[c] 6.07 at time of installation.
[d] 15 gallons added during drilling.
[e] 5 gallons added during development.

Key:

bgs = Below ground surface in feet.

Table 4-2 Well Construction Data
Kenilworth Park Landfill, N.E. Washington, D.C.

Well Identification[a]	Screen Length and Type	Screen Depths (feet bgs)	Sand[b] Pack (feet bgs)	Bentonite Seal[c] (feet bgs)	Grout[d]	Protective Casing	Posts
MW-1	5-foot stainless wire-wound	6-1	6-1	0	0-10	No	No
MW-2	5-foot stainless wire-wound	5.75-0.75	5.75-0.5	0	0.-0.5	No	No
MW-3	5-foot stainless wire-wound	6-1	6-0.75	0	0.-0.75	No	No
MW-4	5-foot stainless wire-wound	6-1	6-0.75	0	0-0.75	No	No
MW-5	5-foot stainless wire-wound	5.5-0.5	5.5-0.5	0	0-0.5	No	No
MW-6	5-foot stainless wire-wound	5.6-0.6	5.6-0.6	0	0-0.6	No	No
MW-7	10-foot PVC #10, schedule 40	29-19	30-18	18-16	0-16	Yes	2
MW-8	10-foot PVC #10, schedule 40	24.7-14.7	25-12.7	12.7-10.7	0-10.7	Yes	2
MW-9	10-foot PVC #10, schedule 40	21.6-11.6	22-9.6	9.6 - 7.6	0-7.6	Yes	3
MW-10	10-foot PVC #10, schedule 40	14.8-4.8	15.0-3	0	0-3'	Yes	2
MW-11	10-foot PVC #10, schedule 40	14.9-4.9	15-3	0	0-3	Yes	2

a MW-1 through MW-6 are well points installed by hand in 3-inch bucket-auger holes. b Silica quartz medium-grain size ANSI/NSF Standard 61. c Holeplug® Coarse-Grade Wyoming Bentonite (Baroid Drilling Fluids Inc.). d Portland cement with 5% bentonite.

Key: bgs– below ground surface

Table 4-3 Containers, Preservatives, and Analyses Required for Water Samples Kenilworth Park Landfill, N.E. Washington, D.C.

Samples	Matrix	Sample Containers	Preservatives	Analyses Required
MW-1 through MW-11	Groundwater	2 x 40-ml clear glass vials	Hydrochloric Acid pH<2	Volatile Organics
MW-1 through MW-11	Groundwater	0.5 gallons amber glass	Ice only	Base/neutral acid extractibles
MW-1 through MW-11	Groundwater	1-liter amber glass	Ice only	Pesticides/PCBs
MW-1 through MW-11	Groundwater	1-liter amber glass	Ice only	TRPH
MW-1 through MW-11	Groundwater	1-liter polyethlene	Nitric Acid pH<2	Target Analyte List Metals
MW-1 through MW-11	Groundwater	1-liter polyethylene	Sodium Hydroxide pH>12	Cyanide
TMW-12	Groundwater	1-liter polyethlene	Nitric Acid pH<2	RCRA Metals
SW-1 through SW-4	Surface Water	As above for groundwater	As above for groundwater	As above for groundwater

Key:

RCRA metals = Arsenic, barium, cadmium, chromium, lead, mercury selenium and silver.
TRPH = Total Recoverable Petroleum Hydrocarbons.
< = Less than.
> = Greater than.

Table 4-4 Results of Hydraulic Conductivity Testing[a]
Kenilworth Park Landfill, N.E. Washington, D.C.

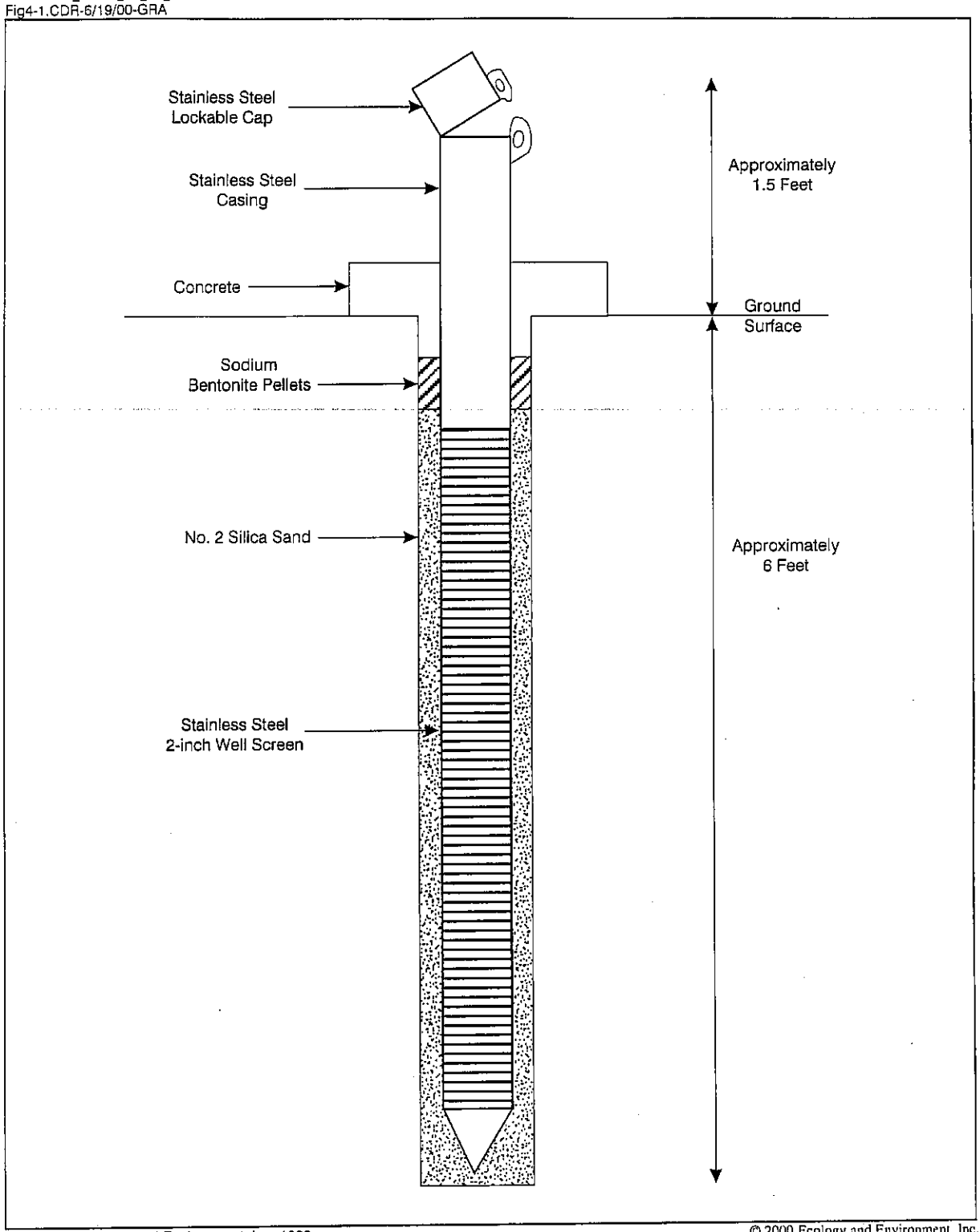
Monitoring Well	Displacement (feet)	Duration of Test (minutes)[b]	Hydraulic Conductivity (cm/sec)	Notes
MW-1	1.08	40	7.33×10^{-6}	No tidal effect
MW-2	1.66	34	1.88×10^{-5}	No tidal effect
MW-3	1.15	34	7.81×10^{-6}	No tidal effect
MW-4	1.19	28	8.5×10^{-6}	No tidal effect
MW-5	1.27	10	8.43×10^{-6}	
MW-6	1.41	9.2	9.03×10^{-6}	
MW-7	1.30	3.4	3.9×10^{-6}	
MW-8	1.96	9.2	9.82×10^{-6}	
MS-9	N/A	N/A	N/A	Not enough depth of water
MW-10	1.05	4.6	1.8×10^{-6}	
MW-11	1.45	4.0	3.37×10^{-6}	
Average	**1.352**	N/A	**7.49×10^{-6}**	

[a] Rising-head slug tests (Bouwer and Rice) using Aqtesolv® from Hydrosolv Inc. (see Appendix I).
[b] The first four tests were run longer to see how long the wells took to fully recover and whether tidal effects could be observed in the well-points next to the river.

Key:

cm/sec = Centimeters per second.
N/A = Not applicable.

02:000545_YM07_00_05_90-B0151
Fig4-1.CDR-6/19/00-GRA



SOURCE: Ecology and Environment, Inc. 1999.

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Figure 4-1 WELL-POINT CONSTRUCTION

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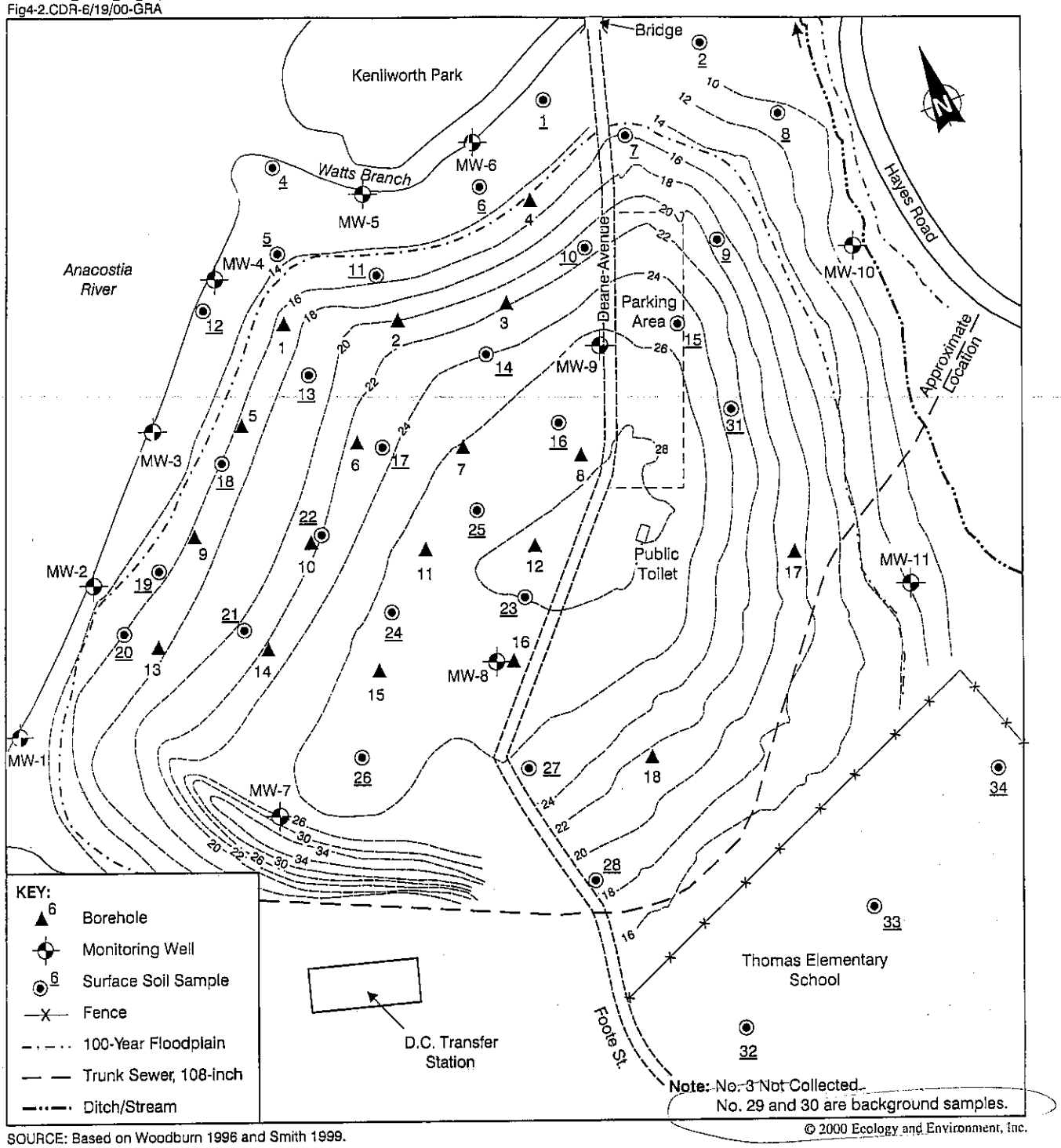
02:000545_YM07_00_05_90-B0151
Fig4-2.CDR-6/19/00-GRA



SOURCE: Based on Woodburn 1996 and Smith 1999.

SCALE IN FEET
0 250 500 Feet

Figure 4-2 KENILWORTH PARK LANDFILL
SKETCH MAP WITH SURVEYED LOCATIONS OF WELLS, BOREHOLES AND SURFACE SOIL SAMPLES

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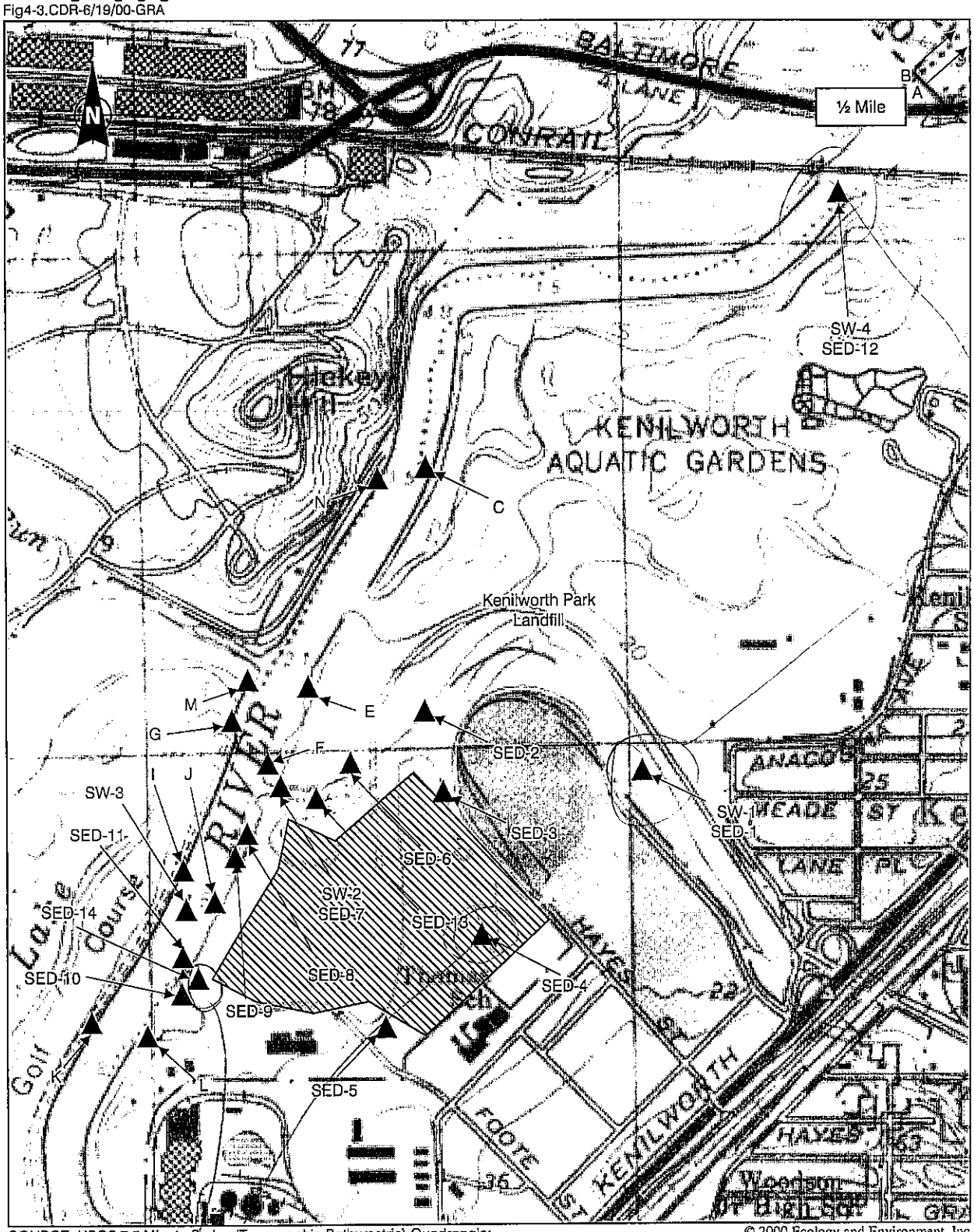
02:000545_YM07_00_05_90-B0151
Fig4-3.CDR-6/19/00-GRA



SOURCE: USGS 7.5 Minute Series (Topographic-Bathymetric) Quadrangle: Washington East, D.C., MD, 1965, Photorevised 1979.

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Silt ponds
Usually Water Lo

SCALE 1:12,000
0 1/8 1/4 Mile
0 .5 1 Kilometer

Figure 4-3 SURFACE WATER AND SEDIMENT SAMPLING LOCATIONS, KENILWORTH PARK LANDFILL

5 Results of the Site Investigation

The analytical results of the SI sampling program are included in full, and are bound separately as Volume II and Volume III of this report. Section 5.1 tabulates and discusses all positive analytical detections, including those results that are given as estimated values, which were below the limit of accurate quantification. The results are discussed by type of sample in the following order: soil/landfill wastes; sediments; surface water; and groundwater.

The results are compared to appropriate criteria: risk-based criteria for soils; guidance values for sediments; ambient water quality criteria for surface water; and maximum contaminant levels for groundwater. Any results that exceed the listed criteria in the right-hand columns of Tables 5-3 through 5-21 are emphasized with bold print.

The analytical results for each type of sample are discussed under the headings of organics and inorganics, and then individual tables are discussed, for example volatile organics or TAL metals. For ease of reference all the analytical results tables are placed at the end of Section 5.

Section 5.2 discusses physical measurements such as the topographic survey and hydraulic conductivity measurements. From these measurements, the waste volumes, the groundwater flow, and the migration of metals into the Anacostia River are calculated and discussed.

5.1 Site Investigation Analytical Results

5.1.1 Soils/Landfill Materials

Tables 5-1 and 5-2 list the sample information for soils and landfill materials collected at the Kenilworth Landfill site, Thomas School, and the Kenilworth Aquatic Gardens.

5.1.1.1 Subsurface Soils/Landfill Materials

Table 5-1 lists all the subsurface soils/landfill waste samples collected from boreholes at the landfill, giving the time, date, and depth of sample collection, and the analyses requested during the first round of sampling. Locations of all subsurface sampling points are indicated on Figure 5-1. The samples were collected from 18 boreholes, BH-1 through BH-18, and from four wellbores at MW-7, MW-9, MW-10, and MW-11. MW-8 was colocated with BH-16. In Borehole 14 repeated attempts were made to sample landfill wastes from 25 to 32 feet bgs, but none of the four split spoons driven, collected enough material for analysis.

Volatile Organics

µg/kg
micrograms per kilogram

TCE
trichloroethene

mg/kg
milligrams per kilogram

Table 5-3 lists results for volatile organics, 17 of which were detected. The concentrations of total volatile organics ranged from nondetect to less than one part per million (1,000 micrograms per kilogram [µg/kg]) with one exception. At MW-10 there was a strong smell of petroleum product from the borehole, and MW10-S1 had a total of over 2,000 µg/kg volatiles, primarily because of total xylenes. The most common volatiles noted were acetone (28 of 49 samples), trichloroethene (TCE) in 11 samples, and 2-butanone in 10 samples. Acetone ranged up to 81 µg/kg, TCE only up to an estimated 2.8 µg/kg, and 2-butanone up to 32 µg/kg.

The landfill materials are clearly not a major source of volatile organics.

Polynuclear Aromatic Hydrocarbons(PAHs)

Table 5-4 lists the results for PAHs, which are nearly ubiquitous within the landfill. Only four samples out of 49 showed no detectable levels, but the range of levels of total PAHs was from 0 to 10,952 milligrams per kilogram (mg/kg), or over 1% (BH2-S3). Five samples exceeded risk-based standards for industrial soils (EPA 1998). These were BH2-S3, BH6-S3, BH7-S3, BH8-S1, and BH10-S1. The first four were waste samples from the former District landfill. Only BH10-S1 clearly is derived from the recent, 1997-1998 fill, since it was taken from 10 to 12 feet bgs at a location where the recent fill is estimated to be 20 feet thick. The five highest concentrations of PAHs averaged 2,228 mg/kg, whereas the remaining 44 samples averaged only 2.64 mg/kg. Even so, 30 of the latter group exceeded the risk-based concentration for residential soils

for benzo(a)pyrene (87 μ/kg), and 11 exceeded the RBC for dibenzo(a,h)anthracene (87 μ/kg).

Base/Neutral Acid Extractibles (other than PAHs)

These analytical results are listed in Table 5-5. The compounds found were primarily phthalates, which accounted for 63% of the detections (83 out of 132). Other compounds noted included phenolics and phenol (18%); dibenzofuran (10%); benzoic acid (4.5%); 1,4-dichlorobenzene (3%, or four detections); and single detections of 4-chloroaniline and n-nitrosodiphenylamine.

The level of bis(2-ethylhexyl)phthalate in BH3-S3 exceeded RBCs for both residential soils and industrial soils. No other exceedances of RBCs were noted.

Pesticides/PCBs

Ten samples exceeded risk-based concentrations for residential soils due to PCBs (Table 5-6). All samples except for one sample (BH17-S1) were collected from depths certainly placing them within the former District landfill. BH17-S1 may be within the former District landfill cap or within the Driggs Corporation fill. Low levels of chlordane (alpha- and gamma-) and of DDT and its derivatives were relatively common. None of the detected concentrations came close to exceeding industrial risk-based criteria, however.

Metals

USEPA
United States Environmental Protection Agency

The primary concern for metals in the landfill materials was lead, based on previous sampling (see Appendix D). This concern is validated by the high levels of lead in some samples, 16 of which (out of 49) exceeded the United States Environmental Protection Agency (EPA) action level of 400 mg/kg (Table 5-7). Lead levels ranged from 2.8 mg/kg to 2,500 mg/kg (the latter in BH4-S3). All of the higher levels of lead occurred in samples from the former District landfill wastes; none occurred in the newly placed fill (1997-1998).

Iron exceeded the RBC for residential soils in 28 of the 49 samples, but none of these detections exceeded the RBC for industrial soils. Levels of iron ranged from nondetect (BH11-S3) to 180 mg/kg (BH4-S3) and averaged 47 mg/kg compared to the 23-mg/kg RBC for residential soils and the 610-mg/kg RBC for industrial soils. No other metals exceeded RBCs for residential soils.

5.1.1.2 Surface Soils/Landfill Materials

Table 5-2 lists all the surface soils/landfill waste samples collected at the landfill, with the time, date, and depth of sample collection and analyses requested. Locations of all sampling points are indicated on Figure 4-2. Thirty five samples were collected in total: twenty eight samples onsite, two duplicates onsite, three at Thomas School, and two background samples from the Kenilworth Aquatic Gardens. - Proposed surface soil sample #3 could not be taken due to its location outside the site boundary, and SS-20 could not be analyzed due to breakage during shipment.

Polynuclear Aromatic Hydrocarbons

Table 5-8 lists the results for PAHs, which are present in onsite samples at levels above background concentrations. Although all of the onsite and background samples showed levels of PAHs above detection, the range of total PAHs varied from 0.1 to 61.8 mg/kg in surface soil samples onsite, compared to a range of 1.1 to 3.3 mg/kg detected in the background samples at the Aquatic Gardens. The average total PAH level for onsite samples was 8.03 mg/kg, nearly four times greater than the average for background samples. Six samples exceeded risk-based standards for industrial soils (EPA, 2000), all of which were found onsite. These were SS-7, SS-11, SS-15, SS-19, SS-22, and SS-26 and its duplicate. Samples SS-7 and SS-15 were both taken adjacent to the gravel and asphalt surface of Deane Avenue which runs north-south along the base of the new fill. The content of asphalt debris could explain high levels of PAHs in these samples. Excluding SS-7, which has the highest level of PAHs for surface soils by a magnitude of at least 270%, the average total PAHs for onsite samples is only 6.18 mg/kg. This average is still greater than three times the average total PAHs for background, however.

The five highest concentrations of PAHs averaged 27.98 mg/kg, whereas the remaining twenty two onsite samples averaged only 4.70 mg/kg. However, 17 of the latter group exceeded the risk-based concentration for residential soils for benzo(a)pyrene (87 μg/kg).

In the first round of sampling, five subsurface samples exceeded industrial soil RBCs, and 30 of the 44 samples exceeded residential RBCs for benzo(a)pyrene. In the second round of sampling six surface samples exceeded industrial soil RBCs, and 17 of the 22 samples exceeded residential RBCs for benzo(a)pyrene. The average total PAHs from the second round of sampling are comparable to

those found in subsurface samples, with the exception of subsurface sample BH2-S3. The three samples collected in the schoolyard at Thomas School (SS-32, SS-33, and SS-34) average 1.77 mg/kg total PAHs and all showed levels of benzo(a)pyrene which exceeded the RBC for residential soil, as did the majority of surface soil samples (28 of 31), including the two background samples (SS-29 and SS-30). Background samples averaged 180 μg/kg of benzo(a)pyrene, and the schoolyard samples averaged 183.5 μg/kg. It is evident that the schoolyard soils cannot be said to have been impacted by the landfill but are very similar to background soils.

PCBs

Because none of the subsurface samples exceeded industrial RBCs in the first round, additional soil samples were not collected onsite. Five offsite surface soil samples (three at Thomas School and two at Kenilworth Aquatic Gardens) were analyzed for PCBs (Table 5-9). None of the samples exceeded residential risk-based concentrations.

Metals

For subsurface sampling, the primary concern for metals in the landfill materials was lead, which exceeded RBCs for residential soils in 28 of the 49 original samples. None of the surface samples taken in the second round of sampling had levels of lead exceeding residential RBCs, however. The only RCRA metal detected above the RBC standard was arsenic, which occurs at high levels in uncontaminated natural soils. All samples had levels of arsenic above residential standards, and of the 34 analyzed samples, 25 had levels above industrial RBCs, including both background samples. The range of arsenic concentration in surface soils onsite, 2.97 to 12.20 mg/kg, is below the range found in background soils, 7.31 to 12.40 mg/kg. The average concentration of arsenic in soils onsite was 5.20 mg/kg, also below the average concentration in background samples, 9.86 mg/kg. No other metals exceeded RBCs for residential soils. The schoolyard soils showed an average level of arsenic of 3.5 mg/kg which is well below background (9.8 μg/kg) and within the normal range for natural soils in the Eastern United States (Shacklette and Boerngen 1984) which average between seven and eight micrograms per kilogram.

5.1.2 Sediments

5.1.2.1 First Round of Sampling

The results are discussed under two headings, organics and inorganics.

Organics

SED-12 was collected from a location at least 1 mile upstream of the landfill in the Anacostia River, so it was regarded as "background." SED-1 also was collected sufficiently upstream of the landfill, to be considered background, since it is above the tidal influence in Watts Branch. All the other samples must be considered to certainly be within the area affected by the landfill. Although SED-2 is upstream of the landfill in Watts Branch, it still is close to the landfill and within that portion of Watts Branch affected by tidal fluctuations and flow reversals.

SED-13 and SED-14 are special cases. They were samples of silt and clay eroded off the recent fill and deposited in the silt ponds north and south of the landfill, respectively. They represent the finer-grained material eroding off the recent fill.

BTAG
Biological Technical Assistance Group (EPA Region III)

The analytical data are tabulated on Table 5-11 (volatile organics, BNAs [except PAHs], and TPHC); Table 5-12 (PAHs); and Table 5-13 (pesticides and PCBs). The data are compared to the screening levels developed by the Biological Technical Assistance Group (BTAG) of EPA Region III (EPA, 1995). The levels used for screening sediments are those at which the lowest observable effect was noted for a particular species. Exceeding these levels does not mean that the sediment is causing biological effects, but that it could do so. These standards are not promulgated or legally enforceable, but they do flag sediments that could be of concern for some species.

Table 5-11 shows that eight sediment samples exceeded BTAG values for phthalates. All of these samples could have been impacted by the landfill, and all are higher than the two background samples (SED-1 and SED-12). The problem with interpreting the results from the two background samples was that the grain sizes found were not directly comparable to the other sediment samples. This resulted in the NPS proposing a second round of sampling using sieved samples (see below).

Table 5-12 shows that PAHs are essentially ubiquitous in sediments. Both background samples contained PAHs, and the SED-1 background sample collected from Watts Branch exceeded BTAG levels for five PAHs. SED-12, in the Anacostia River, showed nine PAHs but did not exceed BTAG screening concentrations. Of the remaining samples, only SED-3 (in the stream draining the east side of the landfill) and SED-5, at the upstream end of the ditch draining the southeast side of the landfill, showed no exceedances. The most contaminated sample (SED-4) is from the stream that originates in the storm drains near Grant Street and runs alongside the landfill on its east side. It contained 11 PAHs exceeding BTAG screening values, and had a total PAH content of 13 mg/kg. It should be noted that this sample is unlikely to have been affected by the landfill, although it is possible that it has been impacted, because of the proximity of the landfill.

Table 5-13 shows the results of analyses for pesticides and PCBs in sediments.

DDT and its breakdown products DDE and DDD are in every sample, and only SED-4 does not show an exceedance of a BTAG screening value.

There is no implication that these compounds come from the former District landfill, since they occur both in background samples (SED-1 and SED-12) and in material eroded off the recent fill (SED-14 and SED-13). PCBs are almost as widespread as DDT and its breakdown products. Only SED-5 at the south end of the landfill does not contain PCBs. The fill apparently does contain PCBs, judging by SED-13 and SED-14 samples from the silt ponds, but upstream (background) samples contain PCBs as well (SED-1 and SED-12). The PCBs may have come, in part, from the former District landfill but obviously other sources are involved.

Inorganics (Target Analyte List)

No sediment sample had detectable levels of cyanide, selenium, or thallium and thus these analytes do not appear on Table 5-14. All the other TAL metals are represented, but none exceeded BTAG screening levels, where BTAG levels have been developed.

5.1.2.2 Second Round of Sediment Sampling

An overall understanding of sedimentation in the tidal Anacostia implies that sampling of surface sediment is unlikely to yield information on the impacts of the past District landfill which was closed and capped by 1970. According to the Metropolitan Washington Council of Government (MWCOG), the estimated total suspended solids (TSS) loading to the tidal Anacostia is approximately 48,200 tons, of which approximately 40,000 tons enters the river above the Kenilworth Park Landfill (MWCOG 1998, pp. 11). It is estimated that 85 percent of the TSS is trapped within the tidal reaches of the river (Ibid, pp. 10), which amounts to 34,000 tons. Over the 850 acres of surface area of the Tidal river (Ibid, pp. 4) this amounts to nearly two pounds of sediment per square foot per year. If the river was not dredged to keep a channel clear, it is evident that the river would rapidly fill with silt. The sediment samples collected near the Kenilworth Park Landfill very probably include almost no sediment or soil either derived from the landfill or impacted by the landfill. These conclusions are generally borne out by the results of the second round of sediment sampling.

Sediments collected during the second round of sampling were analyzed only for PAHs, PCBs and RCRA metals. They were also passed through a #64 sieve to remove all particles larger than very fine sand. This resulted in samples that were of much more uniform grain size than the previous samples, and which would be expected to give more comparable results. The original intention had been to sieve out all but clay and silt sized particles (with a #230 sieve) but so little of the sediment was clay and silt that this was impractical.

Because the USEPA Region III questioned whether SED-12 was "background" and to ensure that the background samples were outside the influence of the landfill, E&E enlisted the assistance of the NPS to provide a boat to give access to the river banks in the area south of Bladensburg approximately 1.75 miles north of the landfill.

The Naval Research Laboratory (Coffin et al. 1998) (Appendix I) chose a location (S-0) close to the E&E upstream background sample. They found that total PAH concentrations attached to "seston" (suspended particles) increased with distance from the mouth of the Anacostia, relative to water volume, and the total mass in the suspended particles also increased (Ibid., Figure 14). A similar pattern was seen with metals, especially lead and zinc (Ibid. Figure 15). Comparison of metal concentrations in suspended particles with concentrations in sediment showed similar average levels in both, but

greater variability in the sediments (Ibid. Table 2). Coffin et al. were not able to estimate the distances that suspended particles might travel back and forth during tidal changes, nor did they detect PCB levels in the seston in June 1997 with the analytical method used (Ibid, pp. 22).

Results of the later study (Coffin et al. 1999) (Appendix J) "indicate that PAH sources originate above the Anacostia River tidal zone" (Ibid, pp. 14). Sediments collected by E&E during the second round of sampling were analyzed for PAHs, PCBs, and RCRA metals, as discussed below.

Polynuclear Aromatic Hydrocarbons

There is no indication that sediment levels of PAHs are related to the landfill. Total PAHs were measured at 5.5 and 11.5 mg/kg in the two background samples (Table 5-15). Sediments from around the landfill reach of the river averaged 6.2 mg/kg with a range of 1.8 to 13.8. No trend in distribution could be discerned.

Polychlorinated Biphenyls

Background levels for PCBs was non-detect, and for sediments near the landfill they ranged from non-detect to 354 µg/kg (Table 5-16). The highest concentration found was in a sample from the embayment south of the landfill, between the landfill and the PEPCO power station. The distribution suggests that a source may exist close to the landfill and the power station.

RCRA

Arsenic, cadmium, lead, and mercury are all elevated with respect to the average of the two background samples (Table 5-17). The distribution of metals does not show any particular pattern, although the highest concentration of lead and relatively high concentrations of all the metals occurred close to PEPCO and south of the landfill, as it did for PCBs. This may indicate that the power station, the landfill, or other sources such as Hickey Run and Watts Branch are implicated.

5.1.3 Surface Water

µg/L
micrograms per liter

QA/QC
quality assurance/quality control

mg/L
milligrams per liter

MCL
maximum contaminant level

Organics

The only organic compounds found in the four surface water samples collected were bis(2-ethylhexyl)phthalate and acetone. In all three instances the compounds were at levels below that for which accurate quantitation could be provided and therefore all levels given are estimated. The background sample collected from Watts Branch (SW-1) above the range of tidal reversals, showed three micrograms per liter (µg/L) (estimated) of bis(2 ethyl hexyl) phthalate, and the sample downstream of SW-1 collected at a point opposite the landfill showed 8.5 µg/L (estimated). This amounts to essentially the same results for both, and implies nothing about what is migrating out of the landfill. SW-3 taken in the Anacostia River near MW-2 showed 5.3 µg/L (estimated) acetone. No acetone was found in SW-4, upstream in the Anacostia. The levels of acetone found in groundwater at the landfill (Section 5.1.4) are far too low to affect the Anacostia, but no acetone was found in the quality assurance/quality control (QA/QC) samples, so, provisionally, it could be speculated that the acetone is from the landfill. The BTAG screening level for acetone (9,000 milligrams per liter [mg/L]) is so high as to imply that the level found is completely innocuous.

Metals

Only 10 metals were found at detectable levels in surface water (Table 5-18). Of these, only two, lead and zinc, had Ambient Water Quality Criteria (both chronic and acute) for freshwater fish (EPA,1994). Lead in one sample (SW-3), opposite the landfill did exceed the chronic criterion for lead of 3.2 µg/L, with a level of 12 µg/L. This level may reflect the presence of suspended solids in the sample. The relatively high level of aluminum in SW-3 (410 µg/L) suggests the presence of clay particles in the water.

5.1.4 Groundwater

5.1.4.1 First Round of Sampling

Organics

Levels of organics in the wells around the landfill were very low, and erratically distributed (Table 5-19). Only bis(2-ethylhexyl) phthalate exceeds a maximum contaminant level (MCL) of the National Primary Drinking Water Regulations (EPA , 1999). Bis(2-ethyl-

hexyl)phthalate exceeds the MCL of 6 μg/L in both MW-4 (23 μg/L) and MW-9 (7.8J μg/L).

Inorganics

Cyanide was nondetect in all wells, but metals concentrations were very high and erratic (Table 5-20). For example, the total levels of metals in MW-7 and MW-7D (the duplicate) vary by 17.76 percent, or to state this another way, sample MW-7D has 82.26% of the metals concentration of sample MW-7. However, the more soluble major cations such as sodium and potassium are close to the same levels in both samples. If these two metals are subtracted from the total levels, then the remaining major cations, aluminum, calcium, iron, and magnesium, make up 96.06% of the metals in sample MW-7 and 96.05% of the metals in sample MW-7D. The ratio of the sum of the concentrations of aluminum, calcium, iron, and magnesium in these two samples is 398 mg/L in MW-7 to 282 mg/L in MW-7D, or 100: 70.85; and the ratio of all the lesser cations (15 in all) in these two samples is 16.326 mg/L to 11.593 mg/L, or 100: 71.03. The strong implication is that since the ratio of insoluble major and minor metals is so constant, it is accounted for by variation of a single controlling factor, which is probably the level of particulate matter in the groundwater.

When compared to the criteria such as maximum contaminant levels, action levels, or Secondary Drinking Water Standards, the levels of metals in MW-7 exceeds them in every case except for thallium and mercury.

All the wells and well points are screened at least partially against the former District landfill wastes, which were repeatedly burned. The resultant ash material is fine-grained and has a high metal content, as shown by the analyses (Section 5.1.1).

The low flow rates in these wells, a consequence of the low hydraulic conductivity (Section 4.3.10), made it very difficult to develop these wells enough to yield clear, nonturbid water. To determine the level of dissolved metals in the groundwater at the Kenilworth Landfill site, a second round of sampling was carried out in which each well was sampled for metals twice, once for unfiltered samples and once for filtered samples. The process of filtering does briefly expose the sample to the atmosphere, which may result in some oxidation and precipitation.

5.2.3 Infiltration and Groundwater Flow

The fact that there is a groundwater mound apparent in the landfill beneath the landfill cap (see Figure 5-6) despite little or no recharge,(see 5.5.5), implies that water movement is very slow. The directions of flow are radial, if one assumes relatively isotropic materials in the fill, i.e., no preferred direction of flow. Given the hydraulic gradients implied by Figure 5-6 and the hydraulic conductivities estimated by the slug tests (Table 4-3), groundwater velocities range from 4 centimeters/year at MW-10, to 40 centimeters/year at MW-2. These velocities are almost proportionate to the respective hydraulic conductivities measured at these wells, since the gradients are very similar and the assumed effective porosity (25%) is the same in every case.

These estimates of groundwater flow velocities are so low as to indicate that the mound of groundwater in the fill as shown by the hydraulic head in the wells could be the result of accumulated infiltration during the landfilling rather than from infiltration after installation of the cap.

Volumes of flow from under the filled area are highly speculative. The cross-sectional area through which groundwater exits the site to surface water could be very low. Volumes of flow are directly proportional to the postulated cross-sectional area of seepage, to the hydraulic gradient, and to the hydraulic conductivity.

Using a postulated seepage face of 1-foot depth around the landfill (0.3 meters), flows into surface water can be estimated for each segment of the landfill represented by a well (Table 5-22).

The resultant flow in liters per year is miniscule compared to the flow of the Anacostia River, being equivalent to 0.0015 cubic feet per second, or less than 1,000 gallons per day. This is less than one part in one hundred thousand of the average flow of the Anacostia River.

5.2.4 Migration of Metals into the Anacostia River

Lead

Even if the unfiltered samples of water from the first sampling of the wells were used as an estimate of dissolved lead being discharged to the river, the mass per year would be only 383 grams of lead, most of which (82%) would come from the segment represented by MW-7. By substituting the result from the sample duplicate from MW-7 for

the MW-7 sample, it would be possible to cut the calculated loading to the river by 26%. Clearly the impact of the flux of groundwater on the lead level of the river is very small, and would be undetectable by sampling the river.

The second round of ground water sampling resulted in lead levels in unfiltered samples being below the EPA action level for drinking water (15 µg/l) in all wells sampled, and non-detect in MW-2, MW-3, MW-4, and MW-6, a decline of 95% in average concentration in the groundwater.

Iron and Manganese

The levels of iron in the landfill wells as originally sampled is almost three orders of magnitude greater than the lead levels, and the level of manganese is close to two orders of magnitude greater. These metals would probably have very little detectable effect on the Anacostia River even if they were dissolved in the groundwater, since the flow of groundwater from the site is estimated at less than 0.001% of the flow in the river. The decline in lead levels in MW-1 through MW-6 after redevelopment during the second round of sampling (95 percent) confirms the influence of suspended particles, which will not migrate with the ground water. This decline also implies that the impact of iron and manganese on the ground water is correspondingly less.

5.2.5 Survey Results

The topographic survey results of the wells, well points, and boreholes are reported in Appendix C. The results have been used to draw the contours atop the recent fill (Figure 5-1), to draw the cross sections (Figures 5-2, 5-3, and 5-4), to estimate the depth of new fill (Figure 5-5), and to draw contours of the water table (Figure 5-6).

The survey shows that the new fill had already exceeded the design elevation intended (Woodburn 1996), before the filling was stopped on the west side of the site.

It also appears then some of the new fill encroached on the 100-year floodplain east of Deane Avenue.
The National Park Service has made minor modifications to the contours of the Kenilworth Landfill by grading to control runoff since the boreholes were installed. Since then, E&E has collected 28 onsite surface soil samples, the locations of which were later surveyed. These results are also included in Appendix C.

5.3 Quantities of Hazardous Substances

In order to assist the USEPA Region III to calculate a preliminary Hazard Ranking System(HRS) score, the total amount of hazardous substances that the public might be exposed to has been calculated as follows.

5.3.1 Metals

None of the soil samples exceeded RBCs for any of the RCRA metals other than arsenic. Although arsenic was found in the soil samples at concentrations higher than both residential and industrial RBCs, the range of arsenic levels in onsite samples was well within the range detected in background samples taken from the Kenilworth Aquatic Gardens. In fact the highest level of arsenic was found in one of the background samples. For these reasons, the quantities of RCRA metals at the site were not calculated.

5.3.2 Organics

None of the surface soil samples exceeded residential RBCs for PCBs, and therefore the quantity of PCBs present was not calculated. All onsite surface soil samples had detectable levels of PAHs. Because some of the samples exceeded background levels and residential and industrial RBCs, the total amount of PAHs found onsite was calculated as discussed below.

The area of Driggs fill was calculated in acres and then the weight of the top one foot of soil/fill was calculated in kilograms (kg). The total amount of PAHs detected in samples on the Driggs fill area (Appendix D) was summed and then divided by the number of samples to calculate the average total PAHs in milligrams per kg. Assuming that each sample location represents an approximately equal area and weight of soil, the metric weight of soil was then multiplied by the average concentration of total PAHs to arrive at the total amount of PAHs in Driggs fill material to which the public might be exposed. This value is estimated at 460 kg in 20,000 tons.

The mass of the top 1-foot of the remaining fill over the surface of the landfill was also calculated and multiplied by the average total PAHs found in onsite samples. Assuming that each sample location represents an approximately equal area, the total amount of PAHs in the fill that the public might be exposed to is approximately 740 kg in 88,000 tons of soil and fill outside the Driggs area.

The total amount of PAHs in the top 1-foot of material on the entire Kenilworth Landfill site to which the public might be exposed is approximately 1200 kg in approximately 110,000 tons of soil and landfill material.

Table 5-1 Subsurface Soils/Landfill Materials Sample Information
Kenilworth Park Landfill, N.E. Washington, D.C.

Sample Designation	Time/Date		Analyzes Requested	Depth/Notes
KL-MW7-S2	0945	05/05/99	TCL, TAL, TPHC	From augers
KL-BH1-S1	1145	05/05/99	TCL, TAL, TPHC	10-12 feet bgs
KL-BH1-S2	1215	05/05/99	TCL, TAL, TPHC	20-22 feet bgs
KL-BH1-S3	1235	05/05/99	TCL, TAL, TPHC	30-32 feet bgs
KL-BH2-S1	1410	05/05/99	TCL, TAL, TPHC	10-12 feet bgs
KL-BH2-S2	1425	05/05/99	TCL, TAL, TPHC	20-22 feet bgs
KL-BH2-S3	1445	05/05/99	TCL, TAL, TPHC	30-32 feet bgs
KL-BH3-S1	1525	05/05/99	TCL, TAL, TPHC	10-12 feet bgs
KL-BH3-S2	1540	05/05/99	TCL (less VOAs), TAL, TPHC	20-22 feet bgs
KL-BH3-S3	1604	05/05/99	TCL, TAL, TPHC	30-32 feet bgs
KL-BH4-S1	1645	05/05/99	TCL, TAL, TPHC	10-12 feet bgs
KL-BH4-S2	1655	05/05/99	TCL, TAL, TPHC	20-21.5 feet bgs
KL-BH4-S3	1720	05/05/99	TCL, TAL, TPHC	30-32 feet bgs
KL-BH5-S1	0905	05/06/99	TCL, TAL, TPHC	10-12 feet bgs
KL-BH5-S2	0918	05/06/99	TCL, TAL, TPHC	20-22 feet bgs
KL-BH5-S3	0959	05/06/99	TCL, TAL, TPHC	37-39 feet bgs
KL-BH6-S1	1049	05/06/99	TCL, TAL, TPHC	10-12 feet bgs
KL-BH6-S2	1058	05/06/99	TCL, TAL, TPHC	20-22 feet bgs
KL-BH6-S3	1135	05/06/99	TCL, TAL, TPHC	32-34 feet bgs
KL-BH7-S1	1210	05/06/99	TCL, TAL, TPHC	10-12 feet bgs
KL-BH7-S2	1225	05/06/99	TCL (less VOAs), TAL, TPHC	20-22 feet bgs
KL-BH7-S3	1241	05/06/99	TCL, TAL, TPHC	30-32 feet bgs
KL-BH8-S1	1445	36285	TCL, TAL, TPHC	10-12 feet bgs
KL-BH8-S2	1500	05/06/99	TCL, TAL, TPHC	20-22 feet bgs
KL-BH9-S1	1605	05/06/99	TCL, TAL, TPHC	10-12 feet bgs
KL-BH9-S2	1615	05/06/99	TCL, TAL, TPHC	23-25 feet bgs
KL-BH9-S3	1635	05/06/99	TCL, TAL, TPHC	30-32 feet bgs
KL-BH10-S1	1705	05/06/99	TCL, TAL, TPHC	10-12 feet bgs

Key at end of table

Table 5-1 Subsurface Soils/Landfill Materials Sample Information Kenilworth Park Landfill, N.E. Washington, D.C.

Sample Designation	Time/Date		Analyzes Requested	Depth/Notes
KL-BH10-S2D	1717	05/06/99	TCL, TAL, TPHC	Duplicate
KL-BH11-S1	0855	05/07/99	TCL, TAL, TPHC	10-12 feet bgs
KL-BH11-S2	0910	05/07/99	TCL, TAL, TPHC	20-22 feet bgs
KL-BH11-S3	0920	05/07/99	TCL (less VOAs), TAL, TPHC	25-27 feet bgs
KL-BH12-S1	1025	05/07/99	TCL, TAL, TPHC	10-12 feet bgs
KL-BH12-S2	1030	05/07/99	TCL, TAL, TPHC	20-22 feet bgs
KL-BH13-S1	1110	05/07/99	TCL, TAL, TPHC	10-12 feet bgs
KL-BH13-S2	1125	05/07/99	TCL, TAL, TPHC	20-22 feet bgs
KL-BH13-S3	1150	05/07/99	TCL, TAL, TPHC	30-32 feet bgs
KL-BH14-S1	1245	05/07/99	TCL (less VOAs), TAL, TPHC	10-12 feet bgs
KL-BH15-S1	1505	05/07/99	TCL, TAL, TPHC	10-12 feet bgs
KL-BH15-S2	1520	05/07/99	TCL (less VOAs), TAL, TPHC	20-22 feet bgs
KL-BH16-S1	0915	05/10/99	TCL, TAL, TPHC	from auger
KL-BH16-S2	0935	05/10/99	TCL (less VOAs), TAL, TPHC	22-24 feet bgs
KL-BH16-S3	1000	05/10/99	TCL, TAL, TPHC	30-32 feet, not fill
KL-MW9-S1	1415	05/10/99	TCL (less VOAs), TAL, TPHC	12-14 feet bgs
KL-MW10-S1	1639	05/10/99	TCL, TAL, TPHC	From augers
KL-MW11-S1	0955	05/11/99	TCL, TAL, TPHC	8.5-10.5 feet bgs
KL-BH17-S1	1100	05/11/99	TCL, TAL, TPHC	5-7 feet bgs
KL-BH18-S2	1135	05/11/99	TCL, TAL, TPHC	5-7 feet bgs

Key:

bgs = Below ground surface.
(less VOAs) = Not enough sample material was collected to analyze for VOAs.
TAL = Target Analyte List containing 23 metals and cyanide (aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, potassium, selenium, silver, sodium, thallium, vanadium, and zinc).
TCL = Target Compound List, comprising Volatile Organics (VOAs), Base/Neutral Acid Extractables (BNAs), and Pesticides/Polychlorinated biphenyls (Pest/PCBs).
TPHC = Total petroleum hydrocarbons.

Table 5-2 Surface Soils/Landfill Materials Sample Information
Kenilworth Park Landfill, N.E. Washington, D.C.

Sample Designation			Analyzes	
	Time	Date	Requested	Depth
KL-SS-1	1200	3/17/00	PAH, RCRA Metals	0-6 inches
KL-SS-2	1150	3/17/00	PAH, RCRA Metals	0-6 inches
KL-SS-4	1135	3/20/00	PAH, RCRA Metals	0-6 inches
KL-SS-5	1225	3/17/00	PAH, RCRA Metals	0-6 inches
KL-SS-6	1220	3/17/00	PAH, RCRA Metals	0-6 inches
KL-SS-7	1210	3/17/00	PAH, RCRA Metals	0-6 inches
KL-SS-8	1205	3/17/00	PAH, RCRA Metals	0-6 inches
KL-SS-9	1230	3/17/00	PAH, RCRA Metals	0-6 inches
KL-SS-10	1240	3/17/00	PAH, RCRA Metals	0-6 inches
KL-SS-11	1250	3/17/00	PAH, RCRA Metals	0-6 inches
KL-SS-12	1145	3/20/00	PAH, RCRA Metals	0-6 inches
KL-SS-12 DUP	1150	3/20/00	PAH, RCRA Metals	0-6 inches
KL-SS-13	1309	3/17/00	PAH, RCRA Metals	0-6 inches
KL-SS-14	1300	3/17/00	PAH, RCRA Metals	0-6 inches
KL-SS-15	1100	3/20/00	PAH, RCRA Metals	0-6 inches
KL-SS-16	1325	3/17/00	PAH, RCRA Metals	0-6 inches
KL-SS-17	1320	3/17/00	PAH, RCRA Metals	0-6 inches
KL-SS-18	1315	3/17/00	PAH, RCRA Metals	0-6 inches
KL-SS-19	1400	3/17/00	PAH, RCRA Metals	0-6 inches
KL-SS-20	1412	3/17/00	PAH, RCRA Metals	0-6 inches
KL-SS-21	1410	3/17/00	PAH, RCRA Metals	0-6 inches
KL-SS-22	1355	3/17/00	PAH, RCRA Metals	0-6 inches
KL-SS-23	1346	3/17/00	PAH, RCRA Metals	0-6 inches
KL-SS-24	1419	3/17/00	PAH, RCRA Metals	0-6 inches
KL-SS-25	1115	3/20/00	PAH, RCRA Metals	0-6 inches
KL-SS-26	1205	3/20/00	PAH, RCRA Metals	0-6 inches
KL-SS-26 DUP	1210	3/20/00	PAH, RCRA Metals	0-6 inches
KL-SS-27	1220	3/20/00	PAH, RCRA Metals	0-6 inches
KL-SS-28	1240	3/20/00	PAH, RCRA Metals	0-6 inches
KL-SS-29	1415	3/20/00	PAH, PCBs, RCRA Metals	0-6 inches
KL-SS-30	1415	3/20/00	PAH, PCBs, RCRA Metals	0-6 inches
KL-SS-31	1600	3/20/00	PAH, PCBs, RCRA Metals	0-6 inches
KL-SS-32	1600	3/21/00	PAH, PCBs, RCRA Metals	0-6 inches
KL-SS-33	1610	3/21/00	PAH, PCBs, RCRA Metals	0-6 inches
KL-SS-34	1615	3/21/00	PAH, PCBs, RCRA Metals	0-6 inches

KEY

RCRA = Resource Conservation and Recovery Act

(RCRA Metals include Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, and Silver).

PAHs = Polynuclear Aromatic Hydrocarbons.

PCBs = Polychlorinated Biphenyls.

Table 5-3 Analytical Results for Subsurface Soils/Landfill Materials
Volatile Organics (µg/kg)
Kenilworth Park Landfill, N.E. Washington, D.C.

Parameter	Sample Identification [a]										RBC
	MW7	BH1	BH1	BH1	BH2	BH2	BH2	BH3	BH3	BH3	
	S2	S1	S2	S3	S1	S2	S3	S1	S2	S3	
Acetone	25	8.4J	11J	26	9.0J	11J	16	16	NS	18	7,800,000
Benzene	1.5J	—	—	—	—	—	—	—	NS	—	22,000
2-Butanone	32	30	33	13	31	32	—	—	NS	—	47,000,000
Carbon disulfide	3.6J	—	—	—	—	—	—	—	NS	—	7,800,000
Chlorobenzene	—	—	—	—	—	—	—	—	NS	—	1,600,000
Chloroethane	—	—	—	—	—	—	—	—	NS	—	220,000
1, 2-dichloropropane	—	—	—	—	—	—	—	—	NS	—	9,400
Ethylbenzene	1.7J	—	—	—	—	—	—	—	NS	—	7,800,000
2-Hexanone	1.6J	—	—	—	—	3.9J	—	—	NS	—	3,100,000
Methylene chloride[b]	—	—	—	—	—	—	—	—	NS	—	85,000
Toluene	1.8J	—	—	—	—	—	—	—	NS	—	16,000,000
Total xylenes	4.9J	—	—	—	—	—	—	—	NS	—	160,000,000
1, 1, 2, 2-Tetrachloroethane	—	—	—	—	—	—	—	—	NS	—	3,200
Tetrachloroethene	—	—	—	—	—	—	—	—	NS	—	12,000
Trans-1, 2-dichloroethene	—	—	—	—	—	—	—	—	NS	—	1,600,000
Trichloroethene	—	—	—	2.8J	—	—	—	1.4J	NS	—	58,000
Vinyl chloride	—	—	—	—	—	—	—	—	NS	—	34,000

Key at the end of table

Table 5-3 Analytical Results for Subsurface Soils/Landfill Materials Volatile Organics (µg/kg) Kenilworth Park Landfill, N.E. Washington, D.C.

Parameter	Sample Identification[a]										RBC
	BH4	BH4	BH4	BH5	BH5	BH5	BH6	BH6	BH6	BH7	
	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	
Acetone	—	76	20	7.0J	—	9.2J	—	15	—	—	7,800,000
Benzene	—	—	—	—	—	—	—	—	—	—	22,000
2-Butanone	—	—	9.2J	—	—	—	—	—	—	—	47,000,000
Carbon disulfide	—	—	—	—	—	—	—	—	—	—	7,500,000
Chlorobenzene	—	—	—	—	—	—	—	—	—	—	1,600,000
Chloroethane	—	—	17	—	—	—	—	—	—	—	220,000
1, 2-Dichloropropane	—	—	—	—	—	—	—	—	—	—	9,400
Ethylbenzene	—	—	—	—	—	—	—	—	—	—	7,800,000
2-Hexanone	—	—	—	—	—	—	—	—	—	—	3,100,000
Methylene chloride[b]	—	—	—	—	—	1.8J	—	—	—	—	85,000
Toluene	—	—	—	—	—	—	—	—	—	—	16,000,000
Total xylenes	—	—	—	—	—	—	—	—	—	—	160,000,000
1, 1, 2, 2-Tetrachloroethane	—	—	—	—	—	—	—	—	—	—	3,200
Tetrachloroethene	—	—	—	—	—	—	—	—	—	—	12,000
Trans-1,2-dichloroethene	—	—	—	—	—	—	—	—	—	—	1,600,000
Trichloroethene	—	—	—	1.5J	1.4J	—	—	—	—	—	58,000
Vinyl chloride	—	—	—	—	—	2.4J	—	—	—	—	34,000

Key at the end of table

Table 5-3 Analytical Results for Subsurface Soils/Landfill Materials
Volatile Organics (µg/kg)
Kenilworth Park Landfill, N.E. Washington, D.C.

Parameter	Sample Identification[a]										RBCs
	BH7	BH7	BH8	BH8	BH9	BH9	BH9	BH10	BH10	BH10	
	S2	S3	S1	S2	S1	S2	S3	S1	S2	S2-D	
Acetone	NS	15	9.3J	19	—	—	81	—	—	—	7,800,000
Benzene	NS	—	—	—	—	—	—	—	—	—	22,000
2-Butanone	NS	—	—	—	—	—	32	—	—	—	47,000,000
Carbon disulfide	NS	3.5J	1.2J	2.6J	—	—	3.4J	—	—	—	7,500,000
Chlorobenzene	NS	1.6J	—	—	—	—	—	—	—	—	1,600,000
Chloroethane	NS	—	—	—	—	—	—	—	—	—	220,000
1, 2-Dichloropropane	NS	—	—	—	—	—	—	—	—	—	9,400
Ethylbenzene	NS	5.8J	—	—	—	—	—	—	—	—	7,800,000
2-Hexanone	NS	—	—	—	—	—	—	—	—	—	3,100,000
Methylene chloride[b]	NS	1.4J	—	—	—	—	—	—	—	—	85,000
Toluene	NS	5.1J	—	—	—	—	—	—	—	—	16,000,000
Total xylenes	NS	8.1J	—	—	—	—	—	—	—	—	160,000,000
1, 1, 2, 2-Tetrachloroethane	NS	—	—	1.5J	—	—	—	—	—	—	3,200
Tetrachloroethene	NS	3.2J	—	—	—	—	—	—	—	—	12,000
Trans-1,2-dichloroethene	NS	2.9J	—	—	—	—	—	—	—	—	1,600,000
Trichloroethene	NS	—	—	—	—	—	—	—	—	—	58,000
Vinyl chloride	NS	3.2J	4.4J	—	—	—	3.4J	—	—	—	34,000

Key at the end of table

Table 5-3 Analytical Results for Subsurface Soils/Landfill Materials
Volatile Organics (µg/kg)
Kenilworth Park Landfill, N.E. Washington, D.C.

Parameter	Sample Identification[a]										RBCs
	BH11	BH11	BH11	BH12	BH12	BH13	BH13	BH13	BH14	BH15	
	S1	S2	S3	S1	S2	S1	S2	S3	S1	S1	
Acetone	—	8.9J	NS	11J	14J	----	—	11J	NS	10J	7,800,000
Benzene	—	—	NS	1.8J	—	—	—	—	NS	—	22,000
2-Butanone	—	—	NS	—	—	—	—	—	NS	—	47,000,000
Carbon disulfide	—	—	NS	—	—	—	—	—	NS	—	7,500,000
Chlorobenzene	—	—	NS	—	—	—	—	—	NS	—	1,600,000
Chloroethane	—	—	NS	—	—	—	—	—	NS	—	220,000
1, 2-Dichloropropane	—	—	NS	6.7	—	—	—	—	NS	—	9,400
Ethylbenzene	—	—	NS	—	—	—	—	—	NS	—	7,800,000
2-Hexanone	—	—	NS	—	—	—	—	—	NS	—	3,100,000
Methylene chloride[b]	—	—	NS	—	—	—	1.2J	—	NS	1.2J	85,000
Toluene	—	—	NS	—	1.6J	—	—	—	NS	—	16,000,000
Total xylenes	—	—	NS	—	—	—	—	—	NS	—	160,000,000
1, 1, 2, 2-Tetrachloroethane	—	—	NS	1.4J	—	—	—	—	NS	—	3,200
Tetrachloroethene	—	—	NS	—	—	—	—	—	NS	—	12,000
Trans-1,2-dichloroethene	—	—	NS	—	—	—	—	—	NS	—	1,600,000
Trichloroethene	1.9J	1.4J	NS	1.6J	1.9J	1.7J	—	1.6J	NS	1.9J	58,000
Vinyl chloride	—	—	NS	—	—	—	—	—	NS	—	34,000

Key at the end of table

Table 5-3 Analytical Results for Subsurface Soils/Landfill Materials
Volatile Organics (µg/kg)
Kenilworth Park Landfill, N.E. Washington, D.C.

Parameter	Sample Identification[a]										RBCs
	BH15	BH15	BH16	BH16	BH16	MW9	MW10	MW11	BH17	BH18	
	S1	S2	S1	S2	S3	S1	S1	S1	S1	S1	
Acetone	10J	NS	6.6J	NS	5.6J	NS	—	11J	10J	24	7,800,000
Benzene	—	NS	—	NS	—	NS	74	—	—	—	22,000
2-Butanone	—	NS	—	NS	3.6J	NS	—	—	—	9.3J	47,000,000
Carbon disulfide	—	NS	—	NS	—	NS	—	—	—	—	7,500,000
Chlorobenzene	—	NS	—	NS	—	NS	—	—	—	—	1,600,000
Chloroethane	—	NS	—	NS	—	NS	—	—	—	—	220,000
1, 2-Dichloropropane	—	NS	—	NS	—	NS	—	—	—	—	9,400
Ethylbenzene	—	NS	—	NS	—	NS	280	—	—	—	7,800,000
2-Hexanone	—	NS	—	NS	—	NS.	67	—	—	—	3,100,000
Methylene chloride[b]	1.2J	NS	—	NS	—	NS	1.2J	—	—	—	85,000
Toluene	—	NS	—	NS	—	NS	180	—	—	—	16,000,000
Total xylenes	—	NS	—	NS	—	NS	2200	—	—	—	160,000,000
1, 1, 2, 2-Tetrachloroethane	—	NS	—	NS	—	NS	—	—	—	—	3,200
Tetrachloroethene	—	NS	—	NS	—	NS	—	—	5.6J	—	12,000
Trans-1,2-dichloroethene	—	NS	—	NS	—	NS	—	—	—	—	1,600,000
Trichloroethene	1.9J	NS	—	NS	—	NS	—	—	—	—	58,000
Vinyl chloride	—	NS	2.6J	NS	—	NS	—	—	—	2.9J	34,000

Key at the end of table

Table 5-3 Analytical Results for Subsurface Soils/Landfill Materials Volatile Organics (µg/kg) Kenilworth Park Landfill, N.E. Washington, D.C.

[a] See Table 5-1 for sample collection information.
[b] Methylene chloride is a common laboratory artifact.

Note: Figures in bold indicate exceedences of RBCs.

Key:

J	= Estimated.
Ug/kg	= Micrograms per kilograms
NS	= Not samples.
RBCs	= Risk-Based Concentrations for Residential Soils (EPA Region III, 1998).
—	= Not detected.

Table 5-4 **Analytical Results for Subsurface Soils/Landfill Materials—Polynuclear Aromatic Hydrocarbons (µg/kg unless otherwise noted) Kenilworth Park Landfill, N.E. Washington, D.C. (Cont.)**

Parameter	Sample Identification[a]										RBC (ug/kg)
	MW7	BH1	BH1	BH1	BH2	BH2	BH2	BH3	BH3	BH3	
	S2	S1	S2	S3	S1	S2	S3	S1	S2	S3	
Acenaphthene	—	—	57J	—	—	—	280K	—	75	280J	4,700,000
Acenaphthylene	—	47J	56J	—	—	—	37K	—	87	270J	—
Anthracene	120	65J	99J	—	—	—	550K	—	180	—	23,000,000
Benzo(a)anthracene	190J	140J	200J	—	130J	—	**180K**	—	260	310J	870
Benzo(a)pyrene	**170J**	**130J**	**190J**	—	130J	—	**760K**	—	**230**	**640J**	87
Benzo(b)fluoranthene	180J	96J	140J	—	120J	—	**600K**	—	230	620J	870
Benzo(g,h,i)perylene	57J	64J	—	—	57J	—	**760K**	—	79	250J	—
Benzo(k)fluoranthene	150J	1.20J	150J	—	120J	—	**600K**	—	220	520J	8,700
Chrysene	210	140J	220J	—	140J	—	**870K**	—	280	1,500	87,000
Dibenzo(a,h)anthracene	—	—	63J	—	—	—	**260K**	—	—	—	87
Fluoranthene	440	260J	420J	—	240J	41J	2,000K	—	760	1,500J	3,100,000
Fluorene	49J	—	41J	—	—	—	370K	—	96J	420	3,100,000
Indeno(1,2,3-cd)pyrene	65J	120J	260J	—	92J	—	**970K**	—	78J	—	870
2-Methylnaphthalene	120J	—	—	—	—	—	65KJ	—	—	390J	1,600,000
Naphthalene	210J	42J	42J	—	—	—	250K	—	41J	—	1,600,000
Phenanthrene	340	200J	320J	—	110J	38J	1,900K	—	480	2,200	—
Pyrene	200	170J	350J	—	130J	—	500K	—	200	1,900	2,300,000
Total PAHs (mg/kg)	2.2	1.6	2.6	0	1.3	0.1	10,952	—	3.3	10.4	NA

Key at end of table.

Table 5-4 **Analytical Results for Subsurface Soils/Landfill Materials—Polynuclear Aromatic Hydrocarbons (µg/kg unless otherwise noted) Kenilworth Park Landfill, N.E. Washington, D.C. (Cont.)**

Parameter	Sample Identification[a]									RBC (ug/kg)
	BH4	BH4	BH4	BH5	BH5	BH5	BH6	BH6	BH6	
	S1	S2	S3	S1	S2	S3	S1	S2	S3	
Acenaphthene	150J	86J	—	—	—	—	—	41J	1,600J	4,700,000
Acenaphthylene	—	450	—	—	45J	—	—	—	—	—
Anthracene	260J	220J	—	55J	64J	100J	40J	140J	2,600J	23,000,000
Benzo(a)anthracene	590	310J	74J	150J	130J	320J	110J	190J	3,700	870
Benzo(a)pyrene	**520**	**240J**	75J	**160J**	**110J**	**320J**	**100J**	**170J**	**2,900**	87
Benzo(b)fluoranthene	440	330J	62J	160J	110J	280J	94J	120J	1,900	870
Benzo(g,h,i)perylene	320	100J	85J	130J	100J	180J	100J	170J	2,700	—
Benzo(k)fluoranthene	460	320J	66J	140J	120J	300J	99J	140J	1800	8,700
Chrysene	640	380	82J	160J	140J	340J	120J	180J	4200	87,000
Dibenzo(a,h)anthracene	**130J**	44J	—	—	—	**340J**	—	61J	**1,100**	87
Fluoranthene	1,400	1,000	92J	340J	230J	78J	250J	460	7,700	3,100,000
Fluorene	91J	84J	—	—	—	560	—	74J	1,800	3,100,000
Indeno(1,2,3-cd)pyrene	600	46J	110J	110J	87J	240J	83J	170J	3,600	870
2-Methylnaphthalene	130J	76J	—	—	—	43J	—	—	3,800	1,600,000
Naphthalene	86J	76J	—	—	—	100J	—	—	9,200	1,600,000
Phenanthrene	900	800	48J	160J	130J	400	150J	450	12,000	—
Pyrene	920	560	81J	280J	200J	290J	210J	380	8,000	2,300,000
Total PAHs (mg/kg)	7.6	5.6	0.8	1.8	1.5	1.5	1.4	2.7	68.6	NA

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Table 5-4 Analytical Results for Subsurface Soils/Landfill Materials—Polynuclear Aromatic Hydrocarbons (µg/kg unless otherwise noted) Kenilworth Park Landfill, N.E. Washington, D.C. (Cont.)

Parameter	Sample Identification[a]										RBC (ug/kg)
	BH7	BH7	BH7	BH8	BH8	BH9	BH9	BH9	BH10	BH10	
	S1	S2	S3	S1	S2	S1	S2	S3	S1	S2	
Acenaphthene	—	—	6,000	220J	—	—	—	54J	750J	—	4,700,000
Acenaphthylene	—	—	2,000J	77J	—	—	—	—	2,200J	—	—
Anthracene	—	—	14,000	650	72J	71J	—	180J	5,900	—	23,000,000
Benzo(a)-anthracene	—	45J	**21,000**	—	200J	350J	—	500	**8,800**	—	870
Benzo(a)pyrene	—	48J	**18,000**	**1,000**	**190J**	**140J**	—	**570**	**7,900**	—	87
Benzo(b)fluor-anthene	—	47J	**16,000**	1,000	170J	110J	—	450	**5,400**	—	870
Benzo(g,h,i)perylene	—	58J	8,300	340	170J	140J	—	650	7,300	—	—
Benzo(k)fluor-anthene	—	—	**14,000**	880	170J	130J	—	410	5,700	—	8,700
Chrysene	—	56	20,000	1,200	230J	150J	—	500	8,300	—	87,000
Dibenzo(a,h)anthracene	—	—	**3,400**	**170J**	68J	—	—	**200J**	**2,500J**	—	87
Fluoranthene	—	75J	57,000	3,000	400	310J	—	880	24,000	71J	3,100,000
Fluorene	—	—	8,300	390	51J	—	—	65J	2,900J	—	3,100,000
Indeno(1,2,3-cd)pyrene	—	90J	**17,000**	590	230J	120J	—	780	**13,000**	40J	870
2-Methylnaphthalene	—	—	1,000J	—	160J	—	—	—	—	—	1,600,000
Naphthalene	—	—	3,800J	—	82J	—	—	—	—	—	1,600,000
Phenanthrene	—	—	5,100	2,000	240J	240J	—	586	20,000	42J	—
Pyrene	—	70J	24,000	940	250J	270J	—	690	14,000	57J	2,300,000
Total PAHs (mg/kg)	—	0.5	284.8	12.4	2.6	2.0	0	6.5	128.7	0.2	NA

Table 5-4 Analytical Results for Subsurface Soils/Landfill Materials—Polynuclear Aromatic Hydrocarbons (µg/kg unless otherwise noted) Kenilworth Park Landfill, N.E. Washington, D.C. (Cont.)

Parameter	Sample Identification[a]										RBC (ug/kg)
	BH10	BH11	BH11	BH11	BH12	BH12	BH13	BH13	BH13	BH14	
	S2-D	S1	S2	S3	S1	S2	S1	S2	S3	S1	
Acenaphthene	—	—	—	140J	—	—	51J	—	110J	—	4,700,000
Acenaphthylene	—	—	37J	43J	—	—	—	—	—	48J	—
Anthracene	—	—	82J	280J	45J	95J	130J	—	430	130J	23,000,000
Benzo(a)anthracene	—	65J	260J	260J	52J	340J	460J	73J	820	500	870
Benzo(a)pyrene	—	63J	**230J**	**190J**	—	**340J**	**400**	61J	**590**	**520**	87
Benzo(b)fluoranthene	—	66J	220J	190J	52J	310J	450	55J	580	500	870
Benzo(g,h,i)perylene	—	48J	84J	81J	—	180J	160J	40J	210J	250J	—
Benzo(k)fluoranthene	—	51J	220J	190J	—	350J	450	56J	580	570	8,700
Chrysene	—	74J	260J	280J	73J	380J	540	72J	880	590	87,000
Dibenzo(a,h)anthracene	—	—	59J	—	—	**110J**	**110J**	—	**130J**	**120J**	87
Fluoranthene	52J	120J	480J	720	94J	600	800	180J	1,600	920	3,100,000
Fluorene	—	—	—	370J	57J	—	576	—	160J	—	3,100,000
Indeno(1,2,3-cd)pyrene	—	47J	68J	62J	—	160J	130J	43J	200J	210J	870
2-Methylnaphthalene	—	—	—	280J	140J	—	49J	—	—	130J	1,600,000
Naphthalene	—	—	—	820	120J	—	47	—	—	95J	1,600,000
Phenanthrene	—	82J	250J	1,300	220J	340J	530	160J	1,500	540	—
Pyrene	39J	—	480	850	210J	640	910	150J	1,700	1,000	2,300,000
Total PAHs (mg/kg)	0.1	0.6	2.7	6.1	1.1	5.7	5.8	0.9	9.5	6.1	NA

Table 5-4 **Analytical Results for Subsurface Soils/Landfill Materials— Polynuclear Aromatic Hydrocarbons (µg/kg unless otherwise noted) Kenilworth Park Landfill, N.E. Washington, D.C. (Cont.)**

Parameter	Sample Identification [a]										RBC (ug/kg)
	BH15	BH15	BH16	BH16	BH16	MW9	MW10	MW11	BH17	BH18	
	S1	S2	S1	S2	S3	S1	S1	S1	S1	S1	
Acenaphthene	—	—	81J	—	370J	—	7,400J	—	—	—	4,700,000
Acenaphthylene	—	—	83J	58J	89J	44J	2,800J	95J	—	—	—
Anthracene	—	62J	190J	99J	440J	130J	9,600	110J	180J	—	23,000,000
Benzo(a)anthracene	—	150J	370J	250J	690	260J	7,800	210J	370J	65J	870
Benzo(a)pyrene	—	**140J**	**310J**	**230J**	**680**	**190J**	**6,000J**	**180J**	**340J**	**68J**	87
Benzo(b)fluoranthene	—	130J	360J	200J	700	180J	**4,600J**	140J	320J	48J	870
Benzo(g,h,i)perylene	—	79J	210J	210J	430	110J	2200	210J	—	88J	—
Benzo(k)fluranthene	—	130J	330J	220J	700	190J	5,000J	150J	300J	51J	8,700
Chrysene	—	160J	410J	270J	830	270J	7,000J	210J	410	72J	87,000
Dibenzo(a,h)anthracene	—	—	**110J**	**93J**	**180J**	56J	**950**	**90J**	—	—	87
Fluoranthene	76J	320J	1,200	390J	2,100	530	2,100	430	860J	100J	3,100,000
Fluorene	—	—	110J	56J	140J	66J	9,900	39J	—	—	3,100,000
Indeno(1,2,3-cd)pyrene	—	74J	130J	360J	290J	180J	**2,000**	390J	360J	120J	870
2-Methylnaphthalene	—	—	240J	170J	—	42J	13,000	—	—	—	1,600,000
Naphthalene	—	—	250J	110J	—	76J	38,000	—	—	—	1,600,000
Phenanthrene	52J	260J	680	330J	880	420	31,000	270J	600J	—	—
Pyrene	73J	320J	480	380J	980	280J	15,000	300J	450J	120J	2,300,000
Total PAHs (mg/kg)	0.2	1.8	5.5	3.4J	7.6	3.0	183.3	2.8	4.6	0.7	—

Table 5-4 Analytical Results for Subsurface Soils/Landfill Materials—Polynuclear Aromatic Hydrocarbons (µg/kg unless otherwise noted) Kenilworth Park Landfill, N.E. Washington, D.C. (Cont.)

[a] Refer to Table 5-1 for sample collection information.

Note: Figures in bold are exceedances of RBCs.

Key:

J	=	Estimated.
K	=	× 1000.
µg/kg	=	Micrograms per kilogram.
mg/kg	=	Milligrams per kilogram.
NA	=	Not applicable.
PAHs	=	Polynuclear aromatic hydrocarbons.
RBCs	=	Risk-Based Concentrations, Residential Site (EPA Region III 1998).
—	=	Not detected.

Table 5-5 Analytical Results for Subsurface Soils/Landfill Materials Base/Neutral Acid Extractables (Excluding PAHs) (µg/kg) Kenilworth Park Landfill, N.E. Washington, D.C.

Parameter	Sample Identification[a]										RBC
	MW-7	BH1	BH1	BH1	BH2	BH2	BH2	BH3	BH3	BH3	
	S2	S1	S2	S3	S1	S2	S3	S1	S2	S3	
Benzoic Acid	320J	—	—	—	—	—	—	—	—	—	31,000,000
Bis(2-ethylhexyl)phthalate	1,200	62J	5,100	63J	52J	81J	—	—	310J	**4,000K**	46,000
Butyl benzyl phthalate	310	—	110J	—	69J	—	—	—	140J	99,000	16,000,000
4-Chloroaniline	—	—	—	—	—	—	—	—	—	—	310,000
Dibenzofuran	—	—	—	—	—	—	190,000	—	49J	—	310,000
1, 4-Dichlorobenzene	210J	—	—	—	—	—	—	—	—	—	27,000
Diethylphthalate	—	—	—	—	—	—	—	—	—	—	63,000,000
2, 4-Dimethylphenol	—	—	—	—	—	—	—	—	—	—	1,600,000
Dimethylphthalate	—	—	—	—	—	—	—	—	—	5,400	780,000,000
Di-n-butyl phthalate	110J	—	52J	—	—	—	—	—	—	190,000	7,800,000
Di-n-octylphthalate	170J	—	230J	—	—	—	—	—	—	88,000	1,600,000
4-Methylphenol	540J	—	—	—	—	—	—	—	—	2,200	390,000
n-Nitrosodiphenylamine	—	—	—	—	—	—	—	—	—	6,605	130,000
Pentachlorophenol	130J	—	—	—	—	—	—	—	—	—	5,300
Phenol	65J	—	—	—	—	—	—	—	—	2,100J	47,000,000

Key at end of table

Table 5-5 Analytical Results for Subsurface Soils/Landfill Materials Base/Neutral Acid Extractables (Excluding PAHs) (µg/kg) Kenilworth Park Landfill, N.E. Washington, D.C.

Parameter	Sample Identification[a]										RBC
	BH4	BH4	BH4	BH5	BH5	BH5	BH6	BH6	BH6	BH7	
	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	
Benzoic Acid	—	410J	—	—	—	140J	—	—	—	—	31,000,000
Bis(2-ethylhexyl)phthalate	46J	72J	110J	56J	91J	76J	—	—	14,000	—	46,000
Butyl benzyl phthalate	—	—	—	—	—	1,400	—	—	15,000	—	16,000,000
4-Chloroaniline	—	—	—	—	—	—	—	—	—	—	310,000
Dibenzofuran	82J	57J	—	—	—	—	—	—	—	—	310,000
1, 4-Dichlorobenzene	—	—	—	—	—	—	—	—	1,000J	—	27,000
Diethylphthalate	—	—	—	—	—	—	—	—	—	—	63,000,000
2, 4-Dimethylphenol	—	—	—	—	—	—	—	—	—	—	1,600,000
Dimethylphthalate	—	—	—	—	—	—	—	—	—	—	780,000,000
Di-n-butylphthalate	—	—	—	—	—	—	—	—	980J	—	7,800,000
Di-n-octylphthalate	—	110J	—	—	—	76J	—	—	—	—	1,600,000
4-Methylphenol	—	54J	48J	—	—	—	—	—	810J	—	390,000
n-Nitrosodiphenylamine	—	—	—	—	—	320J	—	—	—	—	130,000
Pentachlorophenol	—	—	—	—	—	—	—	—	—	—	5,300
Phenol	—	—	—	—	—	—	—	—	—	—	47,000,000

Key at end of table

Table 5-5 Analytical Results for Subsurface Soils/Landfill Materials
Base/Neutral Acid Extractables (Excluding PAHs) (µg/kg unless otherwise noted)
Kenilworth Park Landfill, N.E. Washington, D.C. (Cont.)

Parameter	Sample Identification[a]										RBC
	BH7	BH7	BH8	BH8	BH9	BH9	BH9	BH10	BH10	BH10	
	S2	S3	S1	S2	S1	S2	S3	S1	S2	S2-D	
Benzoic Acid	—	—	—	—	—	—	—	—	—	—	31,000,000
Bis(2-ethylhexyl)phthalate	140J	1,500J	54J	1100	—	—	610J	—	—	—	46,000
Butyl benzyl phthalate	140J	2,000J	51J	—	—	—	67J	—	—	—	16,000,000
4-Chloroaniline	81J	—	—	—	—	—	—	—	—	—	310,000
Dibenzofuran	—	4,800	140J	—	—	—	43J	1,600J	—	—	310,000
1, 4-Dichlorobenzene	—	—	—	—	—	—	—	—	—	—	27,000
Diethylphthalate	—	—	—	—	—	—	—	—	—	—	63,000,000
2, 4-Dimethylphenol	—	—	—	—	—	—	—	—	—	—	1,600,000
Dimethylphthalate	—	—	—	—	—	—	—	—	—	—	780,000,000
Di-n-butylphthalate	—	440J	—	—	—	—	—	—	—	—	7,800,000
Di-n-octylphthalate	—	—	—	—	—	—	—	—	—	—	1,600,000
4-Methylphenol	—	590J	—	330J	—	—	51J	—	—	—	390,000
n-Nitrosodiphenylamine	—	—	—	—	—	—	—	—	—	—	130,000
Pentachlorophenol	—	—	—	—	—	—	—	—	—	—	5,300
Phenol	—	—	—	—	—	—	—	—	—	—	47,000,000

Key at end of table

Table 5-5 Analytical Results for Subsurface Soils/Landfill Materials Base/Neutral Acid Extractables (Excluding PAHs) (µg/kg unless otherwise noted) Kenilworth Park Landfill, N.E. Washington, D.C. (Cont.)

Parameter	Sample Identification[a]										RBC
	BH11	BH11	BH11	BH12	BH12	BH13	BH13	BH13	BH14	BH15	
	S1	S2	S3	S1	S2	S1	S2	S3	S1	S1	
Benzoic Acid	—	—	—	—	—		—			—	31,000,000
Bis(2-ethylhexyl)phthalate	—	1,300	560	3,900	130J	44J	—	77J	120J	—	46,000
Butyl benzyl phthalate	120J	—	—	310J		—	—	—	—	—	16,000,000
4-Chloroaniline	—	—	—	—	—	—	—	—	—	—	310,000
Dibenzofuran	—	—	200J	—	—	42J	—	100J	48J	—	310,000
1, 4-Dichlorobenzene	—	—	79J		—	—	—	—	—	—	27,000
Diethylphthalate	—	—	—	400J	—	—	—	200J	550J	240J	63,000,000
2, 4-Dimethylphenol	—	—	—	—	—	—	—	—	—	—	1,600,000
Dimethylphthalate	—	—		—	—	—	—	64J	93J	71J	780,000,000
Di-n-butylphthalate	—	—	50J	120J	—	—	—	—	54J	—	7,800,000
Di-n-octylphthalate	—	—	—	—	—	—	—	—	—	—	1,600,000
4-Methylphenol	—	—	—	740	—	—	—	—	—	—	390,000
n-Nitrosodiphenylamine	—	—	—	—	—	—	—	—	—	—	130,000
Pentachlorophenol	—	—	—	—	—	—	—	—	—	—	5,300
Phenol	—	—	—	110J	—	—	—	—	—	—	47,000,000

Key at end of table

Table 5-5 **Analytical Results for Subsurface Soils/Landfill Materials**
Base/Neutral Acid Extractables (Excluding PAHs) (µg/kg unless otherwise noted)
Kenilworth Park Landfill, N.E. Washington, D.C. (Cont.)

Parameter	Sample Identification[a]									RBC
	BH15	BH16	BH16	BH16	MW9	MW10	MW11	MW12	BH18	
	S2	S1	S2	S3	S1	S2	S1	S2	S3	
Benzoic Acid	—	200J	—	56J	130J	—	—	—	—	31,000,000
Bis(2-ethylhexyl)phthalate	91J	11,000	5,200	330J	1,500	110J	46J	—	63J	46,000
Butyl benzyl Phthalate	47J	340J	220J	—	120J	63J	—	—	—	16,000,000
4-Chloroaniline	—	—	—	—	—	—	—	—	—	310,000
Dibenzofuran	—	54J	—	—	—	7,100J	—	—	—	310,000
1, 4-Dichlorobenzene	—	56J	—	—	—	—	—	—	—	27,000
Diethylphthalate	120J	87J	—	—	—	61J	—	—	—	63,000,000
2, 4-Dimethylphenol	—	—	—	—	64J	120J	—	—	—	1,600,000
Dimethylphthalate	51J	—	—	—	—	—	—	—	—	780,000,000
Di-n-butylphthalate	—	230J	86J	—	88J	—	—	—	—	7,800,000
Di-n-octylphthalate	—	—	50J	—	44J	—	—	—	—	1,600,000
4-Methylphenol	—	1,600	260J	—	1,400	85J	—	—	—	390,000
n-Nitrosodiphenylamine	—	—	—	—	—	—	—	—	—	130,000
Pentachlorophenol	—	—	—	—	—	—	—	—	—	5,300
Phenol	—	180J	—	—	160J	53J	—	—	—	47,000,000

Key at end of table

Table 5-5 Analytical Results for Subsurface Soils/Landfill Materials Base/Neutral Acid Extractables (Excluding PAHs) (µg/kg unless otherwise noted) Kenilworth Park Landfill, N.E. Washington, D.C. (Cont.)

KEY

[a] See Table 5-1 for sample collection information.

Note: Figures in bold indicate exceedances of RBCs.

Key:

J = Estimated.
K = × 1000.
µg/kg = Micrograms per kilogram.
RBC = Risk-Based Concentration for Residential Soil (EPA Region III, 1998).
— = Not detected.

Table 5-6 Analytical Results for Subsurface Soils/Landfill Materials
Pesticides and Polychlorinated Biphenyls, and Total Petroleum Hydrocarbons (µg/kg unless otherwise noted)
Kenilworth Park Landfill, N.E. Washington, D.C.

Parameter	Sample Identification[a]										RBC
	MW-7	BH1	BH1	BH1	BH2	BH2	BH2	BH3	BH3	BH3	
	S2	S1	S2	S3	S1	S2	S3	S1	S2	S3	
Aldrin	—	—	—	—	—	—	—	—	—	—	38
α-Chlordane	—	—	—	—	—	—	—	—	—	—	1,800
γ-Chlordane	—	—	—	—	—	—	—	—	—	—	1,800
4, 4'-DDD	32	—	—	12	—	—	120	—	57	334	2,700
4, 4'-DDE	22	—	—	18	—	—	—	—	—	—	1,900
4, 4'-DDT	—	—	—	—	—	—	—	—	—	—	1,900
Dieldrin	—	—	—	—	—	—	—	—	—	—	40
Endrin	—	—	—	—	—	—	—	—	—	—	23,000
Heptachlor	—	—	—	—	—	—	—	—	—	—	140
Heptachlor epoxide	—	—	—	—	—	—	—	—	—	—	70
Methoxychlor	—	—	—	—	—	—	—	—	—	—	3,900
PCB-1242	620	—	—	310	—	—	260	—	170	410	320
PCB-1254	200	13J	16J	170	28	—	190	7J	170	180	320
PCB-1260	120	9.4J	15J	120	27	—	120	7J	200	180	320
TPHC (mg/kg)	280	210	730	260	250	46	2,300	490	400	570	N/A

Key at end of table

Table 5-6 **Analytical Results for Subsurface Soils/Landfill Materials**
Pesticides and Polychlorinated Biphenyls, and Total Petroleum Hydrocarbons (µg/kg unless otherwise noted)
Kenilworth Park Landfill, N.E. Washington, D.C. (Cont.)

Parameter	Sample Identification[a]										RBC
	BH4	BH4	BH4	BH5	BH5	BH5	BH6	BH6	BH6	BH7	
	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	
Aldrin	—	—	—	—	—	—	—	—	—	—	38
α-Chlordane	—	—	—	—	—	—	—	—	—	—	1,800
γ-Chlordane	—	—	—	—	—	—	—	—	—	—	1,800
4, 4'-DDD	—	—	—	—	—	19	—	—	—	—	2,700
4, 4'-DDE	—	—	—	—	—	16	—	—	—	—	1,900
4, 4'-DDT	—	—	—	—	—	12	—	—	—	—	1,900
Dieldrin	—	—	—	—	—	—	—	—	—	—	40
Endrin	—	—	—	—	—	—	—	—	—	—	23,000
Heptachlor	—	—	—	—	—	—	—	—	—	—	140
Heptachlor epoxide	—	—	—	—	—	—	—	—	—	—	70
Methoxychlor	—	—	—	—	—	—	—	—	—	—	3,900
PCB-1242	—	91	—	—	—	—	—	—	—	—	320
PCB-1254	88	84	130	—	—	—	—	—	—	—	320
PCB-1260	100	81	83	—	—	—	—	—	—	—	320
TPHC (mg/kg)	560	120	70	310	120	280	630	54	2,300	62	N/A

Key at end of table

Table 5-6 Analytical Results for Subsurface Soils/Landfill Materials Pesticides and Polychlorinated Biphenyls, and Total Petroleum Hydrocarbons (µg/kg unless otherwise noted) Kenilworth Park Landfill, N.E. Washington, D.C. (Cont.)

Parameter	Sample Identification[a]										RBC
	BH7	BH7	BH8	BH8	BH9	BH9	BH9	BH10	BH10	BH10	
	S2	S3	S1	S2	S1	S1	S3	S1	S2	S3	
Aldrin	—	—	—	—	—	—	—		—	—	38
α-Chlordane	35	—	—	—	—	—	—	8.5	—	6.0	1,800
γ-Chlordane	26	—	—	—	—	—	—	11	—	6.2	1,800
4, 4'-DDD	26	230	—	—	—	—	27	—	—	—	2,700
4, 4'-DDE	—	—	—	—	—	—	—	—	2.8	—	1,900
4, 4'-DDT	—	—	—	—	—	—	—	—	—	12	1,900
Dieldrin	39	—	—	—	—	—	—	—	—	—	40
Endrin	—	—	—	—	—	—	—	—	—	—	23,000
Heptachlor	—	—	—	—	—	—	—	—	—	—	140
Heptachlor epoxide	—	—	—	—	—	—	—	—	—	—	70
Methoxychlor	—	—	—	—	—	—	—	—	—	—	3,900
PCB-1242	—	—	—	—	—	—	2,700	—	—	—	320
PCB-1254	—	—	—	93,000	—	—	—	—	—	—	320
PCB-1260	—	—	—	—	—	—	—	—	—	—	320
TPHC (mg/kg)	140	620	480	260	85	—	1,300	1,600	95	28	N/A

Key at end of table

Table 5-6 **Analytical Results for Subsurface Soils/Landfill Materials**
Pesticides and Polychlorinated Biphenyls, and Total Petroleum Hydrocarbons (µg/kg unless otherwise noted)
Kenilworth Park Landfill, N.E. Washington, D.C. (Cont.)

Parameter	Sample Identification[a]										RBC
	BH11	BH11	BH11	BH12	BH12	BH13	BH13	BH13	BH14	BH15	
	S1	S2	S3	S1	S2	S1	S2	S3	S1	S1	
Aldrin	3.4	2.8J	—	—	80	—	—	—	—	—	38
α-Chlordane	1.3	1.0J	—	—	—	7.7	—	—	6.0	—	1,800
γ-Chlordane	1.4	2.8J	—	—	—	12	—	—	6.2	—	1,800
4, 4'-DDD	4.6	10J	11	85	66	—	—	—	—	—	2,700
4, 4'-DDE	—	28J	7.1	36	22	—	—	—	8.6	—	1,900
4, 4'-DDT	2.8	1.4J	5.6	—	—	—	—	—	18	—	1,900
Dieldrin	0.7J	—	4.2	—	—	—	—	—	—	—	40
Endrin	1.2	—	—	—	—	—	—	—	—	—	23,000
Heptachlor	1.1	—	—	—	42	12	—	—	—	—	140
Heptachlor epoxide	3.6	—	—	—	10	—	0.98J	19	19	4.9J	70
Methoxychlor	7.9J	14J	—	—	—	17	—	26J	24J	10J	3,900
PCB-1242	47	17J	230	**1,700**	**560**	43	—	—	—	46	320
PCB-1254	51	30	130	220	230	33	—	18	—	14J	320
PCB-1260	—	25	—	—	—	20	—	—	—	—	320
TPHC (mg/kg)	97	310	350	1,300	870	71	—	82	260	2,300	N/A

Key at end of table

Table 5-6 **Analytical Results for Subsurface Soils/Landfill Materials Pesticides and Polychlorinated Biphenyls, and Total Petroleum Hydrocarbons (µg/kg unless otherwise noted) Kenilworth Park Landfill, N.E. Washington, D.C. (Cont.)**

Parameter	Sample Identification[a]								RBC
	BH16	BH16	BH16	MW9	MW10	MW11	BH17	BH18	
	S1	S2	S3	S1	S1	S1	S1	S1	
Aldrin	—	—	—	—	—	—	—	—	38
α-Chlordane	—	3.7J	4.9J	5.7J	—	3.0	9.3	0.6J	1,800
γ-Chlordane	—	4.7J	10	4.9J	—	2.4	40	0.45J	1,800
4, 4'-DDD	55	27	27	13	11J	7.2	—	0.55J	2,700
4, 4'-DDE	39	29	17	14	12J	4.6	—	0.81J	1,900
4, 4'-DDT	7.4J	21	13J	2.3J	—	1.5J	—	0.94J	1,900
Dieldrin	—	—	—	—	—	1.4J	—	0.49J	40
Endrin	—	—	—	—	—	—	—	—	23,000
Heptachlor	—	—	—	—	—	—	—	—	140
Heptachlor epoxide	—	—	—	—	—	—	—	—	70
Methoxychlor	—	19J	—	—	—	—	—	—	3,900
PCB-1242	1,200	360	55	420	90	—	2,000	—	320
PCB-1254	94J	200	85	100	74	—	—	—	320
PCB-1260	110J	48J	120	63J	81	33	—	14J	320
TPHC (mg/kg)	1,500	780	920	350	160	88	3,000	330	N/A

Key at end of table

Table 5-6 Analytical Results for Subsurface Soils/Landfill Materials Pesticides and Polychlorinated Biphenyls, and Total Petroleum Hydrocarbons (µg/kg unless otherwise noted) Kenilworth Park Landfill, N.E. Washington, D.C. (Cont.)

Refer to Table 5-1 for sample collection information.

Note: Figures in bold indicate exceedances of RBCs.

Key:

J = Estimated.
µg/kg= Micrograms per kilogram.
mg/kg = Milligrams per kilogram.
N/A = Not applicable.
PCB = Polychlorinated biphenyl.
RBC = Risk-Based Concentration for Residential Soils (EPA Region III 1998).
TPHC = Total petroleum hydrocarbons.
— = Not detected.

Table 5-7 **Analytical Results for Subsurface Soils/Landfill Materials Target Analyte List (mg/kg) Kenilworth Park Landfill, N.E. Washington, D.C.**

Parameter	Sample Identification[a]										RBC
	MW-7	BH1	BH1	BH1	BH2	BH2	BH2	BH3	BH3	BH3	
	S2	S1	S2	S3	S1	S2	S3	S1	S2	S2D	
Aluminum	8.4K	15K	4.9K	84K	12K	5.3K	3.5K	4.4K	6.6K	9.7K	78K
Antimony	22	1.5	1.9	22	1.8	1.6	4.7	ND	2.5	21	31
Arsenic	16	4.5	3.4	16	3.2	4.2	9.7	2.6	5.2	9.4	0.43
Barium	390	93	47	390	63	60	520	40	110	280	5,500
Beryllium	ND	1.1	0.96	ND	0.78	069	ND	0.6	ND	ND	160
Cadmium	11	1.0	0.96	11	0.79	0.61	2.9	ND	1.6	12	39
Calcium	22K	7.2K	28K	22K	7.6K	3.4K	9.8K	8.0K	25K	19K	—
Chromium (total)	64	48	28	64	36	15	19	16	24	39	120,000[b]
Cobalt	ND	15	7.8	ND	9.4	5.6	ND	3.5	4.1	ND	4,700
Copper	620	40	24	620	32	19	78	17	61	410	3,100
Iron	**120K**	**26K**	**32K**	**120K**	**24K**	20K	**46K**	16K	**25K**	**120K**	23K
Lead	**750**	14	22	**750**	26	16	150	18	140	**1,500**	400[c]
Magnesium	2,200	8,800	18,000	2,200	7,200	1,500	1,100	2,800	1,600	3,400	—
Manganese	810	500	450	816	410	260	160	220	320	830	1,600
Mercury	0.48	ND	ND	0.48	ND	ND	0.51	ND	0.16	0.019	23
Nickel	57	38	14	57	16	11	18	12	12	30	1,600
Potassium	580	4,800	1,200	580	3,000	540	3,800	730	620	940	—
Selenium	32	87	8.6	32	8.6	7.7	17	6.4	9.6	30	390
Silver	7.2	ND	ND	7.2	ND	ND	ND	ND	3.2	7.8	390
Sodium	**900**	140	ND	900	1,300	200	500	1,500	180	1,300	—
Vanadium	110	55	42	110	51	32	25	32	32	47	550
Zinc	1,700	74	54	1,700	72	47	490	32	610	4,300	23,000
Cyanide	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,600

Key at end of table.

Table 5-7 **Analytical Results for Subsurface Soils/Landfill Materials Target Analyte List (mg/kg) Kenilworth Park Landfill, N.E. Washington, D.C. (Cont.)**

Parameter	Sample Identification[a]										RBC
	BH4	BH4	BH4	BH5	BH5	BH5	BH6	BH6	BH6	BH7	
	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	
Aluminum	5.4K	5.3K	6.9K	6.1K	7.7K	9.4K	6.7K	5.3K	4.3K	4.8K	78K
Antimony	7.8	2.4	29	2.3	1.8	22	1.7	2.2	6.0	3.5	31
Arsenic	9.6	4.2	16	6.7	43	14	4.2	7.6	5.5	ND	0.43
Barium	120	90	1,000	120	57	770	50	72	870	30	5,500
Beryllium	ND	ND	ND	1.6	ND	ND	0.57	ND	ND	1.9	160
Cadmium	1.2	1.1	13	0.82	0.74	14	0.62	0.89	4.1	2.7	39
Calcium	21K	35K	14K	8.0K	3.4K	26K	17K	7K	28K	4K	—
Chromium (total)	30	27	58	52	14	63	28	24	65	40	120,000[b]
Cobalt	4.3	4.4	ND	10	4.3	ND	5.2	5.8	ND	ND	4,700
Copper	89	39	730	84	28	340	24	36	86	30	3,100
Iron	**27K**	22K	**180K**	**25K**	21K	**100K**	13K	20K	48K	74K	23K
Lead	150	82	**2,500**	18	38	**1,900**	350	44	**440**	2.8	400[c]
Magnesium	3,700	3,800	1,900	3,400	1,800	2,900	5,100	2,400	2,200	840	—
Manganese	260	400	840	480	250	1,200	210	310	380	500	1,600
Mercury	0.25	0.089	0.32	ND	0.03	0.22	0.04	0.20	4.9	ND	23
Nickel	22	26	110	27	11	58	20	9.8	33	ND	1,600
Potassium	1,000	840	660	1,200	720	1,200	1,800	510	660	750	—
Selenium	10	9.6	46	ND	ND	ND	ND	ND	ND	ND	390
Silver	ND	ND	14	ND	ND	11	ND	3.0	ND	ND	390
Sodium	180	170	1,200	260	ND	1,700	ND	200	420	160	—
Vanadium	31	25	54	43	33	52	32	40	21	130	550
Zinc	100	170	2,500	66	54	2,500	63	80	630	38	23,000
Cyanide	ND	ND	0.76	ND	ND	ND	ND	ND	ND	ND	1,600

Key at end of table.

Table 5-7 **Analytical Results for Subsurface Soils/Landfill Materials Target Analyte List (mg/kg) Kenilworth Park Landfill, N.E. Washington, D.C. (Cont.)**

Parameter	Sample Identification[a]										RBC
	BH7	BH7	BH8	BH8	BH9	BH9	BH9	BH10	BH10	BH10	
	S2	S3	S1	S2	S1	S2	S3	S1	S2	S2D	
Aluminum	4.0K	6.9K	6.3K	8.6K	4.1K	7.2K	21K	3.5K	3.6K	7.0K	78K
Antimony	ND	19	20	15	ND	1.6	20	ND	ND	1.4	31
Arsenic	3.6	13	8.6	6.1	1.7	5.5	10	2.5	4.0	8.9	0.43
Barium	48	1,300	890	300	39	94	460	70	43	77	5,500
Beryllium	ND	ND	ND	ND	1.2	0.75	ND	ND	ND	0.58	160
Cadmium	ND	4.9	11	7.2	ND	0.7	14	ND	ND	ND	39
Calcium	2.5K	18K	20K	62K	2.6K	2.3K	25K	7.6K	2.3K	2.2K	—
Chromium (total)	18	84	51	34	9.7	14	43	17	15	14	120,000[b]
Cobalt	5.7	ND	ND	ND	5.8	4.1	ND	7.0	3.9	9.6	4,700
Copper	140	180	540	200	26	19	450	15	12	21	3,100
Iron	14K	**75K**	**130K**	**66K**	13K	**26K**	**110K**	10K	9.5K	17K	23K
Lead	25	**940**	**1,200**	**686**	13	9.5	**970**	63	32	56	400[c]
Magnesium	1,000	3,100	2,400	4,200	1,500	1,400	2,700	300	14,000	1,300	—
Manganese	250	490	600	1,200	140	210	650	120	130	320	1,600
Mercury	0.23	0.43	0.31	0.27	0.05	ND	0.50	ND	0.10	0.07	23
Nickel	8.7	29	36	25	13	12	26	76	13	21	1,600
Potassium	580	990	910	1,300	1,000	610	400	560	470	620	—
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	390
Silver	2.3	3.9	9.2	9.9	ND	ND	9.7	ND	ND	ND	390
Sodium	ND	510	2,700	1,900	ND	ND	400	190	ND	ND	—
Vanadium	22	42	54	53	28	27	58	16	18	26	550
Zinc	75	790	1,300	2,600	31	51	2,100	65	44	86	23,000
Cyanide	ND	ND	ND	0.77	ND	ND	0.58	ND	ND	ND	1,600

Key at end of table.

Table 5-7 **Analytical Results for Subsurface Soils/Landfill Materials Target Analyte List (mg/kg) Kenilworth Park Landfill, N.E. Washington, D.C. (Cont.)**

Parameter	Sample Identification[a]										RBC
	BH11	BH11	BH11	BH12	BH12	BH13	BH13	BH13	BH14	BH15	
	S1	S2	S3	S1	S2	S1	S2	S3	S1	S1	
Aluminum	7.1K	7.3K	7.0K	21K	7.8K	6.2K	2.7K	1.9K	6.4K	7.4K	78K
Antimony	1.6	1.8	3.0	21	9.2	2.1	ND	ND	5.9	1.8	31
Arsenic	3.3	5.4	5.0	8.7	17	3.5	1.9	1.8	**43**	7.7	0.43
Barium	50	76	100	780	180	73	39	26	90	93	5,500
Beryllium	ND	ND	ND	ND	ND	0.65	ND	ND	0.64	0.68	160
Cadmium	ND	0.68	0.68	13	3.5	0.88	ND	ND	0.74	0.69	39
Calcium	5.0K	5.5K	ND	18K	9.1K	4.8K	1.9K	6.0K	2.3K	6.5K	—
Chromium (total)	23	23	18	52	38	23	6.5	22	18	18	120,000[b]
Cobalt	4.6	4.7	5.3	12	9.8	3.2	3.3	2.4	3.8	7.5	4,700
Copper	18	41	26	530	150	24	8.8	7.3	48	22	3,100
Iron	17K	20K	ND	**97K**	**50K**	**24K**	6.8K	6.9K	15K	19K	23K
Lead	20	40	76	**1,200**	300	58	6.7	12	150	34	400[c]
Magnesium	2,800	1,700	ND	3,000	1,700	3,000	1,000	3,100	5,100	2,700	—
Manganese	190	430	110	660	340	270	70	ND	150	270	1,600
Mercury	ND	0.05	0.05	0.13	0.16	0.04	ND	0.05	0.09	ND	23
Nickel	12	12	12	100	27	13	5.7	5.9	12	18	1,600
Potassium	1,000	670	ND	1,200	780	1,000	440	340	700	830	—
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	390
Silver	ND	ND	ND	ND	2.1	ND	ND	ND	ND	ND	390
Sodium	130	ND	160	1,900	440	ND	ND	ND	196	ND	—
Vanadium	31	28	27	81	36	46	13	11	27	28	550
Zinc	50	69	98	1,500	550	84	29	22	77	110	23,000
Cyanide	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,600

Key at end of table.

Table 5-7 **Analytical Results for Subsurface Soils/Landfill Materials Target Analyte List (mg/kg) Kenilworth Park Landfill, N.E. Washington, D.C. (Cont.)**

Parameter	Sample Identification[a]									RBC
	BH15	BH16	BH16	BH16	MW9	MW10	MW11	BH17	BH18	
	S2	S1	S2	S3	S1	S1	S1	S1	S1	
Aluminum	4.3K	16K	7.4K	4.6K	12K	7.2K	3.9K	7.5K	4.8K	78K
Antimony	5.8	24	7.8	1.8	28	10	6.8	1.6	1.4	31
Arsenic	5.2	11	6.1	5.0	9.5	10	6.8	4.0	3.1	0.43
Barium	480	500	170	75	440	940	510	41	58	5,500
Beryllium	ND	ND	ND	0.75	ND	ND	ND	ND	ND	160
Cadmium	2.4	9.5	4.0	1.0	8.6	3.6	1.5	0.95	ND	39
Calcium	5.3K	26	20K	2.8K	21K	0.77K	3.6K	8.2K	6.1K	—
Chromium (total)	36	97	21	17	50	69	58	30	14	120,000[b]
Cobalt	2.7	ND	ND	5.8	ND	ND	3.5	3.5	2.9	4,700
Copper	100	580	180	31	430	2,400	160	22	17	3,100
Iron	23K	**120K**	**84K**	20K	**130K**	**69K**	**39K**	21K	12K	23K
Lead	360	**1,200**	**470**	97	**1,000**	**1,000**	**420**	21	28	400[c]
Magnesium	1,200	3,400	4,400	790	3,500	1,900	1,100	2,600	890	—
Manganese	290	1,000	340	220	690	410	290	200	150	1,600
Mercury	0.07	0.23	0.11	0.07	0.09	0.16	0.06	ND	0.05	23
Nickel	14	63	40	10	53	40	40	16	9.2	1,600
Potassium	500	1,000	490	600	1,000	910	760	860	450	—
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	ND	390
Silver	ND	14	4.5	ND	12	2.8	ND	ND	ND	390
Sodium	210	2,000	820	180	1,300	300	160	ND	ND	—
Vanadium	24	94	28	32	52	35	32	55	24	550
Zinc	250	10,000	560	120	1,700	9.30	440	54	34	23,000
Cyanide	0.64	ND	ND	ND	ND	ND	ND	ND	ND	1,600

Key at end of table.

Table 5-7 Analytical Results for Subsurface Soils/Landfill Materials Target Analyte List (mg/kg) Kenilworth Park Landfill, N.E. Washington, D.C. (Cont.)

[a].See Table 5.1 for sample collection information.
[b] Chromium III.
[c] EPA Action Level.

Note: Figures in bold are exceedances of RBCs.

Key:

K	= × 1000.
mg/kg	= Milligrams per kilogram.
ND	= Not detected.
RBC	= Risk-Based Concentrations for Residential Soils (EPA Region III 1998).
—	= Not available.

Table 5-8 Analytical Results for Surface Soils/Landfill Materials Polynuclear Aromatic Hydrocarbons (µg/kg unless otherwise noted) Kenilworth Park Landfill, N.E. Washington, D.C.

Parameter	Sample Identification[a]									RBC
	SS-1	SS-2	SS-4	SS-5	SS-6	SS-7	SS-8	SS-9	SS-10	
Acenaphthene	635.0	3240	ND	ND	ND	18600.0	266J	11100	590J	4,700,000
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	-----
Anthracene	34.4	137	131J	9.16J	34.1	917.0	94.6J	10.6J	172	23,000,000
Benz(a)anthracene	174	364	396	20.1J	107.0	**2030.0**	250	141	525	870
Benzo(a)pyrene	**369**	**388**	**527**	**87.5**	**469.0**	**2260.0**	**286**	**167**	**561**	87
Benzo(b)fluoranthene	285	447	587	43.2	384.0	**2070.0**	318	239	572	870
Benzo(g,h,i)perylene	294	108J	161J	11.4J	459.0	444 J	110J	ND	269J	-----
Benzo(k)fluoranthene	362	308	441	66.3	408.0	1840.0	252	782	336	8,700
Chrysene	208	450	552	23.8J	114.0	2120.0	296	121	582	87,000
Dibenz(a,h)anthracene	**188**	ND	ND	ND	ND	ND	ND	ND	ND	87
Fluoranthene	257.0	915	1200	34.4J	218.0	4980.0	668	211J	1260	3,100,000
Fluorene	ND	ND	ND	ND	6.78 J	ND	18.5J	ND	23.4J	3,100,000
Indeno(1,2,3-cd)pyrene	94.5	197	262J	11.7J	164.0	619.0	118	50.7J	274	870
2-Methylnaphthalene	ND	ND	ND	ND	ND	17600.0	ND	ND	ND	1,600,000
Naphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,600,000
Phenanthrene	90.8	414	495	27.7	133.0	2840.0	379	88.7J	511	-----
Pyrene	378.0	1110	1140	38.0J	209.0	5520.0	586	312	1230	2,300,000
Total PAHs (mg/kg)	3.4	8.1	5.9	0.4	2.7	61.8	3.6	13.2	6.9	-----

Key at end of table.

Table 5-8 Analytical Results for Surface Soils/Landfill Materials Polynuclear Aromatic Hydrocarbons (µg/kg unless otherwise noted) Kenilworth Park Landfill, N.E. Washington, D.C.

Parameter	Sample Identification[a]									RBC
	SS-11	SS-12	SS-12DUP	SS-13	SS-14	SS-15	SS-16	SS-17	SS-18	
Acenaphthene	1710	ND	ND	ND	ND	ND	ND	ND	ND	4,700,000
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	-----
Anthracene	602	68.0J	71.3J	18.4J	3.36J	ND	68.1J	86.4J	13.1J	23,000,000
Benz(a)anthracene	**1280**	220	218J	60.8	8.57J	69.8J	321	240	38.5	870
Benzo(a)pyrene	**1260**	**485**	**253J**	85.3	11.0J	**1500**	**533**	**248**	36.0	87
Benzo(b)fluoranthene	**1240**	345	284	117	9.44J	288J	383	261	42.4	870
Benzo(g,h,i)perylene	777	79.4J	ND	49.3J	7.48J	ND	149J	88.8J	10.3J	-----
Benzo(k)fluoranthene	682	432	243J	58.9	9.38J	456	318	146	24.3	8,700
Chrysene	1420	281	284	80.4	11.6J	144J	356	296	47.6	87,000
Dibenz(a,h)anthracene	63.8J	ND	ND	ND	ND	ND	**152J**	ND	ND	87
Fluoranthene	3420	519	556J	136	22.1J	519J	583	593	94.5	3,100,000
Fluorene	207	ND	ND	ND	ND	ND	ND	ND	ND	3,100,000
Indeno(1,2,3-cd)pyrene	678	101J	119J	49.4	4.30J	ND	144	125	24.4	870
2-Methylnaphthalene	1890	ND	ND	ND	ND	ND	ND	ND	ND	1,600,000
Naphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,600,000
Phenanthrene	2150	255	240J	50.4	8.47J	143J	238	259	43.1	-----
Pyrene	3460	499	575J	142	ND	259J	609	613	87.8	2,300,000
Total PAHs (mg/kg)	20.8	3.3	2.8	0.8	0.1	3.4	3.9	3.0	0.5	-----

Key at end of table.

Table 5-8 Analytical Results for Surface Soils/Landfill Materials Polynuclear Aromatic Hydrocarbons (µg/kg unless otherwise noted) Kenilworth Park Landfill, N.E. Washington, D.C.

Parameter	Sample Identification[a]									RBC
	SS-19	SS-21	SS-22	SS-23	SS-24	SS-25	SS-26	SS-26DUP	SS-27	
Acenaphthene	876J	634J	1780	ND	ND	ND	885J	1640J	7140	4,700,000
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	-----
Anthracene	321	230	438	7.11J	25.0J	8.85J	334	660	ND	23,000,000
Benz(a)anthracene	**1190**	**646**	**1480**	19.3J	93.1J	17.1J	862	**1130**	51.7J	870
Benzo(a)pyrene	**2050**	**760**	**2950**	21.8J	**169**	31.2	**1140**	**1220**	114J	87
Benzo(b)fluoranthene	**1300**	**938**	**1970**	55.6	142	ND	**913**	**1120**	115J	870
Benzo(g,h,i)perylene	1300	321	2390	12.0J	56.6J	33.4	350J	418J	ND	-----
Benzo(k)fluoranthene	1150	395	1740	33.9	77.0J	12.3J	484	641	197J	8,700
Chrysene	1230	786	1640	23.7J	116J	ND	1060	1320	71.7J	87,000
Dibenz(a,h)anthracene	**803**	ND	**1470**	ND	ND	ND	ND	ND	ND	87
Fluoranthene	2450	1510	2790	55.2J	166J	ND	2110	3110	218J	3,100,000
Fluorene	31.0J	41.7J	123	ND	ND	10.2J	86.7J	281	ND	3,100,000
Indeno(1,2,3-cd)pyrene	685	364	**1550**	12.7J	87.9J	ND	467	507	35.4J	870
2-Methylnaphthalene	ND	ND	1500	ND	ND	ND	ND	ND	ND	1,600,000
Naphthalene	ND	ND	ND	ND	ND	4.34J	ND	ND	ND	1,600,000
Phenanthrene	822	659	1050	29.7	67.8J	ND	1010	2440	111J	-----
Pyrene	2550	1630	ND	49.5J	160J	ND	ND	3100	ND	2,300,000
Total PAHs (mg/kg)	16.8	8.9	22.9	0.3	1.2	0.1	9.7	17.6	8.1	-----

Key at end of table.

Table 5-8 Analytical Results for Surface Soils/Landfill Materials Polynuclear Aromatic Hydrocarbons (µg/kg unless otherwise noted) Kenilworth Park Landfill, N.E. Washington, D.C.

Parameter	Sample Identification[a]							RBC
	SS-28	SS-29	SS-30	SS-31	SS-32	SS-33	SS-34	
Acenaphthene	4750	ND	ND	10600	ND	ND	308J	4,700,000
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND	-----
Anthracene	50.1J	16.9J	99.8J	45.0J	13.7J	14.1J	42.3J	23,000,000
Benz(a)anthracene	156J	57.9	240J	184J	103	65.4	225	870
Benzo(a)pyrene	**197J**	**124**	**237J**	**248J**	**113**	**99.8**	**254**	87
Benzo(b)fluoranthene	290J	137	297	328	164	97.6	359	870
Benzo(g,h,i)perylene	ND	92.2	94.9J	ND	128	30.0J	73.7J	-----
Benzo(k)fluoranthene	248J	147	269	923	145	109	291	8,700
Chrysene	244J	89.9	331	249J	117	88.0	325	87,000
Dibenz(a,h)anthracene	ND	ND	ND	ND	ND	ND	ND	87
Fluoranthene	501J	153	666	517J	152	135	470	3,100,000
Fluorene	ND	ND	ND	ND	ND	ND	ND	3,100,000
Indeno(1,2,3-cd)pyrene	116J	46.8	117J	87.3J	34.2	26.7	103J	870
2-Methylnaphthalene	4970	ND	ND	ND	248	ND	ND	1,600,000
Naphthalene	ND	ND	ND	ND	ND	ND	ND	1,600,000
Phenanthrene	220J	58.6	341	200J	40.3	46.8	162	-----
Pyrene	523J	151	621J	452J	171	140	395	2,300,000
Total PAHs (mg/kg)	12.3	1.1	3.3	13.8	1.4	0.9	3.0	-----

KEY

[a] See Table 5.2 for sample collection information.

Note: Figures in bold are exceedences of RBCs.

PAHs = Polynuclear Aromatic Hydrocarbons.

J =Estimated.

K = X 1000.

mg/kg = Milligrams per kilogram.

ug/kg = Micrograms per kilogram.

ND = Not detected.

RBC = Risk-Based Concentration for Residential Soils (EPA Region III 2000).

----- = No Risk Based Concentration.

Table 5-9 Analytical Results for Surface Soils/Landfill Materials, Polychlorinated Biphenyls (µg/kg unless otherwise noted)
Kenilworth Park Landfill, N.E. Washington, D.C.

Parameter	Sample Identification[a]					RBC
	SS-29	SS-30	SS-32	SS-33	SS-34	
PCB-1016	ND	ND	ND	ND	16.5J	5,500
PCB-1221	ND	ND	ND	ND	ND	320
PCB-1232	ND	ND	ND	ND	ND	320
PCB-1242	ND	ND	ND	ND	ND	320
PCB-1248	ND	ND	ND	ND	ND	320
PCB-1254	79.5	ND	ND	ND	ND	320
PCB-1260	58.5	83.4	30.6	44.1	107	320

KEY
[a] See Table 5.2 for sample collection information.
Note: Figures in bold are exceedences of RBCs.
J =Estimated.
ug/kg = Micrograms per kilogram
ND = Not detected
RBC = Risk-Based Concentration for Residential Soils (EPA Region III 2000)
PCBs = Polychlorinated biphenyls.

Table 5-10 Analytical Results for Surface Soils/Landfill Materials, Target Analyte List (mg/kg) Kenilworth Park Landfill, N.E. Washington, D.C.

Parameter	Sample Identification[a]									RCB
	SS-1	SS-2	SS-4	SS-5	SS-6	SS-7	SS-8	SS-9	SS-10	
Aluminum	--	--	--	--	--	--	--	--	--	78K
Antimony	--	--	--	--	--	--	--	--	--	31
Arsenic	**3.64**	**6.04**	**7.48**	**3.63**	**4.59**	**9.91**	**5.35**	**9.57**	**4.42**	0.43
Barium	96.3	353	91.3	64.2	70.9	532	78.8	100	78.4	5,500
Beryllium	--	--	--	--	--	--	--	--	--	160
Cadmium	ND	4.68	1.46	0.645	0.999	7.39	0.549	2.72	ND	39
Calcium	--	--	--	--	--	--	--	--	--	----
Chromium	32.9	151	32.0	22.7	40.5	188	25.7	78.6	35.4	120,000[b]
Cobalt	--	--	--	--	--	--	--	--	--	4,700
Copper	--	--	--	--	--	--	--	--	--	3,100
Iron	--	--	--	--	--	--	--	--	--	23K
Lead	40	307	129	11.6	18.1	344	37.7	64.9	29.9	400[c]
Magnesium	--	--	--	--	--	--	--	--	--	----
Manganese	--	--	--	--	--	--	--	--	--	1,600
Mercury	0.656	5.17	0.261	0.0547	0.0621	7.50	0.377	6.25	0.171	23
Nickel	--	--	--	--	--	--	--	--	--	1,600
Potassium	--	--	--	--	--	--	--	--	--	----
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	ND	390
Silver	3.43	42.4	ND	ND	ND	78.5	ND	12.7	ND	390
Sodium	--	--	--	--	--	--	--	--	--	----
Vanadium	--	--	--	--	--	--	--	--	--	550
Zinc	--	--	--	--	--	--	--	--	--	23,000
Cyanide	--	--	--	--	--	--	--	--	--	1,600

Key at end of table.

Table 5-10 Analytical Results for Surface Soils/Landfill Materials, Target Analyte List (mg/kg) Kenilworth Park Landfill, N.E. Washington, D.C.

Parameter	Sample Identification[a]									RBC
	SS-11	SS-12	SS-12DUP	SS-13	SS-14	SS-15	SS-16	SS-17	SS-18	
Aluminum	--	--	--	--	--	--	--	--	--	78K
Antimony	--	--	--	--	--	--	--	--	--	31
Arsenic	**3.93**	**6.41**	**6.30**	**3.79**	**3.97**	**7.44**	**4.27**	**5.21**	**3.33**	0.43
Barium	117	96.1	95.3	66.2	93.4	41.3	66.0	80.0	49.6	5,500
Beryllium	--	--	--	--	--	--	--	--	--	160
Cadmium	0.602	1.11	1.10	ND	1.04	1.23	ND	ND	ND	39
Calcium	--	--	--	--	--	--	--	--	--	----
Chromium	55.5	45.8	50.9	86.1	26.4	42.8	18.6	22.2	7.96	120,000[b]
Cobalt	--	--	--	--	--	--	--	--	--	4,700
Copper	--	--	--	--	--	--	--	--	--	3,100
Iron	--	--	--	--	--	--	--	--	--	23K
Lead	29.4	76.4	82.3	11.7	11.9	252	22.9	25.5	7.51	400[c]
Magnesium	--	--	--	--	--	--	--	--	--	----
Manganese	--	--	--	--	--	--	--	--	--	1,600
Mercury	0.125	0.876	1.06	0.0702	0.0538	1.20	0.0616	0.0549	ND	23
Nickel	--	--	--	--	--	--	--	--	--	1,600
Potassium	--	--	--	--	--	--	--	--	--	----
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	ND	390
Silver	ND	5.65	6.71	ND	ND	ND	ND	ND	ND	390
Sodium	--	--	--	--	--	--	--	--	--	----
Vanadium	--	--	--	--	--	--	--	--	--	550
Zinc	--	--	--	--	--	--	--	--	--	23,000
Cyanide	--	--	--	--	--	--	--	--	--	1,600

Key at end of table.

Table 5-10 Analytical Results for Surface Soils/Landfill Materials, Target Analyte List (mg/kg) Kenilworth Park Landfill, N.E. Washington, D.C.

Parameter	Sample Identification[a]									RBC
	SS-19	SS-21	SS-22	SS-23	SS-24	SS-25	SS-26	SS-26DUP	SS-27	
Aluminum	--	--	--	--	--	--	--	--	--	78K
Antimony	--	--	--	--	--	--	--	--	--	31
Arsenic	**6.23**	**5.00**	**4.84**	**5.35**	**3.42**	**12.2**	**4.12**	**4.14**	**5.81**	0.43
Barium	84.6	113	88.2	88.2	65.8	28.3	86.6	87.6	90.6	5,500
Beryllium	--	--	--	--	--	--	--	--	--	160
Cadmium	ND	0.663	0.590	0.432	ND	1.36	0.609	0.483	1.42	39
Calcium	--	--	--	--	--	--	--	--	--	----
Chromium	18.5	20.1	20.2	17.5	17.2	48.2	35.4	68.5	48.0	120,000[b]
Cobalt	--	--	--	--	--	--	--	--	--	4,700
Copper	--	--	--	--	--	--	--	--	--	3,100
Iron	--	--	--	--	--	--				23K
Lead	49.7	17.9	27.3	17.7	12.4	21.6	22.9	25.7	63.5	400[c]
Magnesium	--	--	--	--	--	--	--	--	--	----
Manganese	--	--	--	--	--	--	--	--	--	1,600
Mercury	1.33	0.0536	0.0923	0.0462	0.0431	0.227	0.0757	0.0864	1.14	23
Nickel	--	--	--	--	--	--	--	--	--	1,600
Potassium	--	--	--	--	--	--	--	--	--	----
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	ND	39
Silver	ND	ND	ND	ND	ND	ND	ND	ND	6.12	390
Sodium	--	--	--	--	--	--	--	--	--	----
Vanadium	--	--	--	--	--	--	--	--	--	550
Zinc	--	--	--	--	--	--	--	--	--	23,000
Cyanide	--	--	--	--	--	--	--	--	--	1,600

Key at end of table.

Table 5-10 Analytical Results for Surface Soils/Landfill Materials Target Analyte List (mg/kg) Kenilworth Park Landfill, N.E. Washington, D.C.

Parameter	Sample Identification[a]							RBC
	SS-28	SS-29	SS-30	SS-31	SS-32	SS-33	SS-34	
Aluminum	--	--	--	--	--	--	--	78K
Antimony	--	--	--	--	--	--	--	31
Arsenic	**8.87**	**7.31**	**12.4**	**7.03**	**2.97**	**4.20**	**3.34**	0.43
Barium	289	110	285	97.1	141	127	208	5,500
Beryllium	--	--	--	--	--	--	--	160
Cadmium	5.29	1.18	1.34	1.54	2.66	2.95	2.83	39
Calcium	--	--	--	--	--	--	--	----
Chromium	170	43.0	34.1	62.4	27.3	29.3	29.6	120,000[b]
Cobalt	--	--	--	--	--	--	--	4,700
Copper	--	--	--	--	--	--	--	3,100
Iron	--	--	--	--	--	--	--	23K
Lead	237	113	189	59.9	40.0	52.3	29.3	400[c]
Magnesium	--	--	--	--	--	--	--	----
Manganese	--	--	--	--	--	--	--	1,600
Mercury	7.77	0.415	0.901	2.17	0.291	0.381	0.311	23
Nickel	--	--	--	--	--	--	--	1,600
Potassium	--	--	--	--	--	--	--	----
Selenium	ND	ND	ND	ND	ND	ND	ND	390
Silver	37.0	ND	1.32	11.7	ND	ND	ND	390
Sodium	--	--	--	--	--	--	--	----
Vanadium	--	--	--	--	--	--	--	550
Zinc	--	--	--	--	--	--	--	23,000
Cyanide	--	--	--	--	--	--	--	1,600

KEY

[a] See Table 5.2 for sample collection information.

[b] Chromium III.

[c] EPA Action Level.

Note: Figures in bold are exceedences of RBCs.

K = X 1000
Mg/kg = Milligrams per kilogram
ND = Not detected
RBC = Risk-Based Concentration for Residential Soils (EPA Region III 2000)
-- = Not Tested
----- = No Risk Based Concentration

Table 5-11 Analytical Results for Sediments
Volatile Organics, BNAs (except PAHs), and Total Petroleum Hydrocarbons (µg/kg)
Kenilworth Park Landfill, N.E. Washington, D.C.

Parameters	Sample Identification							BTAG[a]
	SED-1	SED-2	SED-3	SED-4	SED-5	SED-6	SED-7	
Volatile Organics								
Acetone	6.7J	—	24J	29J	—	—	92	N/A
2-Butanone	—	—	4.4J	4.6J	—	—	27	N/A
Toluene	—	—	—	—	—	—	3.4J	N/A
BNAs								
Benzoic acid	—	190J	—	—	250J	—	1,100J	N/A
Benzyl Alcohol	—	—	—	—	49J	—	—	57
Bis-(2 ethyl hexyl) phthalate	470J	180	640J	**1,300**	81J	1,100J	**1,500J**	1,300
Butyl benzyl phthalate	—	**150J**	—	**78J**	—	—	—	63
Di-n-octyl phthalate	64J	160J	—	—	—	—	—	6,200
4-Methyl phenol	—	56J	—	—	—	—	640J	670
Dibenzofuran	—	—	—	130J	—	—	—	N/A
TPHC								
Total Petroleum Hydrocarbons	85	1600	1100	1100	90	32	ND	N/A

Key at end of table.

Table 5-11 Analytical Results for Sediments
Volatile Organics, BNAs (except PAHs), and Total Petroleum Hydrocarbons (µg/kg)
Kenilworth Park Landfill, N.E. Washington, D.C. (Cont.)

Parameters	Sample Identification							BTAG[a]
	SED-8	SED-9	SED-10	SED-11	SED-12	SED-13	SED-14	
Volatile Organics								
Acetone	62	86	—	14J	5.6J	5.4J	23	N/A
2-Butanone	2.4J	35	—	—	—	—	—	N/A
Toluene	3.3J	3.5	—	—	—	—	—	N/A
BNAs								
Benzoic acid	—	—	—	—	—	—	—	N/A
Benzyl alcohol	—	—	—	—	—	—	—	57
Bis(2-ethylhexyl)phthalate	3,400J	1,400J	1,400	1,500J	410J	—	47J	1,300
Butyl benzyl phthalate	—	—	—	—	—	—	—	63
di-n-octyl phthalate	—	—	—	—	—	—	—	6,200
4-Methylphenol	—	—	—	—	—	—	—	670
Dibenzofuran	—	—	—	—	—	—	49J	N/A
TPHC								
Total petroleum hydrocarbons	80	92	1,100	56	330	—	49	N/A

Key at end of table.

Table 5-11 Analytical Results for Sediments
Volatile Organics, BNAs (except PAHs), and Total Petroleum Hydrocarbons (µg/kg)
Kenilworth Park Landfill, N.E. Washington, D.C. (Cont.)

Key:

[a] Biological Technical Assistance Group (BTAG) Screening Level (EPA Region III 1995).
BNAs = Base, neutral, and acid extractables.
J = Estimated.
µg/kg = Micrograms per kilogram.
N/A = Not available.
TPHC = Total petroleum hydrocarbons.
— = Not detected.

Note: Figures in bold indicate exceedances of BTAG values.

Table 5-12 Analytical Results for Sediments
Polynuclear Aromatic Hydrocarbons (µg/kg unless otherwise noted)
Kenilworth Park Landfill, N.E. Washington, D.C.

Parameters	Sample Identification							BTAG[a]
	SED-1	SED-2	SED-3	SED-4	SED-5	SED-6	SED-7	
Acenaphthene	—	—	—	**180J**	—	—	—	16
Acenaphthylene	—	—	—	—	—	—	—	44
Anthracene	**110J**	—	—	**360J**	44J	**230J**	—	85.3
Benzo(a)anthracene	**310J**	170J	190J	**740**	150J	**600J**	**420J**	261
Benzo(a)pyrene	330J	280J	330J	**930**	230J	**660J**	**490J**	430
Benzo(b)fluoranthene	430J	470	450J	960	290J	580J	500J	3,200
Benzo(g,h,i)perylene	220J	130J	170J	340J	76J	540J	310J	670
Benzo(k)fluoranthene	340J	470	430J	1100	250J	560J	480J	N/A
Chrysene	430J	330J	340J	910	220J	780J	600J	384
Dibenz(a,h)anthracene	**96J**	47J	—	**130J**	—	**230J**	—	63.4
Fluoranthene	**860**	490	450J	**2,000**	340J	**1,400J**	**1,100J**	600
Fluorene	—	—	—	**180J**	—	—	—	19
Indeno(1,2,3-cd)pyrene	200J	—	—	110J	36J	**1,200J**	—	600
2-Methylnaphthalene	—	—	—	**110J**	—	—	**640J**	70
Naphthalene	—	—	—	**200J**	—	—	—	160
Phenanthrene	**340J**	210J	200J	**1,900**	190J	670J	**480J**	240
Pyrene	360	**720**	660J	**2,800**	420	940J	610J	665
Total PAHs (mg/kg)	4.6	3.3	3.2	13.0	2.2	8.4	6.9	N/A

Key at end of table.

Key at end of table.

Table 5-12 **Analytical Results for Sediments**
Polynuclear Aromatic Hydrocarbons (µg/kg unless otherwise noted)
Kenilworth Park Landfill, N.E. Washington, D.C.

Parameters	Sample Identification							BTAG[a]
	SED-8	SED-9	SED-10	SED-11	SED-12	SED-13	SED-14	
Acenaphthene	—	—	—	—	—	—	**49J**	16
Acenaphthylene	—	—	—	—	—	—	**150J**	44
Anthracene	—	—	—	—	—	**220J**	**350J**	85.3
Benzo(a)anthracene	**750J**	**510J**	240J	**530J**	110J	**580J**	**920**	261
Benzo(a)pyrene	**870J**	**670J**	**480J**	**750J**	—	**540J**	**850**	430
Benzo(b)fluoranthene	1,000J	770J	810J	840J	190J	430J	790	3,200
Benzo(g,h,i)perylene	750J	480J	200J	630J	100J	420J	440J	670
Benzo(k)fluoranthene	940J	620J	780J	740J	160J	440J	740	N/A
Chrysene	1,200J	770J	460J	900J	200J	600J	960J	384
Dibenz(a,h)anthracene	—	—	—	—	42J	**190J**	**240J**	63.4
Fluoranthene	**2,000J**	**1,200J**	590J	**1,300J**	260J	**1,200**	**1,600**	600
Fluorene	—	—	—	—	—	—	**51J**	19
Indeno(1,2,3-cd)pyrene	**1,500J**	**980J**	—	**1,200J**	—	**920J**	**860**	600
2-Methylnaphthalene	—	—	—	—	—	—	—	70
Naphthalene	—	—	—	—	—	—	—	160
Phenanthrene	550J	460J	210J	430J	120J	660J	**920**	240
Pyrene	1,100J	730J	860	820J	170J	830J	**910**	665
Total PAHs (mg/kg)	9.3	7.3	4.6	8.1	1.5	7.0	9.8	N/A

Key at end of table.

Key at end of table.

Table 5-12 Analytical Results for Sediments
Polynuclear Aromatic Hydrocarbons (µg/kg unless otherwise noted)
Kenilworth Park Landfill, N.E. Washington, D.C.

Note: Figures in bold are exceedances of BTAG values.
[a] Biological Technical Assistance Group (BTAG) Screening Level (EPA Region III 1995).

Key:

J	=	Estimated.
µg/kg	=	Micrograms per kilogram.
mg/kg	=	Milligrams per kilogram.
N/A	=	Not available.
PAHs	=	Polynuclear aromatic hydrocarbon.
—	=	Not detected.

Table 5-13 Analytical Results for Sediments
Pesticides and Polychlorinated Biphenyls (µg/kg)
Kenilworth Park Landfill, N.E. Washington, D.C.

Parameter	Sample Identification								BTAG[a]
	SED-1	SED-2	SED-3	SED-4	SED-5	SED-6	SED-7	SED-8	
Aldrin	—	—	—	—	—	8.3	—	8.8J	N/A
α-Chlordane	7.2J	12J	58	44	8.8J	12	9.7	14	N/A
γ-Chlordane	7.6J	20	72	48	6.8J	1.3	10	17	N/A
4, 4'-DDD	7.5J	7.5J	**41J**	11J	4.0J	8.6J	5.6J	7.6J	16
4, 4'-DDE	**14J**	**9.5J**	**15J**	—	**5.9J**	**12J**	**8.5J**	**15J**	2.2
4, 4'-DDT	**16J**	**10J**	**14J**	—	**7.1J**	**6.9J**	**6.9J**	—	1.58
Dieldrin	—	—	—	—	4.0J	2.8J	—	—	N/A
Endrin	—	—	—	—	—	—	—	—	N/A
Heptachlor epoxide	—	16	17J	—	8.0J	—	—	—	N/A
Methoxychlor	—	27J	55J	26J	24J	—	—	—	N/A
PCB-1242	**36**	**63**	**250**	**29**	—	**58**	**48**	**110**	22.7
PCB-1254	**88**	**72**	**250**	**120**	—	**140**	**120**	**170**	22.7
PCB-1260	**40**	**51**	**250**	**89**	—	**44**	**55**	**110**	22.7

Key at end of table.

Table 5-13 Analytical Results for Sediments
Pesticides and Polychlorinated Biphenyls (µg/kg)
Kenilworth Park Landfill, N.E. Washington, D.C.

Parameter	Sample Identification						BTAG[a]
	SED-9	SED-10	SED-11	SED-12	SED-13	SED-14	
Aldrin	—	35	—	—	4.3J	9.8	N/A
α-Chlordane	15	13J	15	2.0J	3.5J	30	N/A
γ-Chlordane	17	12J	14	3.3J	3.4J	35	N/A
4, 4'-DDD	4.9J	13J	7.3J	—	—	—	16
4, 4'-DDE	**10J**	**12J**	**13J**	**2.6J**	**3.3J**	**14J**	2.2
4, 4'-DDT	—	**5.1J**	—	—	—	**16**	1.58
Dieldrin	—	—	—	—	—	—	N/A
Endrin	—	14J	—	—	—	—	N/A
Heptachlor epoxide	—	18J	—	—	—	—	N/A
Methoxychlor	—	26J	—	—	—	26	N/A
PCB-1242	**91**	**91**	**120**	**68**	**34**	**73**	22.7
PCB-1254	**150**	**130**	**160**	**91**	**97**	**156**	22.7
PCB-1260	**93**	**120**	**120**	**48**	**82**	**36**	22.7

Table 5-13 Analytical Results for Sediments Pesticides and Polychlorinated Biphenyls (µg/kg) Kenilworth Park Landfill, N.E. Washington, D.C. (Cont.)

[a] Biological Technical Assistance Group (BTAG) Screening Level (EPA Region III 1995).

Note: Figures in bold are exceedances of BTAG values.

Key:
J = Estimated.
µg/kg = Micrograms per kilogram.
N/A = Not available.
PCBs = Polychlorinated biphenyls.
— = Not detected.

Table 5-14 Analytical Results for Sediments
Metals (µg/kg unless otherwise noted)
Kenilworth Park Landfill, N.E. Washington, D.C.

Parameter	Sample Identification						BTAG[a]
	SED-1	SED-2	SED-3	SED-4	SED-5	SED-6	
Aluminum (mg/kg)	1.6	1.9	8.9	2.0	7.5	3.5	N/A
Antimony	ND	ND	4.4	ND	2.4	2.1	150,000
Arsenic	2.0	2.9	12	2.4	6.0	5.1	8,200[b]
Barium	35	35	200	36	83	56	N/A
Beryllium	ND	ND	ND	ND	0.66	ND	N/A
Cadmium	ND	ND	27	0.97	1.2	1.5	1200
Calcium (mg/kg)	2.2	2.2	5.2	2.8	2.7	2.3	N/A
Chromium (Total)	11	13	40	18	25	18	260
Cobalt	6.4	14	8.6	ND	7.3	12	N/A
Copper	17	20	100	51	38	43	34,000
Iron (mg/kg)	10	14	26	9.6	15	19	N/A
Lead	36	32	300	98	88	74	46,700
Magnesium	1,500	1,300	3,900	2,100	1,400	1,700	N/A
Manganese	86	330	170	55	320	180	N/A
Mercury	ND	ND	0.28	0.05	0.18	0.045	150
Nickel	17	20	44	20	25	25	20,900
Potassium	330	520	930	420	720	400	N/A
Silver	ND	ND	ND	ND	ND	ND	1,000
Sodium	ND	ND	ND	ND	ND	ND	N/A
Vanadium	16	21	72	17	66	28	N/A
Zinc	110	130	560	180	140	200	15,000

Key at end of table.

Table 5-14 Analytical Results for Sediments
Metals (µg/kg unless otherwise noted)
Kenilworth Park Landfill, N.E. Washington, D.C.

Parameter	Sample Identification								BTAG[a]
	SED-7	SED-8	SED-9	SED-10	SED-11	SED-12	SED-13	SED-14	
Aluminum (mg/kg)	3.0	6.5	8.7	12	7.3	0.86	13	11	N/A
Antimony	1.9	3.2	2.8	3.3	2.6	1.4	2.7	2.3	150,000
Arsenic	3.0	6.8	6.6	8.9	7.4	2.9	5.5	5.7	8,200[b]
Barium	44	140	120	110	100	12	80	91	N/A
Beryllium	ND	ND	ND	1.4	1.2	ND	0.98	0.86	N/A
Cadmium	0.98	2.1	1.5	2.4	1.9	ND	1.0	0.83	1,200
Calcium (mg/kg)	2.3	4.2	3.8	3.4	3.7	0.66	4.0	4.8	N/A
Chromium (Total)	21	35	38	50	38	11	34	21	260
Cobalt	14	15	12	16	17	ND	9.5	4.9	N/A
Copper	43	70	58	110	87	14	42	34	34,000
Iron (mg/kg)	15	26	27	30	26	17	32	27	N/A
Lead	64	89	78	120	98	12	31	63	46,700
Magnesium	1,700	3,400	3,200	3,200	2,600	630	4,800	2,200	N/A
Manganese	230	310	710	600	970	120	420	150	N/A
Mercury	0.094	0.16	0.12	0.12	0.12	ND	0.069	0.1	150
Nickel	25	36	30	52	39	93	18	15	20,900
Potassium	310	890	11,000	1,500	850	ND	2,000	860	N/A
Silver	1.8	ND	ND	ND	ND	ND	ND	ND	1,000
Sodium	ND	ND	ND	330	ND	ND	ND	41	N/A
Vanadium	25	44	52	85	57	22	62	92	N/A
Zinc	190	330	220	360	290	72	83	ND	15,000

[a] Biological Technical Assistance Group (BTAG) Screening Level (EPA Region III 1995).
[b] Total arsenic.

Note: Figures in bold are exceedances of RBCs.

Key:

µg/kg = Micrograms per kilogram.
mg/kg = Milligrams per kilogram.
ND = Not detected.
N/A = Not available.

Table 5-15 **Analytical Results for Sediments - Second Round**
Polynuclear Aromatic Hydrocarbons (µg/kg unless otherwise noted)
Kenilworth Park Landfill, N.E. Washington, D.C.

Parameter	Sample Identification												BTAG[a]
	SMP-A	SMP-B	SMP-C	SMP-E	SMP-F	SMP-G	SMP-I	SMP-J	SMP-K	SMP-L	SMP-M	SMP-N	
Acenaphthene	ND	ND	ND	**132J**	ND	**962J**	ND	ND	ND	ND	ND	ND	16
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	44
Anthracene	59.1J	**181J**	**141J**	29.9J	ND	**184J**	**188J**	39.2J	**91.2J**	32.5J	**99.1J**	40.4J	85.3
Benz(a)anthracene	**302**	**603**	**495**	98.3	165J	**662**	**723**	159J	**314J**	114J	**382J**	156J	261
Benzo(a)pyrene	370	**1030**	**848**	129	279J	**1290**	**680**	235J	423	132J	323J	240	430
Benzo(b)fluoranthene	980	1470	1040	193	884	1620	1880	446	997	287J	627	1220	3,200
Benzo(g,h,i)perylene	352J	445J	295J	84.5J	ND	933	492J	151J	248J	ND	ND	ND	670
Benzo(k)fluoranthene	1170	1320	2070	119	1340	1820	3470	481	ND	523	846	1600	N/A
Chrysene	**450**	**1060**	**855**	163	275J	**1180**	**853**	272	**545**	199J	**460**	286	384
Dibenz(a,h)anthracene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	63.4
Fluoranthene	**701**	**2150**	**1470**	313	432J	**1990**	**1900**	483J	**1030**	305J	**913J**	453	600
Fluorene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	19
Indeno(1,2,3-cd)pyrene	147J	671	321	87.5	137J	563	358J	146J	263J	92.7J	215J	106J	600
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	70
Naphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	160
Phenanthrene	215	**643**	**371**	107	**123J**	**705**	546	138J	**306J**	89.2J	**346J**	152J	240
Pyrene	**746**	**1920**	**1340**	296	**454J**	**1870**	1810	472J	**933J**	359J	**1070**	427J	665
Total PAHs (mg/kg)	5.5	11.5	9.2	1.8	4.1	13.8	12.9	3.0	5.2	2.1	5.3	4.7	-----

KEY
[a] Biological Technical Assistance Group (BTAG) Screening Level (EPA Region III 1995).

Note: Figures in bold are exceedences of BTAG values.

PAHs = Polynuclear Aromatic Hydrocarbons.
J =Estimated.
mg/kg = Milligrams per kilogram.
ug/kg = Micrograms per kilogram.
ND = Not detected.
N/A = Not available.

Table 5-16 Analytical Results for Sediments - Second Round
Polychlorinated Biphenyls (µg/kg unless otherwise noted)
Kenilworth Park Landfill, N.E. Washington, D.C.

Parameter	Sample Identification												BTAG[a]
	SMP-A	SMP-B	SMP-C	SMP-E	SMP-F	SMP-G	SMP-I	SMP-J	SMP-K	SMP-L	SMP-M	SMP-N	
PCB-1016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	22.7
PCB-1221	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	22.7
PCB-1232	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	22.7
PCB-1242	ND	ND	**283**	**54.6**	**52.2J**	**52.4**	**54.6**	ND	ND	**354**	**84.0**	**71.4**	22.7
PCB-1248	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	22.7
PCB-1254	**57.1**	**53.2**	**127**	**68.5**	**137**	**90.3**	**73.6**	**90.5**	**202**	**571**	**212**	**101**	22.7
PCB-1260	**64.1**	**54.2**	**88.5**	**59.6**	**84.0**	**57.3**	**48.8**	**76.3**	**159**	**409**	**105**	**60.9**	22.7

KEY

[a] Biological Technical Assistance Group (BTAG) Screening Level (EPA Region III 1995).

Note: Figures in bold are exceedences of BTAG values.

J =Estimated.

ug/kg = Micrograms per kilogram.

ND = Not detected.

N/A =Not available.

PCBs = Polychlorinated biphenyls.

Table 5-17 **Analytical Results for Sediments, Second Round**
Metals (mg/kg unless otherwise noted)
Kenilworth Park Landfill, N.E. Washington, D.C.

Parameter	Sample Identification[a]												BTAG[a]
	SMP-A	SMP-B	SMP-C	SMP-E	SMP-F	SMP-G	SMP-I	SMP-J	SMP-K	SMP-L	SMP-M	SMP-N	
Aluminum	--	--	--	--	--	--	--	--	--	--	--	--	N/A
Antimony	--	--	--	--	--	--	--	--	--	--	--	--	150
Arsenic	5.38	6.58	6.25	**9.19**	2.5	7.90	6.87	**9.34**	7.53	**9.33**	ND	6.23	8.2[b]
Barium	78.3	108	89.0	114	137	124	105	152	113	123	128	93.5	N/A
Beryllium	--	--	--	--	--	--	--	--	--	--	--	--	N/A
Cadmium	0.942	0.994	**1.66**	**1.64**	**4.69**	**1.68**	**1.55**	**1.89**	**1.49**	**5.22**	**5.28**	**1.37**	1.2
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	N/A
Chromium	62.5	45.2	82.3	76.5	99.5	94.6	91.0	82.4	79.1	78.3	78.1	84.3	260
Cobalt	--	--	--	--	--	--	--	--	--	--	--	--	N/A
Copper	--	--	--	--	--	--	--	--	--	--	--	--	34
Iron	--	--	--	--	--	--	--	--	--	--	--	--	N/A
Lead	**80.1**	**81.3**	**105**	**134**	**122**	**93.5**	**90.4**	**134**	**92.6**	**177**	**137**	**81.7**	46.7
Magnesium	--	--	--	--	--	--	--	--	--	--	--	--	N/A
Manganese	--	--	--	--	--	--	--	--	--	--	--	--	N/A
Mercury	**0.200**	**0.245**	**0.260**	**0.840**	**0.58**	**0.320**	**0.311**	**0.412**	**0.321**	**0.456**	**0.569**	**0.249**	0.15
Nickel	--	--	--	--	--	--	--	--	--	--	--	--	20.9
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	N/A
Selenium	--	--	--	--	--	--	--	--	--	--	2.06	--	N/A
Silver	ND	ND	ND	**4.75**	ND	ND	ND	ND	ND	ND	ND	ND	1
Sodium	--	--	--	--	--	--	--	--	--	--	--	--	N/A
Vanadium	--	--	--	--	--	--	--	--	--	--	--	--	N/A
Zinc	--	--	--	--	--	--	--	--	--	--	--	--	150

KEY
[a] Biological Technical Assistance Group (BTAG) Screening Level (EPA Region III 1995).
[b] Toxic arsenic.

Note: Figures in bold are exceedences of BTAG values.

mg/kg = Milligrams per kilogram.
ND = Not detected.
-- = Not Tested.
N/A = Not available.

Table 5-18 Analytical Results for Surface Water Metals (µg/L) Kenilworth Park Landfill, N.E. Washington, D.C.

Parameter	Sample Identification				AWQC[b] (µg/L)	
	SW-1[a]	SW-2	SW-3	SW-4[a]	Chronic	Acute
Aluminum	ND	290	410	ND	—	—
Barium	53	62	63	54	—	—
Calcium	44,000	29,000	29,000	28,000	—	—
Iron	590	1,200	1,800	1,600	—	—
Lead	ND	ND	12	ND	3.2	82
Magnesium	8,800	7,900	7,100	6,800	—	—
Manganese	36	270	240	310	—	—
Potassium	4,100	4,200	5,100	3,900	—	—
Sodium	28,000	31,000	48,000	30,000	—	—
Zinc	ND	ND	25	11	110	120

[a] Upstream sample.
[b] Chronic and acute concentrations for fish (EPA Ambient Water Quality Criteria (AWQC) for Freshwater 1994).

Note: Figures in bold are exceedances of AWQC.

Key:

µg/L = Micrograms per liter.
ND = Not detected.
— = Not available.

Table 5-19 Analytical Results for Groundwater Volatile Organics, BNAs, Pesticides/PCBs, and Total Petroleum Hydrocarbons (µg/L) Kenilworth Park Landfill, N.E. Washington, D.C.

Parameter	Sample Identification							MCL
	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	
Volatile Organics								
Acetone	5.1J	—	—	2.0J	—	—	—	N/A
2-Butanone	—	—	—	—	—	—	—	N/A
Benzene	—	—	—	—	—	—	—	5.0
Carbon disulfide	—	—	1.3J	—	—	—	—	N/A
BNAs								
Bis(2-ethyhexyl)phthalate	—	2.8J	—	23	—	2.2J	—	6.0
Di-n-butylphthalate	—	—	—	—	—	—	—	N/A
4-Methylphenol	—	—	—	—	—	—	—	N/A
Naphthalene	—	—	—	—	—	—	—	N/A
Phenanthrene	—	—	—	—	—	—	—	N/A
Pesticides/PCBs								
Beta-BHC	—	—	0.055	0.045	0.015J	—	—	N/A
Delta-BHC	—	—	0.034	—	—	—	—	N/A
4, 4'-DDE	—	—	—	—	0.012J	—	—	N/A
gamma-Chlordane	—	—	0.018J	—	—	—	—	2.0
Heptachlor epoxide	—	—	0.024J	0.013J	—	—	—	0.2
Total Petroleum Hydrocarbons (mg/L)	—	—	—	—	—	42	—	N/A

Key at end of table.

Table 5-19 Analytical Results for Groundwater Volatile Organics, BNAs, Pesticides/PCBs, and Total Petroleum Hydrocarbons (µg/L) Kenilworth Park Landfill, N.E. Washington, D.C. (Cont.)

Parameter	Sample Identification					MCL
	MW-8	MW-9	MW-10	MW-11	MW-7Dc	
Volatile Organics						
Acetone	—					N/A
2-Butanone	—					N/A
Benzene	—					5.0
Carbon disulfide	—					N/A
BNAs						
bis(2-ethylhexyl) phthalate	—	7.8J	—	—	—	6.0
Di-n-butylphthalate	—	40	—	—	—	N/A
4-Methylphenol	—	—	6.5J	—	2.8J	N/A
Naphthalene	—	—	—	6.2J	—	N/A
Phenanthrene	—	—	—	2.0J	—	N/A
Pesticides/PCBs						
Beta-BHC	—	—	—	—	—	N/A
Delta-BHC	—	—	—	—	—	N/A
4, 4'-DDE	—	—	—	—	—	N/A
gamma-Chlordane	—	—	—	—	—	2.0
Heptachlor epoxide	—	—	—	—	—	0.2
Total Petroleum Hydrocarbons (mg/L)	—	—	—	—	—	N/A

Note: Figures in bold are exceedances of MCLs.

Key:

BNAs = Base/neutral and acid extractable organic compounds.
J = Estimated.
MCL = Maximum Contaminant Level (National Primary Drinking Water Regulations).
µg/L = Micrograms per liter.
mg/L = Milligrams per liter.
N/A = Not available.
PCBs = Polychlorinated biphenyls.
— = Not detected.

Table 5-20 Analytical Results for Groundwater Metals (µg/L unless otherwise noted) Kenilworth Park Landfill, N.E. Washington, D.C.

Parameter	Sample Identification[b]						MCL[c]
	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	
Aluminum (mg/L)	**21**	**1.2**	**2.3**	**4.8**	**31**	**2.1**	50-200[d]
Antimony	—	—	—	—	**13**	—	6
Arsenic	11	—	15	—	14	—	50
Barium	450	1,200	230	300	430	240	2,000
Cadmium	—	**5.1**	—	—	—	—	5
Calcium (mg/L)	100	91	61	48	54	66	N/A
Chromium (total)	59	—	15	12	200	—	100
Cobalt	—	—	—	—	—	—	N/A
Copper	34	—	—	—	**200**	22	1,300[e]
Iron (mg/L)	**78**	**39**	**24**	**7.3**	**64**	**10**	300[d]
Lead	**37**	14	13	13	**340**	**26**	15[e]
Magnesium	61	89	34	40	20	22	N/A
Manganese (mg/L)	**4,500**	**600**	**1,600**	**850**	**1,100**	**2,300**	50[e]
Mercury	—	—	—	—	0.21	—	2
Nickel	41	—	—	—	57	—	N/A
Potassium (mg/L)	—	—	95	140	27	29	N/A
Selenium	—	—	—	—	—	—	50
Silver	—	—	—	—	—	—	100[e]
Sodium (mg/L)	—	—	260	460	100	430	N/A
Thallium	**5.2**	—	**6.3**	**9.6**	—	**9.7**	2
Vanadium	56	—	—	—	110		N/A
Zinc	160	61	42	35	710	59	5,000[e]

Key at end of table.

Table 5-20 Analytical Results for Groundwater Metals (µg/L unless otherwise noted) Kenilworth Park Landfill, N.E. Washington, D.C. (Cont.)

Parameter	Sample Identification[b]						MCL[c]
	MW-7	MW-7D	MW-8	MW-9	MW-10	MW-11	
Aluminum (mg/L)	**82**	**56**	—	**6.1**	**7.9**	**2.2**	50-200[d]
Antimony	**53**	**42**	—	—	—	—	6
Arsenic	**60**	38	—	—	—	—	50
Barium	**2,500**	1,900	—	1,100	370	4,000	2,000
Cadmium	**21**	14	—	**5.3**	—	—	5
Calcium (mg/L)	65	50	29	78	87	120	N/A
Chromium (total)	**280**	190	—	—	24	—	100
Cobalt	32	23	—	—	—	—	N/A
Copper	**1,800**	1200	—	150	—	—	1,300[e]
Iron (mg/L)	**220**	**150**	**39**	**26**	**60**	**23**	300[d]
Lead	**2,800**	**1,900**	—	**620**	**44**	**98**	15[e]
Magnesium (mg/L)	31	26	5.5	72	26	31	N/A
Manganese	**2,300**	**1,600**	**1,900**	**250**	**920**	**89**	50[e]
Mercury	0.29	0.6	—	—	—	—	2
Nickel	280	140	—	—	—	—	N/A
Potassium (mg/L)	65	67	—	150	11	11	N/A
Selenium	50	36	—	—	20	—	50
Silver	**150**	**100**	—	—	—	—	100[e]
Sodium (µg/L)	190	190	—	920	30	32	N/A
Thallium	—	—	—	—	—	—	2
Vanadium	300	210	—	—	57	—	N/A
Zinc	**5,700**	4,200	20	650	69	91	5,000[e]

[b] MW-1 through MW-6 are shallow well points, MW-7 through MW-11 are standard, 2-inch monitoring wells.
[c] Maximum contaminant level (MCL) (National Primary Drinking Water Regulations).
[d] National Secondary Drinking Water Regulations (not enforceable).
[e] Action Level (EPA).

Note: Figures in bold are exceedances of MCLs.

Key: µg/L = Micrograms per liter.
mg/L = Milligrams per liter.
N/A = Not available.
— = Not detected.

Table 5-21 Analytical Results for Groundwater, Second Round Metals (µg/L unless otherwise noted) Kenilworth Park Landfill, N.E. Washington, D.C.

Parameters	Sample Identification[a]								MCL[b]
	MW-1	MW-1F	MW-2	MW-2DUP	MW-2F	MW-2FDUP	MW-3	MW-3F	
Aluminum (mg/L)	--	--	--	--	--	--	--	--	50-200[c]
Antimony	--	--	--	--	--	--	--	--	6
Arsenic	ND	ND	ND	ND	ND	ND	ND	ND	50
Barium	122	243	151	ND	200	184	309	301	2,000
Cadmium	ND	ND	ND	ND	ND	5.00	ND	ND	5
Calcium	--	--	--	--	--	--	--	--	N/A
Chromium (total)	ND	**1550**	ND	ND	10.6	ND	ND	ND	100
Cobalt	--	--	--	--	--	--	--	--	N/A
Copper	--	--	--	--	--	--	--	--	1,300[d]
Iron	--	--	--	--	--	--	--	--	0.30[c]
Lead	8.71	**17.1**	ND	ND	**35.6**	**94.5**	ND	8.35	15[d]
Magnesium	--	--	--	--	--	--	--	--	N/A
Manganese	--	--	--	--	--	--	--	--	50[d]
Mercury	ND	ND	ND	ND	ND	ND	ND	ND	2
Nickel	--	--	--	--	--	--	--	--	N/A
Potassium	--	--	--	--	--	--	--	--	N/A
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	50
Silver	ND	ND	ND	ND	ND	ND	ND	ND	100[d]
Sodium	--	--	--	--	--	--	--	--	N/A
Thallium	--	--	--	--	--	--	--	--	2
Vanadium	--	--	--	--	--	--	--	--	N/A
Zinc	--	--	--	--	--	--	--	--	5,000[d]

Key at end of table.

Table 5-21 **Analytical Results for Groundwater - Second Round Metals (µg/L) Kenilworth Park Landfill, N.E. Washington, D.C.**

Parameters	Sample Identification[a]									MCL[a]
	MW-4	MW-4F	MW-5	MW-5F	MW-6	MW-6F	TMW-12	TMW-12F	Eq Blk	
Aluminum (mg/L)	--	--	--	--	--	--	--	--	--	50-200[b]
Antimony	--	--	--	--	--	--	--	--	--	6
Arsenic	ND	ND	ND	ND	ND	ND	ND	ND	ND	50
Barium	193	161	1060	987	1040	1140	230	183	144	2,000
Cadmium	ND	ND	**5.49**	ND	ND	**5.38**	ND	ND	ND	5
Calcium	--	--	--	--	--	--	--	--	--	N/A
Chromium	ND	ND	ND	ND	ND	ND	28.5	ND	18.7	100
Cobalt	--	--	--	--	--	--	--	--	--	N/A
Copper	--	--	--	--	--	--	--	--	--	1,300[c]
Iron	--	--	--	--	--	--	--	--	--	0.30[b]
Lead	ND	ND	13.7	ND	ND	**15.6**	7.91	ND	**20.3**	15[c]
Magnesium	--	--	--	--	--	--	--	--	--	N/A
Manganese	--	--	--	--	--	--	--	--	--	50[c]
Mercury	ND	ND	ND	ND	ND	ND	ND	ND	ND	2
Nickel	--	--	--	--	--	--	--	--	--	N/A
Potassium	--	--	--	--	--	--	--	--	--	N/A
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	ND	50
Silver	ND	ND	ND	ND	ND	ND	ND	ND	ND	100[c]
Sodium	--	--	--	--	--	--	--	--	--	N/A
Thallium	--	--	--	--	--	--	--	--	--	2
Vanadium	--	--	--	--	--	--	--	--	--	N/A
Zinc	--	--	--	--	--	--	--	--	--	5,000[c]

Key at end of table

KEY

[a] Maximum contaminant level (MCL) (National Primary Drinking Water Regulations).

[b] National Secondary Drinking Water Regulations (not enforceable).

[c] Action Level (EPA).

Note: Figures in bold are exceedences of MCLs.

Eq Blk = Equipment Blank.

mg/L = Milligrams per liter.

ug/L = Micrograms per liter.

ND = Not detected.

-- = Not Tested.

N/A = Not available.

Table 5-22 Estimated Volumes of Groundwater Flow[a] from Under the Kenilworth Park Landfill, N.E. Washington, D.C.

Segment And Monitoring Well	Area (meters^2)				
	Length (meters)	Depth (meters)	Hydraulic Gradient[b]	Hydraulic Conductivity[c]	Volume of Flow (liters/year)
1	101	0.3	0.0106	7.33E-6	73,000
2	94	0.3	0.0174	1.88E-5	290,000
3	93	0.3	0.0174	7.81E-6	119,000
4	118	0.3	0.0122	8.53E-6	116,000
5	101	0.3	0.0136	8.43E-6	109,000
6	335	0.3	0.0138	9.03E-6	394,000
7	101	0.3	0.0300	3.90E-6	112,000
10	202	0.3	0.0051	1.08E-6	29,000
11	244	0.3	0.0144	3.37E-6	112,000
				Total	**1,154,000**

[a] Volumes of flow are calculated from the formula:
Volume of flow = cross-sectional area x hydraulic gradient x hydraulic conductivity.
[b] dimensionless.
[c] centimeters per second.

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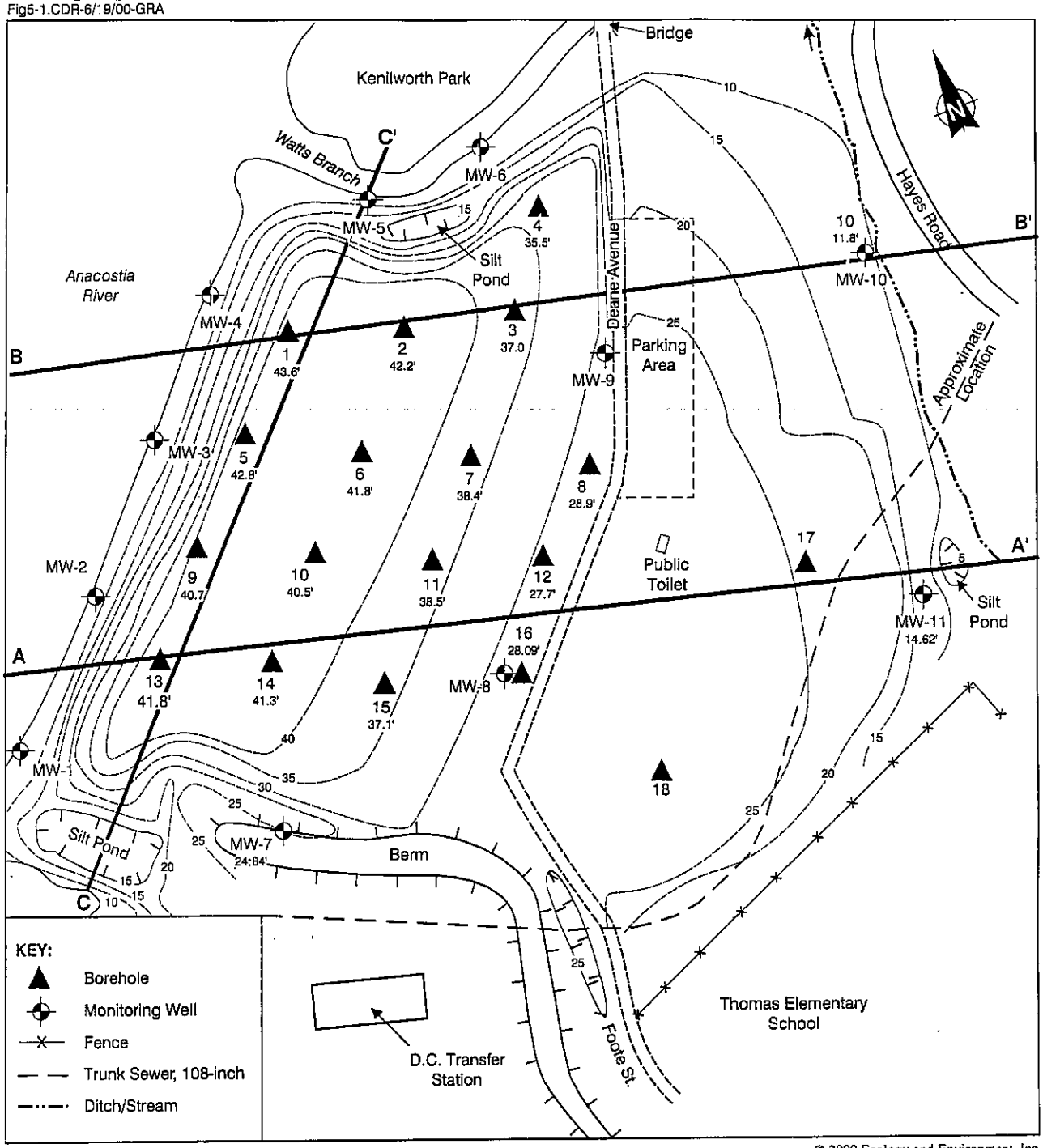
Fig5-1.CDR-6/19/00-GRA



SOURCE: Based on Smith 1999.

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SCALE IN FEET
0 250 500 Feet

Figure 5-1 KENILWORTH PARK LANDFILL
SKETCH MAP OF SITE WITH ESTIMATED
SURFACE CONTOURS AND LOCATION OF CROSS SECTIONS

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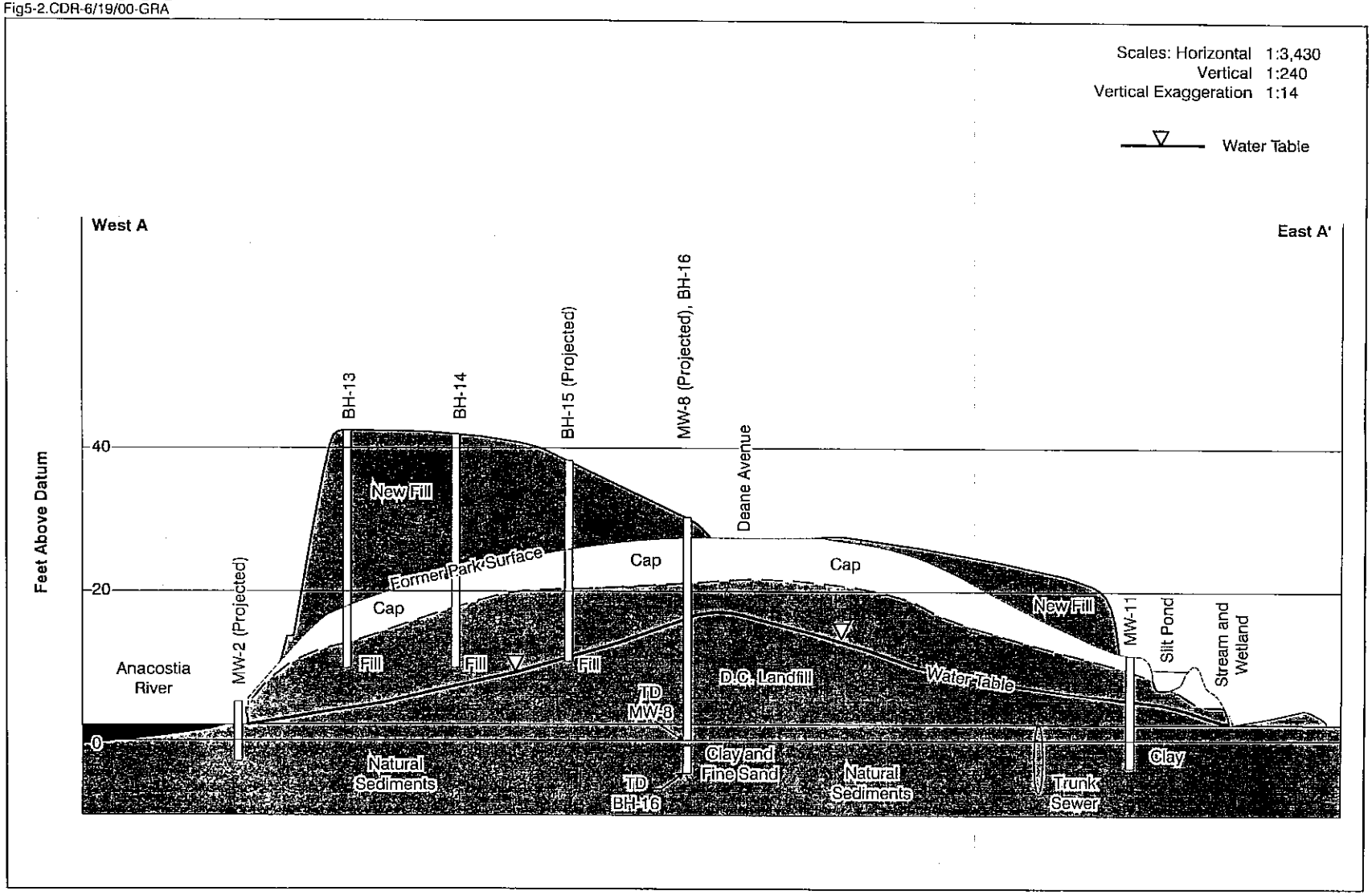
Fig5-2.CDR-6/19/00-GRA



SOURCE: Ecology and Environment, Inc. 1999

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HORIZONTAL SCALE

0 500 1000 Feet

Figure 5-2 KENILWORTH PARK LANDFILL
CROSS SECTION A-A' SHOWING FORMER D.C. LANDFILL AND NEW (1997-1998) FILL

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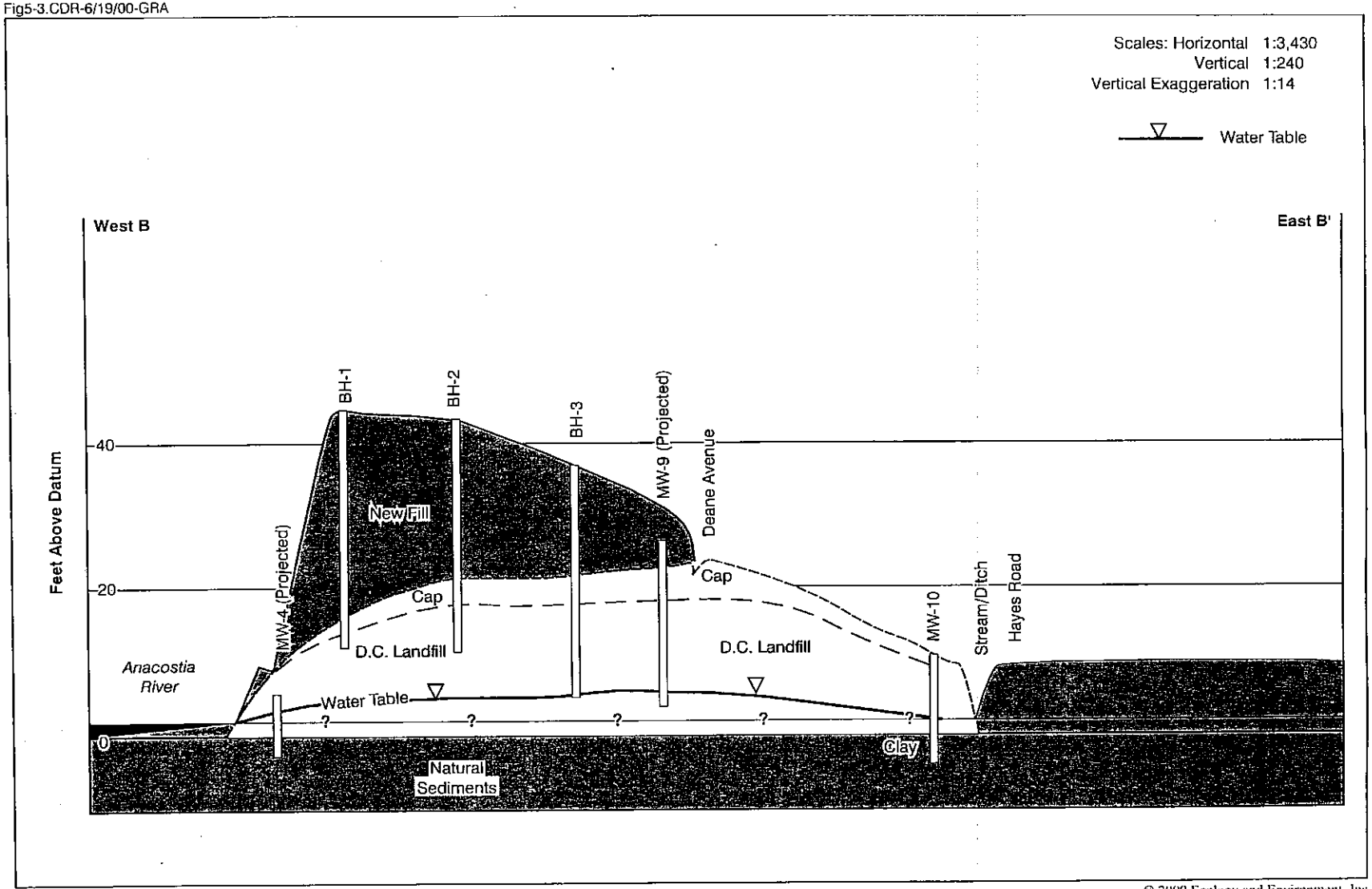
Fig5-3.CDR-6/19/00-GRA



SOURCE: Ecology and Environment, Inc. 1999

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HORIZONTAL SCALE
0 500 1000 Feet

Figure 5-3 KENILWORTH PARK LANDFILL CROSS SECTION B-B' SHOWING FORMER D.C. LANDFILL AND NEW (1997-1998) FILL

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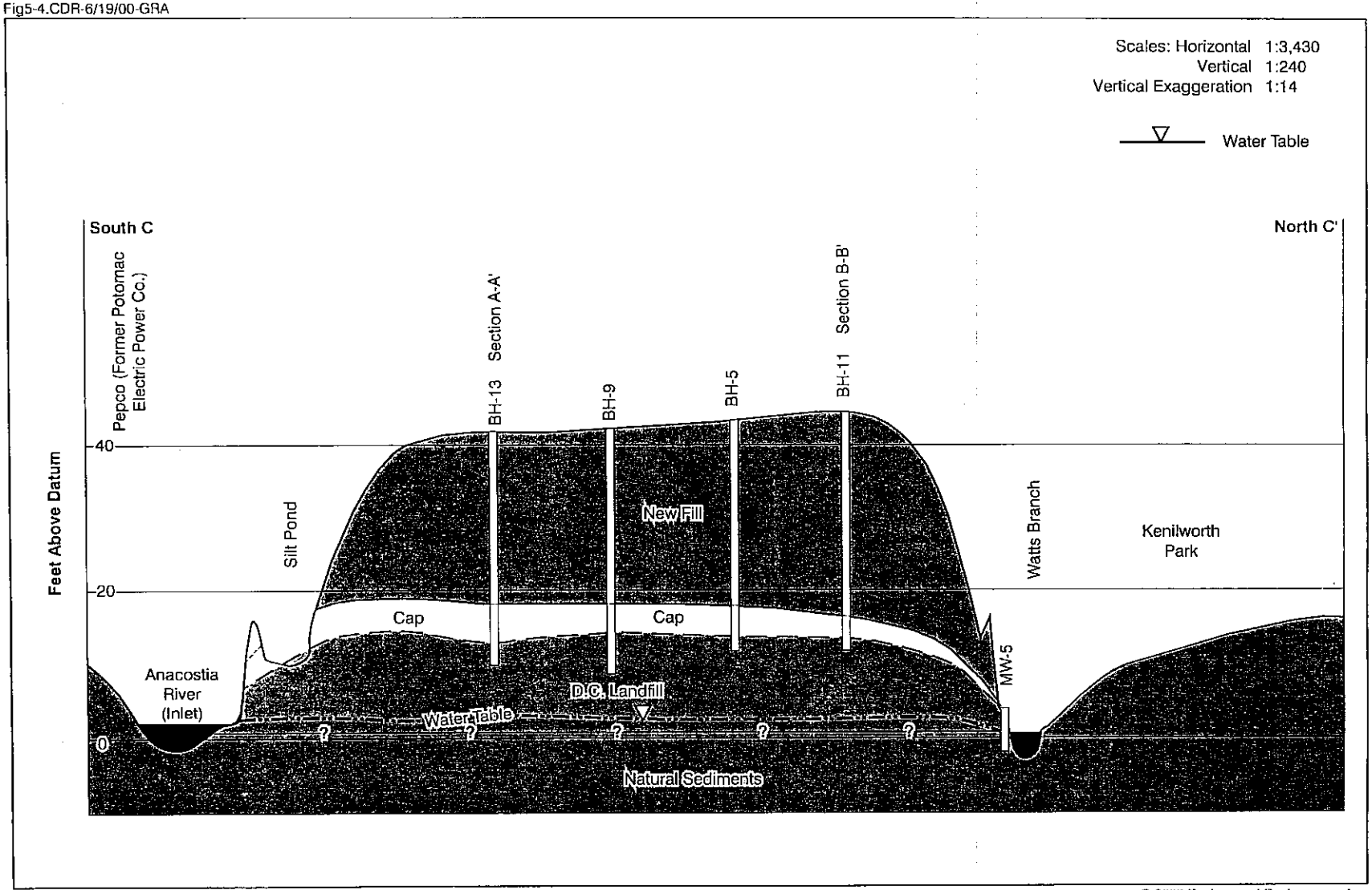
Fig5-4.CDR-6/19/00-GRA



SOURCE: Ecology and Environment, Inc. 1999

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HORIZONTAL SCALE
0 500 1000 Feet

Figure 5-4 KENILWORTH PARK LANDFILL CROSS-SECTION C-C' SHOWING FORMER D.C. LANDFILL AND NEW (1997-1998) FILL

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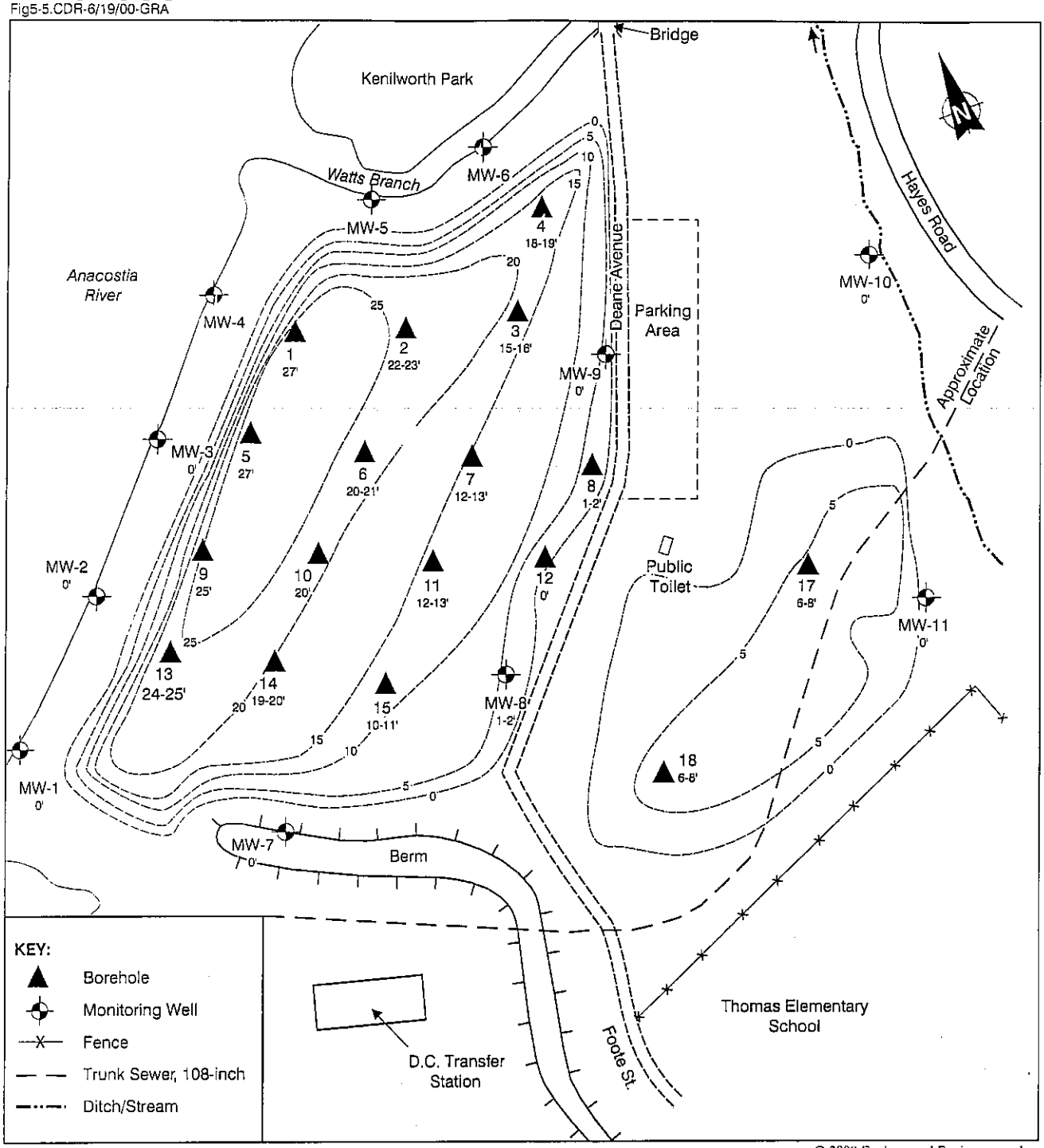
Fig5-5.CDR-6/19/00-GRA



SOURCE: Based on Woodburn 1996.

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SCALE IN FEET
0 250 500 Feet

Figure 5-5 KENILWORTH PARK LANDFILL ESTIMATED THICKNESS OF NEW FILL

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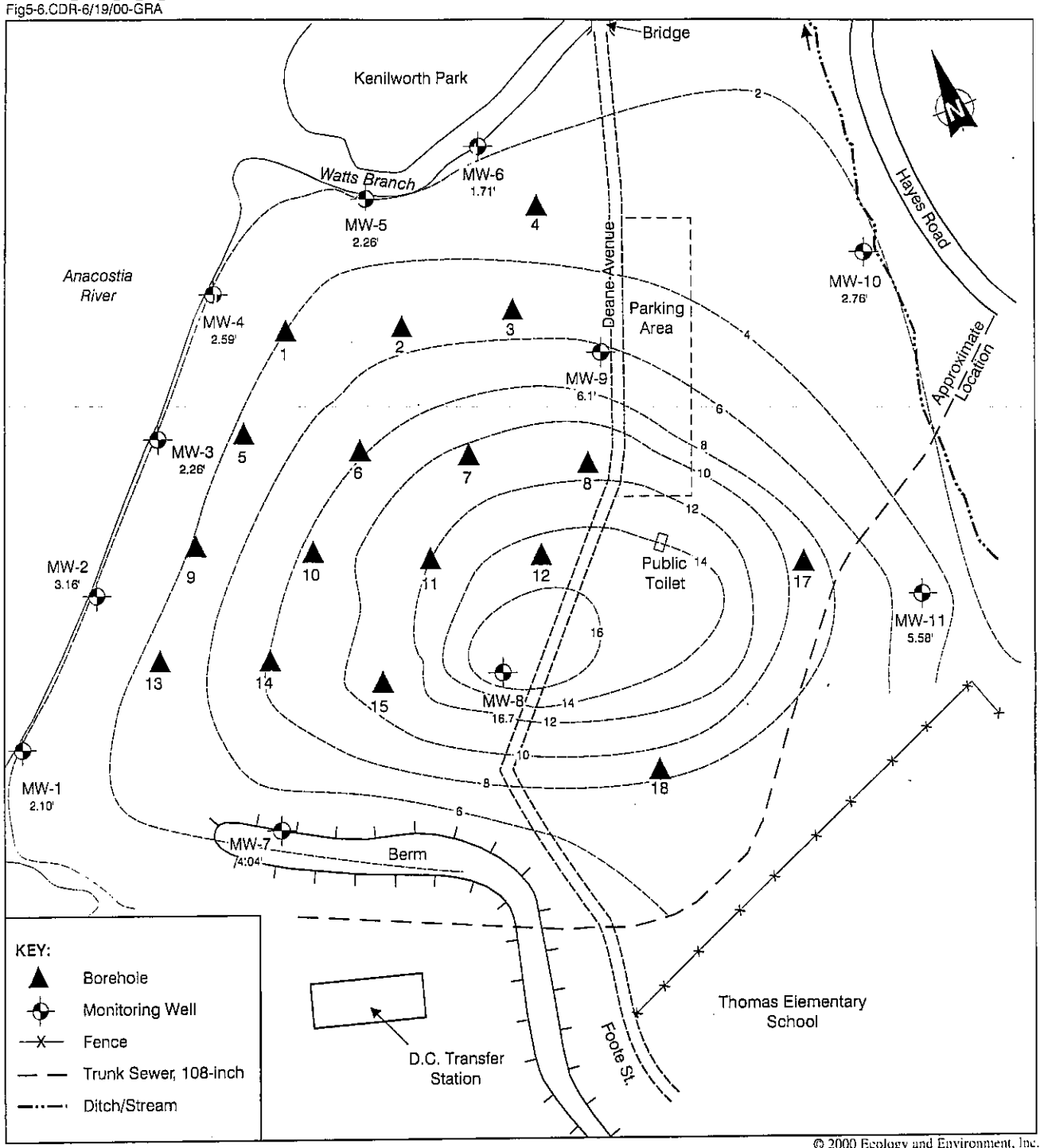
Fig5-6.CDR-6/19/00-GRA



SOURCE: Based on Woodburn 1996.

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SCALE IN FEET
0 250 500 Feet

Figure 5-6 KENILWORTH PARK LANDFILL WATER TABLE ELEVATIONS 05/17/99 (HIGH TIDE) IN FEET ABOVE DATUM

6

Groundwater Pathway

6.1 Hydrogeology

The regional geology shows that the site lies within the Coastal Plain province, which "consists of layers of gravel, sand, silt and clay that are gently sloped downward toward the southeast. The layers form geologic formations that range in age from Cretaceous to Holocene. The geologic units of principle concern (at this site) are the Patuxent Formation, Arundel Clay, and Patapsco Formation." (Andreason, 1999) (Appendix L)

"Collectively, these formations, consisting of alternating beds of sand, silt and clay form the Potomac Group." "Sand layers, which generally allow the transmission and extraction of water, form aquifers. In contrast, silt and clay layers, which impede flow of ground water and do not yield water to wells form confining beds" (Ibid). "The aquifers ... consist of multiple sand layers within the Patapsco and Patuxent Formations; they include, from shallowest to deepest, upper Patapsco aquifer, lower Patapsco aquifer, upper Patuxent aquifer and lower Patuxent aquifer. The lower Patapsco aquifer is separated from the upper Patuxent aquifer by the Arundel Clay" (Ibid). Both geology and the structure can be clearly seen in the cross-section passing just south of the site of Kenilworth Park Landfill (Figure 6.1, Figure 6.2).

At the near - surface the site is underlain by recent marsh deposits and mudflats of the Anacostia River (Section 3.2), and other alluvial deposits including thin sands.

Slug-testing of the wells and well-points at the landfill, screened across waste materials and alluvium, showed hydraulic conductivities averaging $7.49E^{-6}$ centimeters per second and ranging from $1.8\ E^{-5}$ to $1.8\ E^{-6}$ centimeter per second. No hydraulic conductivities have been calculated for the Arundel Clay, since no wells are completed within it. Leakances ranging from $9x10^{-7}$ cubic feet per day per cubic foot ($ft^3/d/ft^3$) to $1x10^{-10}$ $ft^3/d/ft^3$ were assigned to the Arundel Clay confining layer by Andreason while modeling the Patapsco and Patuxent Aquifers in Prince Georges County, (Andreason 1999), resulting in recharge to the Patuxent aquifer of only 0.05 inches/yr under 1997 pumping conditions. These very low values indicate a low vertical hydraulic conductivity. The upper Patuxent aquifer was assigned a wide range of transmissivity (from 0 to 2000 ft^2/d) but the transmissivity is generally between 200 to 500 ft^2/d in the area of Kenilworth Park Landfill (Ibid).

The geologic map of Washington D.C. and vicinity by P.M. Johnston, 1961, is used to draw a cross-section across the site, showing the probable relationships of the various Holocene deposits to the underlying Potomac Formation. (Figs 6-3 and 6-4). The depth to the Patuxent Aquifer beneath the site is estimated at 140 feet (Fig 6-4).

6.2 Water Balance and Recharge

The field observations made while installing boreholes into the landfill show that the cap prevents detectable levels of methane from escaping the former landfill until the cap is pierced which makes it very improbable that recharge is entering the fill. This combination of a groundwater mound with little or no recharge shows that vertical movement must be very restricted, or the groundwater mound could not have continued to exist since the landfill closure in approximately 1970 (Section 2.3 and Appendix B).

The climatic data and river flow data imply an average evapo-transpiration of approximately 28 inches (out of 38.63 inches of precipitation, Table 3-1), since river flow averages around 1 cubic foot per second for each square mile of watershed (Van der Leeden, Troise, and Todd 1990). This means than surface runoff and

groundwater discharge together (which equal river flow) equal 10.6 inches per year. If it is assumed that average runoff is 15% of total rainfall, then average groundwater discharge, and hence recharge, is approximately 5 inches per year on average. Over the area of the landfill (approximately 50 acres) this would amount to over 18,000 gallons per day. The field observations of very low hydraulic conductivity and low hydraulic gradients clearly show that this cannot be happening. The calculated flow of groundwater from under the fill is less than 1,000 gallons per day.

A study by McFarland, 1997, in an area south of Richmond, Virginia, estimated recharge rates for Potomac Group aquifers as ten inches per year. The average of five inches of recharge postulated for the Kenilworth Park area is conservative, therefore, and this reinforces the conclusion that the cap is essentially not permitting recharge, since there is no plausible way for the recharge to exit the site. As calculated in Section 5.2.2., the discharge of groundwater from under the landfill may be less than 1000 gallons per day.

6.3 Groundwater Use and Hydraulic Gradients

Because groundwater use has varied significantly over time in the District and in Prince George County, hydraulic heads have also varied over time. For example the Washington Terminal Company in 1963 was withdrawing one million gallons per day from the Patuxent aquifer at a location near Union Station in the District, (Mack 1966). Now groundwater withdrawals are not occurring from under the District, but in 1963 Mack estimated withdrawals of 1.4 million gallons per day from the Patuxent alone (Mack, Figure 3, 1966). Mack reports that the piezometric surface (hydraulic head), of the Patuxent was between 23 and zero feet AMSL in the site vicinity, indicating approximately equal hydraulic heads above and below the Arundel Clay under the site. As the result of reductions in groundwater withdrawals from the Patuxent Formation, water levels have recovered. For example, in the well at St. Elizabeth's Hospital the water level had risen to -30 ft AMSL in 1964 after having been below -55 ft in 1957 (Mack 1966 Figure 7). St. Elizabeth's Hospital

is just outside the four-mile radius from the site to the south, and the well there is no longer pumped or used for water supply.

Domestic Wells

Frost Associates, (Appendix M), has identified, using 1990 census data, no households with domestic wells within a half mile of the site, but there are eight dug wells within a half mile and one mile, nine dug wells between one and two miles of the site, and a total of 58 dug wells between two and four miles of the site. Because dug wells are invariably shallow, they are easily polluted by surface water and spills. It is extremely unlikely that any of these wells are being used as a source of drinking water. Because of their shallow depth they also will draw only from their immediate surroundings and cannot be affected by the Kenilworth Landfill site, more than half a mile away. One possible drilled well is recorded between three and four miles of the site (Appendix M).

The State of Maryland, Department of the Environment, Groundwater Permits Program, identified two domestic wells within four miles of the site (Table 6-1).

Table 6-1 Domestic Wells within Four Miles of Kenilworth Park Landfill

Data	Well # PG-73-1408	Well # PG-8H072
North Coordinate East Coordinate	379,000 828,000	389,000 832,000
Owner	William Pickett	T.J.Baxter
Address	Rollins Avenue	Hill Road
Surface Elevation [1]	_ 220 ft AMSL	_ 140 ft AMSL
Depth of Well	375 ft	270 ft
Depth of Water (static)	150 ft	100 ft

Approximate Water Table	70 ft AMSL	40 ft AMSL
Geologic Formation	Patapsco	Patapsco

Source Swartzbaugh 2000. (AppendixO)

1 From coordinates and topographic quadrangle map

The depths of these wells make it clear that they are both completed in the Patapsco aquifer, and the water table (non-pumping) elevations of the water show that the hydraulic heads at these locations (70 ft and 40 ft AMSL respectively), make it impossible for water to flow from under the landfill (with a maximum water level 16 ft AMSL), to these wells against the hydraulic gradient.

In fact the hydraulic heads in the wells at the landfill clearly imply that the groundwater under the landfill flows radially outwards and discharges into the adjoining surface water.

There are no water supply wells, municipal, commercial or domestic, that can be impacted at the present time by the Kenilworth Landfill through groundwater migration.

The alluvial aquifer under the site is not used for water supply, and the Patuxent aquifer is protected by a great thickness of clay (more than 100 feet), and an upward or zero vertical hydraulic gradient.

6.4 Potential Groundwater Targets

There are no water supply wells, municipal, commercial or deep drilled domestic wells within three miles of the site. Two domestic wells are identified between three and four miles from the site, but they are completed in the Patapsco aquifer, and the static hydraulic head at these locations is higher than any found on site. No flow from the site can reach these wells. See section 6-1.

The District of Columbia has "no wells (public or private) ... for use of ground water as a source of drinking water" (USEPA, 1999 page 4-3, See Appendix P). There are no potential groundwater targets using aquifers under the site within a four mile radius.

6.5 Groundwater Quality

The groundwater at the site has only been analyzed by sampling wells screened across the former District landfill wastes.

The very low levels of organics indicate that the wastes have had very little impact on groundwater with respect to the Target Compound List organics. The presence of methane in most boreholes that penetrate the older fill implies the active bacterial decomposition of organics, but this does not present a health hazard since no one is exposed to this groundwater.

During the initial round of ground water sampling the metals levels, especially lead, were found to be highly elevated, but the low yield of the wells prevented their being developed sufficiently to yield nonturbid water. The analyses of the landfill waste indicate that the metals levels in the groundwater are most likely the result of suspended solids. The impact of the groundwater from under the landfill is much more nearly represented by the water from well points MW-1 through MW-6 (averaging 74 μg/L of lead). Even so, the high levels of aluminum, iron, and manganese in the well points (averaging a combined 49.3 mg/L) is indicative of suspended solids, which would result in elevated total lead, well above the dissolved concentration.

A second round of sampling for RCRA metals only, taken from MW-1 through MW-6 and compared to a temporary background well at Kenilworth Aquatic Gardens showed a 95% decline in lead levels. One well, MW-5, exceeded the Maximum Contaminant Level (MCL) for cadmium in drinking water, but this well had shown non-detect

for cadmium in the previous round of sampling. No well exceeded the USEPA Action Level for lead in drinking water (15 μg/L) in unfiltered samples and most were non-detect. No other RCRA metal exceeded an MCL. Apart from probably high levels of dissolved iron and manganese, the groundwater around the landfill appears to be little impacted by the fill.

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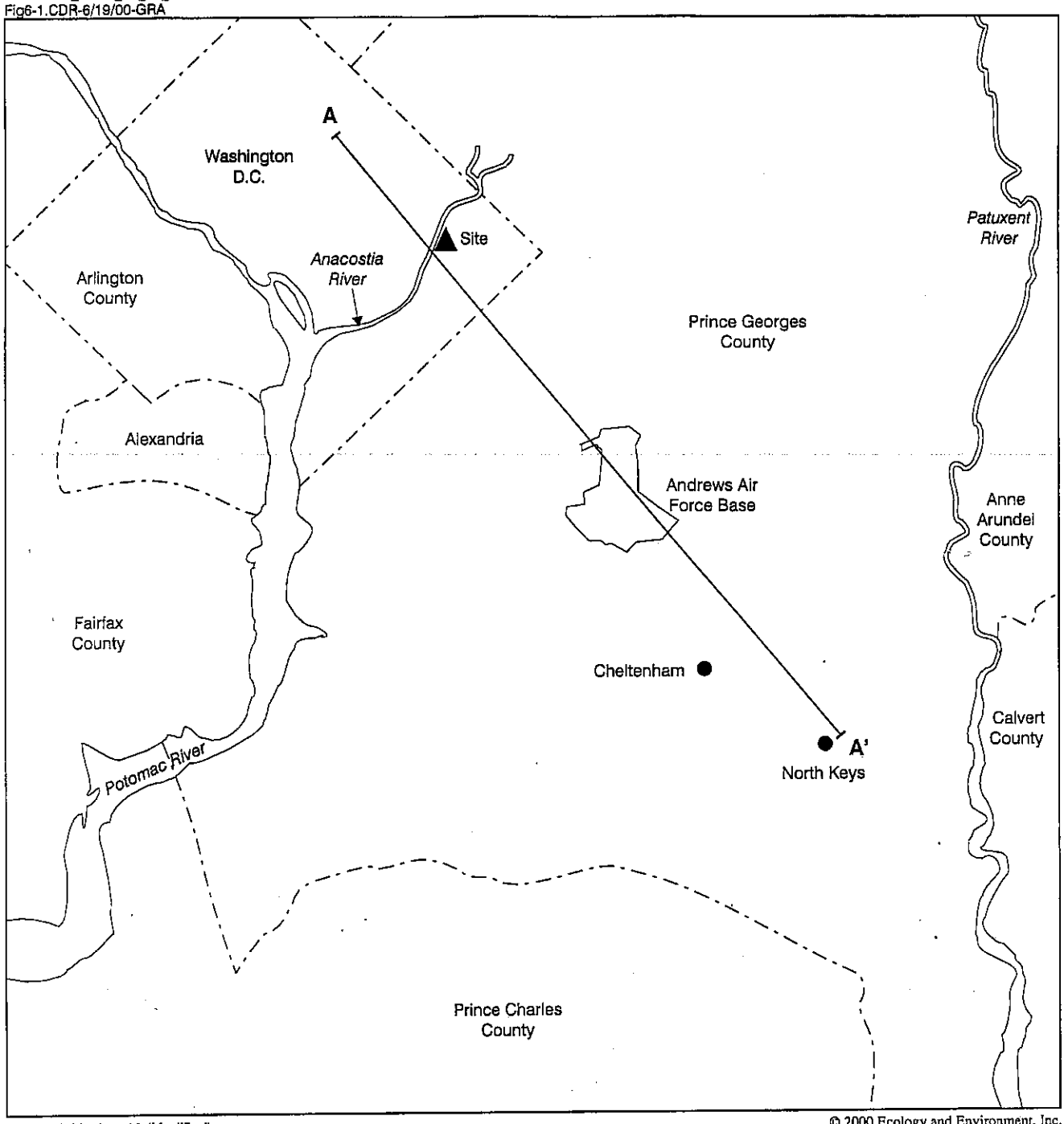
Fig6-1.CDR-6/19/00-GRA



SOURCE: Mack 1966 (Modified)

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MILES

Figure 6-1 LOCATION OF CROSS-SECTION A-A'

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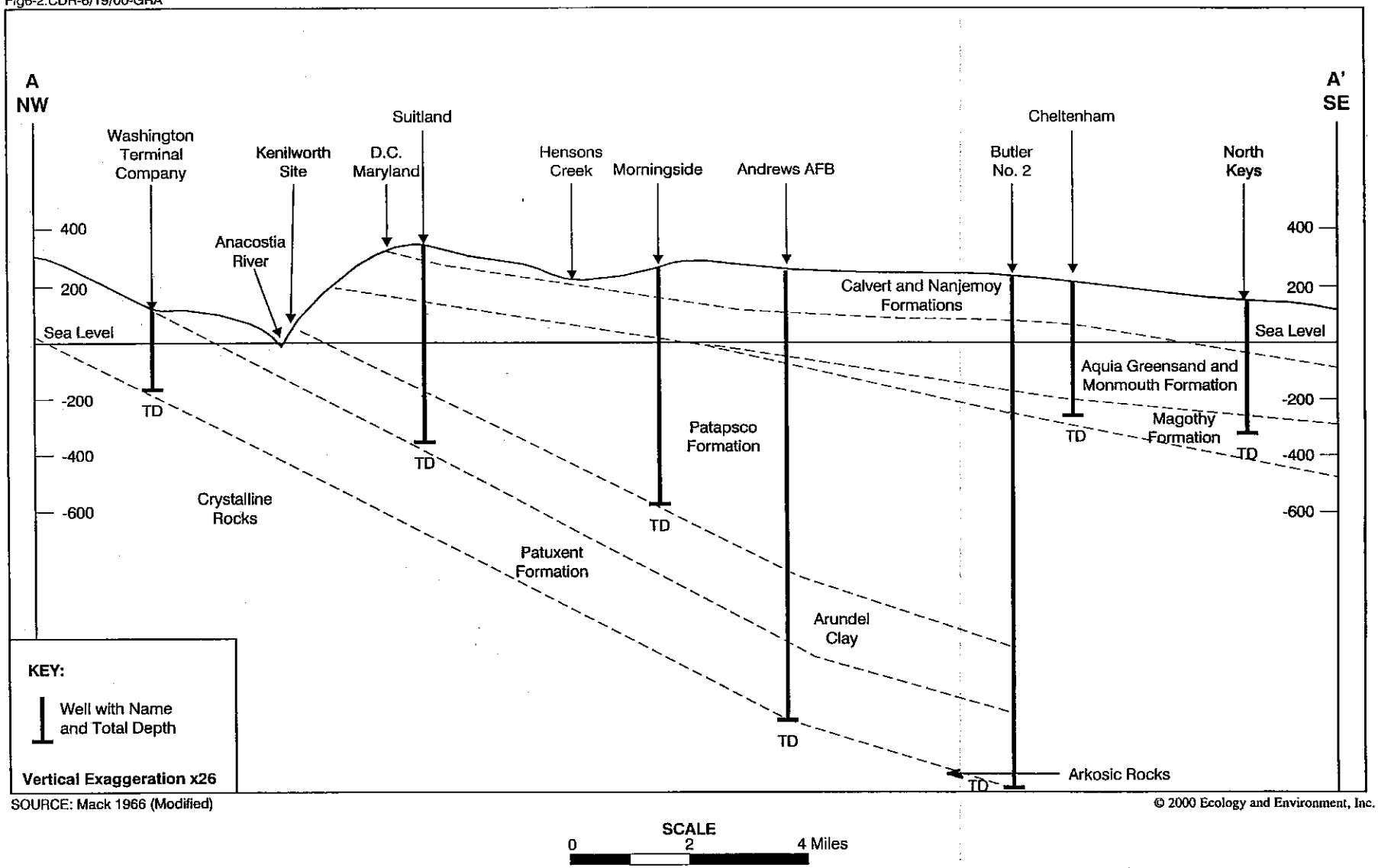

SOURCE: Mack 1966 (Modified)

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Figure 6-2 GEOLOGIC CROSS-SECTION A-A'

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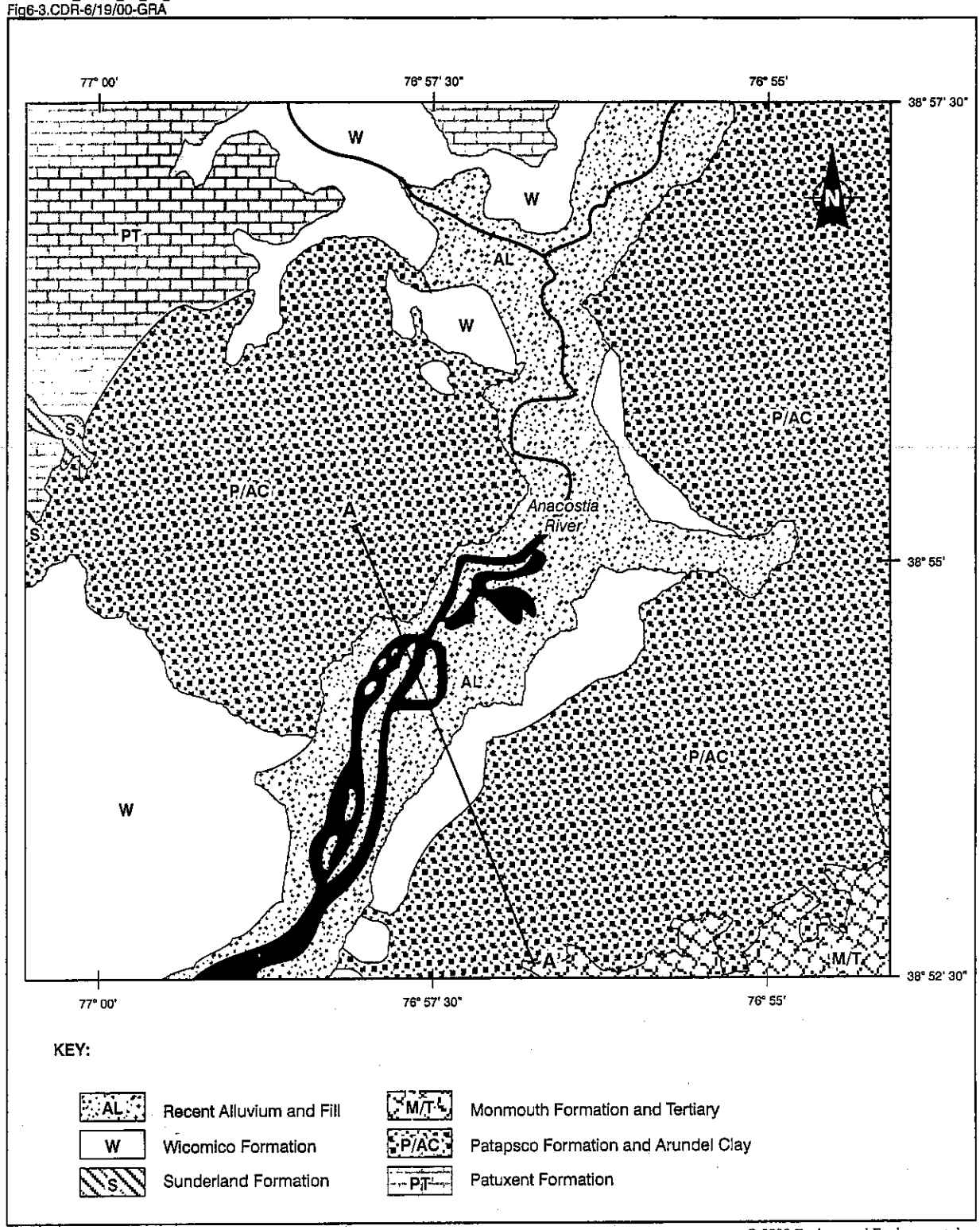

SOURCE: Adapted from Johnston 1961

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Figure 6-3 SURFACE GEOLOGY AND LOCATION OF CROSS-SECTION KENILWORTH PARK LANDFILL

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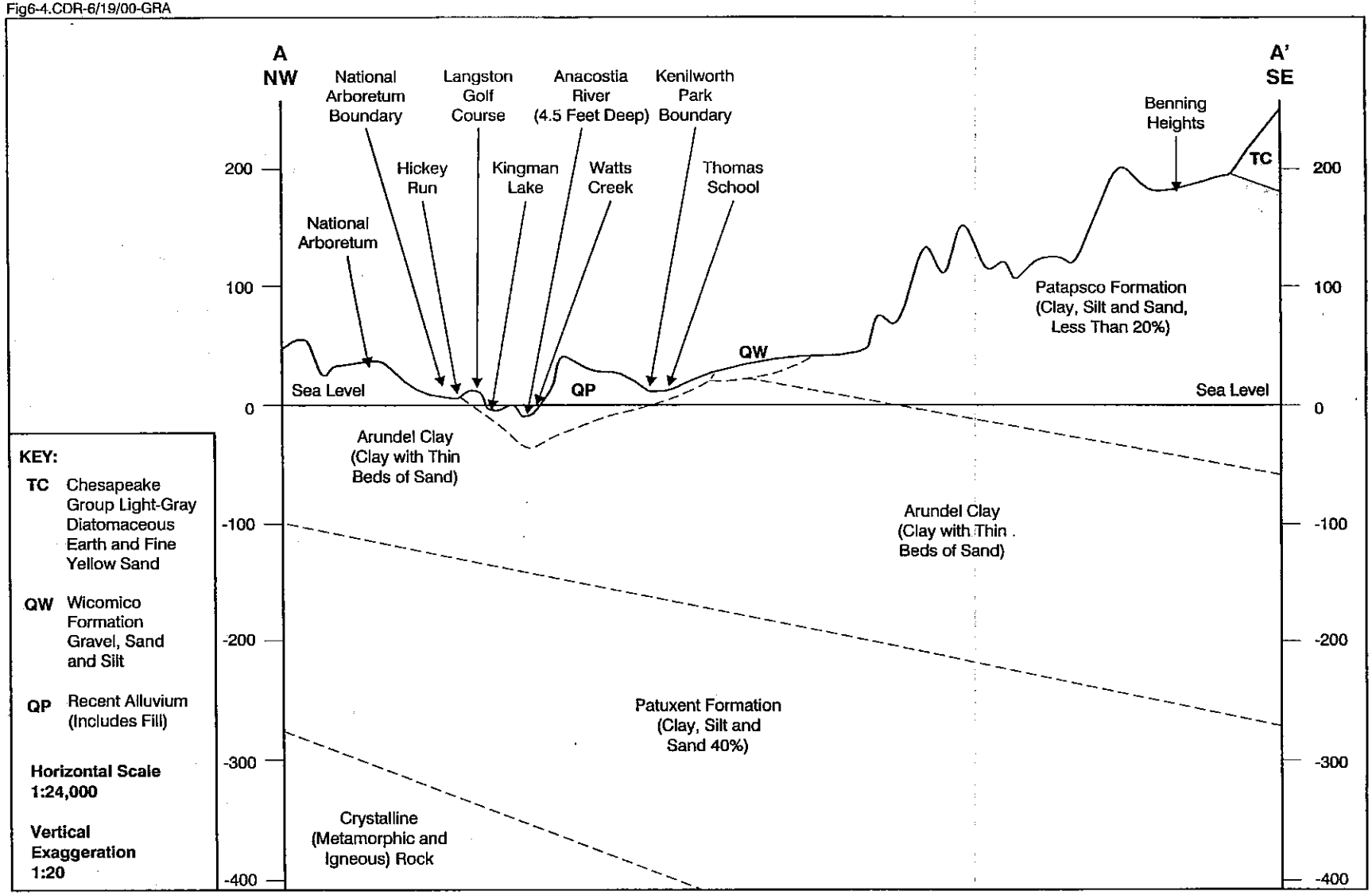
Fig6-4.CDR-6/19/00-GRA



SOURCE: Johnston (1964), Andreason (1999), U.S.G.S. 1965 (Photorevised 1979) and Curtain, et al (1999)

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Figure 6-4 GEOLOGICAL CROSS-SECTION KENILWORTH PARK LANDFILL

7 Surface Water Pathway

7.1 Surface Water Flows

The Anacostia River is estimated to have an average flow of 150 cubic feet per second (cfs) opposite the site. Gauges on the two main tributaries at Riverdale and Hyattsville, 6 to 8 miles upstream, average a combined flow of 138 cubic feet per second. Comparable watersheds in Maryland such as the Patuxent River average slightly above 1 cubic foot per second average flow per square mile of watershed (Van der Leeden, Troise, and Todd 1990). Inspection of the topographic map indicates that the main tributary of the Anacostia, just upstream of the landfill, is Beaverdam Creek with a watershed of over 10 square miles.

Watts Branch has a watershed of approximately 3 square miles, and like Beaverdam Creek is heavily urbanized, which will result in a bias towards rapid runoff, high stormwater flows, and low base flow. Observation of Watts Branch during fieldwork in May 1999 occurred when there were no storms or any significant precipitation, and flows in the creek were low, estimated at 1 to 2 cubic feet per second.

MWCOG, 1998 (pp. 4) estimates maximum discharge into the tidal area of the river (associated with Hurricane Agnes in June 1972) as 31,180 cfs, or 225 times the average flow. Minimum discharge (September 1966) was 1.8 cfs or 1.3 percent of average flow. The entire watershed is very flashy, that is, subject to very large changes caused by rapid runoff, with little base flow from groundwater.

The volume of the tidal portion of the river is estimated at approximately 500 million cubic feet. Average water residence time is "on the order of 30 to 35 days" (MWCOG , 1998, pp. 4). During periods of "extremely low flow this residence time can be as long as 100 to 110 days" (Ibid.).

7.2 Surface Water Quality

The surface water samples collected during the SI did not indicate any significant impact of the site on surface water quality.

SW-3, collected just north of monitoring well MW-2 in the Anacostia River, did show a slightly elevated lead concentration (12 µg/L), when compared to the background sample SW-4 at the mouth of Beaverdam Creek (less than 5 µg/L). It is possible that this lead is a reflection of suspended solids, however. Sediments SED-9 and SED-11, collected from the Anacostia River opposite the landfill, revealed 78 mg/kg and 98 mg/kg of lead, respectively, so one part of these sediments in 6,500 parts of water (0.015%) would give 12 µg/L in the water sample. The Navy found dissolved concentrations of lead to be less than 0.4 ug/L but they were highest in the section of the river opposite the landfill (Coffin et al. 1998).

There is no indication that the former District landfill is impacting surface water or sediment although impact on PCBs and metals in sediments cannot be ruled out (see Section 5.1.2).

CSO
Combined sewer overflow

Combined Sewer Overflows (CSOs)

Approximately 60 percent of the Anacostia watershed within the District of Columbia drains directly to the tidal Anacostia River via a combined sanitary and storm sewer system dating back as early as the late 1800s. There are 11 major combined sewer outfalls to the Anacostia River and all discharge in the vicinity of the East Capitol Street and South Capitol Street bridges south of and downstream of the landfill. A combined sewer overflow (CSO) event occurs when rainfall exceeds the capacity of this combined system causing discharges of untreated sanitary waste and stormwater directly into the river. On average, overflows occur roughly 40 to 50 times a year, resulting in approximately 1.3 billion gallons of sanitary waste discharged to the tidal river.

CSOs are the primary point source pollutants degrading the Anacostia River's water quality. However, only about six percent of the annual pollutant loads to the Anacostia River are from CSOs compared to about 94 percent from nonpoint sources. In recognition of the CSO problem, the District of Columbia initiated its CSO Abatement Program in the early 1980s. Retrofitting of existing combined sewer systems, between 1988 to 1990, with inflatable dams and construction of an overflow treatment facility (a.k.a a swirl concentrator), have produced some improvement. However, it is estimated that well over $1 billion dollars may be required to correct the existing CSO problem (MWCOG 1998, pp. 11-12).

Migration Factors

The former District landfill was placed directly into the river without any barrier, and landfill wastes mixed with soil still extend into the water. The area not covered by recent (1997-1998) fill is heavily overgrown. The new fill has very steep slopes along the side facing the river (up to an estimated 25 to 30 percent), so while the NPS has mulched and seeded much of the fill, the vegetation cover is still very poor and erosion is active. A ditch around the toe of the recent fill directs flow to silt ponds at the north and south ends of the fill that overflow to Watts Branch and the Anacostia River respectively. The Driggs fill area east of Deane Avenue has a flatter surface and a smaller drop-off to the former landfill surface (4 to 5 feet maximum). Flow off the Driggs fill is directed to a silt pond east of the fill which overflows to an unnamed stream originating at a storm drain in the vicinity of Grant Street and discharging to Watts Branch at the northeast edge of the landfill. The shortest distance from the recent fill (which would be considered a source), to surface water is less than fifty feet. From the former landfill materials of the District landfill the distance is zero feet.

Maximum probable rainfall in six hours is twenty eight inches (Hirshfield 1961), and estimated rainfall intensities and return intervals are shown on Table 7-1, which shows a probable seven inches in twenty four hours at a return interval of 50 years, and between 3.0 to 3.5 inches at a return interval of two years.

Table 7.1 Rainfall Intensity (inches)
Kenilworth Park landfill, N.E. Washington, D.C.

DURATION	RETURN INTERVAL (years)					
	1	2	5	10	25	50
30 minutes	1.0 - 1.1	1.4	1.8	2.0	2.4	2.8
1 hour	1.4	1.8	2.2	2.6	3.0	3.5
24 hours	< 3.0	3.0 - 3.5	4.5	5.5	6.0	7.0

Note: Maximum probable rainfall in 6 hours is 28 inches.

Even the two-year expected 24 hour storm is likely to cause severe erosion and will probably result in discharge of heavily sediment-laden water to Watts Branch and the Anacostia River unless the new fill has substantial vegetative cover or is otherwise protected.

7.3 Impacts on Surface Water and Population Affected

Because of the low rates of flow, the groundwater is not expected to significantly impact surface water (Section 6). The landfill formerly was covered entirely by well-established vegetation, and erosion and runoff were controlled, so that it also had little impact.

The recent (1997-1998) fill is almost devoid of vegetation, and active erosion and gullying are talking place. The very steep slopes around the edges of the fill make it very likely that active erosion will create loadings for the silt-control structures that will overwhelm their capacities. It is highly likely that unregulated discharges of stormwater laden with sediment will impact water quality in Watts Branch and the Anacostia River.

Population Affected

No use is made of the tidal Anacostia as a source of drinking water (Palmer 2000) for obvious reasons. The combined sewer overflow problems prevent swimming or water contact sports and floating trash is a major problem also (MWCOG 1998, pp. 14-15)(Appendix I). The former landfill does not contribute to these problems and does not impact any population through surface water impacts directly. It could indirectly impact recreational use of the river for fishing and boating through increased sediment loading (see Section 9 for a discussion of fishing and food chain impacts).

7.4 Critical Environments

There is only one formerly federally listed endangered or threatened species known to occur within a 4-mile radius of the site, the peregrine falcon, which was recently delisted (Appendix E). The site can have very little impact on this species. Wetlands potentially impacted by discharges from the site are discussed in Section 3.5. The impact that the site currently has on surface water and sediments is so slight that it could not be clearly demonstrated. Impacts on critical environments consequently must also be slight.

7.5 Surface Water Pathway Conclusions

Although the site clearly has potential to impact surface water through unregulated discharges of sediment, the SI did not document any impacts on surface water that currently could be attributed to the site.

8

Soil and Air Pathways

8.1 Current Soil Contamination and Waste Quantity

The former District landfill waste does exceed both residential and nonresidential risk-based concentrations (Section 5.1), but this material is essentially all capped and no one is currently exposed or at risk.

The new (1997-1998) demolition debris and soil occasionally exceeds risk-based criteria but would not represent a significant risk if covered and revegetated.

As discussed in Section 5.1.1.2, the average level of PAHs in the top one foot of currently exposed fill and soil across the entire landfill site is on the order of 6 mg/kg. The total mass of hazardous substances (PAHs) across the site is of the order of 1,200 kg in approximately 110,000 tons of fill/soil. Most of this material exceeds USEPA Region III Risk Based Concentrations (RBCs) for residential soils, and some isolated instances occur of soil exceeding RBCs for industrial soils, althought at least one of these appears to result from the presence of asphalt from a parking lot (SS-7).

8.2 Potential Exposure Factors

Although vehicular access to the site is currently controlled, pedestrian access is uncontrolled. Because the fill is directly exposed at the surface, exposure of trespassers to direct contact with surface soil is uncontrolled, and the surface soil itself is exposed to drying out and wind erosion that could create blowing dust.

No measurements of air quality have been made.

8.3 Population Affected

Immediately adjoining the landfill, although fenced off from it, is Thomas Elementary School, on Anacostia Avenue. The school has approximately 450 students and 45 staff (Scudder ,2000). Living within a quarter-mile of the landfill are 476 households with a population of 930 people. Between one quarter and one half mile are 420 households with a population of 847 people. All these households lie on the same side of the Anacostia River and have easy access to the site, although a few who live across Benning Road or Kenilworth Avenue would probably not walk to it.

Between one half mile and one mile is a population of 12,428 in 5787 households based on a 1990 Census data (CENTRACS Report, Appendix M). Between one and two miles from the site is a population of 81,015 in the District and 3,462 in Maryland living in 34,260 and 1,311 households respectively. Between two and three miles is a population of 96,712 in 40,395 households in the District and 43,200 in 15,045 households in Maryland. Between three and four miles is a population of 96,263 in 41,462 households in the District and 75, 711 in 29,785 households in Maryland.

At greater distances many of the residents of the District are unlikely to visit the site because of barriers such as the Anacostia River or major roadways or railways. Travel distances are much greater than direct distances in those circumstances, and other recreational areas are likely to be closer. Few residents of Maryland are likely to visit the site, since all of them have to travel distances greater than two miles.

8.4 Soil and Air Pathway Conclusions

The current state of the landfill, with very steep slopes and minimal vegetative cover, creates the likelihood of soil erosion both by runoff and by blowing dust. This could impact surface water and air quality. Approximately 2000 residents live within a half a mile of the site and may be exposed to direct contact with the soil, or less probably, to blown dust off the recent fill.

The uncontrolled access and physical hazards of the fill could result in injury to trespassers, and, if not remediated, to later park users.

9 Human Food Chain Exposure

The Anacostia river is a fishery used by a limited number of D.C. residents , (7,613 resident fishing licenses were issued in 1993). The river is used for recreational angling and is a potential source of exposure to humans. Surveys do indicate that despite a fish advisory (Appendix Q), a high percentage of anglers consume fish species such as American eel, carp, channel catfish, and largemouth bass, which have been found to have excessive concentrations of metals, PCBs and pesticides (Velinsky and Cummins). A health advisory was issued in 1989 and updated in 1994 recommending no consumption of catfish, carp or eel and limited consumption of largemouth bass (EPA,1999 pp4-9). As reported in the EPA's "District of Columbia Environmental Characterization Report" studies conducted by the District's Department of Consumer and Regulatory Affairs (DCRA) and Virginia State University (VSU) indicate that a large percentage of anglers who fish in the Anacostia consume fish species found to have high levels of contamination.

The DCRA and VSU surveys found that as many as 80 percent of anglers ate fish caught in D.C. waters. Studies indicated that catfish, eel, bass, and carp were the most preferred species among anglers for consumption. A study by Velinsky and Cummins indicated that consumption of these species of fish from D.C. waters will expose humans to elevated levels of metals, PCB's and pesticides.

Metals, PCB's and pesticides were found at the highest levels in the most popular species of fish including carp, American eel, channel catfish, and largemouth bass. Metals detected in most samples from the Anacostia and Potomac were arsenic, selenium and mercury. PCB's were found to be highest in American eel, channel catfish and largemouth bass samples taken from the Anacostia and upper Potomac rivers. Pesticides found in high concentrations in channel catfish and American eel included chlordane, DDT's and dieldrin. Limited research makes it difficult to quantify the risk to the human population (EPA, 1999).

No data on fish consumption rates were available, making it difficult to assess the food chain risks through fish consumption. Generic assessments using consumption rates from the EPA's "Draft Exposure Factor Handbook" have been made for chlordane, dieldrin and PCB's. As indicated in table 4-3 on page 4-16 of Appendix M, at the consumption rates of 6.5g and 140g of fish per day, exposure rates were found to be above the U.S. Food and Drug Administration's "Action Levels" indicating an elevated risk of cancer for people eating these amounts of these species of fish from D.C. waters.

As indicated in the discussion of the sediment samples upgradient of and close to the Kenilworth Park Landfill, there is no firm evidence that the landfill has any impact on sediments in its vicinity (Section 5.1.2). PCB's are elevated adjacent to the landfill, but there are other potential sources. PAH's were not elevated compared to background, but arsenic, cadmium, lead, and mercury are all elevated with respect to background. These elevated levels can not be identified as being related to discharges from the landfill, nor can they be related to elevated levels of toxins in fish.

10

Summary, Conclusions, and Recommendations

Summary

Under contract to the NPS, E&E conducted a PA/SI of the Kenilworth Park Landfill. Investigations of the site identified the presence of contaminants that exceeded risk-based concentrations or action levels for residential and industrial soils. Contaminants included polynuclear aromatic hydrocarbons, PCBs, metals, and in one case, phthalates.

Sediments around the landfill exceeded screening levels established to protect the most sensitive aquatic organisms, from phthalates, PAHs, DDT and its breakdown products, and PCBs. Sediments collected from upstream in Watts Branch and in the Anacostia River were not clearly different from sediments adjacent to the landfillecept for elevated levels of PCBs. There is insufficient evidence to clearly determine whether these contaminants are associated with the landfill site or originate from some other, unrelated and undefined sources. Potential sources include upstream sources in Maryland, Hickey Run, Watts Branch and the PEPCO power station adjoining the landfill.

During a first round of sampling, groundwater exceeded MCLs for bis(2-ethylhexyl)phthalate as established under the National Primary Drinking Water Regulations. MCLs for iron and manganese also were exceeded. During the second round of sampling, however, none of the wells when redeveloped showed significant levels of RCRA metals,(arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver),indicating that the impact of groundwater from under the landfill on the adjoining surface water is negligibly low.

Significant erosion problems occur at the site due to lack of both adequate erosion control and vegetative cover on the recently applied construction debris/excavation material fill. Uncovered, protruding construction debris poses a continuing physical hazard to trespassers and the general public, due to uncontrolled pedestrian site access from the adjacent residential neighborhoods and the elementary school.

Conclusions

Contaminants in site subsurface soil/fill exceed certain risk-based criteria for both residential and industrial soils, and could pose a threat, either now or in the foreseeable future, to human health or the environment. These substances mostly occur beneath the current landfill cap, which in turn is further covered with the recently applied demolition debris/excavation material fill, however. Contaminants are not readily accessible, and as long as the existing landfill cap remains in place, no potential path for exposure exists. PAHs in the more recent fill can exceed risk-based concentrations, and so could provide a route of exposure to site visitors if not covered.

Insufficient data exist to conclude that the contaminants found in site sediments and those adjacent to the site are, or are not, related to the landfill. It is possible that these contaminants are the result of unrelated sources that may include upstream sources, the nearby PEPCO power station, Hickey Run, or Watts Branch.

No aquifer is impacted by site-related groundwater contaminants, nor do contaminants in the groundwater within the fill pose a threat to human health or the environment, as long as the existing landfill cap maintains its integrity.

Analytical results and calculations of flow do not indicate any significant impact of the site on surface water quality due to direct site groundwater discharge. Indirect impacts on surface water quality could be caused by erosion of the new fill material if runoff from storm events is not prevented from discharging to Watts Branch and the Anacostia River.

If allowed to continue unchecked, the erosion will increase in severity and have a decidedly adverse impact on the air and surface water in the immediate site vicinity. Due to the presence of uncovered demolition debris in proximity to adjacent residential neighborhoods, physical injury to the general public is a clear possibility as long as pedestrian access to the site remains uncontrolled. Blowing dust from the uncovered site may become a nuisance and possibly a health hazard under dry conditions.

Recommendations

Every effort should be made to establish and institute an effective erosion-control plan/program to correct the problems caused by the recent application of demolition debris/excavation material fill to the

former landfill site. This would necessarily involve, but not be limited to, such actions as regrading of the site, storm water control, application of a final top cover, revegetation, and habitat and recreational area rehabilitation and restoration. Immediate actions should also be taken to eliminate any uncontrolled pedestrian access to the site until it has been remediated.

11

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A

Historic Maps

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P.O. #: na
Site Name: Kenilworth Park Landfill
Address: Deane Ave.
City/State: Washington, DC 20019
Cross Streets: Foote St./Anacostia Ave./Alias

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The EDR-Historical Topographic Map Report

Kenilworth Park Landfill
Deane Ave.
Washington, DC 20019

May 17, 1999

Inquiry Number: 369033-1

Environmental Data Resources, Inc.
an edr company

The Source For Environmental Risk Management Data

3530 Post Road
Southport, Connecticut 06490

Nationwide Customer Service

Telephone: 1-800-352-0050
Fax: 1-800-231-6802

Environmental Data Resources, Inc.
Historical Topographic Map Report

Environmental Data Resources, Inc.'s (EDR) Historical Topographic Map Report is designed to assist professionals in evaluating potential liability on a target property, and its surrounding area, resulting from past activities. ASTM E 1527-94, Section 7.3 on Historical Use Information, identifies the prior use requirements for a Phase I environmental site assessment. The ASTM standard requires a review of *reasonably ascertainable standard historical sources. Reasonably ascertainable is defined as information that is publicly available, obtainable from a source with reasonable time and cost constraints, and practically reviewable.*

To meet the prior use requirements of ASTM E 1527-94, Section 7.3.2, the following *standard historical sources* may be used: aerial photographs, city directories, fire insurance maps, topographic maps, property tax files, land title records (although these cannot be the sole historical source consulted), building department records, or zoning/and use records. ASTM E 1527-94 requires *"All obvious uses of the property shall be identified from the present, back to the property's obvious first developed use, or back to 1940, whichever is earlier. This task requires reviewing only as many of the standard historical sources as are necessary, and that are reasonably ascertainable and likely to be useful."* (ASTM E 1527-94, Section 7.3.2 page 11.)

EDR's Historical Topographic Map Report includes a search of available public and private color historical topographic map collections.

Topographic Maps

A topographic map (topo) is a color coded line-and-symbol representation of natural and selected artificial features plotted to a scale. Topos show the shape, elevation, and development of the terrain in precise detail by using contour lines and color coded symbols. Many features are shown by lines that may be straight, curved, solid, dashed, dotted, or in any combination. The colors of the lines usually indicate similar classes of information. For example, topographic contours (brown); lakes, streams, irrigation ditches, etc. (blue); land grids and important roads (red); secondary roads and trails, railroads, boundaries, etc. (black); and features that have been updated using aerial photography, but not field verified, such as disturbed land areas (e.g., gravel pits) and newly developed water bodies (purple).

For more than a century, the USGS has been creating and revising topographic maps for the entire country at a variety of scales. There are about 60,000 U.S. Geological Survey (USGS) produced topo maps covering the United States. Each map covers a specific quadrangle (quad) defined as a four-sided area bounded by latitude and longitude. Historical topographic maps are a valuable historical resource for documenting the prior use of a property and its surrounding area, and due to their frequent availability can be particularly helpful when other standard historical sources (such as city directories, fire insurance maps, or aerial photographs) are not reasonably ascertainable.

Please call EDR Nationwide Customer Service at
1-800-352-0050 (8am-8pm ET)
with questions or comments about your report.
Thank you for your business!

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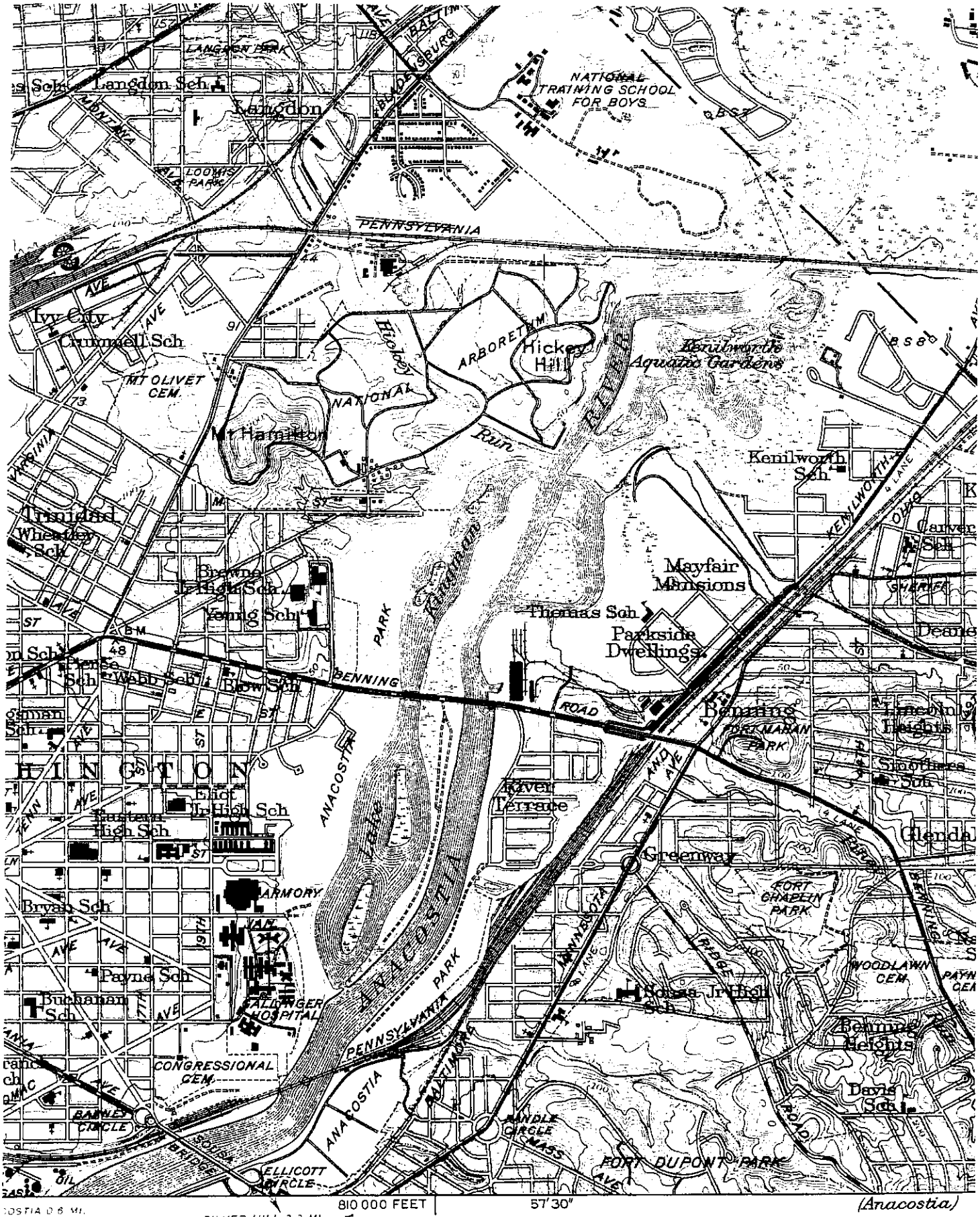

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GS

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SCE, NCPS, and WSSC

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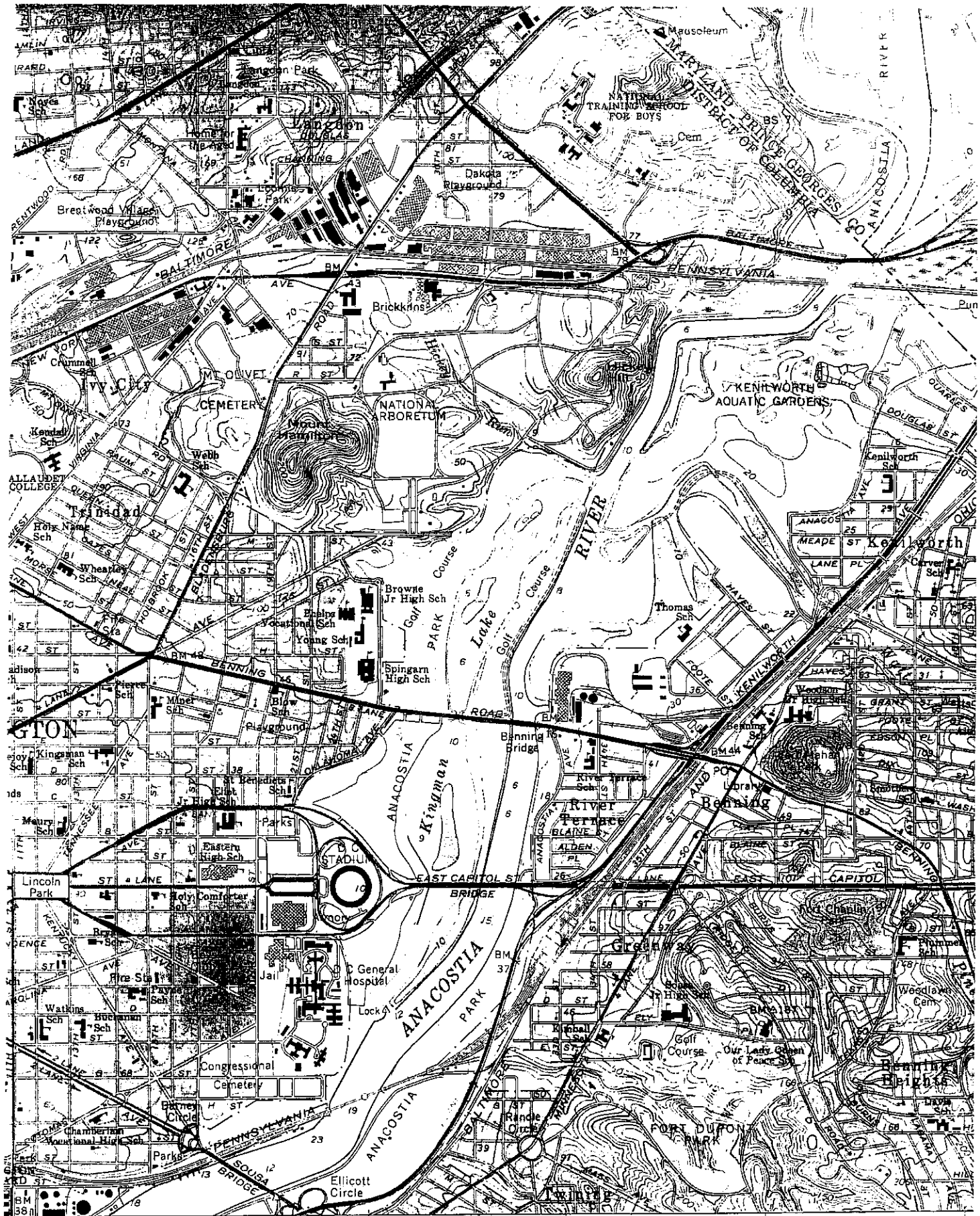
1000 0 1000 2000 3000 4000



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SC&GS, USCE, NCPS, and WSSC

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SCALE 1:2

1000 0 1000 2000 3000

MN GN

ublished by the Geological Survey

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metric methods from aerial photographs
ed 1957. Revised 1965

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GN

1000 0 1000 2000 3000

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&GS, USCE, NCPS, and WSSC

SCALE 1:24 0

B

Aerial Photographs

The EDR-Aerial Photography Print Service

Kenilworth Park Landfill
Deane Ave.
Washington, DC 20019

May 24, 1999

Inquiry Number: 369033-6

Environmental Data Resources, Inc.
an edr company

The Source For Environmental Risk Management Data

3530 Post Road
Southport, Connecticut 06490

Nationwide Customer Service

Telephone: 1-800-352-0050
Fax: 1-800-231-6802

Environmental Data Resources, Inc.
Aerial Photography Print Service

Environmental Data Resources, Inc.'s (EDR) Aerial Photography Print Service is a screening tool designed to assist professionals in evaluating potential liability on a target property resulting from past activities. ASTM E 11527-94, Section 7.3 on Historical Use Information, identifies the prior use requirements for a Phase I environmental site assessment. The ASTM standard requires a review of *reasonably ascertainable standard historical sources. Reasonably ascertainable means information that is publicly available, obtainable from a source with reasonable time and cost constraints, and practically reviewable.*

To meet the prior use requirements of ASTM E 1527-97, Section 7.3.2, the following *standard historical sources* may be used: aerial photographs, fire insurance maps, property tax files, land title records (although these cannot be the sole historical source consulted), topographic maps, city directories, building department records, or zoning/land use records. ASTM E 1527-94 requires *"All obvious uses of the property shall be identified from the present, back to the property's obvious first developed use, or back to 1940, whichever is earlier. This task requires reviewing only as many of the standard historical sources as are necessary, and that are reasonably ascertainable and likely to be useful. "*(ASTM E 11527-94, Section 7.3.2, page 11.

Aerial Photographs
Aerial photographs are a valuable historical resource for documenting past land use and can be particularly helpful when other historical sources (such as city directories or fire insurance maps) are not reasonably ascertainable. The EDR Aerial Photograph Print Service includes a search of local aerial photograph collections flown by public and private agencies for the state of Washington, DC. EDR Sanborn's professional field-based researchers provide digitally reproduced historical aerial photographs at ten year intervals.

Please call EDR Nationwide Customer Service at
1-800-352-0050 (8a.m-8pm EST)
with questions or comments about your report.
Thank you for your business!

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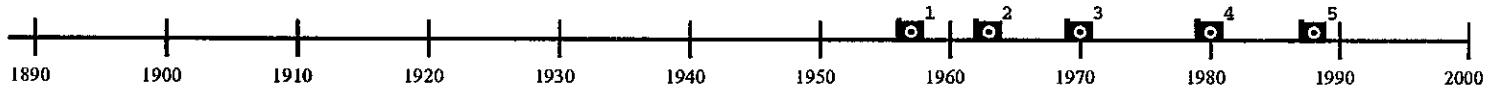
Environmental Data Resources, Inc.
an edr company

Prior Use Report™ Timeline

Target Property



Search Not Requested

Search Not Requested

Search Not Requested

Search Not Requested

Legend:

= Historical Topographic Map (HT)*

= National Wetland Inventory Map (WT)*

= Flood Prone/FEMA Maps (FP/FR)*

= Aerial Photos Included (P)*

= Aerial Photos Available*

= Residential (R)

= Commercial or Industrial (C)

Superscript number corresponds to graph ID in text

**Displayed on timeline when aerial photos, historical topos, flood prone, FEMA, wetland maps, or Aerial Research Summary are purchased.*

Target Property: Kenilworth Park Landfill
Address: Deane Ave.
City/State/Zip: Washington, DC 20019

Customer: Ecology and Environment
Contact: Mr. Hussein Aldis
Inquiry #: 369033-6
Date: 05/24/99

SUMMARY

- ***Aerial Photographs:***

Local collections of aerial photographs flown by public and private sources for the state of Washington, DC were searched and aerial photographs for the years spanning 1957 through 1988 (these years are not necessarily inclusive) were identified. Digital copies are delivered via Federal Express, unless otherwise specified.

Date EDR Searched Historical Sources:
Aerial Photography May 24, 1999
Fire Insurance Maps May 24, 1999

Target Property:
Deane Ave.
Washington, DC 20019

PUR ID *Year*	*Uses*	*Portion-Findings (FIM Information Only)*	*Source*
1 1957	Aerial Photograph. Scale: 1"=750'	Panel #: 2438076-H8/Flightdate: June 15, 1957	nar
2 1963	Aerial Photograph. Scale: 1"=750'	Panel #: 2438076-H8/Flightdate: October 15, 1963	nar
3 1970	Aerial Photograph. Scale: 1"=750'	Panel #: 2438076-H8/Flightdate: September 1, 1970	nar
4 1980	Aerial Photograph. Scale: 1"=750'	Panel #: 2438076-H8/Flightdate: May 16, 1980	nar
5 1988	Aerial Photograph. Scale: 1"=750'	Panel #: 2438076-H8/Flightdate: April 5, 1988	nar

Glossary of Terms

A.A.A.

Aerial photograph flyer: Agriculture Adjustment Administration (Federal).

A.S.C.S

Aerial photograph flyer: Agricultural Stabilization and Conservation Service (Federal)

Address Change

Indicates that a change of address has occurred; indicates new address. A change of address may occur when a city, street, or the address ranges of a street are restructured.

Address in Research Source

Indicates that a property is listed at a different address than the one provided by the user. Generally occurs when a property is located on a corner or, when the physical address of a property is different than its mailing address.

Address Not Listed in Research Source

Occurs when a specific site address is not listed in city directories and/or fire insurance maps.

Adjoining

Any property that is contiguous, or a property that would be contiguous if not for a public thoroughfare, to the target property. *To differentiate from each adjoining property, stand at the target property's "front door" facing the street.*

Adjoining Back

Property directly to the rear of the target property.

Adjoining Front

Property directly in front of the target property.

Adjoining Left

Property directly to the left of the target property.

Adjoining Right

Property directly to the right of the target property.

Adjoining Surrounding Area

Property that may adjoin the target property but due to lack of specific map information cannot be located precisely. This situation typically occurs when city directory information, but not fire insurance map information, is available.

C.A.S

Aerial photograph flyer: Chicago Aerial Survey (private).

C.S.S.

Aerial photograph flyer: Commodity Stabilization Service (Federal).

Cartwright

Aerial photograph flyer: Cartwright (private)

CD

City Directory

Commercial

Any property including, but not limited to, property used for industrial, retail, office, agricultural, other commercial, medical, or educational purposes; property used for residential purposes that has more than four residential dwelling units.

Commercial or Industrial

Property that has either a commercial *or* an industrial use. Examples include retail stores, manufacturing facilities, factories, and apartment buildings.

D.N.R.

Aerial photograph flyer: Department of National Resources (state).

D.O.T.

Aerial photograph flyer: Department of Transportation (state).

Fairchild

Aerial photograph flyer: Fairchild (private).

FIM

Fire Insurance Map

Flood Insurance Rate Maps

Flood Insurance Rate Maps are produced by the Federal Emergency Management Agency (FEMA). These maps indicate special flood hazard areas, base flood elevations and flood insurance risk zones.

Flood Prone Area Maps

Flood Prone Area maps are produced by the United States Geological Survey (USGS). Areas identified as flood prone have been determined by available information gathered from past floods.

F.S.

Aerial photograph flyer: Forest Service (Federal).

Geonex

Aerial photograph flyer: Geonex (private).

M.C.

Aerial photograph flyer: Metropolitan Council of the Twin Cities Area (state).

Map Required Not Available in Local Collection

Property is located on a fire insurance map sheet not available in local and/or microfilm collection.

Mark Hurd

Aerial photograph flyer: Mark Hurd (private)

Multiple Locations

Indicates that there are two or more sites adjoining the target property's border.

N.A.P.P.

Aerial photograph flyer: National Aerial Photography Program (Federal).

National Wetland Inventory Maps

National Wetland Inventory Maps are produced by the U.S. Fish and Wildlife Service, a division of the U.S. Department of the Interior. Wetland and deepwater habitat information is identified on a 7.5 minute U.S.G.S. topographic map. The classification system used categorizes these habitats into five systems: marine, estuarine, riverine, lacustrine and palustrine.

No Return

Indicates that site owner was unavailable at time of surveyor's contact. *Applies only to city directories.*

No Structure Identified on Parcel

Used when site boundaries and/or site address is indicated on a fire insurance map; no structure details exist.

Other

Occurs when the site's classification is different that EDR's standard categories. Examples may include undeveloped land and buildings with no specified function.

P.M.A.

Aerial photograph flyer: Production and Marketing Administration (Federal).

Pacific Aerial

Aerial photograph flyer: Pacific Aerial (private)

Portion

Refers to the fire insurance map information identified on the four quadrants of a target or adjoining property. The portions are referred to as *Frontright*, *Frontleft*, *Backright*, and *Backleft* and are determined as if one were standing at the front door, facing the street.

Property Not Defined

Used when property is not clearly demarcated on a fire insurance map.

Residential

Any property having fewer than five dwelling units used exclusively for residential purposes.

Residential with Commercial Uses (a.k.a. Multiple Purpose Address)

A business (firm) and residence at the same address. Examples include a doctor, attorney, etc. working out of his/her home.

Sidwell

Aerial photograph flyer: Sidwell (private).

Site Not Mapped

Occurs when an adjoining property has not been mapped by fire insurance map surveyors.

Teledyne

Aerial photograph flyer: Teledyne (private)

Topographic Maps

Topographic maps are produced by the United States Geological Survey (USGS). These maps are color coded line and symbol representations of natural and selected artificial features plotted to scale.

Turnbow

Aerial photograph flyer: Michael Turnbow (private)

U.S.D.A.

Aerial photograph flyer: United States Department of Agriculture (Federal).

U.S.D.I.

Aerial photograph flyer: United States Department of the Interior (Federal).

U.S.G.S.

Aerial photograph flyer: United States Geological Survey (Federal).

Vacant

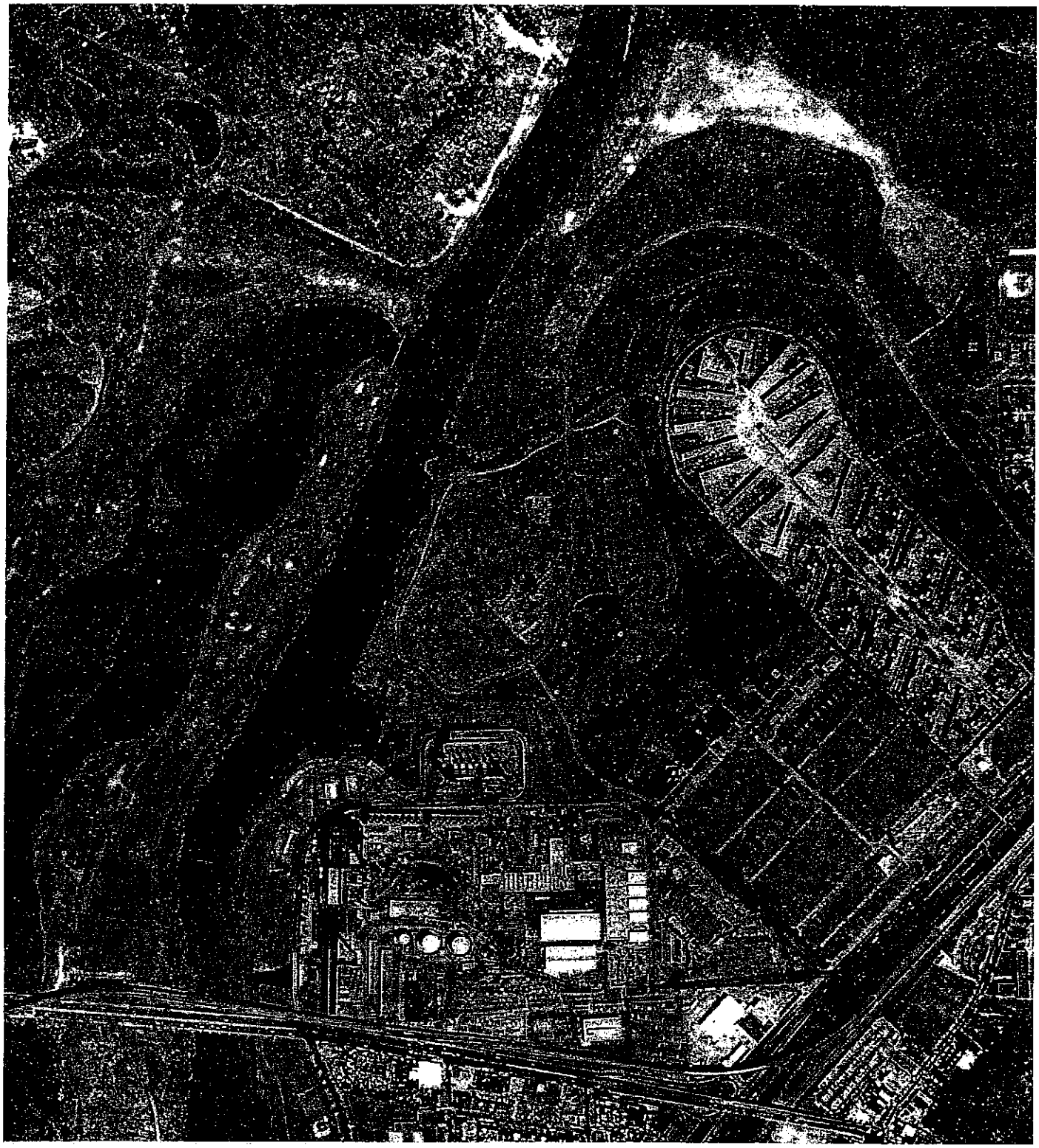
May refer to an unoccupied structure or land. *Used only when fire insurance map or city directory specifies 'vacant.'*

W.P.A.

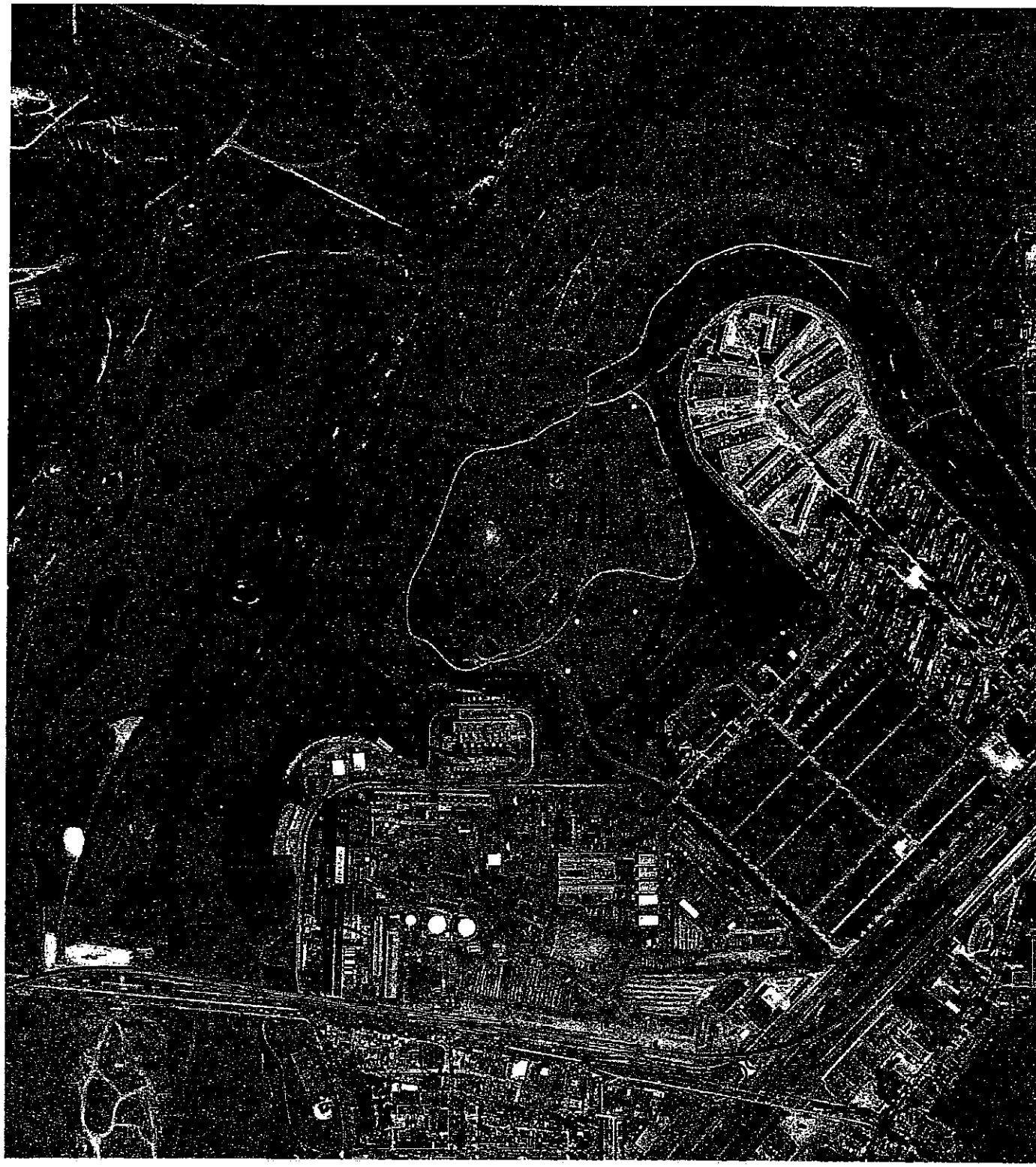
Aerial photograph flyer: Works Progress Administration (Federal).

WALLACE

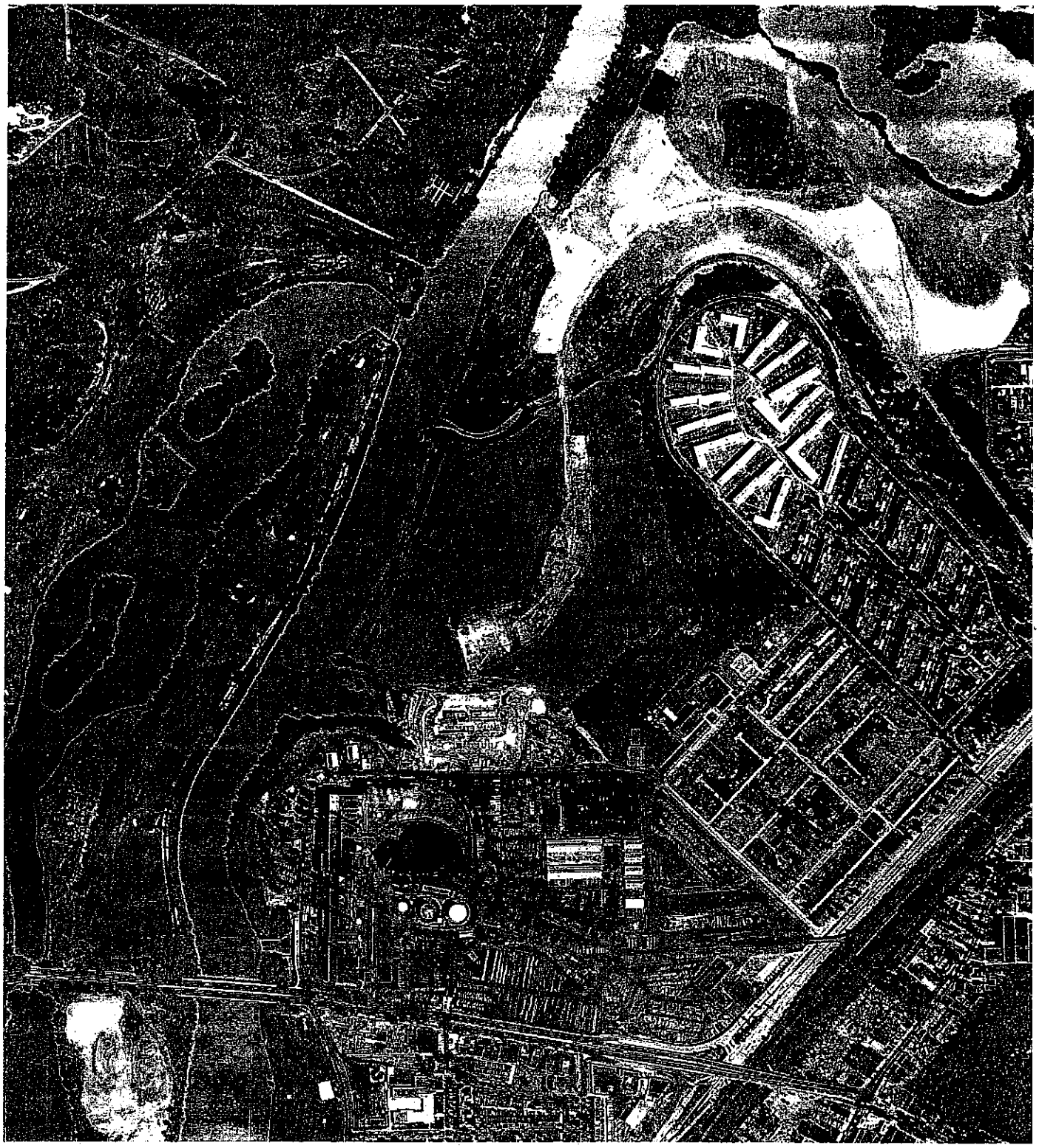
Aerial photograph flyer: Wallace (private).



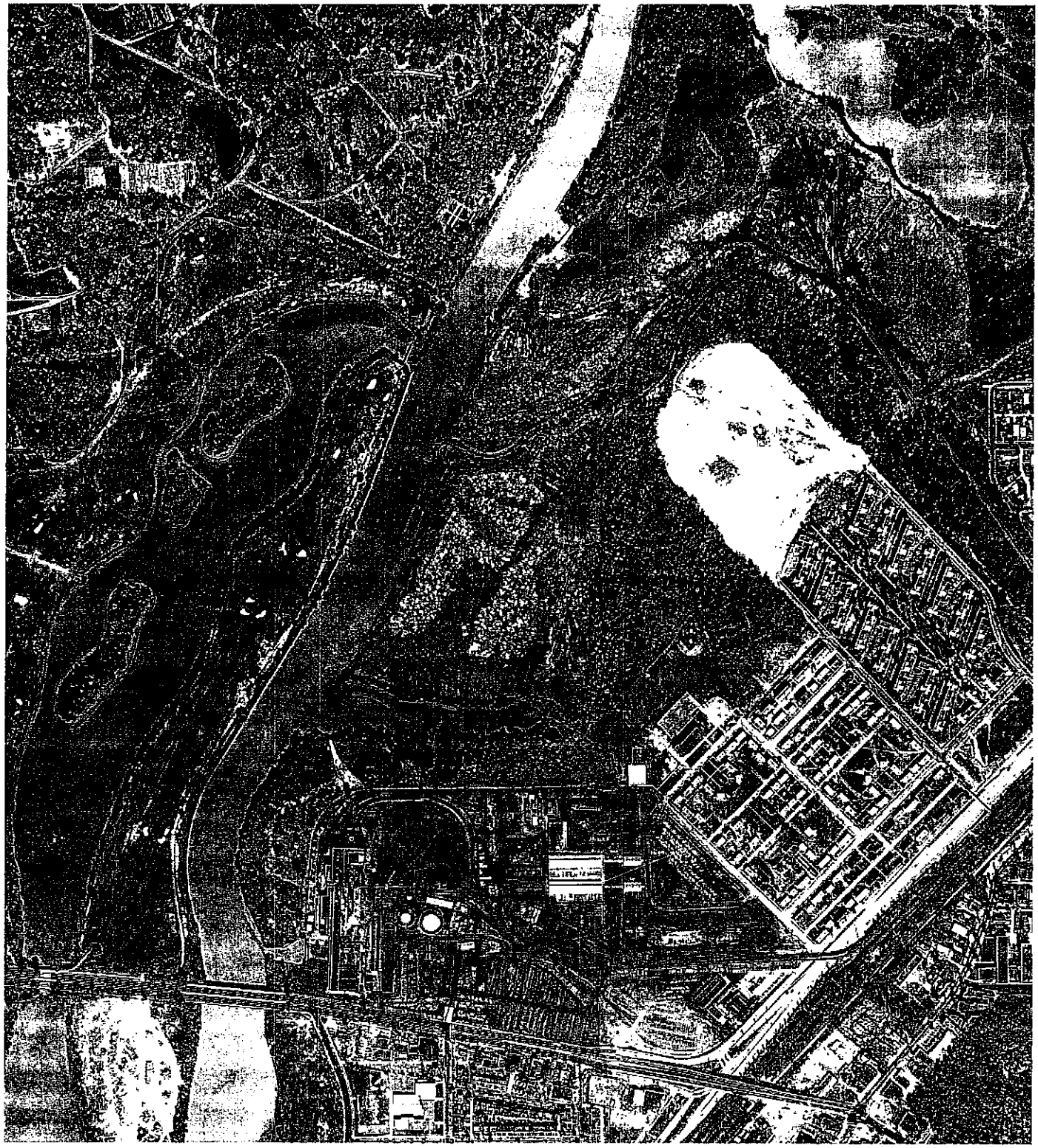
Client:	Ecology & Environment, Inc.	USGS Quad:	Washington East 2438076-H8
Site Address:	Deane Avenue	Scale: 1"=750'	Originally flown at: 1"=3333'
City/Town(ship)	Washington	Project Number:	369033
County /State:	District of Columbia	Date of Photography:	April 5, 1988



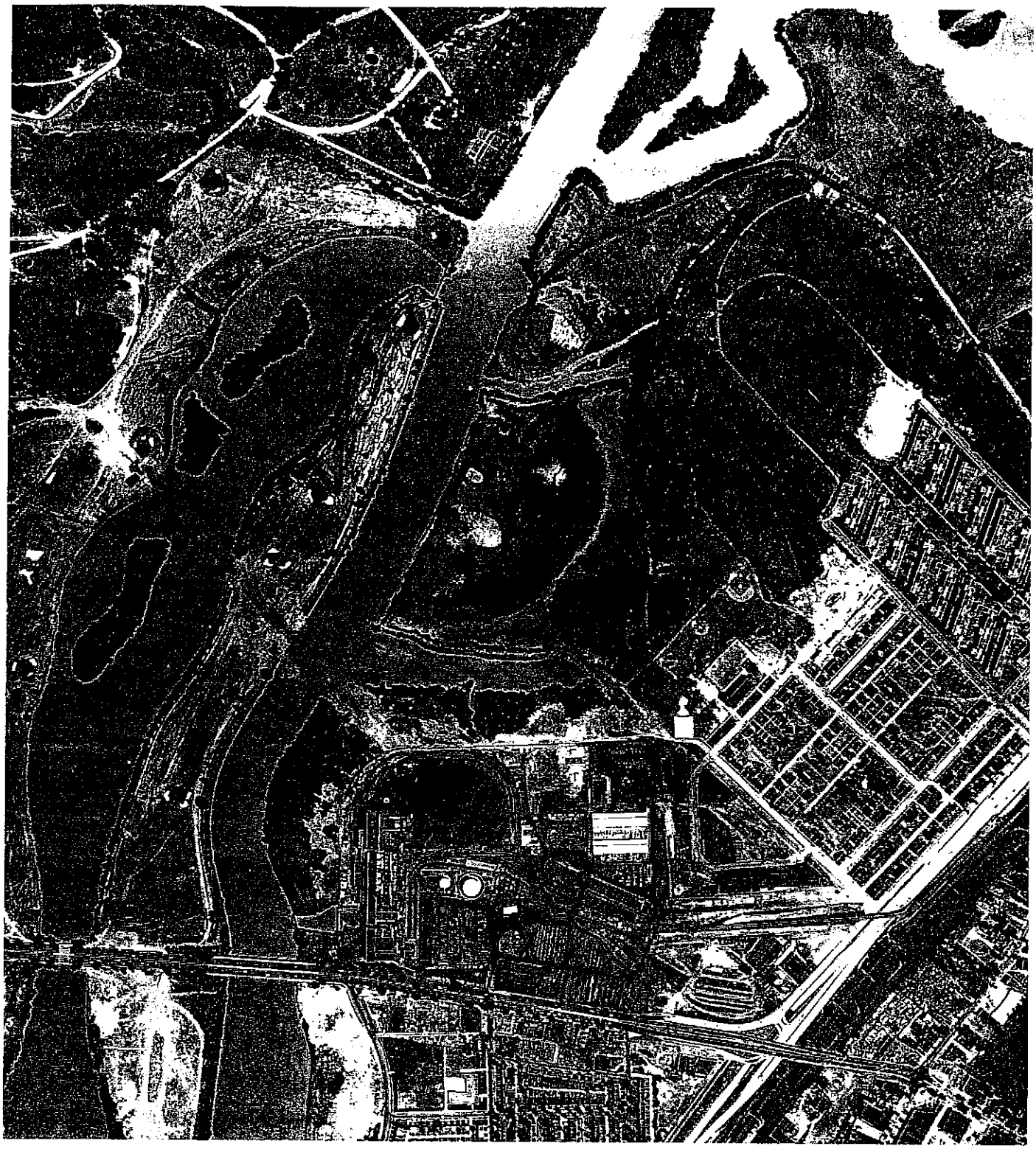
Client: Ecology & Environment, Inc.	USGS Quad: Washington East 2438076-H8
Site Address: Deane Avenue	Scale: 1"=750' Originally flown at: 1"=3333'
City/Town(ship) Washington	Project Number: 369033
County /State: District of Columbia	Date of Photography: May 16, 1980



Client:	Ecology & Environment, Inc.	USGS Quad:	Washington East 2438076-H8
Site Address:	Deane Avenue	Scale: 1"=750'	Originally flown at: 1"=1667'
City/Town(ship)	Washington	Project Number:	369033
County /State:	District of Columbia	Date of Photography:	September 1, 1970



Client:	Ecology & Environment, Inc.	USGS Quad:	Washington East 2438076-H8
Site Address:	Deane Avenue	Scale:	1"=750' Originally flown at: 1"=1667'
City/Town(ship)	Washington	Project Number:	369033
County /State:	District of Columbia	Date of Photography:	October 15, 1963



Client: Ecology & Environment, Inc.	USGS Quad: Washington East 2438076-H8
Site Address: Deane Avenue	Scale: 1"=750' Originally flown at: 1"=1667'
City/Town(ship) Washington	Project Number: 369033
County /State: District of Columbia	Date of Photography: June 15, 1957

C

Site Survey of Sampling Locations

B.W. Smith and Associates, Inc.

Professional Surveying • Land Planning

9255 Corporate Circle • Manassas, Virginia 20110
(703) 368-5866 • 1-800-682-0996 • (703) 368-6892(fax)

Date 07/01/99

File No. _____

Ecology and Environment **TRANSMITTAL**

To: HUSSEIN ALDS
1700 N. MOORE ST SUITE 1610
ARLINGTON, VA 22209

Re: KENILWORTH PARK
LANDFILL MONITORING WELLS

Attention: _____

( ) Delivered By _____

( ) Picked-up By _____

Transmitted

[ ] Herewith

[ ] Under Separate Cover

[ ] Originals [ ] Photocopies [ ] Samples

[ ] Specifications [ ] Shop Drawings [ ] Mylar

[ ] Ozalid Prints [ ] Invoice [ ] Sepia

Quantity	Drwg No.	Date	Description
1			MAP OF WELLS
1			COORDINATES OF WELLS
1			DESCRIPTION OF BM 16
2			PLANS YOU SENT
1			SET OF ELEVEN KEYS TO WELLS

For: [ ] Approval [ ] Your Use [ ] Your Files

[ ] Please Return _____ Corrected Prints

[ ] Please Submit _____ Revised Prints

[ ] Correction

Comments: _____

Received By: _____

Date: _____ By: _____

BM 16

The NGS Data Sheet

```
DATABASE = Sybase ,PROGRAM = datasheet, VERSION = 5.84
Starting Datasheet Retrieval...
1        National Geodetic Survey,   Retrieval Date = JUNE 14, 1999
 HV1230 ***********************************************************************
 HV1230  DESIGNATION -  L 1=TIDAL BM
 HV1230  PID         -  HV1230
 HV1230  STATE/COUNTY-  DC/DISTRICT OF COLUMBIA
 HV1230  USGS QUAD   -  WASHINGTON EAST (1983)
 HV1230
 HV1230                        *CURRENT SURVEY CONTROL
 HV1230
 HV1230* NAD 83(1986)-  38 53 49.     (N)    076 57 35.     (W)     SCALED
 HV1230* NAVD 88     -         4.669  (meters)      15.32   (feet)  ADJUSTED
 HV1230
 HV1230  GEOID HEIGHT-        -32.19  (meters)                       GEOID96
 HV1230  DYNAMIC HT  -          4.667 (meters)      15.31   (feet)  COMP
 HV1230  MODELED GRAV-     980,095.5  (mgal)                        NAVD 88
 HV1230
 HV1230  VERT ORDER  -  FIRST     CLASS II
 HV1230
 HV1230.The horizontal coordinates were scaled from a topographic map and have
 HV1230.an estimated accuracy of +/- 6 seconds.
 HV1230
 HV1230.The orthometric height was determined by differential leveling
 HV1230.and adjusted by the National Geodetic Survey in June 1991.
 HV1230
 HV1230.The geoid height was determined by GEOID96.
 HV1230
 HV1230.The dynamic height is computed by dividing the NAVD 88
 HV1230.geopotential number by the normal gravity value computed on the
 HV1230.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 HV1230.degrees latitude (G = 980.6199 gals.).
 HV1230
 HV1230.The modeled gravity was interpolated from observed gravity values.
 HV1230
 HV1230                          SUPERSEDED SURVEY CONTROL
 HV1230
 HV1230  NGVD 29     -         4.904  (m)          16.09   (f) ADJUSTED    1 2
 HV1230
 HV1230.Superseded values are not recommended for survey control.
 HV1230.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 HV1230.See file dsdata.txt to determine how the superseded data were derived.
 HV1230
 HV1230_MARKER: DJ = TIDAL STATION DISK
 HV1230_SETTING: 30 = SET IN A LIGHT STRUCTURE
 HV1230_STABILITY: D = MARK OF QUESTIONABLE OR UNKNOWN STABILITY
 HV1230
 HV1230  HISTORY     - Date     Condition        Recov. By
 HV1230  HISTORY     - UNK      MONUMENTED       CGS
 HV1230  HISTORY     - 1929     GOOD             CGS
 HV1230  HISTORY     - 1960     GOOD             CGS
 HV1230
 HV1230                          STATION DESCRIPTION
 HV1230
 HV1230'DESCRIBED BY COAST AND GEODETIC SURVEY 1929
 HV1230'AT WASHINGTON.
 HV1230'AT WASHINGTON, ON BENNING ROAD NORTHEAST, EAST OF BENNING BRIDGE,
 HV1230'AT THE SOUTHWEST CORNER OF THE POTOMAC ELECTRIC POWER CO.
 HV1230'GENERATING PLANT, AT THE ENTRANCE TO THE MACHINE SHOP NOW CALLED
 HV1230'THE MAIN BUILDING, AND IN THE WEST END OF THE DOORSILL.  A
 HV1230'STANDARD DISK.  NOTE-- IT WAS REPORTED IN MAY 1954 THAT STONE
```

Point statistics: JOB 99-10
Starting point number: 1
Current point number: 19 ('L' indicates locked point)

Point	Northing	Easting	Elevation	Description
		MONITORING WELLS		
38	6191.2437	3343.5513	5.31	WELL #1
40	6459.1972	3153.4378	5.86	WELL #2
47	6702.4473	2965.7830	5.04	WELL #3
48	6933.5628	2762.5651	5.48	WELL #4
52	7285.2449	2738.0108	6.28	WELL #5
53	7522.7131	2754.6553	5.35	WELL #6
34	6562.0211	3723.3291	27.30	WELL #7
33	7083.3333	3659.5455	30.54	WELL #8 = BH#16
55	7551.3083	3226.6217	28.48	WELL #9
72	8072.6330	3293.0663	14.36	WELL #10
73	7862.6925	3902.8140	17.04	WELL #11
		BORE HOLES		
46	7028.9505	2902.0727	43.6	B.H. #1
49	7223.3031	3002.9592	42.2	B.H.2
50	7427.0262	3078.1201	37.0	B.H. #3
51	7567.3244	2916.7688	33.5	B.H. #4
45	6856.4671	3037.0720	42.8	B.H. #5
44	7035.6045	3167.9847	41.8	B.H.6
43	7219.7954	3281.2424	38.4	B.H.7
31	7416.1602	3397.6575	28.9	BH8
39	6681.2677	3175.0177	40.7	B.H #9
41	6869.8877	3297.1264	40.5	B.H. #10
42	7060.0753	3411.7493	38.5	B.H.11
32	7253.5664	3517.8581	27.7	BH12
37	6503.9309	3313.7659	41.8	B.H.13
36	6694.7194	3427.8108	41.3	B.H. #14
35	6866.9616	3568.9515	37.1	BH #15
33	7083.3333	3659.5455	30.54	WELL #8 = BH#16

* NOTE HORIZONTAL COORDINATES ARE ASSUMED

ASSUMED COORDINATE FOR BM 16 IS N 5066.2107 E 5000.0000

VERTICAL DATUM BASED ON BM 16 DYNAMIC HT OF 15.31'

SOIL SAMPLES

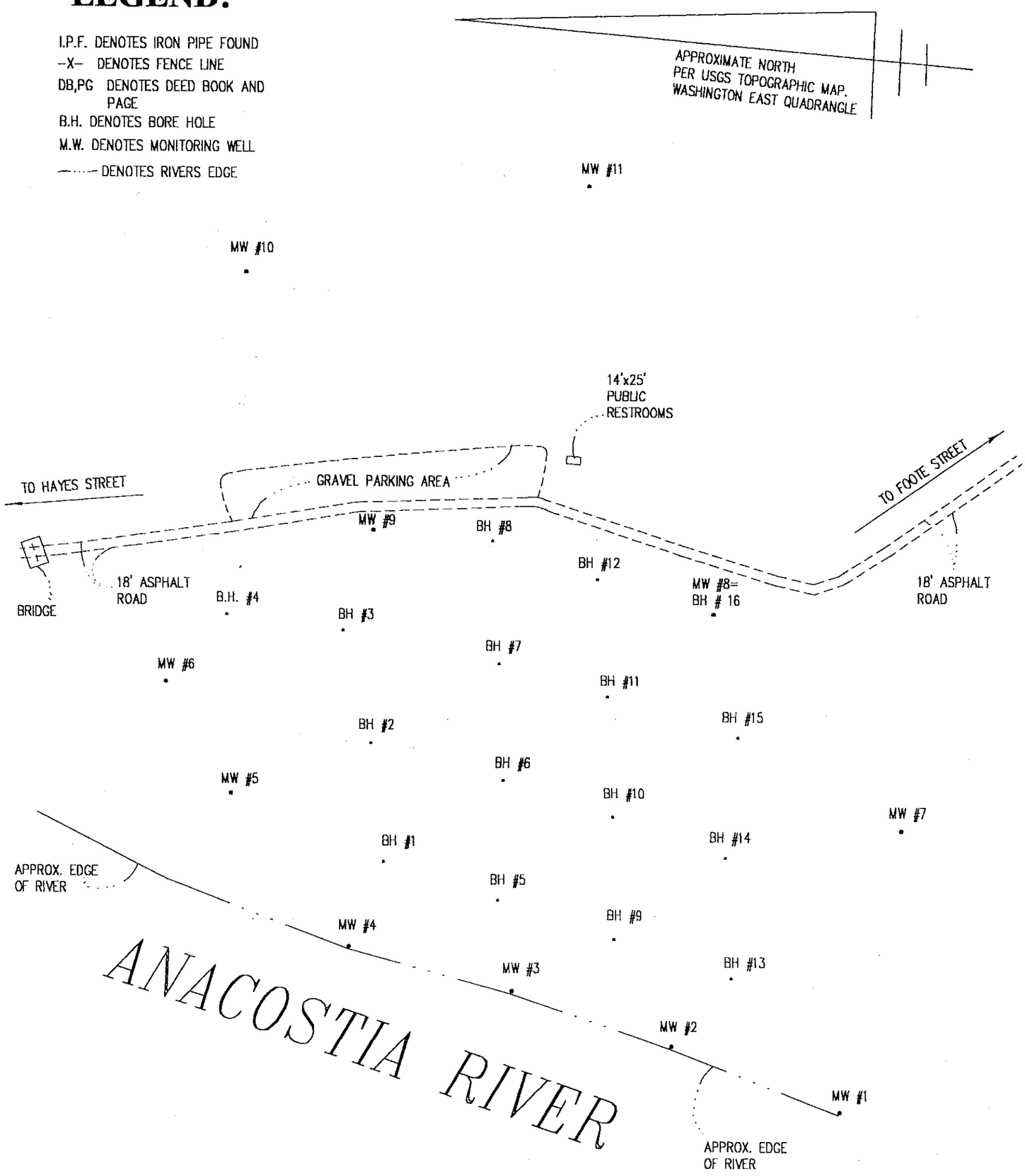
Point statistics: JOB #99-10
Starting point number: 87

Point	Northing	Easting	Elevation	Description
87	7693.7424	2766.2370	14.6	1 SOIL
88	8011.9416	2799.0437	11.6	2 SOIL
89	7154.7972	2613.2338	2.2	4 SOIL
90	7078.3607	2781.7880	24.1	5 SOIL
91	7487.8568	2853.6398	23.3	6 SOIL
92	7781.0574	2927.9704	21.4	7 SOIL
93	8088.0445	3011.9363	15.6	8 SOIL
94	7847.9006	3170.9253	21.9	9 SOIL
95	7551.8148	3055.4652	32.6	10 SOIL
96	7230.4803	2941.5595	42.0	11 SOIL
97	6911.1487	2802.9488	7.6	12 SOIL
98	7024.6529	3005.5489	45.7	13 SOIL
99	7319.6927	3132.5892	44.6	14 SOIL
100	7682.5835	3306.3607	26.8	15 SOIL
101	7413.2739	3342.3890	30.3	16 SOIL
102	7086.3146	3209.5940	41.0	17 SOIL
103	6795.9822	3085.1167	42.1	18 SOIL
104	6591.6360	3193.9502	32.0	19 SOIL
105	6476.4200	3269.0024	28.2	20 SOIL
106	6666.4856	3377.8955	41.8	21 SOIL
107	6892.1062	3297.0675	40.6	22 SOIL
108	7196.4230	3393.5488	38.8	23 SOIL
109	6965.4057	3494.5255	35.7	24 SOIL
110	7217.1704	3609.3088	27.2	25 SOIL
111	6775.8032	3706.0713	35.3	26 SOIL
112	7051.8507	3877.7207	24.4	27 SOIL
113	7061.2094	4139.3980	17.6	28 SOIL
114	7716.5566	3460.0655	23.2	31 SOIL

NOTE HORIZONTAL COORDINATES ARE ASSUMED, VERTICAL DATUM BASED ON BM 16 DYNAMIC HT OF 15.31'. HORIZONTAL COORDINATES OF BM 16 BASED ON ASSUMED COORDINATES IS N 5066.2107 E 5000.0000

LEGEND:

I.P.F. DENOTES IRON PIPE FOUND
-X- DENOTES FENCE LINE
DB,PG DENOTES DEED BOOK AND PAGE
B.H. DENOTES BORE HOLE
M.W. DENOTES MONITORING WELL
—·····— DENOTES RIVERS EDGE



B-537

MONITORING WELL LOCATION
KENILWORTH PARK LANDFILL
WASHINGTON D.C.

COMMONWEALTH OF VIRGINIA
BRIAN W. SMITH
6/24/99
No. 1556
LAND SURVEYOR

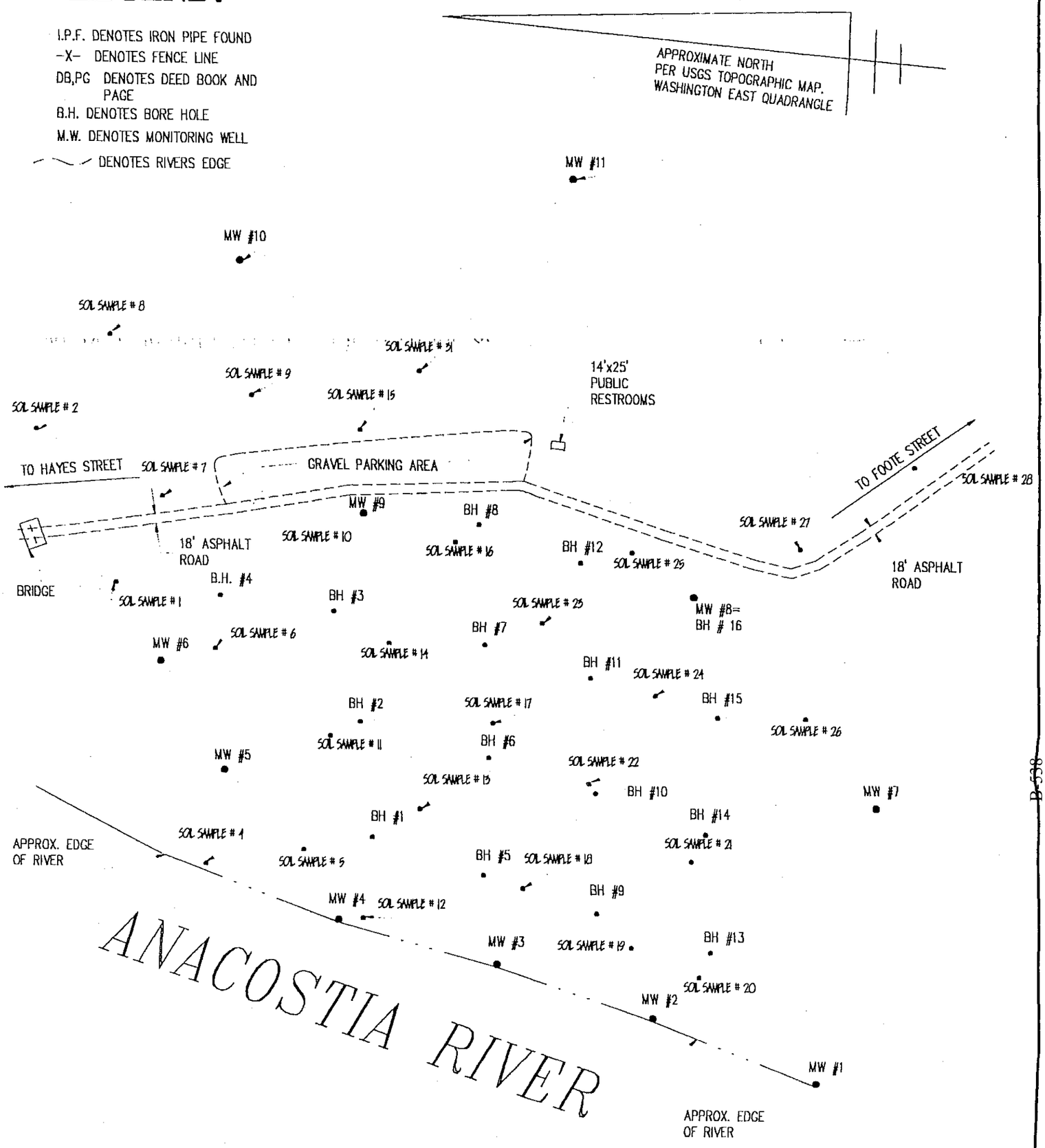
B.W. SMITH AND ASSOCIATES, INC.
PROFESSIONAL SURVEYING AND LAND PLANNING
MANASSAS, VIRGINIA (703) 368-5866 1(800) 682-0996

FIELD CREW: B. SHEEHAN

DFT: M.A.B.	CHK: T.J.F.	NO TITLE REPORT FURNISH	SCALE 1'= 200'	DATE: 6/26/99

LEGEND:

I.P.F. DENOTES IRON PIPE FOUND
-X- DENOTES FENCE LINE
DB,PG DENOTES DEED BOOK AND PAGE
B.H. DENOTES BORE HOLE
M.W. DENOTES MONITORING WELL
DENOTES RIVERS EDGE



B-538

MONITORING WELL LOCATION &
SOIL SAMPLE LOCATION

KENILWORTH PARK LANDFILL

WASHINGTON D.C.

COMMONWEALTH OF VIRGINIA
BRIAN W. SMITH
5/4/00
No. 1556
LAND SURVEYOR

B.W. SMITH AND ASSOCIATES, INC.
PROFESSIONAL SURVEYING AND LAND PLANNING
MANASSAS, VIRGINIA (703) 368-5866 1(800) 682-0996

DFT: M.A.B.	CHK: T.J.F.	NO TITLE REPORT FURNISH	SCALE 1'= 200'	FIELD CREW: B. SHEEHAN
				FIELD CREW: P. HASSAN
				REVISION DATE 5/4/00 (SOIL SAMPLES)
				JOB # 99-10
				DATE: 6/26/99

D

Report on Sampling the Kenilworth Site (December 1998)

The Report on Sampling the Kenilworth Site (December 1998) is included in Appendix B of the Remedial Investigation at the Kenilworth Park South Landfill

E

Threatened and Endangered Species

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401

May 17, 1999

Ms. Sylvie Gomis
Ecology and Environment, Inc.
1700 North Moore Street
Arlington, VA 22209

RE: Kenilworth Park Landfill Site; Washington, District of Columbia

Dear Ms. Gomis:

This responds to your April 27, 1999, request for information on the presence of species which are federally listed or proposed for listing as endangered or threatened within a four mile radius of the Kenilworth Park Landfill site. We have reviewed the information you enclosed and are providing comments in accordance with Section 7 of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*).

The federally endangered peregrine falcon *(Falco peregrinus)* has been documented within a four mile radius of the referenced sight. The peregrine falcon occurs at the Shrine of Immaculate Conception, located in the northwest quadrant of Washington, D.C.

Except for occasional transient individuals, no other proposed or federally listed endangered or threatened species are known to exist within the identified area. Should project plans change, or should additional information on the distribution of listed or proposed species become available, this determination may be reconsidered.

This response relates only to federally protected threatened or endangered species under our jurisdiction. For information on the presence of other rare species in the state of Maryland, Lori Byrne of the Maryland Wildlife and Heritage Division should be contacted at (410) 260-8573. Limited information is currently available regarding the distribution of rare species in the District of Columbia. However, the Nature Conservancy and National Park Service (NPS) have initiated an inventory of rare species within the District. For further information on such rare species, you should contact Olin Allen or Karen Cieminski of NPS at (301) 427-1354.

We appreciate the opportunity to provide information relative to fish and wildlife issues, and thank you for your interest in these resources. If you have any questions or need further assistance, please contact Andy Moser at (410) 573-4537.

Sincerely,

Robert J. Pennington
Assistant Field Supervisor
Div. of Habitat Evaluation and Protection

ecology and environment, inc.
International Specialists in the Environment

Rosslyn Center, 1700 North Moore Street
Arlington, Virginia 22209
Tel: (703) 522-6065, Fax: (703) 558-7950

April 27, 1999

John Wolslin
Project Leader
United States Fish and Wildlife Service
177 Admiral Cocohrane Drive
Annapolis, MD 21401
Attn: Ray Li

RE: Request for Rare, Threatened, and Endangered Species and Natural Resource Survey Within a Four-Mile Radius of Kenilworth Park Landfill Site.

Dear Sir:

The National Park Service (NPS) has contracted Ecology and Environment, Inc., (E & E) to conduct a preliminary assessment (PA)/site investigation (SI) of the Kenilworth Park landfill site located in Northeast Washington, DC.

An integral part of the PA/SI process involves the identification of human and ecological receptors that may potentially be affected by contaminants at the site. E & E would like to request your assistance in identifying protected aquatic or terrestrial natural resources (habitats or specific species) in the vicinity of the site as well as downgradient (south-southeast) from it. In particular, it is important to identify any state and/or federal rare, threatened, and endangered species (flora and fauna) that may occur within a 4-mile radius of the site.

As noted above, the Kenilworth Park landfill site is located in Northeast Washington, DC, approximately ¾ miles southwest of the Kenilworth Aquatic Gardens and within 3 miles, south of the DC-Maryland (Prince George County) State line.

E & E has recently sampled material in an area of recent fill, and found that some of the fill exceeded Risk Based Concentrations (RBCs) for polyaromatic hydrocarbons (PAHs) for both residential and industrial soils. Analysis of samples from the historic landfill found elevated levels of heavy metals, especially lead. This fill would be potentially a significant source of contamination to its surrounding environment.

To assist you in processing this request, two copies of the relevant United States Geological Survey (USGS) map is enclosed. The maps show the location of the site. Please note that this request is for a 4-mile radius around the site.

N:\DC Agency letter.doc

recycled paper

Thank you for your assistance in obtaining this information and expediting the process as much as you can. Please mail the information to my attention at the address provided above, and contact me at (703) 522-6065 should you require any additional information to process this request.

Sincerely,

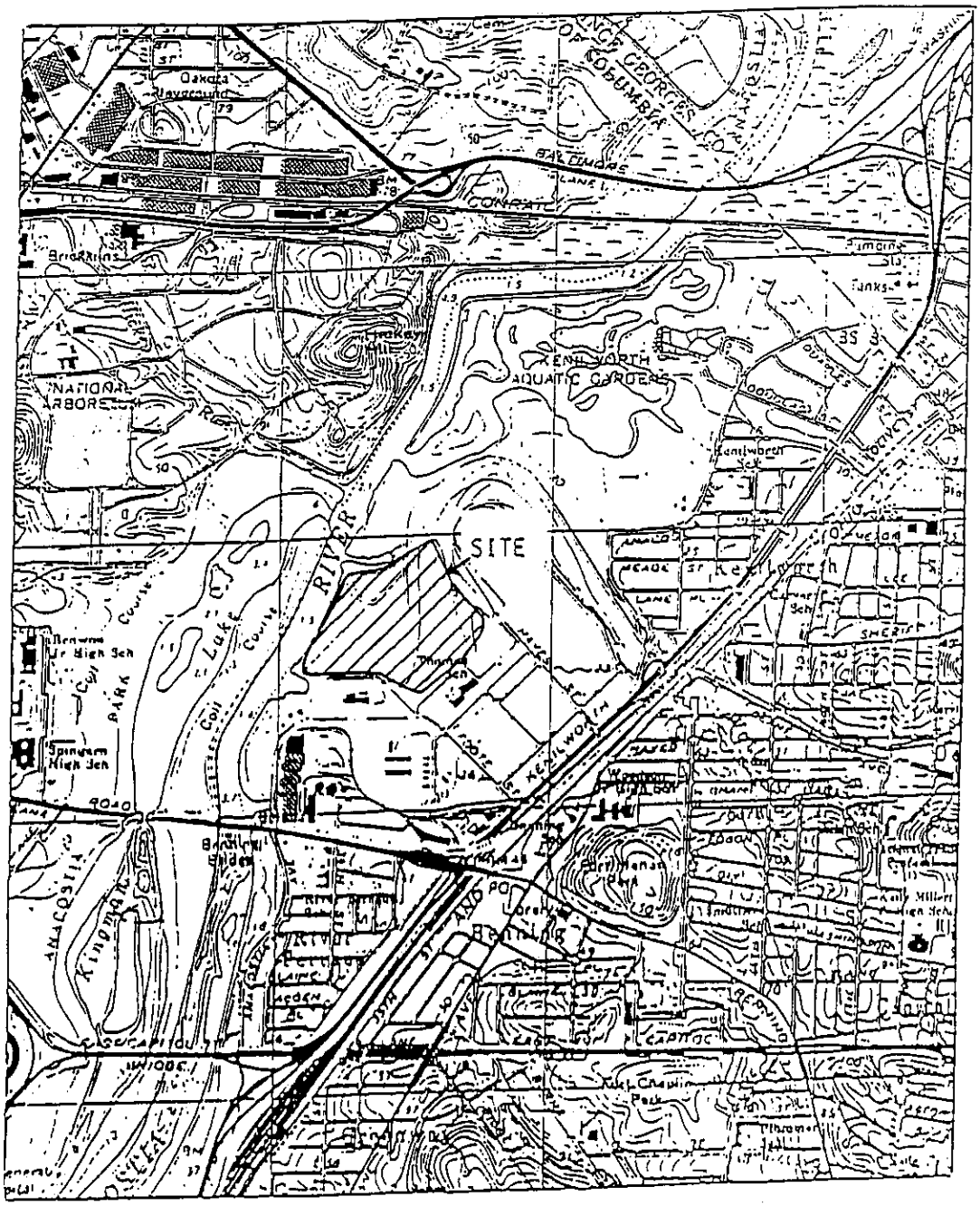
Sylvie Gomis

Enclosure

Cc: J. Hewitt (NPS)
Hussein Aldis (E & E)

© 1999 Ecology and Environment, Inc.

N:\DC Agency letter.doc



USGS Topographic Map. Washington East D.C.-M.D.

Fig 1. Site Location Map, Kenilworth Landfill
Scale 1:24,000

F

EcoSearch Environmental Site Assessment

EcoSearch Environmental Resources, Inc.

9365 Counselors Row Suite 104
Indianapolis, Indiana 46240
ph: (317) 574-8830 fax: (317) 574-8840

EcoSearch Environmental Site Assessment

Type of Report:	Comprehensive Risk Report
Site Location:	**Kenilworth Park Landfill** **Kenilworth Park** **Washington, DC 20019**
Date:	April 29, 1999
Report ID Number:	1727-4401
Especially Prepared For:	Mr. Hussein Aldis Ecology & Environment, Inc.
PO Number:	HQDC991273

Limits of Information:

Customer proceeds at its own risk in choosing to rely on EcoSearch Environmental Resources, Inc. ("EcoSearch") services, in whole or in part, prior to proceeding with any transaction. EcoSearch cannot be an insurer of the accuracy of the information, errors occuring in the conversion of data, or for customer's use of the data. EcoSearch and its affiliated companies, officers, agents, employees, and independent contractors cannot be held liable for accuracy, storage, delivery, loss, or expense suffered by the customer resulting directly or indirectly from any information provided by EcoSearch Environmental Resources, Inc.

Thank you for choosing EcoSearch.

Introduction

We want to thank you for your order requesting the enclosed site assessment.

EcoSearch makes every effort possible to combine the most accurate environmental data available into an understandable and easy-to-use format.

While every attempt has been made to ensure accuracy of the information presented, we cannot guarantee the accuracy of the data from the original sources, nor can we guarantee that no transcription or plotting errors have occurred.

If any concerns arise from your review of the databases in this report, please call the appropriate agency involved. As a service, we have included phone numbers in the database description section of this report to help you in your evaluation.

The enclosed maps present a working approximation of the location of surrounding environmental sites based primarily on available accurate site addresses. These maps should not be used for purposes more correctly handled by surveys.

EcoSearch is driven by its mission to present the most responsive, technically sound, and cost-effective environmental data services available to our customer.

Read Me First

The following suggestions are offered in an attempt to help you in using and understanding this site assessment from EcoSearch:

1. Skim over the entire report to familiarize yourself with its contents and layout.

2. You will notice that the information is presented following this general concept: we begin by giving sections that summarize data and then give detailed information about these summaries as you proceed further into the report.

3. Then refer to the section titled "Statistical Overview". You will need to take a moment to read the column headings and the data below them. Also, as you go down the first column (left side) you will probably need to look back at the preceeding section titled "Database Descriptions". Please pay particular attention to the radius searched as they vary according to the database. These are ASTM standards that we meet and exceed. Your site's datum is the third, shaded column. Also, the next column showing database hits within the first radius is important as it will include data about adjoining properties. The unmappable sites have their own section with a cover page explaining them.

4. The next section titled "Maps" is important as it gives a very clear visual presentation of the site, and which database(s) are at the site itself or within the study radii.

5. The site summary page(s) tells you by map ID# which database is at that location as well as the site's name and distance/direction from your study site. You will notice that the numbering corresponds to the distance from the subject site-- eg. #1 is your site itself or the site closest to it, #2 is further away. This continues until all database hits have been summarized within the largest study radius. Your report may extend further than one mile if you asked us to extend the radii.

6. As you will recall our format goes from summary-type pages to detailed information. Therefore, the next section is "Detailed Data". Here extensive data is given about each database hit. The map ID#, distance, and direction are in the top left corner. Further data follows.

7. The "Unmappable" section was referred to earlier. In this summary you will find those sites. Please read the cover page as it describes unmappable sites and our efforts to minimize and/or eliminate them from all of our site assessments.

8. The last two divisions -- "Radon" and "Glossary/Acronyms" are self-explanatory and often helpful to our customers.

If you would like further help in understanding our reports please call as our intention is to have this report helpful to you.

Database Descriptions -- Federal Databases

NPL

National Priorities List

US Environmental Protection Agency
Office of Solid Waste and Emergency Response
(703) 603-8881

Data Date: October 7, 1998
Release Date: November 18, 1998
Active Date: December 9, 1998

The NPL is a subset of the CERCLIS and lists over 1,150 of the nation's most dangerous sites of uncontrolled or hazardous waste which require cleanup. Also known as the Superfund List, the sites are scored according to the hazardous ranking system.

CERCLA (Active)

Comprehensive Environmental Response, Compensation, and Liability Information System (Active)

US Environmental Protection Agency
Office of Solid Waste and Emergency Response

Data Date: October 7, 1998
Release Date: November 18, 1998
Active Date: December 9, 1998

CERCLIS maintains information on over 15,000 sites nationally identified as hazardous or potentially hazardous which may require action. These sites are currently being investigated or an investigation has been completed regarding the release of hazardous substances. The most serious of this list as ranked by the hazardous ranking system are transferred to the NPL.

CERCLA (NFRAP Archive)

Comprehensive Environmental Response, Compensation, and Liability Information System (NFRAP Archive)

US Environmental Protection Agency
Office of Solid Waste and Emergency Response

Data Date: October 7, 1998
Release Date: November 18, 1998
Active Date: December 9, 1998

For more complete information purposes we include sites which have been reclassified as No Further Remedial Action Planned (NFRAP) by the EPA. This action was taken by the EPA beginning February 1995 as a part of the Brownfields Redevelopment Program. These former CERCLIS sites, also known as the CERCLIS Archive, have been delisted because a lack of significant contamination was found.

RCRA TSD

Resource Conservation and Recovery Information System -- Treatment, Storage, and Disposal Facilities

US Environmental Protection Agency
Office of Solid Waste and Emergency Response
(202) 260-4348

Data Date: January 1, 1999
Release Date: February 2, 1999
Active Date: April 5, 1999

RCRIS contains information on hazardous waste handlers regulated by the US Environmental Protection Agency under the Resource Conservation and Recovery Act (RCRA). It is a national system used to track events and activities which fall under RCRA. The TSD database is a subset of the complete RCRIS file which includes facilities which treat, store, dispose, or incinerate hazardous waste. Additionally, compliance and corrective action (CORRACTS) information is included.

RCRA Generator

Resource Conservation and Recovery Information System -- Large and Small Quantity Generators

US Environmental Protection Agency
Office of Solid Waste and Emergency Response
(202) 260-4610

Data Date: January 1, 1999
Release Date: February 2, 1999
Active Date: April 5, 1999

RCRIS contains information on hazardous waste handlers regulated by the US Environmental Protection Agency under the Resource Conservation and Recovery Act (RCRA). It is a national system used to track events and activities which fall under RCRA. The generators database is a subset of the complete RCRIS file which includes hazardous waste generators which create more than 100kg of hazardous waste per month or meet other requirements of RCRA. We also include RCRA Notifiers, Transporters, and formerly regulated RCRA Sites for more complete hazardous waste information. Additionally, compliance and corrective action information is included.

RAATS

RCRA Administrative Action Tracking System

US Environmental Protection Agency
Office of Enforcement and Compliance Assurance
(202) 564-4104

Data Date: April 14, 1995
Release Date: Not Available
Active Date: April 17, 1995

The RCRA Administrative Action Tracking System contains additional information on RCRA enforcement actions. Data includes the type of action, proposed penalty, and final penalty amount.

CORRACTS

Resource Conservation and Recovery Information System -- Corrective Action Sites

US Environmental Protection Agency
Office of Solid Waste and Emergency Response
(202) 260-4610

Data Date: January 1, 1999
Release Date: February 2, 1999
Active Date: April 5, 1999

The CORRACTS database includes RCRIS (Resource Conservation and Recovery Information System) sites with reported corrective action. This information is also reported in the standard RCRIS detailed data.

ERNS

Emergency Response Notification System

US Environmental Protection Agency
Office of Solid Waste and Emergency Response
(202) 260-2342

Data Date: January 19, 1999
Release Date: January 19, 1999
Active Date: March 8, 1999

ERNS is a national database which contains information on specific notification of releases of oil and hazardous substances into the environment. The system stores data regarding the site of the spill, the material released, and the medium into which it occured. As a joint effort, the Department of Transportation and the Environmental Protection Agency have collaborated to compile more than 290,000 records.

Open Dumps

Inventory of Open Dumps

US Environmental Protection Agency
Office of Solid Waste
(202) 260-7751

Data Date: June 1985
Release Date: Not Available

The Open Dumps Inventory is a list of open dump facilities, formerly maintained by the Office of Solid Waste. The list includes sites the States have found to pose a reasonable probability of adverse effects on health or the environment slated for closure or upgrading. RCRA Subtitle D funds are no longer available to the States and this list is no longer being revised.

PADS

PCB Activity Database System

US Environmental Protection Agency
Office of Pollution Prevention and Toxics
(202) 260-3992

Data Date: March 26, 1997
Release Date: Not Available
Active Date: July 14, 1998

This database stores information about facilities which handle PCBs and file EPA form 7710-53. It is divided into storage facilities, disposers, generators, and transporters.

TRI

Toxic Release Inventory

US Environmental Protection Agency
Office of Pollution Prevention and Toxics
(202) 260-1531

Data Date: October 1995
Release Date: Not Available
Active Date: August 10, 1998

TRI contains information from facilities which manufacture, process, or import any of the over 300 listed toxic chemicals which are released directly into air, water, or land or are transported off-site. The database includes facts on amounts of chemicals stored and emitted from the facility. This database is released on an infrequent basis by the US EPA. EcoSearch includes information from 1987 through the 1995 reporting year.

SSTS

Section Seven Tracking System

US Environmental Protection Agency
Office of Prevention, Pesticides, and Toxic Substances
(202) 564-5008

Data Date: July 31, 1998
Release Date: Not Available
Active Date: August 27, 1998

Formerly FATES, this system tracks the registration of pesticide-producing establishments and tracks the types and amounts of pesticides, active ingredients, and devices which are sold, produced, or distributed annually.

DOCKET

Civil Enforcement Docket

US Environmental Protection Agency
Office of Enforcement
(202) 564-4114

Data Date: September 3, 1998
Release Date: Not Available
Active Date: February 3, 1999

The Civil Enforcement Docket is information on civil and administrative actions filed by the Department of Justice for the US Environmental Protection Agency. This record has been continually updated since 1972 and includes data regarding facility name, dates, laws violated, and penalties assessed.

SETS

Site Enforcement Tracking System

US Environmental Protection Agency
Office of Science and Technology
(703) 603-8881

Data Date: April 1995
Release Date: Not Available
Active Date: June 15, 1995

SETS includes names and addresses of entities named as Potentially Responsible Parties (PRPs) at both NPL and non-NPL sites. It identifies potential financial responsibility of uncontrolled hazardous waste sites.

TSCA

Toxic Substances Control Act Inventory

US Environmental Protection Agency

(202) 554-1404

Data Date: May 14, 1986
Release Date: Not Available

The Toxic Substances Control Act Inventory includes the locations and chemical production information of more than 7000 processors and manufacturers of chemicals. This database is no longer released to the public by the US EPA.

MLTS

Material License Tracking System

US Nuclear Regulatory Commission
Permits Section
(301) 415-7876

Data Date: July 27, 1998
Release Date: Not Available
Active Date: August 18, 1998

MLTS contains information on sites licensed by the NRC to handle radioactive materials. Over 7,000 nuclear power plants and sites which handle radioactive materials are recorded.

FINDS

Facility Index System

US Environmental Protection Agency
Office of Information Resources Management
(703) 908-2493

Data Date: September, 1997
Release Date: January 10, 1998
Active Date: January 10, 1998

The FINDS is an inventory of all facilities which are regulated or tracked by the US Environmental Protection Agency. These facilities are assigned identification numbers for cross-reference capabilities to other databases and denotes which EPA division is responsible for its regulation.

Database Descriptions -- State Databases

HWS

District of Columbia Hazardous Waste Sites List (CERCLA)

US Environmental Protection Agency
Office of Solid Waste and Emergency Response

Data Date: N/A
Release Date: N/A
Active Date: N/A

The CERCLIS list is a compliation of known or suspected uncontrolled or abandoned hazardous waste sites. These sites have either been investigated, or are currently under investigation by the EPA for the release, or threatened release of hazardous substances. Once a site is placed in CERCLIS, it may be subjected to several levels of review and evaluation and ultimately placed on the National Priorities List. Due to the fact that the District of Columbia does not have a formal "State Superfund" program, the federal EPA's CERCLIS database is considered to be the equivalent of a State Hazardous Waste Sites list.

LUST

District of Columbia Leaking Underground Storage Tank List

District of Columbia Dept of Consumer & Regulatory Affairs
Freedom of Information Act Officer
202-727-7170

Data Date: December 5, 1998
Release Date: December 5, 1998
Active Date: February 19, 1999

The DC LUST is a listing of all reported leaking underground storage tanks within the District of Columbia.

UST

District of Columbia Underground Storage Tank List

District of Columbia Dept of Consumer & Regulatory Affairs
Freedom of Information Act Officer
202-727-7170

Data Date: October 21, 1998
Release Date: October 21, 1998
Active Date: January 19, 1999

The DC UST is a listing of registered underground storage tanks within the District of Columbia. This database listing provides very cursory information general to the site with no additional tank information.

EcoSearch Statistical Overview

Property Information

Kenilworth Park
Washington, DC 20019

Latitude: 38.903333 N Longitude: 76.95555 W

Search Parameters

Report: Comprehensive Risk Report
Radii: ASTM*
Zip Code(s): 20019 20002
City: Washington
County: Washington Disctrict of Columbia

FEDERAL DATABASES	Radius (miles)	Mappable Sites					Unmappable Sites		
		Total	Site	within 1.00mi	1.00 - 0.00mi	0.00 - 0.00mi	Zip Code	City	County
NPL	1.000	0	0	0	-	-	0	0	0
CERCLA (Active)	1.000	2	0	2	-	-	0	0	0
CERCLA (NFRAP Archive)	1.000	0	0	0	-	-	0	0	0
RCRA TSD	1.000	0	0	0	-	-	0	0	0
RCRA Generator	1.000	21	0	21	-	-	0	0	0
CORRACTS	1.000	0	0	0	-	-	0	0	0
ERNS	1.000	58	0	58	-	-	-	-	-
Open Dumps	1.000	0	0	0	-	-	-	-	-
PADS	1.000	1	0	1	-	-	0	-	-
TRI	1.000	0	0	0	-	-	0	0	0
SSTS	1.000	0	0	0	-	-	0	0	0
DOCKET	1.000	4	0	4	-	-	0	0	0
SETS	1.000	0	0	0	-	-	0	0	0
TSCA	1.000	1	0	1	-	-	0	-	-
MLTS	1.000	0	0	0	-	-	0	-	-
FINDS	Site	0	0	-	-	-	-	-	-

STATE DATABASES	Radius (miles)	Mappable Sites					Unmappable Sites		
		Total	Site	within 1.00mi	1.00 - 0.00mi	0.00 - 0.00mi	Zip Code	City	County
HWS	1.000	2	0	2	-	-	0	0	0
LUST	1.000	38	0	38	-	-	0	0	0
UST	1.000	77	0	77	-	-	0	0	0

MANUAL GEOCODING:^ For this city/township, **1256** sites were manually plotted by EcoSearch.

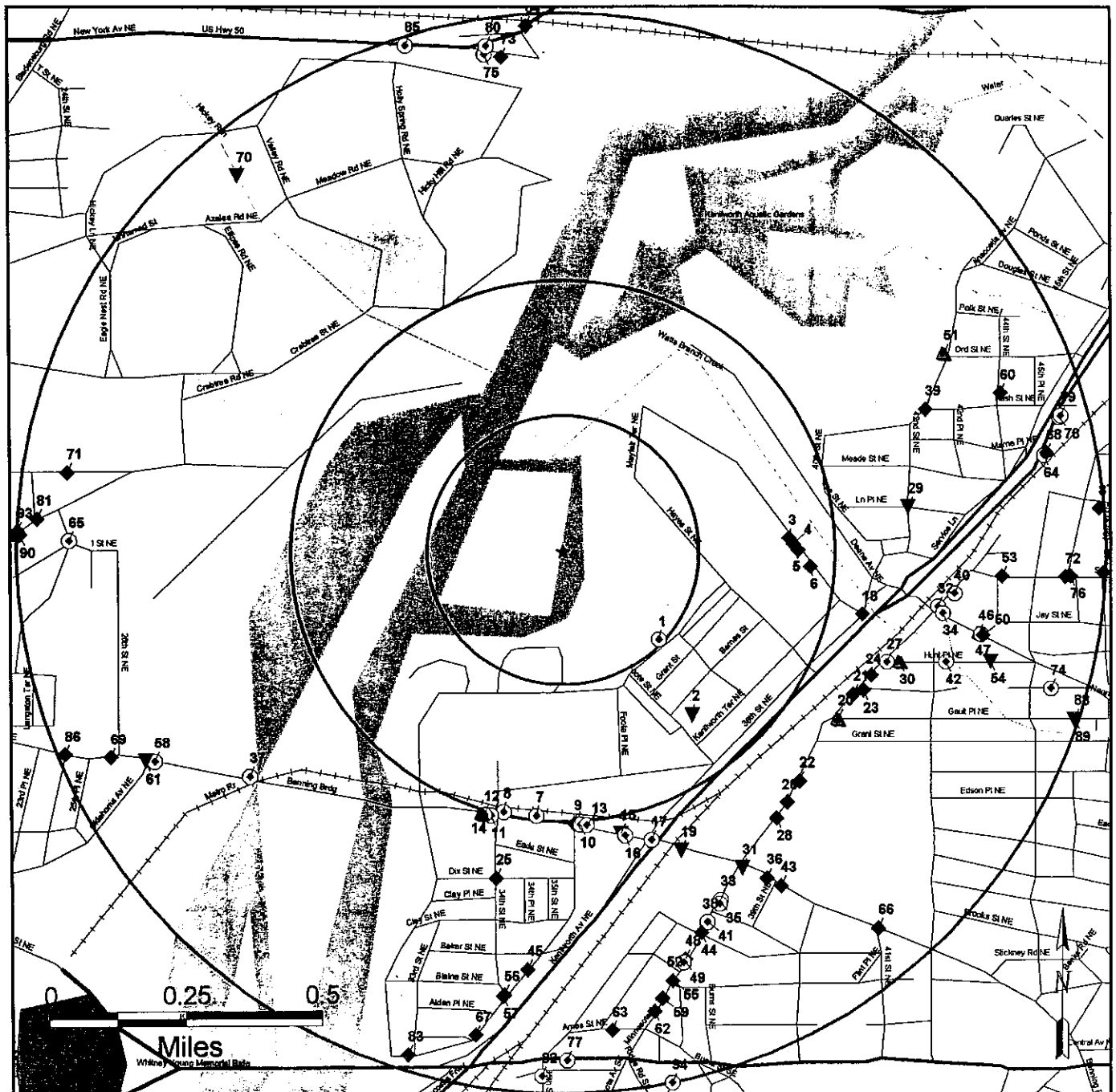
* This database search and study radii meets or exceeds the ASTM (American Society of Testing and Materials) standards for a government records review.

^ Manual Geocoding: Plotting environmental site data using paper maps and phone calls to properly place the information on the map.

Accurate street addresses are required for records to be found at the study property.

Mappable Sites are environmental sites which were located and appear on the enclosed EcoSearch Map, Site Summary, and Detailed Data sections of the report. These sites are summarized based on proximity to the study site.

Unmappable Sites are governmental records with incomplete or inaccurate address information. These sites could not be located on the street map, but have been searched by the Zip Codes, Cities, and County specified in the search parameters. Further investigation of these sites and their relationship to your study site is necessary.



EcoSearch Environmental Resources, Inc.

Comprehensive Risk Report Map

Report ID: 1727-4401

Site: Kenilworth Park
Washington, DC 20019

★ Study Site

Study Site Matches Database

FEDERAL DATABASES	Radius (mi)
NPL Sites	1.00
CERCLA (Active) Sites	1.00
CERCLA (NFRAP Archive) Sites	1.00
RCRA TSD Sites	1.00
RCRA Generator Sites	1.00
CORRACTS Sites	1.00
ERNS Sites	1.00
Open Dumps Sites	1.00
PADS Sites	1.00
TRI Sites	1.00
SSTS Sites	1.00
DOCKET Sites	1.00
SETS Sites	1.00
TSCA Sites	1.00
MLTS Sites	1.00
FINDS Sites	Site

STATE DATABASES	
HWS Sites	1.00
LUST Sites	1.00
UST Sites	1.00

MULTIPLE MATCHES / AREAS

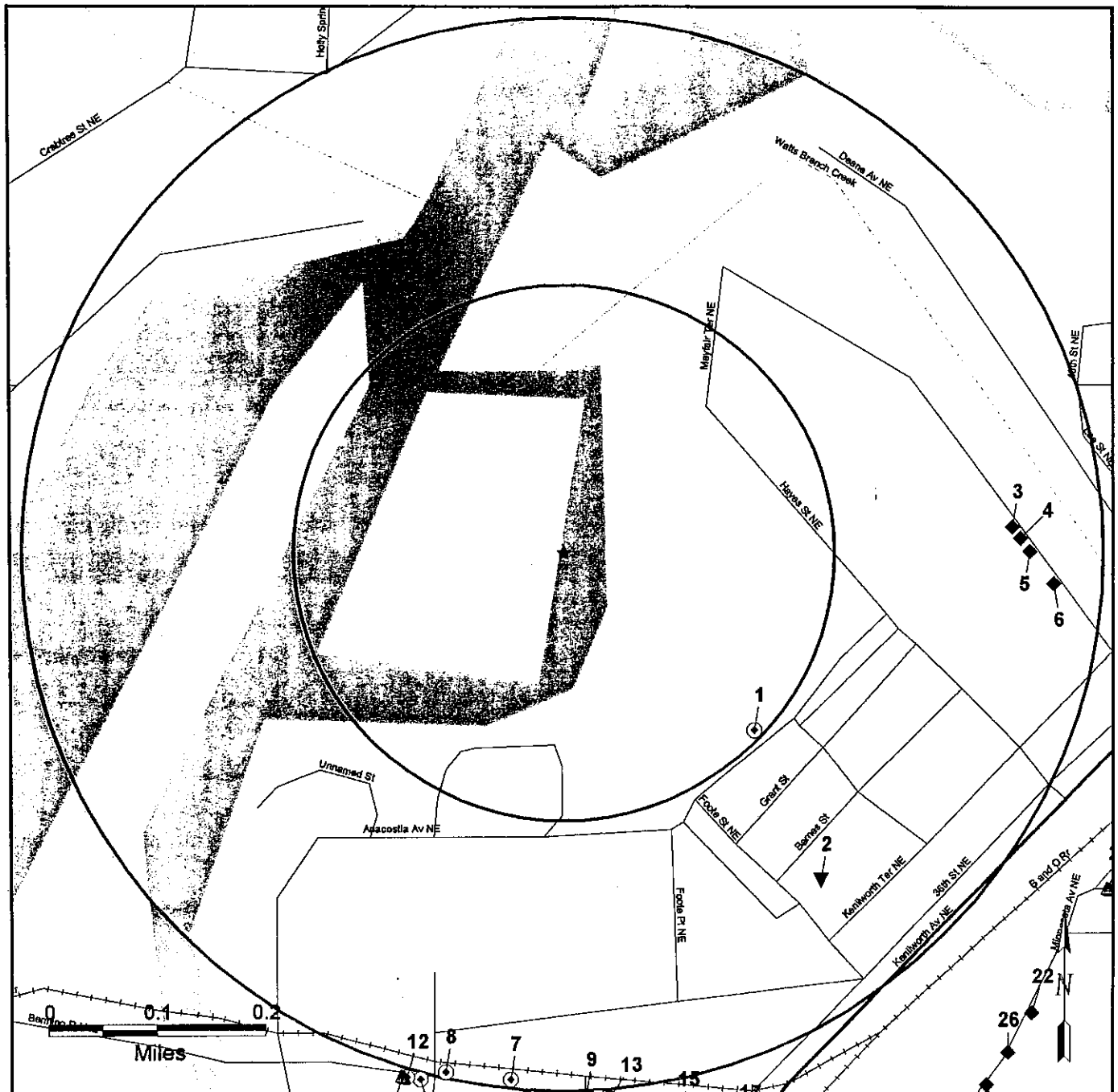
- Two Database Matches
- Three or More Matches
- Database Area Site

MAP LEGEND

- Parks
- Incorp. Areas
- Water
- Cemeteries
- Streets
- Secondary Roads
- Primary Roads
- Freeways
- Railroads
- Boundaries

Radii: 1/4 mile, 1/2 mile, 1 mile

Note: The information contained on this map is subject to the general disclaimer on the first page.



Note: The information contained on this map is subject to the general disclaimer on the first page.

EcoSearch Environmental Resources, Inc.

Comprehensive Risk Report Map

Report ID: 1727-4401

Site: Kenilworth Park
Washington, DC 20019

★ Study Site

Study Site Matches Database

FEDERAL DATABASES	Radius (mi)
NPL Sites	1.00
CERCLA (Active) Sites	1.00
CERCLA (NFRAP Archive) Sites	1.00
RCRA TSD Sites	1.00
RCRA Generator Sites	1.00
CORRACTS Sites	1.00
ERNS Sites	1.00
Open Dumps Sites	1.00
PADS Sites	1.00
TRI Sites	1.00
SSTS Sites	1.00
DOCKET Sites	1.00
SETS Sites	1.00
TSCA Sites	1.00
MLTS Sites	1.00
FINDS Sites	Site

STATE DATABASES	
HWS Sites	1.00
LUST Sites	1.00
UST Sites	1.00

MULTIPLE MATCHES / AREAS

- Two Database Matches
- Three or More Matches
- Database Area Site

MAP LEGEND

- Parks
- Incorp. Areas
- Water
- Cemeteries
- Streets
- Secondary Roads
- Primary Roads
- Freeways
- Railroads
- Boundaries

Radii: 1/4 mile, 1/2 mile, 1 mile

Source: United States Geological Survey, 7.5 minute Topographic Map (Digital Raster Graphics)

EcoSearch Environmental Resources, Inc.

USGS 7.5 Minute Topographical Map

Report ID: 1727-4401
Site: Kenilworth Park
Washington, DC 20019

○ Study Site

Map Features are Color Coded

Black -- Cultural features such as roads and buildings.

Blue -- Hydrographic features such as lakes and rivers.

Brown -- Hypsographic (elevation) features shown by contour lines.

Green -- Woodland cover, scrub, orchards, and vineyards.

Red -- Important roads and public land survey system.

Purple -- Features added from aerial photographs during map revision. The changes are not field checked.

A detailed Topographic Map Symbols pamphlet is available from EcoSearch free upon request.

Radii: 0.25 mile, 0.50 mile, 1.00 mile

Topographical Map:
Washington East, DC MD -- 1965
Photorevised 1979

Site Summary

Map ID#	Database / Agency ID#	Site Name, Address, and County	Distance/Direction
1A	UST District of Columbia Underground Storage Tank 7-002064	THOMAS ELEMENTARY SCHOOL 650 ANACOSTIA AVE NE WASHINGTON, DC 20019-1509 DISTRICT OF COLUMBIA	0.24140 mi SE **Manually Geocoded***
1B	ERNS Emergency Response Notification System 319881	NAVAL THOMAS SCHOOL WASHINGTON, DC WASHINGTON	0.24140 mi SE **Manually Geocoded***
2	ERNS Emergency Response Notification System 320711	IN THE VACANT LOT (NEXT TO 624 PARKSIDE PL, NE) WASHINGTON, DC 20019 WASHINGTON D.C.	0.38665 mi SE **Manually Geocoded***
3	UST District of Columbia Underground Storage Tank 7-002565	MAYFAIR MANSIONS INCORP 3721 JAY ST NE WASHINGTON, DC 20019-1816 DISTRICT OF COLUMBIA	0.41573 mi E **Manually Geocoded***
4	UST District of Columbia Underground Storage Tank 7-002566	MAYFAIR MANSIONS INCORP 7343 JAY ST NE , DC 20019	0.42330 mi E **Manually Geocoded***
5	UST District of Columbia Underground Storage Tank 7-002567	MAYFAIR MANSIONS 3763 JAY ST NE WASHINGTON, DC 20019-1837 DISTRICT OF COLUMBIA	0.43171 mi E **Manually Geocoded***
6	UST District of Columbia Underground Storage Tank 7-002568	MAYFAIR MANSION 3819 JAY ST NE WASHINGTON, DC 20019-1854 DISTRICT OF COLUMBIA	0.45483 mi E **Manually Geocoded***
7A	ERNS Emergency Response Notification System 160123	3300 BENNING RD NE # NE WASHINGTON, DC 20019-1501 DISTRICT OF COLUMBIA	0.49168 mi S **Manually Geocoded***
7B	PADS PCB Activity Database Site DCD000819516	POTOMAC ELEC PWR CO BENNING 3300 BENNING RD NE WASHINGTON, DC 20019-1501 DISTRICT OF COLUMBIA	0.49168 mi S **Manually Geocoded***
7C	ERNS Emergency Response Notification System 101392	PEPCO POWER PLANT BENNING ROAD WASHINGTON, DC DC	0.49168 mi S **Manually Geocoded***
7D	LUST District of Columbia Leaking Underground Stg Tk 90013	BENNING ROAD GEN. STA. 3300 BENNING RD NE WASHINGTON, DC 20019-1501 DISTRICT OF COLUMBIA	0.49168 mi S **Manually Geocoded***
7E	RCRA Generator RCRA Transporter and Generator DCD000819516	PEPCO BENNING ROAD GENERATING STATION 3300 BENNING RD NE WASHINGTON, DC 20019-1501 DISTRICT OF COLUMBIA	0.49168 mi S **Manually Geocoded***
7F	UST District of Columbia Underground Storage Tank 7-002015	PEPCO FOOTE ST NE , DC 20019	0.49168 mi S **Manually Geocoded***
7G	ERNS Emergency Response Notification System 166751	3300 BENNING RD NE WASHINGTON, DC 20019-1501 DISTRICT OF COLUMBIA	0.49168 mi S **Manually Geocoded***

Site Summary

Map ID#	Database / Agency ID#	Site Name, Address, and County	Distance/Direction
7H	TSCA Toxic Substances Control Act Inventory Site 004920U	BENNING GENERATING STATION 3300 BENNING RD NE WASHINGTON, DC 20019-1501 WASHINGTON	0.49168 mi S **Manually Geocoded***
8A	UST District of Columbia Underground Storage Tank 9-000001	KENILWORTH MAINTENANCE YARD 3200 BENNING RD NE WASHINGTON, DC 20019-1500 DISTRICT OF COLUMBIA	0.49452 mi SSW **Manually Geocoded***
8B	UST District of Columbia Underground Storage Tank 7-000160	FLEET MGMT ADMINISTRATION 3200 BENNING RD NE WASHINGTON, DC 20019-1500 DISTRICT OF COLUMBIA	0.49452 mi SSW **Manually Geocoded***
8C	UST District of Columbia Underground Storage Tank 7-000001	KENILWORTH MAINTENACNE YARD 3200 BENNING RD NE WASHINGTON, DC 20019-1500 DISTRICT OF COLUMBIA	0.49452 mi SSW **Manually Geocoded***
8D	RCRA Generator RCRA Small Quantity Generator DCD000765818	KENILWORTH MAINTENANCE YARD 3200 BENNING RD NE WASHINGTON, DC 20019-1500 DISTRICT OF COLUMBIA	0.49452 mi SSW **Manually Geocoded***
8E	LUST District of Columbia Leaking Underground Stg Tk 95025	NATIONAL PARK SERVICE 3200 BENNING RD NE WASHINGTON, DC 20019-1500 DISTRICT OF COLUMBIA	0.49452 mi SSW **Manually Geocoded***
8F	DOCKET Civil Enforcement Docket 03-98-0101A	NATL PARK SVC 3200 BENNING RD NE WASHINGTON, DC 20019-1500 DISTRICT OF COLUMBIA	0.49452 mi SSW **Manually Geocoded***
8G	DOCKET Civil Enforcement Docket 03-84-0010C	SOLID WASTE REDUCTION CENTER # 3200 BENNING RD NE WASHINGTON, DC 20019-1500 DISTRICT OF COLUMBIA	0.49452 mi SSW **Manually Geocoded***
8H	LUST District of Columbia Leaking Underground Stg Tk 90055	KENILWORTH MAINT. YARD 3200 BENNING RD NE WASHINGTON, DC 20019-1500 DISTRICT OF COLUMBIA	0.49452 mi SSW **Manually Geocoded***
8I	ERNS Emergency Response Notification System 161068	3200 BENNING RD NE # NE WASHINGTON, DC 20019-1500 DISTRICT OF COLUMBIA	0.49452 mi SSW **Manually Geocoded***
9	UST District of Columbia Underground Storage Tank 7-003939	INCINERATOR #5 KENILWORTH & BENNING ROAD NE , DC 20019	0.50457 mi S
10A	CERCLA CERCLA Site DCD983967951	PEPCO BENNING ROAD FACILITY 3400 BENNING RD NE WASHINGTON, DC 20019-1503 DISTRICT OF COLUMBIA	0.50649 mi S
10B	ERNS Emergency Response Notification System 204770	3400 BENNING RD NE WASHINGTON, DC 20019-1503 DISTRICT OF COLUMBIA	0.50649 mi S
10C	ERNS Emergency Response Notification System 189310	3400 BENNING RD NE WASHINGTON, DC 20019-1503 DISTRICT OF COLUMBIA	0.50649 mi S

Site Summary

Map ID#	Database / Agency ID#	Site Name, Address, and County	Distance/Direction
10D	ERNS Emergency Response Notification System 437476	3400 BENNING RD NE WASHINGTON, DC 20019-1503 DISTRICT OF COLUMBIA	0.50649 mi S
10E	ERNS Emergency Response Notification System 445408	3400 BENNING RD NE WASHINGTON, DC 20019-1503 DISTRICT OF COLUMBIA	0.50649 mi S
10F	LUST District of Columbia Leaking Underground Stg Tk 95082	PEPCO-BENNING TANK UTM4A 3400 BENNING RD NE WASHINGTON, DC 20019-1503 DISTRICT OF COLUMBIA	0.50649 mi S
10G	LUST District of Columbia Leaking Underground Stg Tk 92018	PEPCO-BENNING RD 3400 BENNING RD NE WASHINGTON, DC 20019-1503 DISTRICT OF COLUMBIA	0.50649 mi S
10H	UST District of Columbia Underground Storage Tank 7-000585	BENNING ROAD GENERATING 3400 BENNING RD NE WASHINGTON, DC 20019-1503 DISTRICT OF COLUMBIA	0.50649 mi S
10I	HWS Hazardous Waste Site List (CERCLA) DCD983967951	PEPCO BENNING ROAD FACILITY 3400 BENNING RD NE WASHINGTON, DC 20019-1503 DISTRICT OF COLUMBIA	0.50649 mi S
11A	UST District of Columbia Underground Storage Tank 7-004536	UNKNOWN 3399 BENNING RD NE WASHINGTON, DC 20019-1502 DISTRICT OF COLUMBIA	0.50650 mi SSW
11B	RCRA Generator RCRA Small Quantity Generator DCD983966771	TRANSCO INC 3399 BENNING RD NE WASHINGTON, DC 20019-1502 DISTRICT OF COLUMBIA	0.50650 mi SSW
12A	UST District of Columbia Underground Storage Tank 7-000123	AMOCO OIL CO 3355 BENNING RD NE WASHINGTON, DC 20019-1502 DISTRICT OF COLUMBIA	0.50819 mi SSW
12B	RCRA Generator RCRA Notifier Site DCD983970500	LEES AUTOMOTIVE 3355 BENNING RD NE WASHINGTON, DC 20019-1502 DISTRICT OF COLUMBIA	0.50819 mi SSW
13A	ERNS Emergency Response Notification System 173938	BENNING GENERATING STA. 3400 BENNING RD. NE WASHINGTON DC, DC WASHINGTON D.C.	0.50845 mi S **Manually Geocoded***
13B	ERNS Emergency Response Notification System 444232	BENNING STATION 3400 BENNING RD,NE WASHINGTON, DC WASHINGTON D.C.	0.50845 mi S **Manually Geocoded***
14	RCRA Generator RCRA Notifier Site DCD000760702	SUNOCO SERVICE STATION 3341 BENNING RD NE WASHINGTON, DC 20019-1502 DISTRICT OF COLUMBIA	0.50877 mi SSW
15	ERNS Emergency Response Notification System 539177	3600 BENNING RD NE # NE WASHINGTON, DC 20019-1505 DISTRICT OF COLUMBIA	0.53259 mi SSE

Site Summary

Map ID#	Database / Agency ID#	Site Name, Address, and County	Distance/Direction
16A	RCRA Generator RCRA Notifier Site DCD983966748	CABS INC 3621 BENNING RD NE WASHINGTON, DC 20019-1506 DISTRICT OF COLUMBIA	0.53770 mi SSE
16B	UST District of Columbia Underground Storage Tank 7-002013	AUTO CARE 3621 BENNING RD NE WASHINGTON, DC 20019-1506 DISTRICT OF COLUMBIA	0.53770 mi SSE
17A	UST District of Columbia Underground Storage Tank 7-000538	MERIDIAN PROPERTIES 3705 BENNING RD NE WASHINGTON, DC 20019-2645 DISTRICT OF COLUMBIA	0.55843 mi SSE
17B	RCRA Generator RCRA Notifier Site DCD983970740	RICKS AUTO CLINIC 3705 BENNING RD NE WASHINGTON, DC 20019-2645 DISTRICT OF COLUMBIA	0.55843 mi SSE
18	UST District of Columbia Underground Storage Tank 7-003938	MAYFAIR MANSIONS INCORPORATED KENILWORTH AVE & JAY ST NE , DC 20019	0.56170 mi E
19	ERNS Emergency Response Notification System 286504	DUVALL, HAWKWAY, ACCIDENT TOWING WASHINGTON, DC WASHINGTON	0.59420 mi SSE **Manually Geocoded***
20	RCRA Generator RCRA Small Quantity Generator DCD981041494	GREENHOUSE CLEANERS 4001 GAULT PL NE WASHINGTON, DC 20019-3534 DISTRICT OF COLUMBIA	0.59420 mi ESE
21	UST District of Columbia Underground Storage Tank 7-000381	MT VERNON UNITED METHODIST 4147 MINNESOTA AVE NE WASHINGTON, DC 20019-3575 DISTRICT OF COLUMBIA	0.59684 mi ESE
22	UST District of Columbia Underground Storage Tank 7-002247	CARTER WOODSON 4095 MINNESOTA AVEQ NE , DC 20019	0.60883 mi SE **Manually Geocoded***
23	UST District of Columbia Underground Storage Tank 7-004085	UNKNOWN 4001 HAYES ST NE WASHINGTON, DC 20019-3557 DISTRICT OF COLUMBIA	0.60993 mi ESE
24	UST District of Columbia Underground Storage Tank 7-002249	BIG D LLIQUORS 4169 MINNESOTA AVE NE WASHINGTON, DC 20019-3577 DISTRICT OF COLUMBIA	0.61238 mi ESE
25	UST District of Columbia Underground Storage Tank 7-004375	RIVER TERRACE SCHOOL 34TH & DIX ST NE , DC 20019	0.61577 mi SSW **Manually Geocoded***
26	UST District of Columbia Underground Storage Tank 7-002246	UNKNOWN 4065 MINNESOTA AVE NE WASHINGTON, DC 20019-3503 DISTRICT OF COLUMBIA	0.62077 mi SE
27A	RCRA Generator RCRA Small Quantity Generator DCD983970708	MINNESOTA AVENUE EXXON 4100 HUNT PL NE WASHINGTON, DC 20019-3565 DISTRICT OF COLUMBIA	0.63002 mi ESE

Site Summary

Map ID#	Database / Agency ID#	Site Name, Address, and County	Distance/Direction
27B	LUST District of Columbia Leaking Underground Stg Tk 96068	EXXON #2-5455 4100 HUNT PL NE WASHINGTON, DC 20019-3565 DISTRICT OF COLUMBIA	0.63002 mi ESE
27C	UST District of Columbia Underground Storage Tank 7-000330	EXXON 4100 HUNT PLNE NE , DC 20019	0.63002 mi ESE **Manually Geocoded***
28	LUST District of Columbia Leaking Underground Stg Tk 98047	DOUGLAS DEVELOPMENT CORP. 4045 MINNESOTA AVE NE WASHINGTON, DC 20019-3541 DISTRICT OF COLUMBIA	0.63045 mi SE
29	ERNS Emergency Response Notification System 235072	1100 42ND ST NE WASHINGTON, DC 20019-1909 DISTRICT OF COLUMBIA	0.63886 mi E
30	RCRA Generator RCRA Notifier Site DCD981935760	CENTER 18 DENTAL CLINIC 4130 HUNT PL NE WASHINGTON, DC 20019-3565 DISTRICT OF COLUMBIA	0.65203 mi ESE
31	ERNS Emergency Response Notification System 387579	FM 2130 CHILLUM RD TO MINNESOTA AND BENNING WASHINGTON, DC WASHINGTON	0.67156 mi SE **Manually Geocoded***
32A	UST District of Columbia Underground Storage Tank 7-000298	DCFD ENGINE 4201 MINNESOTA AVE NE WASHINGTON, DC 20019-2706 DISTRICT OF COLUMBIA	0.69618 mi E
32B	LUST District of Columbia Leaking Underground Stg Tk 92064	FIRE ENGIN COMPANY 27 4201 MINNESOTA AVE NE WASHINGTON, DC 20019-2706 DISTRICT OF COLUMBIA	0.69618 mi E
33A	LUST District of Columbia Leaking Underground Stg Tk 97090	WOOLWORTHS 3932 MINNESOTA AVE NE WASHINGTON, DC 20019-2661 DISTRICT OF COLUMBIA	0.70519 mi SSE
33B	UST District of Columbia Underground Storage Tank 7-002245	F W WOOLWORTH 3932 MINNESOTA AVE NE WASHINGTON, DC 20019-2661 DISTRICT OF COLUMBIA	0.70519 mi SSE
34A	UST District of Columbia Underground Storage Tank 7-000614	PHILLIPS 66 CO 4200 NANNIE HELEN BURROUGHS AVE NE WASHINGTON, DC 20019-3639 DISTRICT OF COLUMBIA	0.70734 mi E
34B	RCRA Generator RCRA Notifier Site DC0000082198	RICKS AUTO CLINIC 4200 BURROUGHS AVE NE WASHINGTON, DC 20019 DISTRICT OF COLUMBIA	0.70734 mi E **Manually Geocoded***
35	UST District of Columbia Underground Storage Tank 6-000003	SENATOR SQUARE APARTMENTS 3948 MINNESOTA AVE SE , DC 20019	0.70921 mi SSE **Manually Geocoded***
36	UST District of Columbia Underground Storage Tank 7-000101	EAST RIVER PARK SHOPPING 3919 BENNING RD NE WASHINGTON, DC 20019-3402 DISTRICT OF COLUMBIA	0.71005 mi SE **Manually Geocoded***

Site Summary

Map ID#	Database / Agency ID#	Site Name, Address, and County	Distance/Direction
37A	UST District of Columbia Underground Storage Tank 6-000001	LANGSTON GOLF COURSE 2600 BENNING RD NE WASHINGTON, DC 20002-4846 DISTRICT OF COLUMBIA	0.71022 mi WSW **Manually Geocoded***
37B	LUST District of Columbia Leaking Underground Stg Tk 97068	LANGSTON GOLF COURSE 2600 BENNING RD NE WASHINGTON, DC 20002-4846 DISTRICT OF COLUMBIA	0.71022 mi WSW **Manually Geocoded***
37C	ERNS Emergency Response Notification System 319879	2600 BENNING RD NE WASHINGTON, DC 20002-4846 DISTRICT OF COLUMBIA	0.71022 mi WSW **Manually Geocoded***
37D	LUST District of Columbia Leaking Underground Stg Tk 91077	LANGSTON GOLF COURSE 2600 BENNING RD NE WASHINGTON, DC 20002-4846 DISTRICT OF COLUMBIA	0.71022 mi WSW **Manually Geocoded***
38A	RCRA Generator RCRA Small Quantity Generator DC0000144196	SUPERTRAK #624 3925 MINNESOTA AVE NE WASHINGTON, DC 20019-2662 DISTRICT OF COLUMBIA	0.71108 mi SSE
38B	UST District of Columbia Underground Storage Tank 7-002307	TRAK AUTO 3925 MINNESOTA AVE NE WASHINGTON, DC 20019-2662 DISTRICT OF COLUMBIA	0.71108 mi SSE
39	UST District of Columbia Underground Storage Tank 7-002066	KENILWORTH PARKSIDE ANACOSTIA AVE & NASH ST NE , DC 20019	0.71569 mi ENE
40A	UST District of Columbia Underground Storage Tank 7-000080	AMOCO OIL 4251 MINNESOTA AVE NE WASHINGTON, DC 20019-2729 DISTRICT OF COLUMBIA	0.72312 mi E **Manually Geocoded***
40B	RCRA Generator RCRA Notifier Site DCD983970849	METRO AMOCO 4251 MINNESOTA AVE NE WASHINGTON, DC 20019-2729 DISTRICT OF COLUMBIA	0.72312 mi E **Manually Geocoded***
40C	LUST District of Columbia Leaking Underground Stg Tk 90084	AMOCO 4251 MINNESOTA AVE NE WASHINGTON, DC 20019-2729 DISTRICT OF COLUMBIA	0.72312 mi E **Manually Geocoded***
40D	DOCKET Civil Enforcement Docket 03-91-0074A	AMOCO OIL COMPANY #0234 4251 MINNESOTA AVE NW WASHINGTON, DC 20019	0.72312 mi E **Manually Geocoded***
40E	DOCKET Civil Enforcement Docket 03-90-0654A	AMOCO OIL COMPANY #0234 4251 MINNESOTA AVE NW WASHINGTON, DC 20019	0.72312 mi E **Manually Geocoded***
41A	UST District of Columbia Underground Storage Tank 7-000743	DELBY REAL ESTATE 3916-18 MINNESOTA AVE NE WASHINGTON, DC 20019-2661 DISTRICT OF COLUMBIA	0.73336 mi SSE
41B	LUST District of Columbia Leaking Underground Stg Tk 89005	SUNOCO 3916-18 MINNESOTA AVE NE WASHINGTON, DC 20019-2661 DISTRICT OF COLUMBIA	0.73336 mi SSE

Site Summary

Map ID#	Database / Agency ID#	Site Name, Address, and County	Distance/Direction
42A	ERNS Emergency Response Notification System 265135	4214 HUNT PL NE WASHINGTON, DC 20019-8001 DISTRICT OF COLUMBIA	0.73354 mi ESE
42B	UST District of Columbia Underground Storage Tank 0-000457	JOHN GLEN 4214 HUNT PL NE WASHINGTON, DC 20019-8001 DISTRICT OF COLUMBIA	0.73354 mi ESE
42C	LUST District of Columbia Leaking Underground Stg Tk 99008	ALL ABOARD CONTRACTING INC 4214 HUNT PL NE WASHINGTON, DC 20019-8001 DISTRICT OF COLUMBIA	0.73354 mi ESE
43	UST District of Columbia Underground Storage Tank 7-000100	BENNING BRANCH LIBRARY 3935 BENNING RD NE WASHINGTON, DC 20019-3402 DISTRICT OF COLUMBIA	0.73646 mi SE
44	UST District of Columbia Underground Storage Tank 7-002288	PAYLESS SHOE SOURCE 3900 MINNESOTA AVE NE WASHINGTON, DC 20019-2661 DISTRICT OF COLUMBIA	0.74676 mi SSE
45	UST District of Columbia Underground Storage Tank 7-003928	UNKNOWN 214 KENILWORTH AVE NE WASHINGTON, DC 20019-1356 DISTRICT OF COLUMBIA	0.77400 mi S
46	RCRA Generator RCRA Small Quantity Generator DCD064852320	DEANE AVENUE CLEANERS 4309 NANNIE HELEN BURROUGHS AVE NE WASHINGTON, DC 20019-3642 DISTRICT OF COLUMBIA	0.77946 mi E
47A	LUST District of Columbia Leaking Underground Stg Tk 90006	SHELL 4315 NANNIE HELEN BURROUGHS AVE NE WASHINGTON, DC 20019-3642 DISTRICT OF COLUMBIA	0.78350 mi E
47B	UST District of Columbia Underground Storage Tank 7-000654	SHELL OIL COMP 4315 NANNIE HELEN BURROUGHS AVE NE WASHINGTON, DC 20019-3642 DISTRICT OF COLUMBIA	0.78350 mi E
48	UST District of Columbia Underground Storage Tank 7-002286	AMOCO OIL 3830 MINNESOTA AVE NE WASHINGTON, DC 20019-2659 DISTRICT OF COLUMBIA	0.78441 mi SSE
49	LUST District of Columbia Leaking Underground Stg Tk 90029	AMOCO 3830 MINNESOTA AVE, SE WASHINGTON, DC	0.78507 mi SSE **Manually Geocoded***
50	UST District of Columbia Underground Storage Tank 7-001887	SHELL OIL COMP 4321 NANNIE HELEN BURROUGHS AVE NE WASHINGTON, DC 20019-3642 DISTRICT OF COLUMBIA	0.78748 mi E
51	RCRA Generator RCRA Small Quantity Generator DCR000000232	NATIONAL CAPITAL PARKS E 1400 ANACOSTIA AVE NE WASHINGTON, DC 20019-1923 DISTRICT OF COLUMBIA	0.78879 mi ENE
52A	LUST District of Columbia Leaking Underground Stg Tk 95039	MINNESOTA AVE. MOBIL 3820 MINNESOTA AVE NE WASHINGTON, DC 20019-2659 DISTRICT OF COLUMBIA	0.78906 mi SSE

Site Summary

Map ID#	Database / Agency ID#	Site Name, Address, and County	Distance/Direction
52B	LUST District of Columbia Leaking Underground Stg Tk 89014	CHEVRON 3820 MINNESOTA AVE NE WASHINGTON, DC 20019-2659 DISTRICT OF COLUMBIA	0.78906 mi SSE
52C	UST District of Columbia Underground Storage Tank 7-002000	SAMAD CORPORATION 3820 MINNESOTA AVE NE WASHINGTON, DC 20019-2659 DISTRICT OF COLUMBIA	0.78906 mi SSE
52D	RCRA Generator RCRA Notifier Site DCR000000273	.IKE SVC CTR 3820 MINNESOTA AVE NE WASHINGTON, DC 20019-2659 DISTRICT OF COLUMBIA	0.78906 mi SSE
53	UST District of Columbia Underground Storage Tank 0-000456	FORMER F L WATKINDS 4301 SHERRIF ROAD NE , DC 20019	0.80852 mi E **Manually Geocoded***
54	ERNS Emergency Response Notification System 589593	4300 HUNT PL NE WASHINGTON, DC 20019-8003 DISTRICT OF COLUMBIA	0.81266 mi ESE
55	UST District of Columbia Underground Storage Tank 7-000108	AMOCO OIL 3780 MINNESOTA AVE NE WASHINGTON, DC 20019-2667 DISTRICT OF COLUMBIA	0.81671 mi SSE
56	UST District of Columbia Underground Storage Tank 7-000004	RIVER TERRACE 3393 BLAINE ST NE WASHINGTON, DC 20019-1377 DISTRICT OF COLUMBIA	0.82420 mi S
57	LUST District of Columbia Leaking Underground Stg Tk 91017	RIVER TERRACE APTS 140 KENNILWORTH AVE, NE(3393 BLAINE) WASHINGTON, DC	0.82600 mi S **Manually Geocoded***
58A	ERNS Emergency Response Notification System 365229	STADIUM ARMORY EXXON WASHINGTON, DC WASHINGTON	0.84309 mi WSW **Manually Geocoded***
58B	LUST District of Columbia Leaking Underground Stg Tk 96069	EXXON #2-1931 2651 BENNING RD NE WASHINGTON, DC 20002-4847 DISTRICT OF COLUMBIA	0.84309 mi WSW **Manually Geocoded***
58C	LUST District of Columbia Leaking Underground Stg Tk 96064	EXXON #12-1931 2651 BENNING RD NE WASHINGTON, DC 20002-4847 DISTRICT OF COLUMBIA	0.84309 mi WSW **Manually Geocoded***
58D	UST District of Columbia Underground Storage Tank 6-000359	EXON 2651 BENNING RD NE WASHINGTON, DC 20002-4847 DISTRICT OF COLUMBIA	0.84309 mi WSW **Manually Geocoded***
59	LUST District of Columbia Leaking Underground Stg Tk 91008	ALLEN HOUSE 3760 MINNESOTA AVE NE WASHINGTON, DC 20019-2600 DISTRICT OF COLUMBIA	0.84318 mi SSE
60	UST District of Columbia Underground Storage Tank 7-004441	KENILWORTH ELEMENTARY SCHOOL 1316 44TH ST NE WASHINGTON, DC 20019-1915 DISTRICT OF COLUMBIA	0.85499 mi ENE **Manually Geocoded***

Site Summary

Map ID#	Database / Agency ID#	Site Name, Address, and County	Distance/Direction
61	ERNS Emergency Response Notification System 374212	CORNER BENNING AVE. & OKLAHOMA AVE. WASHINGTON, DC 20002 WASHINGTON	0.85727 mi WSW **Manually Geocoded***
62	UST District of Columbia Underground Storage Tank 7-000267	CENTRAL CONSTRUCTION 3710 MINNESOTA AVE NE WASHINGTON, DC 20019-2667 DISTRICT OF COLUMBIA	0.86372 mi SSE
63	UST District of Columbia Underground Storage Tank 0-000452	FORMER ESSO STATION 3625 AMES ST NE , DC 20019	0.88702 mi S
64A	UST District of Columbia Underground Storage Tank 7-003931	KENILWORTH AVENUE BUILDING 1215 KENILWORTH AVE NE WASHINGTON, DC 20019-2710 DISTRICT OF COLUMBIA	0.90299 mi E **Manually Geocoded***
64B	RCRA Generator RCRA Notifier Site DCD983970328	LEE'S FOREIGN AUTO PARTS 1215 KENILWORTH AVE NE WASHINGTON, DC 20019-2710 DISTRICT OF COLUMBIA	0.90299 mi E **Manually Geocoded***
65A	UST District of Columbia Underground Storage Tank 2-000073	UNKNOWN 904 22ND ST NE WASHINGTON, DC 20002-3253 DISTRICT OF COLUMBIA	0.90386 mi W
65B	UST District of Columbia Underground Storage Tank 5-002493	UNKNOWN 904 22ND ST NE WASHINGTON, DC 20002-3253 DISTRICT OF COLUMBIA	0.90386 mi W
66	UST District of Columbia Underground Storage Tank 7-004432	BENING ELEMENTARY SCHOOL 41ST & BENNING ROAD NE , DC 20019	0.90507 mi SE
67	UST District of Columbia Underground Storage Tank 7-003926	UNKNOWN 20 KENILWORTH AVE NE WASHINGTON, DC 20019-1347 DISTRICT OF COLUMBIA	0.90555 mi SSW
68	UST District of Columbia Underground Storage Tank 7-003932	SQUARE DEAR TRUCKING COMPANY 1221 KENILWORTH AVE NE WASHINGTON, DC 20019-2710 DISTRICT OF COLUMBIA	0.90771 mi E **Manually Geocoded***
69	UST District of Columbia Underground Storage Tank 6-002001	UNKNOWN 2501 BENNING RD NE WASHINGTON, DC 20002-4805 DISTRICT OF COLUMBIA	0.91135 mi WSW
70	ERNS Emergency Response Notification System 126544	HICKEY RUN WASHINGTON, DC WASHINGTON	0.91643 mi NW **Manually Geocoded***
71	UST District of Columbia Underground Storage Tank 5-004205	WIRE PROEPRTIES 2229 M ST NE WASHINGTON, DC 20002-2060 DISTRICT OF COLUMBIA	0.91763 mi W
72	UST District of Columbia Underground Storage Tank 7-002381	PENN REALTY CORP 4401 SHERIFF RD NE WASHINGTON, DC 20019-3741 DISTRICT OF COLUMBIA	0.92472 mi E

Site Summary

Map ID#	Database / Agency ID#	Site Name, Address, and County	Distance/Direction
73	LUST District of Columbia Leaking Underground Stg Tk 99005	US FDA NATIONAL ARBORETUM 3501 NEW YORK AVENUE N WASHINGTON, DC	0.92568 mi N **Manually Geocoded***
74A	UST District of Columbia Underground Storage Tank 7-004471	UNKNOWN 4427 HAYES ST NE WASHINGTON, DC 20019-4748 DISTRICT OF COLUMBIA	0.93342 mi ESE
74B	UST District of Columbia Underground Storage Tank 7-004086	UNKNOWN 4427 HAYES ST NE WASHINGTON, DC 20019-4748 DISTRICT OF COLUMBIA	0.93342 mi ESE
75A	ERNS Emergency Response Notification System 436075	3501 NEW YORK AVE. NE HICKORY RUN WASHINGTON, DC 20002	0.93452 mi N **Manually Geocoded***
75B	ERNS Emergency Response Notification System 454062	3501 NEW YORK AVE HICKEY RUN WASHINGTON, DC 21202 WASHINGTON D.C.	0.93452 mi N **Manually Geocoded***
76	UST District of Columbia Underground Storage Tank 7-004552	UNKNOWN 4408 SHERIFF RD NE WASHINGTON, DC 20019-3740 DISTRICT OF COLUMBIA	0.93500 mi E
77A	LUST District of Columbia Leaking Underground Stg Tk 95019	GREENWAY APTS. 3525 E CAPITOL ST SE WASHINGTON, DC 20019-1207 DISTRICT OF COLUMBIA	0.93858 mi S
77B	UST District of Columbia Underground Storage Tank 6-000007	GREENWAY APART 3525 E CAPITOL ST SE WASHINGTON, DC 20019-1207 DISTRICT OF COLUMBIA	0.93858 mi S
78A	LUST District of Columbia Leaking Underground Stg Tk 95037	BUSINESS FUNDING OF FL. 1325 KENILWORTH AVE NE WASHINGTON, DC 20019-2711 DISTRICT OF COLUMBIA	0.94580 mi ENE
78B	UST District of Columbia Underground Storage Tank 7-003934	SQUARE DEAL TRUCKING COMPANY 1325 KENILWORTH AVE NE WASHINGTON, DC 20019-2711 DISTRICT OF COLUMBIA	0.94580 mi ENE
79A	LUST District of Columbia Leaking Underground Stg Tk 90072	LEE'S GAS AND CAR WASH 1329 KENILWORTH AVE NE WASHINGTON, DC 20019-2711 DISTRICT OF COLUMBIA	0.94886 mi ENE
79B	LUST District of Columbia Leaking Underground Stg Tk 96036	LEE'S GAS & CAR WASH 1329 KENILWORTH AVE NE WASHINGTON, DC 20019-2711 DISTRICT OF COLUMBIA	0.94886 mi ENE
79C	RCRA Generator RCRA Notifier Site DCD983970161	1912 AUTO 1329 KENILWORTH AVE NE WASHINGTON, DC 20019-2711 DISTRICT OF COLUMBIA	0.94886 mi ENE
79D	RCRA Generator RCRA Notifier Site DCD983970237	S & T AUTO SVC 1329F KENILWORTH AVE NE WASHINGTON, DC 20019-2711 DISTRICT OF COLUMBIA	0.94886 mi ENE

Site Summary

Map ID#	Database / Agency ID#	Site Name, Address, and County	Distance/Direction
79E	RCRA Generator RCRA Notifier Site DCD981107220	HAGLER & SONS WASTE REMOVAL INC 1329 KENILWORTH AVE NE WASHINGTON, DC 20019-2711 DISTRICT OF COLUMBIA	0.94886 mi ENE
79F	UST District of Columbia Underground Storage Tank 7-000624	LEES GAS AND CAR WASH 1329 KENILWORTH AVE NE WASHINGTON, DC 20019-2711 DISTRICT OF COLUMBIA	0.94886 mi ENE
80A	ERNS Emergency Response Notification System 179164	NATIONAL ARBORETUM WASHINGTON, DC WASHINGTON	0.95017 mi N **Manually Geocoded***
80B	ERNS Emergency Response Notification System 230394	NATIONAL ARBORETUM WASHINGTON, DC 20001 WASHINGTON	0.95017 mi N **Manually Geocoded***
80C	ERNS Emergency Response Notification System 229907	HICKEY RUN/NATIONAL ABORETUM WASHINGTON, DC 20002 WASHINGTON	0.95017 mi N **Manually Geocoded***
80D	ERNS Emergency Response Notification System 226309	HICKEY RUN CREEK WASHINGTON, DC WASHINGTON	0.95017 mi N **Manually Geocoded***
80E	ERNS Emergency Response Notification System 191142	NATIONAL ARBORETUM WASHINGTON, DC WASHINGTON	0.95017 mi N **Manually Geocoded***
80F	ERNS Emergency Response Notification System 188004	NATIONAL ARBORETUM WASHINGTON, DC WASHINGTON	0.95017 mi N **Manually Geocoded***
80G	ERNS Emergency Response Notification System 187990	NATIONAL ARBORETUM WASHINGTON, DC WASHINGTON	0.95017 mi N **Manually Geocoded***
80H	ERNS Emergency Response Notification System 183934	NATIONAL ARBORETUM WASHINGTON, DC WASHINGTON	0.95017 mi N **Manually Geocoded***
80I	ERNS Emergency Response Notification System 183932	NATIONAL ARBORETUM WASHINGTON, DC WASHINGTON	0.95017 mi N **Manually Geocoded***
80J	ERNS Emergency Response Notification System 183931	NATION ARBORETUM WASHINGTON, DC WASHINGTON	0.95017 mi N **Manually Geocoded***
80K	ERNS Emergency Response Notification System 182812	NATIONAL ABORETUM WASHINGTON, DC WASHINGTON	0.95017 mi N **Manually Geocoded***
80L	ERNS Emergency Response Notification System 182731	NATIONAL ABORETUM WASHINGTON, DC WASHINGTON	0.95017 mi N **Manually Geocoded***

Site Summary

Map ID#	Database / Agency ID#	Site Name, Address, and County	Distance/Direction
80M	ERNS Emergency Response Notification System 181415	NATIONAL ABORETUM - HICKEY RUN WASHINGTON, DC WASHINGTON	0.95017 mi N **Manually Geocoded***
80N	ERNS Emergency Response Notification System 230395	NATIONAL ARBORETUM WASHINGTON, DC 20001 WASHINGTON	0.95017 mi N **Manually Geocoded***
80O	ERNS Emergency Response Notification System 172394	HICKEY RUN - NATIONAL ABARETUM WASHINGTON, DC WASHINGTON	0.95017 mi N **Manually Geocoded***
80P	ERNS Emergency Response Notification System 169328	NATIONAL ARBARETUM WASHINGTON, DC WASHINGTON	0.95017 mi N **Manually Geocoded***
80Q	ERNS Emergency Response Notification System 166056	NATIONAL ARBORETUM WASHINGTON, DC WASHINGTON	0.95017 mi N **Manually Geocoded***
80R	ERNS Emergency Response Notification System 164623	NATIONAL ABARETUM WASHINGTON, DC WASHINGTON	0.95017 mi N **Manually Geocoded***
80S	ERNS Emergency Response Notification System 163444	NATIONAL ARBORETUM WASHINGTON, DC 00000 WASHINGTON	0.95017 mi N **Manually Geocoded***
80T	ERNS Emergency Response Notification System 261339	NATIONAL ARBORETUM/HICKEY RUN WASHINGTON, DC WASHINGTON	0.95017 mi N **Manually Geocoded***
80U	ERNS Emergency Response Notification System 261337	NATIONAL ARBORETUM/HICKEY RUN WASHINGTON, DC 20001 WASHINGTON	0.95017 mi N **Manually Geocoded***
80V	ERNS Emergency Response Notification System 261336	NATIONAL ARBORETUM/HICKEY RUN WASHINGTON, DC WASHINGTON	0.95017 mi N **Manually Geocoded***
80W	ERNS Emergency Response Notification System 163448	NATIONAL ARBORETUM 3501 NEW YORK AVE NE, DC WASHINGTON	0.95017 mi N **Manually Geocoded***
80X	RCRA Generator RCRA Small Quantity Generator DC7120507432	US DA NATIONAL ARBORETUM 3501 NEW YORK AVE NE WASHINGTON, DC 20002-1958 DISTRICT OF COLUMBIA	0.95017 mi N **Manually Geocoded***
80Y	LUST District of Columbia Leaking Underground Stg Tk 92104	US NATL ARBORETUM - BLDG 19 3501 NEW YORK AVE NE WASHINGTON, DC 20002-1958 DISTRICT OF COLUMBIA	0.95017 mi N **Manually Geocoded***
80Z	LUST District of Columbia Leaking Underground Stg Tk 94019	NATIONAL ARBORETUM # 001 3501 N.Y. AVE, NE BLDG 1 WASHINGTON, DC	0.95017 mi N **Manually Geocoded***

Site Summary

Map ID#	Database / Agency ID#	Site Name, Address, and County	Distance/Direction
80AA	LUST District of Columbia Leaking Underground Stg Tk 94014	NATIONAL ARBORETUM #013 3501 N.Y. AVE, NE BLDG 13 WASHINGTON, DC	0.95017 mi N **Manually Geocoded***
80AB	UST District of Columbia Underground Storage Tank 5-000540	US NATIONAL ABORETUM 3501 NEW YORK AVE NE WASHINGTON, DC 20002-1958 DISTRICT OF COLUMBIA	0.95017 mi N **Manually Geocoded***
80AC	HWS Hazardous Waste Site List (CERCLA) DC7120507432	USDA NATIONAL ARBORETUM 3501 NEW YORK AVE NE WASHINGTON, DC 20002-1958 DISTRICT OF COLUMBIA	0.95017 mi N **Manually Geocoded***
80AD	LUST District of Columbia Leaking Underground Stg Tk 94013	NATIONAL ARBORETUM #012 3501 N.Y. AVE, NE BLDG 12 WASHINGTON, DC	0.95017 mi N **Manually Geocoded***
80AE	CERCLA CERCLA Site DC7120507432	USDA NATIONAL ARBORETUM 3501 NEW YORK AVE NE WASHINGTON, DC 20002-1958 DISTRICT OF COLUMBIA	0.95017 mi N **Manually Geocoded***
80AF	LUST District of Columbia Leaking Underground Stg Tk 90077	US NAT'L ARBORETUM BLDG 015 3501 NEW YORK AVE NE WASHINGTON, DC 20002-1958 DISTRICT OF COLUMBIA	0.95017 mi N **Manually Geocoded***
80AG	LUST District of Columbia Leaking Underground Stg Tk 97063	U.S. NATIONAL ARBORETUM, BLDG 15 3501 NEW YORK AVE NE BLDG 15 WASHINGTON, DC 20002-1958 DISTRICT OF COLUMBIA	0.95017 mi N **Manually Geocoded***
80AH	LUST District of Columbia Leaking Underground Stg Tk 91023	NAT'L ARBORETUM - BRICK YARD 3501 NEW YORK AVE NE WASHINGTON, DC 20002-1958 DISTRICT OF COLUMBIA	0.95017 mi N **Manually Geocoded***
80AI	UST District of Columbia Underground Storage Tank 5-000541	US NAT ARB 3501 NEW YORK AVE NE WASHINGTON, DC 20002-1958 DISTRICT OF COLUMBIA	0.95017 mi N **Manually Geocoded***
80AJ	ERNS Emergency Response Notification System 230396	NATIONAL ARBORETUM WASHINGTON, DC 20001 WASHINGTON	0.95017 mi N **Manually Geocoded***
80AK	ERNS Emergency Response Notification System 179167	USDA - NATIONAL ARBARETUM WASHINGTON, DC 20002 WASHINGTON	0.95017 mi N **Manually Geocoded***
80AL	ERNS Emergency Response Notification System 163447	NATIONAL ARBORETUM WASHINGTON, DC WASHINGTON	0.95017 mi N **Manually Geocoded***
80AM	ERNS Emergency Response Notification System 236295	NATIONAL ARBORETUM WASHINGTON, DC WASHINGTON	0.95017 mi N **Manually Geocoded***
80AN	ERNS Emergency Response Notification System 235558	NATIONAL ARBORETUM WASHINGTON, DC WASHINGTON	0.95017 mi N **Manually Geocoded***

Site Summary

Map ID#	Database / Agency ID#	Site Name, Address, and County	Distance/Direction
80AO	ERNS Emergency Response Notification System 235557	NATIONAL ARBORETUM WASHINGTON, DC WASHINGTON	0.95017 mi N **Manually Geocoded***
80AP	ERNS Emergency Response Notification System 232527	NATIONAL ARBORETUM WASHINGTON, DC WASHINGTON	0.95017 mi N **Manually Geocoded***
80AQ	ERNS Emergency Response Notification System 232525	NATIONAL ARBORETUM WASHINGTON, DC WASHINGTON	0.95017 mi N **Manually Geocoded***
80AR	ERNS Emergency Response Notification System 232526	NATIONAL ARBORETUM WASHINGTON, DC WASHINGTON	0.95017 mi N **Manually Geocoded***
81	UST District of Columbia Underground Storage Tank 5-002976	CARVER TERRACE APARTMENTS 1100 21ST PL NE APT 04 WASHINGTON, DC 20002-3140 DISTRICT OF COLUMBIA	0.96334 mi W
82A	LUST District of Columbia Leaking Underground Stg Tk 95031	CAFRITZ COMPANY 11 35TH ST SE WASHINGTON, DC 20019-7471 DISTRICT OF COLUMBIA	0.96776 mi S
82B	UST District of Columbia Underground Storage Tank 6-000008	GREENWAY APARTMENTS 11 35TH ST SE WASHINGTON, DC 20019-7471 DISTRICT OF COLUMBIA	0.96776 mi S
83	UST District of Columbia Underground Storage Tank 6-001339	UNKNOWN 3317 E CAPITOL ST SE WASHINGTON, DC 20019-1344 DISTRICT OF COLUMBIA	0.97014 mi SSW
84	UST District of Columbia Underground Storage Tank 5-005286	WASHINGTON TIMES BUILDING 3600 NEW YORK AVE NE WASHINGTON, DC 20002-1947 DISTRICT OF COLUMBIA	0.97775 mi N **Manually Geocoded***
85A	LUST District of Columbia Leaking Underground Stg Tk 96102	PREMIUM DISTRIBUTORS (REOPEN) 3350 NEW YORK AVE NE WASHINGTON, DC 20002-1955 DISTRICT OF COLUMBIA	0.98324 mi NNW
85B	UST District of Columbia Underground Storage Tank 5-005285	PREMIUM DIST 3350 NEW YORK AVE NE WASHINGTON, DC 20002-1955 DISTRICT OF COLUMBIA	0.98324 mi NNW
85C	LUST District of Columbia Leaking Underground Stg Tk 91015	PREMIUM DISTRIBUTORS 3350 NEW YORK AVE NE WASHINGTON, DC 20002-1955 DISTRICT OF COLUMBIA	0.98324 mi NNW
86	UST District of Columbia Underground Storage Tank 5-002000	SPINGARN HIGH SCHOOL 24TH & BENNING ROAD NE , DC 20002	0.98581 mi WSW
87	UST District of Columbia Underground Storage Tank 7-004932	CARVER ELEMENTARY SCHOOL 4525 LANE PL NE , DC 20019	0.99017 mi E **Manually Geocoded***

Site Summary

Map ID#	Database / Agency ID#	Site Name, Address, and County	Distance/Direction
88	ERNS Emergency Response Notification System 187690	4515 GAULT PL NE WASHINGTON, DC 20019-4734 DISTRICT OF COLUMBIA	0.99143 mi ESE
89	ERNS Emergency Response Notification System 298514	4517 GAULT PL NE WASHINGTON, DC 20019-4734 DISTRICT OF COLUMBIA	0.99256 mi ESE
90	UST District of Columbia Underground Storage Tank 5-002492	WIRE PROPERTIES 2115 MARYLAND AVE NE WASHINGTON, DC 20002-3132 DISTRICT OF COLUMBIA	0.99312 mi W **Manually Geocoded***
91	UST District of Columbia Underground Storage Tank 7-001990	RANDALL MEMEORIAL METH CHURCH 1002 46TH ST NE WASHINGTON, DC 20019-3810 DISTRICT OF COLUMBIA	0.99552 mi E
92	UST District of Columbia Underground Storage Tank 5-005498	UNKNOWN 2109 MARYLAND AVE NE WASHINGTON, DC 20002-3135 DISTRICT OF COLUMBIA	0.99830 mi W **Manually Geocoded***
93	UST District of Columbia Underground Storage Tank 5-005500	CARER TERRACE 2112 MARYLAND AVE NE WASHINGTON, DC 20002-3148 DISTRICT OF COLUMBIA	0.99853 mi W **Manually Geocoded***
94A	UST District of Columbia Underground Storage Tank 7-000007	GREENWAY APARTMENTS 1 ANACOSTIA RD SE WASHINGTON, DC 20019-4163 DISTRICT OF COLUMBIA	0.99953 mi SSE
94B	LUST District of Columbia Leaking Underground Stg Tk 95028	CAFRITZ COMPANY 1 ANACOSTIA RD SE WASHINGTON, DC 20019-4163 DISTRICT OF COLUMBIA	0.99953 mi SSE

* -- Manually Geocoded: Site plotted or corrected using paper maps, phone calls, and other resources to properly place the site on the map.

** -- Agency Provided Lat/Long: Site plotted using the latitude and longitude given by the federal or state government agency.

*** -- Area Manually Plotted: Area manually drawn using digital and paper maps.

Detailed Data

The following pages contain the detailed data concerning the sites plotted on the map and included in the site summary.

Please Note: Pages are not included for databases not found within the search radii.

These pages are arranged as follows:

CERCLA Data

RCRA TSD and Generators Data

ERNS Data

PADS Data

DOCKET Data

TSCA Data

HWS Data

District of Columbia LUST Data

District of Columbia UST Data

CERCLA Data

Comprehensive Environmental Response, Compensation, and Liability Act Sites

Map ID#: **10A** Distance (mi): 0.506494
Direction: S

EPA ID#: **DCD983967951**
CERCLIS Site ID#: **0305086**
Status: This site is currently under investigation by the federal government to assess the extent of further action

Facility Name: **PEPCO BENNING ROAD FACILITY**
Address: **3400 BENNING ROAD NE**
City, State, Zip: **WASHINGTON, DC 20019**
County: **DIST OF COLUMBIA**

Federal Facility Indicator: **Not a Federal Facility**
Ownership Indicator: **Private**
Comments: **Not Reported**

NPL Status: **Not on the NPL**
RCRIS Facility Indicator: **Not Reported**

Event	Date Started	Date Completed
DISCOVERY	Not Reported	1995-03-07

Map ID#: **80AE** Distance (mi): 0.950170
Direction: N

EPA ID#: **DC7120507432**
CERCLIS Site ID#: **0304464**
Status: This site is currently under investigation by the federal government to assess the extent of further action

Facility Name: **USDA NATIONAL ARBORETUM**
Address: **3501 NEW YORK AVENUE NE**
City, State, Zip: **WASHINGTON, DC 20002**
County: **DIST OF COLUMBIA**

Federal Facility Indicator: **Federal Facility**
Ownership Indicator: **Federally Owned**
Comments: **GRAVEL PIT SITE HAS POTENTIAL FOR RELEASING HAZARDOUS SUBSTANCES TO THE ENVIRONMENT SHOP AREA SITE HAS POTENTIAL FOR ACC UMULATION OF HAZARDOUS SUBSTANCES TO EXIST IN SURFICAL SOILS.**

NPL Status: **Not on the NPL**
RCRIS Facility Indicator: **Not Reported**

Event	Date Started	Date Completed
DISCOVERY	Not Reported	1991-07-24
PRELIMINARY ASSESSMENT	1991-04-05	Not Reported

RCRA TSD and Generators Data

Facility and Compliance Information

Map ID#: **7E** Distance (mi): **0.491678** Direction: **S**
EPA ID#: **DCD000819516**
Status: **Transporter Large Quantity Generator**

Name: **PEPCO BENNING ROAD GENERATING STATION**
Address: **3300 BENNING RD NE**
City, State, Zip: **WASHINGTON DC 20019**

SIC Code: **4911**
Contact Name: **RONALD MOORE**
Contact Phone: **202-331-6537**

Land Type: **Unknown**

RCRA Evaluation / Violation / Enforcement Data

EVALUATIONS

Eval. #:	19840208001	Agency:	State	Evaluation Date:	02/08/1984
Eval. #:	19881230002	Agency:	State	Evaluation Date:	12/30/1988
Eval. #:	19891120003	Agency:	State	Evaluation Date:	11/20/1989
Eval. #:	19910712	Agency:	EPA Personnel	Evaluation Date:	07/12/1991
Eval. #:	19910802	Agency:	State	Evaluation Date:	08/02/1991
Eval. #:	19950613	Agency:	EPA Personnel	Evaluation Date:	06/13/1995
Eval. #:	19970428	Agency:	EPA Personnel	Evaluation Date:	04/28/1997

VIOLATIONS

Viol. #:	DCD000819516E0001	Violation Type:	Generator - Land Ban Requirement		
Viol. #:	DCD000819516E0002	Violation Type:	Generator - Any Requirements		
Viol. #:	DCD000819516S0001	Violation Type:	Generator - Any Requirements	Actual Resolution Date:	12/21/1989
Viol. #:	DCD000819516S0002	Violation Type:	Generator - Any Requirements	Actual Resolution Date:	12/21/1989
Viol. #:	DCD000819516S0003	Violation Type:	Generator - Land Ban Requirement	Actual Resolution Date:	12/21/1989

ENFORCEMENTS

Enf. #:	19891204001	Agency: State	Type: Written Informal	Date:	12/04/1989
Enf. #:	19920204	Agency: EPA	Type: Initial 3008(a) Compliance Order	Date:	02/04/1992
Enf. #:	19930209	Agency: EPA	Type: Initial 3008(a) Compliance Order	Date:	02/09/1993
Enf. #:	19930823	Agency: EPA	Type: Final 3008(a) Compliance Order	Date:	08/23/1993

RAATS (RCRA Administrative Action Tracking System) Data

No RAATS Information Reported for this Site

RCRA Corrective Action Data (CORRACTS) Instrument and Event Data

No Corrective Action Instrument Information for this Site

Map ID#: **8D** Distance (mi): **0.494523** Direction: **SSW**
EPA ID#: **DCD000765818**
Status: **Conditionally Exempt Small Quantity Generator**

Name: **KENILWORTH MAINTENANCE YARD**
Address: **3200 BENNING RD NE**
City, State, Zip: **WASHINGTON DC 20019**

SIC Code: **4953**
Contact Name: **JOHN SCHILF**
Contact Phone: **202-727-4821**

Land Type: **Unknown**

RCRA Evaluation / Violation / Enforcement Data

EVALUATIONS

Eval. #:	19840508001	Agency:	State	Evaluation Date:	05/08/1984
Eval. #:	19930225	Agency:	State	Evaluation Date:	02/25/1993
Eval. #:	19931206	Agency:	State	Evaluation Date:	12/06/1993
Eval. #:	19940404	Agency:	State	Evaluation Date:	04/04/1994
Eval. #:	19940404001	Agency:	State	Evaluation Date:	04/04/1994
Eval. #:	19960625	Agency:	State	Evaluation Date:	06/25/1996
Eval. #:	19970427	Agency:	State	Evaluation Date:	04/27/1997

VIOLATIONS

Viol. #:	DCD000765818S0001	Violation Type:	Generator - Any Requirements	Actual Resolution Date:	03/03/1995

ENFORCEMENTS

Enf. #:	19940404001	Agency: State	Type: Written Informal	Date:	04/04/1994

RAATS (RCRA Administrative Action Tracking System) Data

RCRA Wastes and Waste Code Information previously reported by EcoSearch have been removed from the RCRIS database by the USEPA.

RCRA TSD and Generators Data

Facility and Compliance Information

No RAATS Information Reported for this Site

RCRA Corrective Action Data (CORRACTS) Instrument and Event Data

No Corrective Action Instrument Information for this Site

Map ID#: 11B
Distance (mi): 0.506497
Direction: SSW
EPA ID#: DCD983966771
Status: Small Quantity Generator
Land Type: Unknown

Name: TRANSCO INC
Address: 3399 BENNING RD
City, State, Zip: WASHINGTON DC 20019
SIC Code:
Contact Name: MAURICE SCHAFFER
Contact Phone: 202-398-0526

RCRA Evaluation / Violation / Enforcement Data

EVALUATIONS

Eval. #:	19930225	Agency:	State	Evaluation Date:	02/25/1993
Eval. #:	19940404	Agency:	State	Evaluation Date:	04/04/1994

VIOLATIONS

Viol. #:	DCD983966771S0001	Violation Type:	Generator - Any Requirements	Actual Resolution Date:	04/18/1994

ENFORCEMENTS

Enf. #:	19940404	Agency: State	Type: Written Informal	Date:	04/04/1994

RAATS (RCRA Administrative Action Tracking System) Data

No RAATS Information Reported for this Site

RCRA Corrective Action Data (CORRACTS) Instrument and Event Data

No Corrective Action Instrument Information for this Site

Map ID#: 12B
Distance (mi): 0.508186
Direction: SSW
EPA ID#: DCD983970500
Status: RCRA Notifier (Former RCRA Site)
Land Type: Private Land

Name: LEES AUTOMOTIVE
Address: 3355 BENNING RD NE
City, State, Zip: WASHINGTON DC 20019
SIC Code:
Contact Name: CARROLL LEE
Contact Phone: 202-397-2370

RCRA Evaluation / Violation / Enforcement Data

EVALUATIONS

Eval. #:	19930927	Agency:	State	Evaluation Date:	09/27/1993
Eval. #:	19940404	Agency:	State	Evaluation Date:	04/04/1994
Eval. #:	19981110	Agency:	State	Evaluation Date:	11/10/1998

VIOLATIONS

Viol. #:	DCD983970500S0001	Violation Type:	Generator - Any Requirements	Actual Resolution Date:	03/06/1995

ENFORCEMENTS

Enf. #:	19940404	Agency: State	Type: Written Informal	Date:	04/04/1994

RAATS (RCRA Administrative Action Tracking System) Data

No RAATS Information Reported for this Site

RCRA Corrective Action Data (CORRACTS) Instrument and Event Data

RCRA Wastes and Waste Code Information previously reported by EcoSearch have been removed from the RCRIS database by the USEPA.

RCRA TSD and Generators Data

Facility and Compliance Information

No Corrective Action Instrument Information for this Site

Map ID#: **14** Distance (mi): **0.508771** Direction: **SSW**
EPA ID#: **DCD000760702**
Status: **RCRA Notifier (Former RCRA Site)**

Name: **SUNOCO SERVICE STATION**
Address: **3341 BENNING RD NE**
City, State, Zip: **WASHINGTON** DC 20020

Land Type: **Unknown**

SIC Code:
Contact Name: **DON GRAY**
Contact Phone: **301-341-0100**

RCRA Evaluation / Violation / Enforcement Data

EVALUATIONS

Eval. #:	19910109001	Agency:	State	Evaluation Date:	01/09/1991
Eval. #:	19950127	Agency:	State	Evaluation Date:	01/27/1995

RAATS (RCRA Administrative Action Tracking System) Data

No RAATS Information Reported for this Site

RCRA Corrective Action Data (CORRACTS) Instrument and Event Data

No Corrective Action Instrument Information for this Site

Map ID#: **16A** Distance (mi): **0.537699** Direction: **SSE**
EPA ID#: **DCD983966748**
Status: **RCRA Notifier (Former RCRA Site)**

Name: **CABS INC**
Address: **3621 BENNING RD NE**
City, State, Zip: **WASHINGTON** DC 20019

Land Type: **Private Land**

SIC Code:
Contact Name: **JERRY SCHAFFER**
Contact Phone: **202-398-0531**

RCRA Evaluation / Violation / Enforcement Data

EVALUATIONS

Eval. #:	19911022	Agency:	State	Evaluation Date:	10/22/1991
Eval. #:	19930701001	Agency:	State	Evaluation Date:	07/01/1993

VIOLATIONS

Viol. #: **DCD983966748S0001** Violation Type: **Generator - Any Requirements** Actual Resolution Date: **08/06/1993**

ENFORCEMENTS

Enf. #: **19930712001** Agency: **State** Type: **Written Informal** Date: **07/12/1993**

RAATS (RCRA Administrative Action Tracking System) Data

No RAATS Information Reported for this Site

RCRA Corrective Action Data (CORRACTS) Instrument and Event Data

No Corrective Action Instrument Information for this Site

Map ID#: **17B** Distance (mi): **0.558427** Direction: **SSE**
EPA ID#: **DCD983970740**
Status: **RCRA Notifier (Former RCRA Site)**

Name: **RICKS AUTO CLINIC**
Address: **3705 BENNING RD NE**
City, State, Zip: **WASHINGTON** DC 20019

Land Type: **Private Land**

SIC Code: **7538**
Contact Name: **RICARDO DAVIS**
Contact Phone: **202-388-9374**

RCRA Wastes and Waste Code Information previously reported by EcoSearch have been removed from the RCRIS database by the USEPA.

RCRA Evaluation / Violation / Enforcement Data

EVALUATIONS

Eval. #:	19930927	Agency:	State	Evaluation Date:	09/27/1993
Eval. #:	19940404	Agency:	State	Evaluation Date:	04/04/1994
Eval. #:	19950810	Agency:	State	Evaluation Date:	08/10/1995
Eval. #:	19960625	Agency:	State	Evaluation Date:	06/25/1996
Eval. #:	19970207	Agency:	State	Evaluation Date:	02/07/1997

VIOLATIONS

Viol. #: DCD983970740S0001 Violation Type: Generator - Any Requirements Actual Resolution Date: 08/10/1995

ENFORCEMENTS

Enf. #: 19940404 Agency: State Type: Written Informal Date: 04/04/1994

RAATS (RCRA Administrative Action Tracking System) Data

No RAATS Information Reported for this Site

RCRA Corrective Action Data (CORRACTS) Instrument and Event Data

No Corrective Action Instrument Information for this Site

Map ID#: 20 Distance (mi): 0.594203 Direction: ESE

Name: GREENHOUSE CLEANERS
Address: 4001 GAULT PL NE
City, State, Zip: WASHINGTON DC 20019

EPA ID#: DCD981041494
Status: Conditionally Exempt Small Quantity Generator

SIC Code: 7216
Contact Name: HENRY GREENHOUSE
Contact Phone: 215-396-2116

Land Type: Unknown

RCRA Evaluation / Violation / Enforcement Data

EVALUATIONS

Eval. #:	19870520001	Agency:	State	Evaluation Date:	05/20/1987
Eval. #:	19880629002	Agency:	State	Evaluation Date:	06/29/1988
Eval. #:	19900206003	Agency:	State	Evaluation Date:	02/06/1990
Eval. #:	19900307004	Agency:	State	Evaluation Date:	03/07/1990
Eval. #:	19951128	Agency:	State	Evaluation Date:	11/28/1995

VIOLATIONS

Viol. #:	DCD981041494S0001	Violation Type:	Generator - Any Requirements	Actual Resolution Date:	07/12/1988
Viol. #:	DCD981041494S0002	Violation Type:	Generator - Any Requirements	Actual Resolution Date:	03/07/1990

ENFORCEMENTS

Enf. #:	19880712001	Agency: State	Type: Verbal Informal	Date:	07/12/1988
Enf. #:	19900220002	Agency: State	Type: Written Informal	Date:	02/20/1990

RAATS (RCRA Administrative Action Tracking System) Data

No RAATS Information Reported for this Site

RCRA Corrective Action Data (CORRACTS) Instrument and Event Data

No Corrective Action Instrument Information for this Site

RCRA Wastes and Waste Code Information previously reported by EcoSearch have been removed from the RCRIS database by the USEPA.

RCRA TSD and Generators Data

Facility and Compliance Information

Map ID#: **27A** Distance (mi): **0.630015** Direction: **ESE**
EPA ID#: **DCD983970708**
Status: **Conditionally Exempt Small Quantity Generator**

Name: **MINNESOTA AVENUE EXXON**
Address: **4100 HUNT PL NE**
City, State, Zip: **WASHINGTON** **DC** **20019**

Land Type: **Private Land**

SIC Code:
Contact Name: **MARK AKEOMI**
Contact Phone: **202-398-3125**

RCRA Evaluation / Violation / Enforcement Data

EVALUATIONS

Eval. #: **19940404** Agency: **State** Evaluation Date: **04/04/1994**
Eval. #: **19941129001** Agency: **State** Evaluation Date: **11/29/1994**

VIOLATIONS

Viol. #: **DCD983970708S0001** Violation Type: **Generator - Any Requirements** Actual Resolution Date: **03/07/1995**

ENFORCEMENTS

Enf. #: **19940404** Agency: **State** Type: **Written Informal** Date: **04/04/1994**

RAATS (RCRA Administrative Action Tracking System) Data

No RAATS Information Reported for this Site

RCRA Corrective Action Data (CORRACTS) Instrument and Event Data

No Corrective Action Instrument Information for this Site

Map ID#: **30** Distance (mi): **0.652030** Direction: **ESE**
EPA ID#: **DCD981935760**
Status: **RCRA Notifier (Former RCRA Site)**

Name: **CENTER 18 DENTAL CLINIC**
Address: **4130 HUNT PL NE**
City, State, Zip: **WASHINGTON** **DC** **20019**

Land Type: **Unknown**

SIC Code:
Contact Name: **ROBERT_D QUARANTA**
Contact Phone: **202-727-5122**

RCRA Evaluation / Violation / Enforcement Data

No Compliance Information Reported

RAATS (RCRA Administrative Action Tracking System) Data

No RAATS Information Reported for this Site

RCRA Corrective Action Data (CORRACTS) Instrument and Event Data

No Corrective Action Instrument Information for this Site

Map ID#: **34B** Distance (mi): **0.707337** Direction: **E**
EPA ID#: **DC0000082198**
Status: **RCRA Notifier (Former RCRA Site)**

Name: **RICKS AUTO CLINIC**
Address: **4200 BURROUGHS AVE NE**
City, State, Zip: **WASHINGTON** **DC** **20019**

Land Type: **Private Land**

SIC Code: **7538**
Contact Name: **RICARDO DAVIS**
Contact Phone: **202-388-9374**

RCRA Evaluation / Violation / Enforcement Data

EVALUATIONS

Eval. #: **19950622** Agency: **State** Evaluation Date: **06/22/1995**
Eval. #: **19980123** Agency: **State** Evaluation Date: **01/23/1998**

RCRA Wastes and Waste Code Information previously reported by EcoSearch have been removed from the RCRIS database by the USEPA.

RCRA TSD and Generators Data

Facility and Compliance Information

RAATS (RCRA Administrative Action Tracking System) Data

No RAATS Information Reported for this Site

RCRA Corrective Action Data (CORRACTS) Instrument and Event Data

No Corrective Action Instrument Information for this Site

Map ID#: 38A
Distance (mi): 0.711079
Direction: SSE
EPA ID#: DC0000144196
Status: Conditionally Exempt Small Quantity Generator
Land Type: Private Land

Name: SUPERTRAK #624
Address: 3925 MINNESOTA AVE NE
City, State, Zip: WASHINGTON DC 20019
SIC Code:
Contact Name: PAUL PLUMMER
Contact Phone: 202-397-7100

RCRA Evaluation / Violation / Enforcement Data

EVALUATIONS

Eval. #:	19950512001	Agency:	State	Evaluation Date:	05/12/1995
Eval. #:	19971218	Agency:	State	Evaluation Date:	12/18/1997

RAATS (RCRA Administrative Action Tracking System) Data

No RAATS Information Reported for this Site

RCRA Corrective Action Data (CORRACTS) Instrument and Event Data

No Corrective Action Instrument Information for this Site

Map ID#: 40B
Distance (mi): 0.723120
Direction: E
EPA ID#: DCD983970849
Status: RCRA Notifier (Former RCRA Site)
Land Type: Unknown

Name: METRO AMOCO
Address: 4251 MINNESOTA AVE NE
City, State, Zip: WASHINGTON DC 20019
SIC Code:
Contact Name: WILLIE POPE
Contact Phone: 202-397-8094

RCRA Evaluation / Violation / Enforcement Data

EVALUATIONS

Eval. #:	19940404001	Agency:	State	Evaluation Date:	04/04/1994
Eval. #:	19941215001	Agency:	State	Evaluation Date:	12/15/1994

VIOLATIONS

Viol. #:	DCD983970849S0001	Violation Type:	Generator - Any Requirements	Actual Resolution Date:	03/06/1995

ENFORCEMENTS

Enf. #:	19940404001	Agency: State	Type: Written Informal	Date:	04/04/1994

RAATS (RCRA Administrative Action Tracking System) Data

No RAATS Information Reported for this Site

RCRA Corrective Action Data (CORRACTS) Instrument and Event Data

No Corrective Action Instrument Information for this Site

RCRA Wastes and Waste Code Information previously reported by EcoSearch have been removed from the RCRIS database by the USEPA.

RCRA TSD and Generators Data

Facility and Compliance Information

Map ID#: 46 Distance (mi): 0.779464 Direction: E
EPA ID#: DCD064852320
Status: Conditionally Exempt Small Quantity Generator

Name: DEANE AVENUE CLEANERS
Address: 4309 NANNIE HELEN BOURROUGHS
City, State, Zip: WASHINGTON DC 20019

Land Type: Private Land

SIC Code: 7216
Contact Name: MICHEL KARYO
Contact Phone: 202-396-8300

RCRA Evaluation / Violation / Enforcement Data

EVALUATIONS

Eval. #:	19870520001	Agency:	State	Evaluation Date:	05/20/1987
Eval. #:	19880629002	Agency:	State	Evaluation Date:	06/29/1988
Eval. #:	19920226	Agency:	State	Evaluation Date:	02/26/1992
Eval. #:	19920306	Agency:	State	Evaluation Date:	03/06/1992
Eval. #:	19940404001	Agency:	State	Evaluation Date:	04/04/1994
Eval. #:	19950516	Agency:	State	Evaluation Date:	05/16/1995

VIOLATIONS

Viol. #:	DCD064852320S0001	Violation Type:	Generator - Any Requirements	Actual Resolution Date:	07/12/1988
Viol. #:	DCD064852320S0002	Violation Type:	Generator - Any Requirements	Actual Resolution Date:	07/14/1992
Viol. #:	DCD064852320S0003	Violation Type:	Generator - Any Requirements	Actual Resolution Date:	07/14/1992
Viol. #:	DCD064852320S0004	Violation Type:	Generator - Any Requirements	Actual Resolution Date:	07/14/1992
Viol. #:	DCD064852320S0005	Violation Type:	Generator - Any Requirements	Actual Resolution Date:	07/14/1992
Viol. #:	DCD064852320S0006	Violation Type:	Generator - Any Requirements	Actual Resolution Date:	07/14/1992
Viol. #:	DCD064852320S0007	Violation Type:	Generator - Any Requirements	Actual Resolution Date:	03/27/1992
Viol. #:	DCD064852320S0008	Violation Type:	Generator - Any Requirements	Actual Resolution Date:	06/20/1995
Viol. #:	DCD064852320S0009	Violation Type:	Generator - Any Requirements	Actual Resolution Date:	06/20/1995
Viol. #:	DCD064852320S0010	Violation Type:	Generator - Any Requirements	Actual Resolution Date:	06/20/1995
Viol. #:	DCD064852320S0011	Violation Type:	Generator - Any Requirements	Actual Resolution Date:	06/20/1995
Viol. #:	DCD064852320S0012	Violation Type:	Generator - Any Requirements	Actual Resolution Date:	06/20/1995
Viol. #:	DCD064852320S0013	Violation Type:	Generator - Any Requirements	Actual Resolution Date:	06/05/1995

ENFORCEMENTS

Enf. #:	19880712001	Agency: State	Type: Verbal Informal	Date:	07/12/1988
Enf. #:	19920226001	Agency: State	Type: Written Informal	Date:	02/26/1992
Enf. #:	19920306	Agency: State	Type: Written Informal	Date:	03/06/1992
Enf. #:	19940404001	Agency: State	Type: Written Informal	Date:	04/04/1994
Enf. #:	19950522	Agency: State	Type: Written Informal	Date:	05/22/1995

RAATS (RCRA Administrative Action Tracking System) Data

No RAATS Information Reported for this Site

RCRA Corrective Action Data (CORRACTS) Instrument and Event Data

No Corrective Action Instrument Information for this Site

Map ID#: 51 Distance (mi): 0.788793 Direction: ENE
EPA ID#: DCR000000232
Status: Conditionally Exempt Small Quantity Generator

Name: NATIONAL CAPITAL PARKS E
Address: 1400 ANACOSTIA DR NE
City, State, Zip: WASHINGTON DC 20019

Land Type: Federal Land

SIC Code: 7033
Contact Name: JAMES REILY
Contact Phone: 202-426-5990

RCRA Evaluation / Violation / Enforcement Data

EVALUATIONS

Eval. #:	19960625	Agency:	State	Evaluation Date:	06/25/1996
Eval. #:	19970303	Agency:	EPA Personnel	Evaluation Date:	03/03/1997

RAATS (RCRA Administrative Action Tracking System) Data

RCRA Wastes and Waste Code Information previously reported by EcoSearch have been removed from the RCRIS database by the USEPA.

RCRA TSD and Generators Data

Facility and Compliance Information

No RAATS Information Reported for this Site

RCRA Corrective Action Data (CORRACTS) Instrument and Event Data

No Corrective Action Instrument Information for this Site

Map ID#: **52D** Distance (mi): 0.789056 Direction: SSE

Name: IKE SVC CTR
Address: 3820 MINNESOTA AVE NE
City, State, Zip: WASHINGTON DC 20019

EPA ID#: DCR000000273
Status: RCRA Notifier (Former RCRA Site)

SIC Code:
Contact Name: ISHIAH WILSON
Contact Phone: 202-398-8557

Land Type: Private Land

RCRA Evaluation / Violation / Enforcement Data

EVALUATIONS

Eval. #: 19950622 Agency: State Evaluation Date: 06/22/1995

RAATS (RCRA Administrative Action Tracking System) Data

No RAATS Information Reported for this Site

RCRA Corrective Action Data (CORRACTS) Instrument and Event Data

No Corrective Action Instrument Information for this Site

Map ID#: **64B** Distance (mi): 0.902994 Direction: E

Name: LEE'S FOREIGN AUTO PARTS
Address: 1215 KENILWORTH AVE NE
City, State, Zip: WASHINGTON DC 20019

EPA ID#: DCD983970328
Status: RCRA Notifier (Former RCRA Site)

SIC Code:
Contact Name: NEAL V LEE
Contact Phone: 202-398-7194

Land Type: Private Land

RCRA Evaluation / Violation / Enforcement Data

EVALUATIONS

Eval. #: 19940404001 Agency: State Evaluation Date: 04/04/1994

VIOLATIONS

Viol. #: DCD983970328S0001 Violation Type: Generator - Any Requirements Actual Resolution Date: 05/01/1996

ENFORCEMENTS

Enf. #: 19940404001 Agency: State Type: Written Informal Date: 04/04/1994

RAATS (RCRA Administrative Action Tracking System) Data

No RAATS Information Reported for this Site

RCRA Corrective Action Data (CORRACTS) Instrument and Event Data

No Corrective Action Instrument Information for this Site

RCRA Wastes and Waste Code Information previously reported by EcoSearch have been removed from the RCRIS database by the USEPA.

RCRA TSD and Generators Data

Facility and Compliance Information

Map ID#: **79C** Distance (mi): **0.948864** Direction: **ENE**
EPA ID#: **DCD983970161**
Status: **RCRA Notifier (Former RCRA Site)**

Name: **1912 AUTO**
Address: **1329 KENILWORTH AVE NE**
City, State, Zip: **WASHINGTON** **DC** **20019**

Land Type: **Unknown**

SIC Code: **7538**
Contact Name: **JAMES CALEB**
Contact Phone: **202-388-5661**

RCRA Evaluation / Violation / Enforcement Data

EVALUATIONS

Eval. #: **19940404001** Agency: **State** Evaluation Date: **04/04/1994**
Eval. #: **19960125** Agency: **State** Evaluation Date: **01/25/1996**

VIOLATIONS

Viol. #: **DCD983970161S0001** Violation Type: **Generator - Any Requirements** Actual Resolution Date: **01/25/1996**

ENFORCEMENTS

Enf. #: **19940404001** Agency: **State** Type: **Written Informal** Date: **04/04/1994**

RAATS (RCRA Administrative Action Tracking System) Data

No RAATS Information Reported for this Site

RCRA Corrective Action Data (CORRACTS) Instrument and Event Data

No Corrective Action Instrument Information for this Site

Map ID#: **79D** Distance (mi): **0.948864** Direction: **ENE**
EPA ID#: **DCD983970237**
Status: **RCRA Notifier (Former RCRA Site)**

Name: **S & T AUTO SVC**
Address: **1329 F KENNILWORTH AVE NE**
City, State, Zip: **WASHINGTON** **DC** **20019**

Land Type: **Unknown**

SIC Code: **7538**
Contact Name: **TREVOR SUBANEY SR**
Contact Phone: **202-399-1090**

RCRA Evaluation / Violation / Enforcement Data

EVALUATIONS

Eval. #: **19940404** Agency: **State** Evaluation Date: **04/04/1994**
Eval. #: **19960125** Agency: **State** Evaluation Date: **01/25/1996**

VIOLATIONS

Viol. #: **DCD983970237S0001** Violation Type: **Generator - Any Requirements** Actual Resolution Date: **01/25/1996**

ENFORCEMENTS

Enf. #: **19940404** Agency: **State** Type: **Written Informal** Date: **04/04/1994**

RAATS (RCRA Administrative Action Tracking System) Data

No RAATS Information Reported for this Site

RCRA Corrective Action Data (CORRACTS) Instrument and Event Data

No Corrective Action Instrument Information for this Site

Map ID#: **79E** Distance (mi): **0.948864** Direction: **ENE**
EPA ID#: **DCD981107220**
Status: **RCRA Notifier (Former RCRA Site)**

Name: **HAGLER & SONS WASTE REMOVAL INC**
Address: **1329 KENILWORTH AVE**
City, State, Zip: **WASHINGTON** **DC** **20019**

Land Type: **Unknown**

SIC Code:
Contact Name: **AMYE BROWN**
Contact Phone: **202-399-7272**

RCRA Wastes and Waste Code Information previously reported by EcoSearch have been removed from the RCRIS database by the USEPA.

RCRA TSD and Generators Data

Facility and Compliance Information

RCRA Evaluation / Violation / Enforcement Data

No Compliance Information Reported

RAATS (RCRA Administrative Action Tracking System) Data

No RAATS Information Reported for this Site

RCRA Corrective Action Data (CORRACTS) Instrument and Event Data

No Corrective Action Instrument Information for this Site

Map ID#: 80X
Distance (mi): 0.950170
Direction: N
EPA ID#: DC7120507432
Status: Small Quantity Generator

Land Type: Unknown

Name: US DA NATIONAL ARBORETUM
Address: 3501 NEW YORK AVE NE
City, State, Zip: WASHINGTON DC 20002

SIC Code:
Contact Name: DAVID PREVAR
Contact Phone: 301-344-3557

RCRA Evaluation / Violation / Enforcement Data

EVALUATIONS

Eval. #:	19900116001	Agency:	State	Evaluation Date:	01/16/1990
Eval. #:	19900208002	Agency:	State	Evaluation Date:	02/08/1990
Eval. #:	19970219	Agency:	EPA Personnel	Evaluation Date:	02/19/1997

VIOLATIONS

Viol. #:	DC7120507432E0001	Violation Type:	Generator - Any Requirements		
Viol. #:	DC7120507432E0002	Violation Type:	Generator - Any Requirements		
Viol. #:	DC7120507432S0001	Violation Type:	Generator - Any Requirements	Actual Resolution Date:	02/08/1990
Viol. #:	DC7120507432S0002	Violation Type:	Generator - Any Requirements	Actual Resolution Date:	02/08/1990
Viol. #:	DC7120507432S0003	Violation Type:	Generator - Land Ban Requirement	Actual Resolution Date:	02/08/1990

ENFORCEMENTS

Enf. #:	19900125001	Agency: State	Type: Written Informal	Date:	01/25/1990

RAATS (RCRA Administrative Action Tracking System) Data

No RAATS Information Reported for this Site

RCRA Corrective Action Data (CORRACTS) Instrument and Event Data

No Corrective Action Instrument Information for this Site

RCRA Wastes and Waste Code Information previously reported by EcoSearch have been removed from the RCRIS database by the USEPA.

ERNS Data

Emergency Response Notification System Data

Map ID#: **1B** Distance (mi): **0.241395**
Direction: **SE**
ID #: **319881** Location: **NAVAL THOMAS SCHOOL**
City, State, Zip: **WASHINGTON, DC**

Time Released: **3/25/93 11:00** Deaths: **0** Injuries: **0** Evacuations: **0** Property Damage: **0.00**

Medium Affected: **Air**
Name of Affected Medium: **NONE**

Cause of Release: **Unknown**
Additional Cause: **Not Reported**

Source: **Not Reported**
Transportation Mode: **Unknown (EPA Regions)**

Discharger Information (if reported):
NAVAL THOMAS SCHOOL
650 ANACOSTIC AVE.
WASHINGTON DC

Release Description: **ODOR OF CHEMICAL IN THE AIR AT THE SCHOOL CALLER STATES THAT THERE IS ROOF WORK BEING DONE AT THIS TIME**

Action Description: **NONE**

Misc. Information: **CALLER STATES SCHOOL IS STILL IN SESSION - ALSO CALLER BELIEVES SEVERAL STUDENTS AND TEACHERS ARE HOME SICK BECAUSE OF THE ODOR.**

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
UNKNOWN MATERIAL		**UNK**		**UNK**	

Map ID#: **2** Distance (mi): **0.386646**
Direction: **SE**
ID #: **320711** Location: **IN THE VACANT LOT (NEXT TO 624 PARKSIDE PL, NE)**
City, State, Zip: **WASHINGTON, DC 20019**

Time Released: **4/6/93 15:00** Deaths: **0** Injuries: **0** Evacuations: **0** Property Damage: **0.00**

Medium Affected: **Land**
Name of Affected Medium: **NONE**

Cause of Release: **Dumping**
Additional Cause: **Not Reported**

Source: **Not Reported**
Transportation Mode: **Fixed Facility**

Discharger Information (if reported):
T.C.M. CORP.
624 PARKSIDE PL, NE
WASHINGTON DC 20019

Release Description: **CONSTRUCTION EQUIPMENT DUMPED FUEL OUT OF FUEL TANK**

Action Description: **NONE**

Misc. Information:

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
OIL: DIESEL	**30.00**	**GAL**		**UNK**	**210.00**

Map ID#: **7A** Distance (mi): **0.491678**
Direction: **S**
ID #: **160123** Location: **3300 BENNING RD NE # NE**
City, State, Zip: **WASHINGTON, DC 20019**

Time Released: **2/14/90 11:00** Deaths: **0** Injuries: **0** Evacuations: **0** Property Damage: **0.00**

Medium Affected: **Land**
Name of Affected Medium: **CEMENT**

Cause of Release: **Not Reported**
Additional Cause: **Not Reported**

Source: **Not Reported**
Transportation Mode: **Fixed Facility**

Discharger Information (if reported):
POTOMAC ELEC POWER CO
1900 PENNSYLVANIA AVE NW
WASHINGTON DC 20068

ERNS Data

Emergency Response Notification System Data

Release Description: INACTIVE TRANSFORMER / DISCOVERED LEAKAGE DUE TO UNKNOWN REASONS

Action Description: USED SOLVENTS TO CLEAN SPILL.

Misc. Information: .99 EQUALS LESS THAN 1/2 PINT.

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
POLYCHLORINATED BIPHENYLS	1.00	OTH		NON	

Map ID#: 7C
Distance (mi): 0.491678
Direction: S
ID #: 101392
Location: PEPCO POWER PLANT BENNING ROAD
City, State, Zip: WASHINGTON, DC

Time Released: 1/30/89 11:30 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Land
Name of Affected Medium: CONCRETE

Discharger Information (if reported):

Cause of Release: Not Reported
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Highway Related

Release Description: SPILL OCCURED AFTER TRANSFER TO STORAGE TANK;OIL SPILLED FROM TRANSFER HOSE ON TRUCK DUE TO BAD SEAL ON THE TRUCK

Action Description: TRUCK DRIVER CONDUCTED CLEAN UP

Misc. Information:

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
NO. 4 OIL	2.00	GAL		NON	15.00

Map ID#: 7G
Distance (mi): 0.491678
Direction: S
ID #: 166751
Location: 3300 BENNING RD NE
City, State, Zip: WASHINGTON, DC 20019

Time Released: 6/1/90 05:00 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Water
Name of Affected Medium: STORM DRAIN

Discharger Information (if reported):
POTOMAC ELEC. POWER CO.
1900 PENNSYLVANIA AVE NW
WASHINGTON DC DC 20068

Cause of Release: Not Reported
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Fixed Facility

Release Description: VALVE ON A LINE TO A BOILER / LEAK

Action Description: RETURNED POOLED MATERIAL TO SYSTEM, WILL APPLY SORBENT TO RESIDUALS

Misc. Information:

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
HYDROCHLORIC ACID CLEANING SOLN	1,000.00	GAL	100.00	GAL	9,900.00

ERNS Data

Emergency Response Notification System Data

Map ID#: **8I** Distance (mi): 0.494523
Direction: SSW

ID #: 161068 Location: 3200 BENNING RD NE # NE
City, State, Zip: WASHINGTON, DC 20019

Time Released: 2/26/90 15:15 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Land
Name of Affected Medium: SOIL

Cause of Release: Not Reported
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Fixed Facility

Discharger Information (if reported):
DC GOVERNMENT - PUB. WKS.
3200 BENNING RD. N.E.
WASHINGTON DC 20019

Release Description: MATERIAL SPILLED FROM OUT OF SERVICE TRANSFORMER WAS DAMAGED BY A PIECE OF SCRAP METAL THAT HIT IT WHEN A WORKER WAS MOVING IT.

Action Description: CALLER NEEDS ASSISTANCE WITH CLEANUP AND DESIRES CALL FROM EPA III. SOME CONTAINMENT WITH SORBENTS ACCOMPLISHED.

Misc. Information: CALLER STATES MATERIAL WILL GET INTO STORM DRAINS > ANACOSTIA RIVER IF IT RAINS. UNIT MAY HAVE AS MUCH AS 250 GALS; STILL SLOWLY LEAKING

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
POLYCHLORINATED BIPHENYLS (PPM U	40.00	GAL		NON	500.00

Map ID#: **10B** Distance (mi): 0.506494
Direction: S

ID #: 204770 Location: 3400 BENNING RD NE
City, State, Zip: WASHINGTON, DC 20019

Time Released: 2/25/91 09:00 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Land
Name of Affected Medium: ASPHALT

Cause of Release: Not Reported
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Fixed Facility

Discharger Information (if reported):
PEPCO
1900 PENNSYLVANIA AVE NW
WASHINGTON DC 20068

Release Description: PCB CAPACITOR / LEAK IN UNIT - UNKNOWN CAUSE

Action Description: WORK CREW WILL CLEAN UP MATERIAL.

Misc. Information:

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
POLYCHLORINATED BIPHENYLS	8.00	LBS		NON	8.00

Map ID#: **10C** Distance (mi): 0.506494
Direction: S

ID #: 189310 Location: 3400 BENNING RD NE
City, State, Zip: WASHINGTON, DC 20019

Time Released: 10/24/9000:00 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Water
Name of Affected Medium: SEWER SYSTEM

Cause of Release: Not Reported
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Fixed Facility

Discharger Information (if reported):
PEPCO
1900 PENNSYLVANIA AVE.
WASHINGTON DC

Release Description: HEAVY RAINS

Action Description: NONE MATERIALD FLUSHED THRU.

Misc. Information: COMPANY TO SEND LETTER WITH MORE INFO.

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
STORM WATER PH 9.1		UNK			

Map ID#: 10D Distance (mi): 0.506494 Direction: S

ID #: 437476 Location: 3400 BENNING RD NE City, State, Zip: WASHINGTON, DC 20019

Time Released: 5/21/95 08:25 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Water
Name of Affected Medium: STORM DRAIN > ANACOSTIA RIVER

Cause of Release: Not Reported
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Fixed Facility

Discharger Information (if reported):
PEPCO
1900 PENNSYLVANIA AVE
WASHINGTON DC 20068

Release Description: 75 KVA TRANSFORMER RUPTURED DUE TO UNKNOWN CAUSES

Action Description: ABSORBENTS USED

Misc. Information:

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
OIL, MISC: TRANSFORMER	20.00	GAL	15.00	GAL	148.00

Map ID#: 10E Distance (mi): 0.506494 Direction: S

ID #: 445408 Location: 3400 BENNING RD NE City, State, Zip: WASHINGTON, DC 20019

Time Released: 6/16/95 10:00 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Land Water
Name of Affected Medium: ANACOSTIA RIVER

Cause of Release: Transportation Accident
Additional Cause: Valve

Source: Power Plant
Transportation Mode: Fixed Facility

Discharger Information (if reported):
PEPCO
1900 PENNSYLVANIA AVE NW
WASHINGTON DC 20068

Release Description: COOLING TOWER COOLING TOWER//BROKEN VALVE

Action Description: MAT'L WENT INTO A DISCHARGE CHANNEL WHICH LED TO THE ANACOSTIA RIVER PCB 4 PPB(PARTS PER BILLION)//SECURING LEAK//WILL RECIRCULATE WATER

Misc. Information: WILL RECIRCULATE WATER THROUGH TREATMENT SYSTEM

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
POLYCHLORINATED BIPHENYLS AND WA	8,000.00	GAL	8,000.00	GAL	100,000.00

ERNS Data

Emergency Response Notification System Data

Map ID#: **13A** Distance (mi): 0.508450
Direction: S

ID #: 173938 Location: BENNING GENERATING STA. 3400 BENNING RD. NE
City, State, Zip: WASHINGTON DC, DC

Time Released: 7/18/90 09:00 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Water
Name of Affected Medium: SUMP > OIL/WATER SEPARATOR

Cause of Release: Not Reported
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Fixed Facility

Discharger Information (if reported):
PEPCO
1900 PENNSYLVANIA AVE NW
WASHINGTON DC 20068

Release Description: DAY TANK / OPERATOR ALLOWED TO TANK TO OVERFILL. OVERFILL WENT INTO A SUMP. SOME MATERIAL ESCAPED FROM THE SUMP TO AN OIL/WATER SEPARATOR.

Action Description: SECURED THE LEAK. PUMPED MATERIAL BACK INTO TANK AND NEUTRALIZED THE RESIDUAL MATERIAL IN THE SUMP.

Misc. Information: OIL/WATER SEPARATOR LEADS TO AN OUTFALL TO THE ANACOSTIA RIVER.

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
SULFURIC ACID (93%)	350.00	GAL		UNK	5,366.00

Map ID#: **13B** Distance (mi): 0.508450
Direction: S

ID #: 444232 Location: BENNING STATION 3400 BENNING RD,NE
City, State, Zip: WASHINGTON, DC

Time Released: 6/2/95 11:00 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Land
Name of Affected Medium:

Cause of Release: Equipment Failure
Additional Cause: Unknown

Source: Not Reported
Transportation Mode: Unknown (EPA Regions)

Discharger Information (if reported):
PEPCO
1900 PENNSYLVANIA AVE NW
WASHINGTON DC 20068

Release Description: HISTORIC SPILL DISCOVERED DURING REFURBISHMENT OF COOLING TOWER

Action Description: SAMPLES CONFIRMED / SOIL TO BE EXCAVATED

Misc. Information: NONE

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
UNKNOWN OIL		UNK		UNK	

Map ID#: **15** Distance (mi): 0.532590
Direction: SSE

ID #: 539177 Location: 3600 BENNING RD NE # NE
City, State, Zip: WASHINGTON, DC 20019

Time Released: 6/11/97 00:10 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Water
Name of Affected Medium: STORM DRAIN > UNK

Cause of Release: Other Cause
Additional Cause:

Source: Not Reported
Transportation Mode: Fixed Facility

Discharger Information (if reported):
3600 BENNING RD, N.E.
WASHINGTON DC

ERNS Data

Emergency Response Notification System Data

Release Description: FIRE AT A BUILDING / CONTAINED 55 GALON DRUMS(10) / DRUMS RUPTURED

Action Description: FIRE IS EXTINGUISHED USING DRY CHEMICALS / FOAM HAS ALSO BEEN APPLIED / STORM DRAIN BOOMED OFF, OIL DRY APPLIED

Misc. Information: THE MATERIAL IN THE DRUMS IS BELIEVED TO BE PAINT THINNER / WILL NOTIFY: BALMS

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
UNKNOWN MATERIAL		UNK		UNK	

Map ID#: 19 Distance (mi): 0.594196 Direction: SSE

ID #: 286504 Location: DUVALL, HAWKWAY, ACCIDENT TOWING City, State, Zip: WASHINGTON, DC

Time Released: 7/27/92 00:00 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Land Water
Name of Affected Medium: ANACOSTIA RIVER

Cause of Release: Operator Error
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Fixed Facility

Discharger Information (if reported):
CONSOLIDATED CAB COMPANY
3341 BENNING ROAD, N.E.
WASHINGTON DC 20019-

Release Description: AUTOMOBILE JUNKYARD CARS ARE DISMANTELED AND EXCESS MATERIALS ALLOWED TO RUN-OFF INTO GROUND.

Action Description: UNKNOWN; DEPT. OF CONSUMER AFFAIRS HAS BEEN INVOLVED.

Misc. Information: PRIVATE HOMES ARE WITHIN 25' OF LOCATION. ACCORDING TO THE STATE, NO WATER CONTAMINATION UNLESS DUE TO EXTREME HEAVY RAIN; AREA IS TWO BLOCKS FROM A CATCH BASIN. THIS APPEARS TO BE A LOCAL BUILDING CODE VIOLATION. AREA IS A STRIP OF JUNKYARDS ALONG MINN.

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
WASTE OIL		UNK		UNK	
GASOLINES:AUTOMOTIVE		UNK		UNK	
ANTI-FREEZE		UNK		UNK	

Map ID#: 29 Distance (mi): 0.638859 Direction: E

ID #: 235072 Location: 1100 42ND ST NE City, State, Zip: WASHINGTON, DC 20019

Time Released: 10/19/91 10:00 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Land
Name of Affected Medium: CONCRETE

Cause of Release: Not Reported
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Fixed Facility

Discharger Information (if reported):
1100 42ST NE
WASHINGTON DC

Release Description: GASKET ON FURNACE PUMP

Action Description: SORBENTS USED TO REMOVE

Misc. Information: WILL NOTIFY ERC

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
OIL: DIESEL		GAL		NON	1.00

ERNS Data

Emergency Response Notification System Data

Map ID#: **31** Distance (mi): **0.671560** Direction: **SE**

ID #: **387579** Location: **FM 2130 CHILLUM RD TO MINNESOTA AND BENNING RDS** City, State, Zip: **WASHINGTON, DC**

Time Released: **7/7/94 08:05** Deaths: **0** Injuries: **0** Evacuations: **0** Property Damage: **0.00**

Medium Affected: **Air**
Name of Affected Medium: **NONE**

Cause of Release: **Equipment Failure**
Additional Cause: **Valve**

Source: **Lines**
Transportation Mode: **Pipeline Related**

Discharger Information (if reported):
WASHINGTON GAS COMPANY
6801 INDUSTRIAL ROAD
SPRINGFIELD VA 22151

Release Description: **CONTROL VALVE AT RECEIVING STATION VALVE FAILED AND CAUSED THE REGULATORS TO RELEASE**

Action Description: **THE VALVE WAS BY-PASSED AND REPAIRED**

Misc. Information: **THE EVACUEES WERE ALL GENERAL PUBLIC / THE RELEASE WAS SECURED AT 2220/THE AREA AFFECTED WAS APPROX 10 SQ MILES /**

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
NATURAL GAS		**UNK**		**UNK**	

Map ID#: **37C** Distance (mi): **0.710217** Direction: **WSW**

ID #: **319879** Location: **2600 BENNING RD NE** City, State, Zip: **WASHINGTON, DC 20002**

Time Released: **3/24/93 05:00** Deaths: **0** Injuries: **0** Evacuations: **0** Property Damage: **0.00**

Medium Affected: **Land**
Name of Affected Medium: **NONE**

Cause of Release: **Transportation Accident**
Additional Cause: **Not Reported**

Source: **Not Reported**
Transportation Mode: **Fixed Facility**

Discharger Information (if reported):
UNKNOWN
UNKNWON
UNKNOWN

Release Description: **REGULATOR RESERVIOR FOR POLE-MOUNTED TRANSFORMER RESERVOIR FELL TO GROUND AND LEAKED WHEN POLE WAS STRUCK BY AN AUTO**

Action Description: **PEPCO IS CLEANING UP SPILL.**

Misc. Information: **THERE IS A POSSIBILITY THAT MATERIAL MAY REACH THE ANACOSTA RIVER/NO MATERIAL HAS BEEN NOTICED ON RIVER AT THIS TIME BY PEPCO.**

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
OIL, MISC: TRANSFORMER	**69.00**	**GAL**		**UNK**	**511.00**

Map ID#: **42A** Distance (mi): **0.733541** Direction: **ESE**

ID #: **265135** Location: **4214 HUNT PL NE** City, State, Zip: **WASHINGTON, DC 20019**

Time Released: **2/21/92 00:00** Deaths: **0** Injuries: **0** Evacuations: **0** Property Damage: **0.00**

Medium Affected: **Water**
Name of Affected Medium: **ANACOSTIA RIVER**

Cause of Release: **Dumping**
Additional Cause: **Not Reported**

Source: **Not Reported**
Transportation Mode: **Fixed Facility**

Discharger Information (if reported):
UNKNOWN
UNKNOWN
UNKNOWN

Release Description: MOTOR BUSES BUSES ARE PARKED OVER STORM DRAINS - OIL IS DRAINED OFF AND DUMPED INTO STORM DRAINS.

Action Description: DC DEPT. OF CONSUMER AFFAIRS WILL CONDUCT AN INSPECTION THE WEEK OF 2-24-92.

Misc. Information: ALSO REFER TO EPA CASE NO DC92045.

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
WASTE OIL		UNK		UNK	
SLUDGE		UNK		UNK	

Map ID#: 54 Distance (mi): 0.812656 Direction: ESE

ID #: 589593 Location: 4300 HUNT PL NE City, State, Zip: WASHINGTON, DC 20019

Time Released: 00:00 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Land Water
Name of Affected Medium: STORM DRAIN AND SOILS

Discharger Information (if reported):
UNNAMED AUTOMOTIVE SHOP

Cause of Release: Dumping
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Fixed Facility

Release Description: POSSIBLY ILLEGAL SHOP SHOP IN DC AREA ILLEGAL DUMPING / STORAGE OF WASTE OIL & ANTIFREEZE

Action Description: DC HAZ MAT UTILIZIING CONTRACTOR TRI-COUNTY ENVIRONMENTAL CO. TO MITIGATE RELEASE TO STORM DRAIN LEADING TO ANACOSTA RIVER

Misc. Information: USCG STATES LOCATION MAY BE IN EPA JURISDICTION BY A MILE OR TWO. INFORMED DO DC HAZ MAT MAY REQUEST EPA ASSISTANCE.

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
OILS, ANTIFREEZE		UNK		UNK	
AUTOMOTIVE WASTE OIL		UNK		UNK	

Map ID#: 58A Distance (mi): 0.843094 Direction: WSW

ID #: 365229 Location: STADIUM ARMORY EXXON City, State, Zip: WASHINGTON, DC

Time Released: 2/7/94 12:00 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Water
Name of Affected Medium: DRAINAGE SEWER

Discharger Information (if reported):
STADIUM ARMORY EXXON
OKLAHOMA AND BENNING RD NE
WASHINGTON DC

Cause of Release: Dumping
Additional Cause: Deliberate

Source: Not Reported
Transportation Mode: Fixed Facility

Release Description: CALLER STATES THERE IS OIL DUMPED INTO A DRAINAGE AREA AND IS RUNNING DOWN THE ALLEY

Action Description: SANITATION DEPT. REP. WILL RESPOND.

Misc. Information: THIS HAS HAPPENED BEFORE AND IS A HAZARD TO THE PEOPLE WALKING DOWN THE STREET

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
UNKNOWN OIL		UNK		UNK	

ERNS Data

Emergency Response Notification System Data

Map ID#: **61** Distance (mi): **0.857271** Direction: **WSW**

ID #: **374212** Location: **CORNER BENNING AVE. & OKLAHOMA AVE.** City, State, Zip: **WASHINGTON, DC 20002**

Time Released: **5/9/94 08:20** Deaths: **0** Injuries: **0** Evacuations: **0** Property Damage: **0.00**

Medium Affected: **Land**
Name of Affected Medium: **NONE**

Cause of Release: **Dumping**
Additional Cause: **Improper Disposal**

Source: **Gasoline Station**
Transportation Mode: **Fixed Facility**

Discharger Information (if reported):
EXXON GAS STATION
CORNER BENNING AVE & OKLAHOMA
WASHINGTON DC 20002

Release Description: **GAS STATION GAS STATION IS DUMPING ANTI-FREEZE ON TO THE STREET**

Action Description: **NONE**

Misc. Information: **CALLER SAID THIS DUMPING HAS BEEN GOING ON FOR OVER A YEAR, FIRE HAS BEEN CALLED BUT COULD NOT TAKEACTION BECAUSE MATERIAL IS NOT FLAM.**

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
ETHYLENE GLYCOL		UNK		UNK	

Map ID#: **70** Distance (mi): **0.916431** Direction: **NW**

ID #: **126544** Location: **HICKEY RUN** City, State, Zip: **WASHINGTON, DC**

Time Released: **9/14/89 00:00** Deaths: **0** Injuries: **0** Evacuations: **0** Property Damage: **0.00**

Medium Affected: **Water**
Name of Affected Medium: **HICKEY RUN**

Cause of Release: **Unknown**
Additional Cause: **Not Reported**

Source: **Not Reported**
Transportation Mode: **Unknown**

Discharger Information (if reported):
UNKNOWN
UNKNOWN
UNKNOWN

Release Description:

Action Description: **USCG TOOK SAMPLES IN SUPPORT OF FUTHER EPA CASE.**

Misc. Information: **USCG IS ASSISTING EPA IN INVESTIGATING OIL SPILL TO HICKEY RUN; SAMPLE S TAKEN FROM HICKEY RUM TO TRY AND ESTABLISH SPILLER.**

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
UNKNOWN OIL		UNK			

Map ID#: **75A** Distance (mi): **0.934517** Direction: **N**

ID #: **436075** Location: **3501 NEW YORK AVE. NE HICKORY RUN** City, State, Zip: **WASHINGTON, DC 20002**

Time Released: **4/18/95 15:00** Deaths: **0** Injuries: **0** Evacuations: **0** Property Damage: **0.00**

Medium Affected:
Name of Affected Medium: **NONE**

Cause of Release: **Not Reported**
Additional Cause:

Source: **Not Reported**
Transportation Mode: **Highway Related**

Discharger Information (if reported):
USDA-NATIONAL ABORETUM
3501 NEW YORK AVE. NE
WASHINGTON DC 20002-

ERNS Data

Emergency Response Notification System Data

Release Description: PRIVATELY OWNED VEHICLE PRIVATELY OWNED VEHICLE COOLING SYTEM LEAKED IN PARKING LOT.

Action Description: ABSORBENTS USED

Misc. Information: FOLLOW-UP LETTER DATED 5/3/95 WAS SENT TO EPA FROM THE NATIONAL ARBORETUM (SEEFILE).

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
ETHYLENE GLYCOL	1.00	GAL		UNK	9.27

Map ID#: **75B** Distance (mi): 0.934517
Direction: N

ID #: 454062 Location: 3501 NEW YORK AVE HICKEY RUN
City, State, Zip: WASHINGTON, DC 21202

Time Released: 8/25/95 11:00 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Air
Name of Affected Medium: HICKEY RUN

Discharger Information (if reported):

Cause of Release: Unknown
Additional Cause: Unknown

Source: Not Reported
Transportation Mode: Fixed Facility

Release Description: UNKNOWN / UNKNOWN SHEEN SIGHTING, SHEEN SIZE: UNKNOWN/GREEN MATERIAL- POSSIBLY ANTIFREEZE

Action Description: AREA WAS ALREADY BOOMED WITH A NATURAL BOOM

Misc. Information: KARL MOMBERGER FROM NATIONAL ARBORETUM REPORTED ALSO. HE UPDATED: NOT OIL BASED PRODUCT--DYE FROM WATER LINE TRACE. MSO BALTIMORE UPDATED.

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
UNKNOWN MATERIAL	1,000.00	GAL	1,000.00	GAL	8,340.00

Map ID#: **80A** Distance (mi): 0.950170
Direction: N

ID #: 179164 Location: NATIONAL ARBORETUM
City, State, Zip: WASHINGTON, DC

Time Released: 7/26/90 11:40 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Water
Name of Affected Medium: HICKEY RUN

Discharger Information (if reported):
WASHINGTON METRO TRANSIT AUTH.
600 FIFTH AVE.
WASHINGTON DC 20001-

Cause of Release: Unknown
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Fixed Facility

Release Description:

Action Description: DISCHARGER PERFORMED CLEANUP. MR. RUBY WILL CONFER WITH OSC ZENONE *

Misc. Information: * ON 7-27-90 IN RE: CLEANUP EFFORTS BY DISCHARGER.

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
WASTE OIL	40.00	GAL			334.00

ERNS Data

Emergency Response Notification System Data

Map ID#: **80B** Distance (mi): 0.950170
Direction: N

ID #: 230394 Location: NATIONAL ARBORETUM
City, State, Zip: WASHINGTON, DC 20001

Time Released: 8/19/91 09:01 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Water
Name of Affected Medium: HICKEY RUN

Cause of Release: Unknown
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Unknown

Discharger Information (if reported):
WASH. METRO TRANSIT (SUSPECT)
600 FIFTH AVE., NW
WASHINGTON DC 20001-

Release Description:

Action Description: CLEANUP CONDUCTED BY WASHINGTON METRO TRANSIT.

Misc. Information:

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
WASTE OIL	100.00	GAL			834.00

Map ID#: **80C** Distance (mi): 0.950170
Direction: N

ID #: 229907 Location: HICKEY RUN/NATIONAL ABORETUM
City, State, Zip: WASHINGTON, DC 20002

Time Released: 8/15/91 09:00 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Water
Name of Affected Medium: HICKEY RUN

Cause of Release: Unknown
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Unknown

Discharger Information (if reported):
UNKNOWN
UNKNOWN
UNKNOWN

Release Description: STORM SEWER

Action Description: WASHINGTON METRO ON-SCENE PUMPING OIL / MAINTAINS BOOM

Misc. Information: AMOUNT SPILL WAS <150 GAL.

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
PETROLEUM PRODUCT	150.00	GAL			1,050.00

Map ID#: **80D** Distance (mi): 0.950170
Direction: N

ID #: 226309 Location: HICKEY RUN CREEK
City, State, Zip: WASHINGTON, DC

Time Released: 7/18/91 09:30 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Water
Name of Affected Medium: HICKEY RUN CREEK

Cause of Release: Unknown
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Unknown

Discharger Information (if reported):
WASH. METRO TRANSIT (SUSPECT)
600 FIFTH AVE., NW
WASHINGTON DC

Release Description:

Action Description: CONTAINED BY WASHINGTON METRO TRANSIT.

Misc. Information:

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
WASTE OIL	40.00	GAL			334.00

Map ID#: **80E** Distance (mi): 0.950170
Direction: N
Location: NATIONAL ARBORETUM
ID #: 191142 City, State, Zip: WASHINGTON, DC

Time Released: 11/23/9009:30 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Water
Name of Affected Medium: HICKEY RUN

Cause of Release: Unknown
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Unknown

Discharger Information (if reported):
WASINGTON METRO TRANSIT (SUS.)
600 FIFTH AVE., NW
WASHINGTON DC

Release Description:

Action Description: CLEANUP COMPLETED BY WASHINGTON METRO TRANSIT.

Misc. Information: SPILL DISCOVRED BY BILL RUBY.

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
WASTE OIL	50.00	GAL			417.00

Map ID#: **80F** Distance (mi): 0.950170
Direction: N
Location: NATIONAL ARBORETUM
ID #: 188004 City, State, Zip: WASHINGTON, DC

Time Released: 11/6/90 10:00 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Water
Name of Affected Medium: HICKEY RUN

Cause of Release: Unknown
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Unknown

Discharger Information (if reported):
WASHINGTON METRO TRANSIT SUS.
600 KFIFTH AVE. NW
WASHINGTON DC

Release Description:

Action Description: DISCHARGER WILL ASSUME CLEANUP RESPONSIBILITY.

Misc. Information:

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
WASTE OIL	50.00	GAL			417.00

ERNS Data

Emergency Response Notification System Data

Map ID#: **80G** Distance (mi): 0.950170
Direction: N

ID #: 187990 Location: NATIONAL ARBORETUM
City, State, Zip: WASHINGTON, DC

Time Released: 10/4/90 10:00 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Water
Name of Affected Medium: HICKY RUN

Cause of Release: Unknown
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Unknown

Discharger Information (if reported):
WASHINGTON METRO TRANSIT
600 5TH AVE. NW
WASHINGTON DC 20001-

Release Description:

Action Description: DISCHARGER COMPLETED CLEANUP 10-5-90.

Misc. Information:

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
WASTE OIL	150.00	GAL			1,250.00

Map ID#: **80H** Distance (mi): 0.950170
Direction: N

ID #: 183934 Location: NATIONAL ARBORETUM
City, State, Zip: WASHINGTON, DC

Time Released: 9/12/90 14:10 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Water
Name of Affected Medium: HICKEY RUN

Cause of Release: Unknown
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Fixed Facility

Discharger Information (if reported):
WASHINGTON METRO TRANSIT
600 FIFTH AVE. NW
WASHINGTON DC 20001-

Release Description:

Action Description: UNKNOWWN

Misc. Information: SPCC INSPECTION DUE ON 9-26-90 WITH OSC, V. ZENONE.

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
WASTE OIL MIXTURE	200.00	GAL			1,668.00

Map ID#: **80I** Distance (mi): 0.950170
Direction: N

ID #: 183932 Location: NATIONAL ARBORETUM
City, State, Zip: WASHINGTON, DC

Time Released: 8/30/90 09:50 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Water
Name of Affected Medium: HICKERY RUN

Cause of Release: Unknown
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Fixed Facility

Discharger Information (if reported):
WASHINGTON METRO TRANSIT
600 FIFTH AVE. NW
WASHINGTON DC 20001-

Release Description:

Action Description: UNKNOWN - B. RUBY WILL INVESTIGATE.

Misc. Information:

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
WASTE OIL	30.00	GAL			250.00

Map ID#: 80J Distance (mi): 0.950170 Direction: N

ID #: 183931 Location: NATION ARBORETUM City, State, Zip: WASHINGTON, DC

Time Released: 8/23/90 13:30 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Water
Name of Affected Medium: HICKEY RUN

Cause of Release: Unknown
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Fixed Facility

Discharger Information (if reported):
WASHINGTON METRO TRANSIT
600 FIFTH AVE. NW
WASHINGTON DC

Release Description:

Action Description: DISCHARGER PERFORMED CLEANUP.

Misc. Information:

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
WASTE OIL	50.00	GAL			417.00

Map ID#: 80K Distance (mi): 0.950170 Direction: N

ID #: 182812 Location: NATIONAL ABORETUM City, State, Zip: WASHINGTON, DC

Time Released: 10/1/90 09:45 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Water
Name of Affected Medium: HICKEY RUN

Cause of Release: Unknown
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Unknown

Discharger Information (if reported):
WASHINGTON METRO TRANSIT AUTH.
600 5TH STREET, NW
WASHINGTON DC 20001-

Release Description:

Action Description: CLEANED UP BY 10-2-90 BY 0930 HRS. (PERMANENT CONTAINMENT BOOM).

Misc. Information:

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
WASTE OIL	200.00	GAL			1,668.00

ERNS Data

Emergency Response Notification System Data

Map ID#: **80L** Distance (mi): 0.950170
Direction: N

ID #: 182731 Location: NATIONAL ABORETUM
City, State, Zip: WASHINGTON, DC

Time Released: 9/27/90 09:50 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Water
Name of Affected Medium: MICKEY RUN

Cause of Release: Unknown
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Unknown

Discharger Information (if reported):
WASH. METRO. TRANSIT AUTH.
600 5TH ST. NW
WASHINGTON DC 20001-

Release Description:

Action Description: CLEANED UP ON 9/28/90 (PERMANENT CONT. AREA)

Misc. Information:

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
WASTE OIL	50.00	GAL			417.00

Map ID#: **80M** Distance (mi): 0.950170
Direction: N

ID #: 181415 Location: NATIONAL ABORETUM - HICKEY RUN
City, State, Zip: WASHINGTON, DC

Time Released: 8/16/90 13:10 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Water
Name of Affected Medium: STORM SEWER

Cause of Release: Unknown
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Unknown

Discharger Information (if reported):
WASHINGTON METRO TRANSIT (SUS)
600 5TH AVE. NW
WASHINGTON DC 20001-

Release Description:

Action Description: WASHINGTON METRO PERFORMED CLEANUP.

Misc. Information:

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
WASTE OIL	150.00	GAL			1,251.00
LUBE OIL	175.00	GAL			1,460.00

Map ID#: **80N** Distance (mi): 0.950170
Direction: N

ID #: 230395 Location: NATIONAL ARBORETUM
City, State, Zip: WASHINGTON, DC 20001

Time Released: 8/26/91 09:30 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Water
Name of Affected Medium: HICKEY RUN

Cause of Release: Unknown
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Unknown

Discharger Information (if reported):
WASH. METRO TRANSIT (SUSPECT)
600 FIFTH AVE., NW
WASHINGTON DC 20001-

Release Description:

Action Description: CLEANUP CONDUCTED BY WASHINGTON METRO TRANSIT ON 8-26-91.

Misc. Information:

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
WASTE OIL	50.00	GAL			417.00

Map ID#: 80O Distance (mi): 0.950170
Direction: N
Location: HICKEY RUN - NATIONAL ABARETUM
ID #: 172394 City, State, Zip: WASHINGTON, DC

Time Released: 6/4/90 10:15 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Water
Name of Affected Medium: HICKEY RUN

Cause of Release: Unknown
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Unknown

Discharger Information (if reported):
WASHINGTON METRO TRANSIT AUTH.
600 FIFTH ST. NW
WASHINGTON DC

Release Description:

Action Description: CREW O/S FRIDAY JUNE 8TH & AGAIN ON MONDAY JUNED 11 AFTER RAIN WASHED OUT *

Misc. Information: * CONTAINMENT BOOMS. DISCOVERED ON A ROUTINE INSPECTION.

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
WASTE OIL	30.00	GAL			250.00

Map ID#: 80P Distance (mi): 0.950170
Direction: N
Location: NATIONAL ARBARETUM
ID #: 169328 City, State, Zip: WASHINGTON, DC

Time Released: 5/17/90 10:25 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Water
Name of Affected Medium: HICKEY RUN

Cause of Release: Unknown
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Unknown

Discharger Information (if reported):
UNKNOWN
UNKNOWN
UNKNOWN

Release Description:

Action Description: WASHINGTON METRO TRANSIT PERFORMED CLEANUP.

Misc. Information:

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
WASTE OIL	30.00	GAL			250.00

ERNS Data

Emergency Response Notification System Data

Map ID#: **80Q** Distance (mi): 0.950170
Direction: N

ID #: 166056 Location: NATIONAL ARBORETUM
City, State, Zip: WASHINGTON, DC

Time Released: 5/4/90 09:40 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Water
Name of Affected Medium: HICKEY RUN

Cause of Release: Unknown
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Fixed Facility

Discharger Information (if reported):
WASHINGTON METRO TRANS.
600 FIFTH AVE. NW
WASHINGTON DC 20001-

Release Description:

Action Description: DISCHARGER PERFORMED CLEANUP.

Misc. Information:

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
WASTE OIL	30.00	GAL			250.00

Map ID#: **80R** Distance (mi): 0.950170
Direction: N

ID #: 164623 Location: NATIONAL ABARETUM
City, State, Zip: WASHINGTON, DC

Time Released: 4/23/90 10:00 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Water
Name of Affected Medium: HICKEY RUN

Cause of Release: Unknown
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Fixed Facility

Discharger Information (if reported):
WASHINGTON METRO TRANS.
600 FIFTH AVE. NW
WASHINGTON DC 20001-

Release Description:

Action Description: DISCHARGER COMPLETED CLEANUP 4/24/90 @ 0900.

Misc. Information:

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
WASTE OIL	60.00	GAL			500.00

Map ID#: **80S** Distance (mi): 0.950170
Direction: N

ID #: 163444 Location: NATIONAL ARBORETUM
City, State, Zip: WASHINGTON, DC 00000

Time Released: 2/28/90 13:40 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Water
Name of Affected Medium: HICKEY RUN

Cause of Release: Unknown
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Fixed Facility

Discharger Information (if reported):
WASHINGTON METRO TRANS.
600 FIFTH ST. NW
WASHINGTON DC 20001-

Release Description:

Action Description: CLEAN-UP CONDUCTED BY DISCHARGER-COMPLETED 3-2-90.

Misc. Information:

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
SOLVENTS		UNK			

Map ID#: 80T Distance (mi): 0.950170 Direction: N

ID #: 261339 Location: NATIONAL ARBORETUM/HICKEY RUN City, State, Zip: WASHINGTON, DC

Time Released: 2/20/92 14:30 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Water
Name of Affected Medium: HICKEY RUN

Cause of Release: Unknown
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Unknown (EPA Regions)

Discharger Information (if reported):
WASHINGTON METRO TRANSIT SUSP.
600 FIFTH AVE., NW
WASHINGTON DC

Release Description:

Action Description: CLEANUP COMPLETED 2-21-92 BY WASHINGTON METRO TRANSIT.

Misc. Information:

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
WASTE OIL	50.00	GAL		UNK	417.00

Map ID#: 80U Distance (mi): 0.950170 Direction: N

ID #: 261337 Location: NATIONAL ARBORETUM/HICKEY RUN City, State, Zip: WASHINGTON, DC 20001

Time Released: 3/2/92 09:30 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Water
Name of Affected Medium: HICKEY RUN

Cause of Release: Unknown
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Unknown (EPA Regions)

Discharger Information (if reported):
WASHINGTON METRO TRANSIT
600 FIFTH AVE., NW
WASHINGTON DC

Release Description:

Action Description: CLEANUP COMPLETED 3-3-92 BY WASHINGTON METRO TRANSIT.

Misc. Information:

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
WASTE OIL	40.00	GAL		UNK	334.00

ERNS Data

Emergency Response Notification System Data

Map ID#: **80V** Distance (mi): 0.950170
Direction: N

ID #: 261336 Location: NATIONAL ARBORETUM/HICKEY RUN
City, State, Zip: WASHINGTON, DC

Time Released: 3/16/92 08:45 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Water
Name of Affected Medium: HICKEY RUN

Cause of Release: Unknown
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Unknown (EPA Regions)

Discharger Information (if reported):
WASHINGTON METRO TRANSIT SUSP.
600 FIFTH AVE., NW
WASHINGTON DC

Release Description:

Action Description: CLEANUP IN PROGRESS BY WASHINGTON METRO TRANSIT.

Misc. Information:

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
WASTE OIL	20.00	GAL		UNK	167.00

Map ID#: **80W** Distance (mi): 0.950170
Direction: N

ID #: 163448 Location: NATIONAL ARBORETUM
City, State, Zip: 3501 NEW YORK AVE NE, DC

Time Released: 3/5/90 09:55 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Water
Name of Affected Medium: HICKEY RUN

Cause of Release: Unknown
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Fixed Facility

Discharger Information (if reported):
WASHINGTON METRO TRANS.
600 FIFTH AVE. NW
WASHINGTON DC 20001-

Release Description:

Action Description: DISCHARGER TO CONDUCT CLEANUP. MATERIAL IS IN CONTAINMENT AREA.

Misc. Information: PRESENCE OF LARGE RATS NOTED.

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
DIESEL FUEL	200.00	GAL			2,360.00

Map ID#: **80AJ** Distance (mi): 0.950170
Direction: N

ID #: 230396 Location: NATIONAL ARBORETUM
City, State, Zip: WASHINGTON, DC 20001

Time Released: 8/14/91 13:35 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Water
Name of Affected Medium: HICKEY RUN

Cause of Release: Unknown
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Unknown

Discharger Information (if reported):
WASH. METRO TRANSIT (SUSPECT)
600 FIFTH AVE., NW
WASHINGTON DC 20001-

Release Description:

Action Description: CLEANUP COMPLETED BY WASHINGTON METRO TRANSIT.

Misc. Information:

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
WASTE OIL	125.00	GAL			1,043.00

Map ID#: 80AK Distance (mi): 0.950170
Direction: N

ID #: 179167 Location: USDA - NATIONAL ARBARETUM
City, State, Zip: WASHINGTON, DC 20002

Time Released: 8/14/90 09:30 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Land
Name of Affected Medium: NONE

Cause of Release: Equipment Failure
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Not Reported

Discharger Information (if reported):
USDA - NATIONAL ARBARETUM
3501 NEW YORK AVE, NE
WASHINGTON DC 20002-

Release Description: LEAK IN UST LINE

Action Description: ELECTRICITY TURNED OFF. AREA ISOLATED. DISCHARGER WAITING FOR CONTACT FROM*

Misc. Information: * DC ENVIRONMENTAL CONTROL HAS THE AUTHORITY FOR DC UST SPILLS.

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
DIESEL FUEL	300.00	GAL			2,499.00

Map ID#: 80AL Distance (mi): 0.950170
Direction: N

ID #: 163447 Location: NATIONAL ARBORETUM
City, State, Zip: WASHINGTON, DC

Time Released: 2/7/90 09:50 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Water
Name of Affected Medium: HICKEY RUN

Cause of Release: Unknown
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Fixed Facility

Discharger Information (if reported):
WASHINGTON METRO TRANS.
600 FIFTH NW
WASHINGTON DC 20001-

Release Description:

Action Description: CLEANUP CONDUCTED BY DISCHARGER.

Misc. Information:

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
WASTE OIL	100.00	GAL			834.00

Map ID#: **80AM** Distance (mi): 0.950170
Direction: N
Location: NATIONAL ARBORETUM
ID #: 236295 City, State, Zip: WASHINGTON, DC

Time Released: 10/24/9113:00 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Water
Name of Affected Medium: HICKEY RUN

Discharger Information (if reported):
WASHINGTON METRO TRANSIT (SUS)
600 FIFTH AVE., NW
WASHINGTON DC

Cause of Release: Unknown
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Unknown

Release Description:

Action Description: WASHINGTON METRO WILL CONDUCT CLEANUP - 10-24-91 IN THE P.M.

Misc. Information:

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
WASTE OIL	70.00	GAL			584.00

Map ID#: **80AN** Distance (mi): 0.950170
Direction: N
Location: NATIONAL ARBORETUM
ID #: 235558 City, State, Zip: WASHINGTON, DC

Time Released: 10/4/91 09:15 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Water
Name of Affected Medium: HICKEY RUN

Discharger Information (if reported):
WASHINGTON METRO TRANSIT(SUSP)
600 FIFTH AVE. NW
WASHINGTON DC

Cause of Release: Unknown
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Unknown

Release Description:

Action Description: WASHINGTON METRO COMPLETED CLEANUP BY 10-7-91.

Misc. Information:

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
WASTE OIL	50.00	GAL			417.00

Map ID#: **80AO** Distance (mi): 0.950170
Direction: N
Location: NATIONAL ARBORETUM
ID #: 235557 City, State, Zip: WASHINGTON, DC

Time Released: 10/10/9109:45 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Water
Name of Affected Medium: HICKEY RUN

Discharger Information (if reported):
WASHINGTON METRO TRANSIT(SUSP)
600 FIFTH AVE., NW
WASHINGTON DC

Cause of Release: Unknown
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Unknown

Release Description:

Action Description: CLEANUP BY WASHINGTON METRO COMPLETED 10-11-91 AT 1250 HRS.

Misc. Information:

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
WASTE OIL	100.00	GAL			834.00

Map ID#: 80AP
Distance (mi): 0.950170
Direction: N
Location: NATIONAL ARBORETUM
City, State, Zip: WASHINGTON, DC
ID #: 232527

Time Released: 5/31/91 10:30 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Water
Name of Affected Medium: HICKEY RUN

Cause of Release: Unknown
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Unknown

Discharger Information (if reported):
WASHINGTON METRO TRANSIT SUSP.
600 FIFTH AVE., NW
WASHINGTON DC

Release Description:

Action Description: CLEANUP BY WASHNGTON METRO IN PROGRESS.

Misc. Information:

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
WASTE OIL	40.00	GAL			334.00

Map ID#: 80AQ
Distance (mi): 0.950170
Direction: N
Location: NATIONAL ARBORETUM
City, State, Zip: WASHINGTON, DC
ID #: 232525

Time Released: 5/2/91 10:30 Deaths: 0 Injuries: 0 Evacuations: 0 Property Damage: 0.00

Medium Affected: Water
Name of Affected Medium: HICKEY RUN

Cause of Release: Unknown
Additional Cause: Not Reported

Source: Not Reported
Transportation Mode: Unknown

Discharger Information (if reported):
WASHINGTON METRO TRANSIT SUSP.
600 FIFTH AVE., NW
WASHINGTON DC

Release Description:

Action Description: WASHINGTON METRO COMPLETED CLEANUP.

Misc. Information:

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
WASTE OIL	30.00	GAL			250.00

ERNS Data

Emergency Response Notification System Data

Map ID#: **80AR** Distance (mi): **0.950170** Direction: **N**

ID #: **232526** Location: **NATIONAL ARBORETUM** City, State, Zip: **WASHINGTON, DC**

Time Released: **4/27/91 09:30** Deaths: **0** Injuries: **0** Evacuations: **0** Property Damage: **0.00**

Medium Affected: **Water**
Name of Affected Medium: **HICKEY RUN**

Cause of Release: **Unknown**
Additional Cause: **Not Reported**

Source: **Not Reported**
Transportation Mode: **Unknown**

Discharger Information (if reported):
WASHINGTON METRO TRANSIT SUSP.
600 FIFTH AVE., NW
WASHINGTON DC

Release Description:

Action Description: **WASHINGTON METRO COMPLETED CLEANUP.**

Misc. Information:

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
WASTE OIL	30.00	GAL			250.00

Map ID#: **88** Distance (mi): **0.991433** Direction: **ESE**

ID #: **187690** Location: **4515 GAULT PL NE** City, State, Zip: **WASHINGTON, DC 20019**

Time Released: **12/3/90 10:02** Deaths: **0** Injuries: **0** Evacuations: **0** Property Damage: **0.00**

Medium Affected: **Land**
Name of Affected Medium: **SOIL**

Cause of Release: **Not Reported**
Additional Cause: **Not Reported**

Source: **Not Reported**
Transportation Mode: **Fixed Facility**

Discharger Information (if reported):
4515 GAULT PLACE NE
WASHINGTON DC 20019

Release Description: **STORAGE TANK/ SWEATING**

Action Description: **PLACED SORBENT UNDER THE TANK. INFORMED THE CUSTOMER THAT THEY NEEDED A NEW TANK.**

Misc. Information:

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
OIL, FUEL: NO. 2		UNK		NON	

Map ID#: **89** Distance (mi): **0.992555** Direction: **ESE**

ID #: **298514** Location: **4517 GAULT PL NE** City, State, Zip: **WASHINGTON, DC 20019**

Time Released: **12/31/9215:00** Deaths: **0** Injuries: **0** Evacuations: **0** Property Damage: **0.00**

Medium Affected: **Land**
Name of Affected Medium: **NONE**

Cause of Release: **Equipment Failure**
Additional Cause: **Tank or Container**

Source: **Not Reported**
Transportation Mode: **Not Reported**

Discharger Information (if reported):
A.P. WOODSON
8101 PARSTON DR.
FORESTVILLE MD 20747

ERNS Data

Emergency Response Notification System Data

Release Description: HOME HEATING OIL TANK RUSTED TANK LEAKED

Action Description: TECHNICIANS ON-SCENE TO REMOVE CONTAMINANT.

Misc. Information: FUEL FOUND UNDER TANK. OTHER = PINTS

Material(s) Spilled:	Quantity	Units	Quan in Water	Units in Water	Pounds
OIL, FUEL: NO. 2	2.00	OTH		OTH	

PADS Data

PCB Activity Database Data

Map ID#:	7B	Distance (mi):	0.491678		
		Direction:	S	Name:	POTOMAC ELEC PWR CO BENNING
				Address:	3300 BENNING RD N E
EPA ID:	DCD000819516			City, State, Zip:	WASHINGTON, DC 20019-
				EPA Region:	3
Facility Ownership:	Not a Federal Facility				
Generator:	No		Transport Facility:	Active	
Storage Facility:	No		Disposal Facility:	No	

DOCKET Data

Civil Enforcement Docket

Map ID#: **8F** Distance (mi): 0.494523
Direction: SSW
Date Filed: 11/17/97
Docket Number: **03-98-0101A** Case Name: **NATIONAL PARK SERVICE** Date Concluded:
Federal Penalty Assessed: **$300**
Cost Recovery Charged: Case Result:

Law Reported Violated	Section	Violation Type	Pollutant Type
Resource Conservation and Recovery Act	9006		

Subject Facilities / EPA ID# / Address / City, State, and Zip
DC0002323764 / NATL PARK SVC / 3200 BENNING RD., NE / WASHINGTON, DC 20019

Subject Defendant(s)
NATIONAL PARK SERVICE

Map ID#: **8G** Distance (mi): 0.494523
Direction: SSW
Date Filed: 10/31/84
Docket Number: **03-84-0010C** Case Name: **DIST. OF COLUMBIA (SOL.WSTE.RE** Date Concluded: **01/08/85**
Federal Penalty Assessed: **$150,000**
Cost Recovery Charged: Case Result:

Law Reported Violated	Section	Violation Type	Pollutant Type
Clean Air Act	110	**State implementation plan**	**Particulate matter**

Subject Facilities / EPA ID# / Address / City, State, and Zip
DCD000765818 / SOLID WASTE REDUCTION CENTER # / 3200 BENNING RD NE / WASHINGTON, DC 20019

Subject Defendant(s)
DISTRICT OF COLUMBIA

Map ID#: **40D** Distance (mi): 0.723120
Direction: E
Date Filed: 03/06/91
Docket Number: **03-91-0074A** Case Name: **AMOCO OIL CO. (#0234)** Date Concluded: **07/25/91**
Federal Penalty Assessed: **$8,236**
Cost Recovery Charged: Case Result:

Law Reported Violated	Section	Violation Type	Pollutant Type
Resource Conservation and Recovery Act	9006		

Subject Facilities / EPA ID# / Address / City, State, and Zip
DCD983970849 / AMOCO OIL COMPANY #0234 / 4251 MINNESOTA AVE NW / WASHINGTON, DC 20019

Subject Defendant(s)
AMOCO OIL CO. (#0234)

Map ID#: **40E** Distance (mi): 0.723120
Direction: E
Date Filed: 08/21/90
Docket Number: **03-90-0654A** Case Name: **AMOCO OIL CO. (#0234)** Date Concluded: **01/31/91**
Federal Penalty Assessed: **$4,429**
Cost Recovery Charged: Case Result:

Law Reported Violated	Section	Violation Type	Pollutant Type
Resource Conservation and Recovery Act	9006	**Leaking underground storage tank**	

Subject Facilities / EPA ID# / Address / City, State, and Zip
DCD983970849 / AMOCO OIL COMPANY #0234 / 4251 MINNESOTA AVE NW / WASHINGTON, DC 20019

Subject Defendant(s)
AMOCO OIL CO. (#0234)

TSCA Data

Toxic Substances Control Act Sites Data

Map ID#:	7H	Distance (mi):	0.491678	Name:	BENNING GENERATING STATION
		Direction:	S	Address:	3300 BENNING ROAD, N.E.
Agency ID:	004920U			City, State, Zip:	WASHINGTON, DC 20019

Additional Remarks: ATTN: E. F. KENNEDY

CAS Number	Production Volume per Year	Reported Chemical Name
68131-74-8	100,000 to 1,000,000 lbs	Ashes, residues

HWS Data

Hazardous Waste Sites List (CERCLA)

Map ID#:	10I	Distance (mi):	0.50649	Name:	PEPCO BENNING ROAD FACILITY
		Direction:	S	Address:	3400 BENNING RD NE
EPA ID:	DCD983967951			City, State, Zip:	WASHINGTON, DC 20019

Map ID#:	80AC	Distance (mi):	0.95017	Name:	USDA NATIONAL ARBORETUM
		Direction:	N	Address:	3501 NEW YORK AVE NE
EPA ID:	DC7120507432			City, State, Zip:	WASHINGTON, DC 20002

District of Columbia LUST Data

District of Columbia Leaking Underground Storage Tank Data

Map ID#: 7D
Distance (mi): 0.49168
Direction: S
Agency ID: 90013
Name: BENNING ROAD GEN. STA.
Address: 3300 BENNING RD, NE
City, State Zip: WASHINGTON, DC 20019
Status: Closed
Product: Waste Oil Diesel

Map ID#: 8E
Distance (mi): 0.49452
Direction: SSW
Agency ID: 95025
Name: NATIONAL PARK SERVICE
Address: 3200 BENNING RD., NE
City, State Zip: WASHINGTON, DC 20019
Status: Open
Product: Gasoline

Map ID#: 8H
Distance (mi): 0.49452
Direction: SSW
Agency ID: 90055
Name: KENILWORTH MAINT. YARD
Address: 3200 BENNING RD, NE
City, State Zip: WASHINGTON, DC 20019
Status: Closed
Product: Gasoline Diesel

Map ID#: 10F
Distance (mi): 0.50649
Direction: S
Agency ID: 95082
Name: PEPCO-BENNING TANK UTM4A
Address: 3400 BENNING RD, NE
City, State Zip: WASHINGTON, DC 20019
Status: Closed
Product: Gasoline

Map ID#: 10G
Distance (mi): 0.50649
Direction: S
Agency ID: 92018
Name: PEPCO-BENNING RD
Address: 3400 BENNING RD, NE
City, State Zip: WASHINGTON, DC 20019
Status: Closed
Product: Diesel

Map ID#: 27B
Distance (mi): 0.63002
Direction: ESE
Agency ID: 96068
Name: EXXON #2-5455
Address: 4100 HUNT PLACE, NE
City, State Zip: WASHINGTON, DC 20019
Status: Open
Product: Gasoline

Map ID#: 28
Distance (mi): 0.63045
Direction: SE
Agency ID: 98047
Name: DOUGLAS DEVELOPMENT CORP.
Address: 4045 MINNISSOTA AVE NE
City, State Zip: WASHINGTON, DC 20019
Status: Open
Product: Not Reported

Map ID#: 32B
Distance (mi): 0.69618
Direction: E
Agency ID: 92064
Name: FIRE ENGIN COMPANY 27
Address: 4201 MINNESOTA AVE, NE
City, State Zip: WASHINGTON, DC 20019
Status: Closed
Product: Gasoline

Map ID#: 33A
Distance (mi): 0.70519
Direction: SSE
Agency ID: 97090
Name: WOOLWORTHS
Address: 3932 MINNESOTA AVE, NE
City, State Zip: WASHINGTON, DC 20019
Status: Open
Product: Heating Oil

Map ID#: 37B
Distance (mi): 0.71022
Direction: WSW
Agency ID: 97068
Name: LANGSTON GOLF COURSE
Address: 2600 BENNING ROAD NE
City, State Zip: WASHINGTON, DC 20002
Status: Open
Product: Gasoline

Map ID#: 37D
Distance (mi): 0.71022
Direction: WSW
Agency ID: 91077
Name: LANGSTON GOLF COURSE
Address: 2600 BENNING ROAD, NE
City, State Zip: WASHINGTON, DC 20002
Status: Closed
Product: Gasoline

Map ID#: 40C
Distance (mi): 0.72312
Direction: E
Agency ID: 90084
Name: AMOCO
Address: 4251 MINNESOTA AVE, NE
City, State Zip: WASHINGTON, DC 20019
Status: Open
Product: Gasoline Waste Oil

Map ID#: 41B
Distance (mi): 0.73336
Direction: SSE
Agency ID: 89005
Name: SUNOCO
Address: 3916-18 MINNESOTA AVE, NE
City, State Zip: WASHINGTON, DC 20019
Status: Open
Product: Gasoline

Map ID#: 42C
Distance (mi): 0.73354
Direction: ESE
Agency ID: 99008
Name: ALL ABOARD CONTRACTING INC
Address: 4214 HUNT PLACE NE
City, State Zip: WASHINGTON, DC 20019
Status: Open
Product: Gasoline

Map ID#: 47A
Distance (mi): 0.78350
Direction: E
Agency ID: 90006
Name: SHELL
Address: 4315 NH BURROUGHS AVE, NE
City, State Zip: WASHINGTON, DC 20019
Status: Closed
Product: Gasoline

Map ID#: 49
Distance (mi): 0.78507
Direction: SSE
Agency ID: 90029
Name: AMOCO
Address: 3830 MINNESOTA AVE, SE
City, State Zip: WASHINGTON, DC
Status: Open
Product: Gasoline

Map ID#: 52A
Distance (mi): 0.78906
Direction: SSE
Agency ID: 95039
Name: MINNESOTA AVE. MOBIL
Address: 3820 MINNESOTA AVE., NE
City, State Zip: WASHINGTON, DC 20019
Status: Open
Product: Gasoline

Map ID#: 52B
Distance (mi): 0.78906
Direction: SSE
Agency ID: 89014
Name: CHEVRON
Address: 3820 MINNESOTA AVE, NE
City, State Zip: WASHINGTON, DC 20019
Status: Open
Product: Gasoline

Map ID#: 57
Distance (mi): 0.82600
Direction: S
Agency ID: 91017
Name: RIVER TERRACE APTS
Address: 140 KENNILWORTH AVE, NE(3393 BLAINE)
City, State Zip: WASHINGTON, DC
Status: Closed
Product: Heating Oil

Map ID#: 58B
Distance (mi): 0.84309
Direction: WSW
Agency ID: 96069
Name: EXXON #2-1931
Address: 2651 BENNING RD., NE
City, State Zip: WASHINGTON, DC 20002
Status: Closed
Product: Waste Oil

Map ID#: 58C
Distance (mi): 0.84309
Direction: WSW
Agency ID: 96064
Name: EXXON #12-1931
Address: 2651 BENNING RD., NE
City, State Zip: WASHINGTON, DC 20002
Status: Open
Product: Waste Oil

Map ID#: 59
Distance (mi): 0.84318
Direction: SSE
Agency ID: 91008
Name: ALLEN HOUSE
Address: 3760 MINNESOTA AVE, NE
City, State Zip: WASHINGTON, DC 20019
Status: Closed
Product: Gasoline

Map ID#:	73	Distance (mi):	0.92568		
		Direction:	N	Name:	US FDA NATIONAL ARBORETUM
Agency ID:	99005			Address:	3501 NEW YORK AVENUE N
				City, State Zip:	WASHINGTON, DC
Status:	Open				
Product:	Gasoline				

Map ID#:	77A	Distance (mi):	0.93858		
		Direction:	S	Name:	GREENWAY APTS.
Agency ID:	95019			Address:	3525 E. CAPITOL ST., SE
				City, State Zip:	WASHINGTON, DC 20019
Status:	Closed				
Product:	Heating Oil				

Map ID#:	78A	Distance (mi):	0.94580		
		Direction:	ENE	Name:	BUSINESS FUNDING OF FL.
Agency ID:	95037			Address:	1325 KENILWORTH AVE., NE
				City, State Zip:	WASHINGTON, DC 20019
Status:	Closed				
Product:	Gasoline				

Map ID#:	79A	Distance (mi):	0.94886		
		Direction:	ENE	Name:	LEE'S GAS AND CAR WASH
Agency ID:	90072			Address:	1329 KENILWORTH AVE, NE
				City, State Zip:	WASHINGTON, DC 20019
Status:	Closed				
Product:	Gasoline Diesel				

Map ID#:	79B	Distance (mi):	0.94886		
		Direction:	ENE	Name:	LEE'S GAS & CAR WASH
Agency ID:	96036			Address:	1329 KENILWORTH AV NE
				City, State Zip:	WASHINGTON, DC 20019
Status:	Open				
Product:	Diesel				

Map ID#:	80Y	Distance (mi):	0.95017		
		Direction:	N	Name:	US NATL ARBORETUM - BLDG 19
Agency ID:	92104			Address:	3501 NEW YORK AVENUE, NE
				City, State Zip:	WASHINGTON, DC 20002
Status:	Closed				
Product:	Heating Oil				

Map ID#:	80Z	Distance (mi):	0.95017		
		Direction:	N	Name:	NATIONAL ARBORETUM # 001
Agency ID:	94019			Address:	3501 N.Y. AVE, NE BLDG 1
				City, State Zip:	WASHINGTON, DC
Status:	Closed				
Product:	Heating Oil				

Map ID#:	80AA	Distance (mi):	0.95017		
		Direction:	N	Name:	NATIONAL ARBORETUM #013
Agency ID:	94014			Address:	3501 N.Y. AVE, NE BLDG 13
				City, State Zip:	WASHINGTON, DC
Status:	Closed				
Product:	Heating Oil				

Map ID#:	80AD	Distance (mi):	0.95017		
		Direction:	N	Name:	NATIONAL ARBORETUM #012
Agency ID:	94013			Address:	3501 N.Y. AVE, NE BLDG 12
				City, State Zip:	WASHINGTON, DC
Status:	Closed				
Product:	Heating Oil				

Map ID#:	80AF	Distance (mi):	0.95017		
		Direction:	N	Name:	US NAT'L ARBORETUM BLDG 015
Agency ID:	90077			Address:	3501 NEW YORK AVE, NE
				City, State Zip:	WASHINGTON, DC 20002
Status:	Open				
Product:	Diesel				

Map ID#:	80AG	Distance (mi):	0.95017		
		Direction:	N	Name:	U.S. NATIONAL ARBORETUM, BLDG 15
Agency ID:	97063			Address:	3501 NEW YORK AVE NE, BLDG 15
				City, State Zip:	WASHINGTON, DC 20002
Status:	Closed				
Product:	Diesel				

District of Columbia LUST Data

District of Columbia Leaking Underground Storage Tank Data

Map ID#:	80AH	Distance (mi):	0.95017		
		Direction:	N	Name:	NAT'L ARBORETUM - BRICK YARD
Agency ID:	91023			Address:	3501 NEW YORK AVENUE NE
				City, State Zip:	WASHINGTON, DC 20002
Status:	Closed				
Product:	Gasoline				

Map ID#:	82A	Distance (mi):	0.96776		
		Direction:	S	Name:	CAFRITZ COMPANY
Agency ID:	95031			Address:	11 35TH ST., SE
				City, State Zip:	WASHINGTON, DC 20019
Status:	Closed				
Product:	Heating Oil				

Map ID#:	85A	Distance (mi):	0.98324		
		Direction:	NNW	Name:	PREMIUM DISTRIBUTORS (REOPEN)
Agency ID:	96102			Address:	3350 NEW YORK AVE NE
				City, State Zip:	WASHINGTON, DC 20002
Status:	Closed				
Product:	Gasoline				

Map ID#:	85C	Distance (mi):	0.98324		
		Direction:	NNW	Name:	PREMIUM DISTRIBUTORS
Agency ID:	91015			Address:	3350 NEW YORK AVE, NE
				City, State Zip:	WASHINGTON, DC 20002
Status:	Closed				
Product:	Gasoline				

Map ID#:	94B	Distance (mi):	0.99953		
		Direction:	SSE	Name:	CAFRITZ COMPANY
Agency ID:	95028			Address:	1 ANNACOSTIA RD., SE
				City, State Zip:	WASHINGTON, DC 20019
Status:	Closed				
Product:	Heating Oil				

District of Columbia UST Data

District of Columbia Underground Storage Tank Data

Map ID#:	1A	Distance (mi):	0.24140		
		Direction:	SE	Name:	THOMAS ELEMENTARY SCHOOL
Agency ID:	7-002064			Address:	650 ANACOSTIA AVE
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	DC PUBLIC SCHOOL				

Map ID#:	3	Distance (mi):	0.41573		
		Direction:	E	Name:	MAYFAIR MANSIONS INCORP
Agency ID:	7-002565			Address:	3721 JAY ST
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	MAYFAIR MANSIONS INCORP				

Map ID#:	4	Distance (mi):	0.42330		
		Direction:	E	Name:	MAYFAIR MANSIONS INCORP
Agency ID:	7-002566			Address:	7343 JAY ST
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	MAYFAIR MANSIONS INCORP				

Map ID#:	5	Distance (mi):	0.43171		
		Direction:	E	Name:	MAYFAIR MANSIONS
Agency ID:	7-002567			Address:	3763 JAY ST
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	MAYFAIR MANSIONS INCORP				

Map ID#:	6	Distance (mi):	0.45483		
		Direction:	E	Name:	MAYFAIR MANSION
Agency ID:	7-002568			Address:	3819 JAY ST
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	MAYFAIR MANSIONS				

Map ID#:	7F	Distance (mi):	0.49168		
		Direction:	S	Name:	PEPCO
Agency ID:	7-002015			Address:	FOOTE ST
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	POTOM ELECTRIC POWER CO				

Map ID#:	8A	Distance (mi):	0.49452		
		Direction:	SSW	Name:	UNKNOWN
Agency ID:	9-000001			Address:	925 GIRARD ST
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	DC FIRE PREVENTION BRANCH				

Map ID#:	8A	Distance (mi):	0.49452		
		Direction:	SSW	Name:	KENILWORTH MAINTENANCE YARD
Agency ID:	9-000001			Address:	3200 BENNING ROAD
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	NATIONAL PARK SERVICE				

Map ID#:	8B	Distance (mi):	0.49452		
		Direction:	SSW	Name:	FLEET MGMT ADMINISTRATION
Agency ID:	7-000160			Address:	3200 BENNING ROAD
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	DPW FLEET MANAGEMENT ADMIN				

Map ID#:	8C	Distance (mi):	0.49452		
		Direction:	SSW	Name:	KENILWORTH MAINTENACNE YARD
Agency ID:	7-000001			Address:	3200 BENNING ROAD
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	NATIONAL PARK SERVICE				

Map ID#:	9	Distance (mi):	0.50457		
		Direction:	S	Name:	INCINERATOR #5
Agency ID:	7-003939			Address:	KENILWORTH & BENNING ROAD
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	DC FIRE PREVENTION BRANCH				

District of Columbia UST Data

District of Columbia Underground Storage Tank Data

Map ID#:	10H	Distance (mi):	0.50649		
		Direction:	S	Name:	BENNING ROAD GENERATING
Agency ID:	7-000585			Address:	3400 BENNING ROAD
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	POTOMAC ELECTRIC POWER				

Map ID#:	11A	Distance (mi):	0.50650		
		Direction:	SSW	Name:	UNKNOWN
Agency ID:	7-004536			Address:	3399 BENNING ROAD
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	UNKNOWN				

Map ID#:	12A	Distance (mi):	0.50819		
		Direction:	SSW	Name:	AMOCO OIL CO
Agency ID:	7-000123			Address:	3355 BENNING ROAD
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	AMOCO OIL CO				

Map ID#:	16B	Distance (mi):	0.53770		
		Direction:	SSE	Name:	AUTO CARE
Agency ID:	7-002013			Address:	3621 BENNING ROAD
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	AUTO CARE				

Map ID#:	17A	Distance (mi):	0.55843		
		Direction:	SSE	Name:	MERIDIAN PROPERTIES
Agency ID:	7-000538			Address:	3705 BENNING ROAD
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	MERIDIAN PROPERTIES				

Map ID#:	18	Distance (mi):	0.56170		
		Direction:	E	Name:	MAYFAIR MANSIONS INCORPORATED
Agency ID:	7-003938			Address:	KENILWORTH AVE & JAY ST
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	MAYFAIR MANSIONS INCORPORATED				

Map ID#:	21	Distance (mi):	0.59684		
		Direction:	ESE	Name:	MT VERNON UNITED METHODIST
Agency ID:	7-000381			Address:	4147 MINNESOTA AVE
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	MT VERNON UNITED METHODIST				

Map ID#:	22	Distance (mi):	0.60883		
		Direction:	SE	Name:	CARTER WOODSON
Agency ID:	7-002247			Address:	4095 MINNESOTA AVEQ
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	DC PUBLIC SCHOOL				

Map ID#:	23	Distance (mi):	0.60993		
		Direction:	ESE	Name:	UNKNOWN
Agency ID:	7-004085			Address:	4001 HWYES ST
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	DC FIRE PREVENTION BRANCH				

Map ID#:	24	Distance (mi):	0.61238		
		Direction:	ESE	Name:	BIG D LLIQUORS
Agency ID:	7-002249			Address:	4169 MINNESOTA AVE
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	SAM YONKOVITZ				

Map ID#:	25	Distance (mi):	0.61577		
		Direction:	SSW	Name:	RIVER TERRACE SCHOOL
Agency ID:	7-004375			Address:	34TH & DIX ST
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	D C PUBLIC SCHOOL				

District of Columbia UST Data

District of Columbia Underground Storage Tank Data

Map ID#:	26	Distance (mi):	0.62077		
		Direction:	SE	Name:	UNKNOWN
Agency ID:	7-002246			Address:	4065 MINNESOTA AVE
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	SOME INC				

Map ID#:	27C	Distance (mi):	0.63002		
		Direction:	ESE	Name:	EXXON
Agency ID:	7-000330			Address:	4100 HUNT PLNE
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	EXXON				

Map ID#:	32A	Distance (mi):	0.69618		
		Direction:	E	Name:	DCFD ENGINE
Agency ID:	7-000298			Address:	4201 MINNESOTA AVE
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	DC FIRE DEPART				

Map ID#:	33B	Distance (mi):	0.70519		
		Direction:	SSE	Name:	F W WOOLWORTH
Agency ID:	7-002245			Address:	3932 MINNESOTA AVE
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	WOOLWORTH'S				

Map ID#:	34A	Distance (mi):	0.70734		
		Direction:	E	Name:	PHILLIPS 66 CO
Agency ID:	7-000614			Address:	4200 N H BURROUGHS AVE
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	PHILLIPS 66 CO				

Map ID#:	35	Distance (mi):	0.70921		
		Direction:	SSE	Name:	SENATOR SQUARE APARTMENTS
Agency ID:	6-000003			Address:	3948 MINNESOTA AVE
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	DELBE REAL ESTATE CO INC				

Map ID#:	36	Distance (mi):	0.71005		
		Direction:	SE	Name:	EAST RIVER PARK SHOPPING
Agency ID:	7-000101			Address:	3919 BENNING ROAD
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	EAST RIVER PARK LIMITIED				

Map ID#:	37A	Distance (mi):	0.71022		
		Direction:	WSW	Name:	LANGSTON GOLF COURSE
Agency ID:	6-000001			Address:	2600 BENNING ROAD
				City, State, Zip:	WASHINGTON, DC 20002
Owner:	NATIONAL CAPITAL PARKS EAST				

Map ID#:	38B	Distance (mi):	0.71108		
		Direction:	SSE	Name:	TRAK AUTO
Agency ID:	7-002307			Address:	3925 MINNESOTA AVE
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	THE JENCO FOUNDATION INC				

Map ID#:	39	Distance (mi):	0.71569		
		Direction:	ENE	Name:	KENILWORTH PARKSIDE
Agency ID:	7-002066			Address:	ANACOSTIA AVE & NASH ST
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	DC FIRE PREVENTION BRANCH				

Map ID#:	40A	Distance (mi):	0.72312		
		Direction:	E	Name:	AMOCO OIL
Agency ID:	7-000080			Address:	4251 MINNESOTA AVE
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	AMOCO OIL CO				

District of Columbia UST Data

District of Columbia Underground Storage Tank Data

Map ID#:	41A	Distance (mi):	0.73336		
		Direction:	SSE	Name:	DELBY REAL ESTATE
Agency ID:	7-000743			Address:	3916-18 MINNESOTA AVE
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	SUN REFINING MARKETING				

Map ID#:	42B	Distance (mi):	0.73354		
		Direction:	ESE	Name:	JOHN GLEN
Agency ID:	0-000457			Address:	4214 HUNT PL
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	DC FIRE PREVENTION BRANCH				

Map ID#:	43	Distance (mi):	0.73646		
		Direction:	SE	Name:	BENNING BRANCH LIBRARY
Agency ID:	7-000100			Address:	3935 BENNING ROAD
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	D C PUBLIC LIBRARY				

Map ID#:	44	Distance (mi):	0.74676		
		Direction:	SSE	Name:	PAYLESS SHOE SOURCE
Agency ID:	7-002288			Address:	3900 MINNESOTA AVE
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	CARL K & HEDY GUMPBERT				

Map ID#:	45	Distance (mi):	0.77400		
		Direction:	S	Name:	UNKNOWN
Agency ID:	7-003928			Address:	214 KENILWORTH AVE
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	DC FIRE PREVENTION BRANCH				

Map ID#:	47B	Distance (mi):	0.78350		
		Direction:	E	Name:	SHELL OIL COMP
Agency ID:	7-000654			Address:	4315 N H BURROUGHS AVE
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	SHELL OIL CO				

Map ID#:	48	Distance (mi):	0.78441		
		Direction:	SSE	Name:	AMOCO OIL
Agency ID:	7-002286			Address:	3830 MINNESOTA AVE
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	AMOCO OIL				

Map ID#:	50	Distance (mi):	0.78748		
		Direction:	E	Name:	SHELL OIL COMP
Agency ID:	7-001887			Address:	4321 N H BURROUGHS AVE
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	SHELL OIL COMP				

Map ID#:	52C	Distance (mi):	0.78906		
		Direction:	SSE	Name:	SAMAD CORPORATION
Agency ID:	7-002000			Address:	3820 MINNESOTA AVE
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	SAMAD CORPORATION				

Map ID#:	53	Distance (mi):	0.80852		
		Direction:	E	Name:	FORMER F L WATKINDS
Agency ID:	0-000456			Address:	4301 SHERRIF ROAD
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	DIVINE LOVE BAPTSIT CHURCH				

Map ID#:	55	Distance (mi):	0.81671		
		Direction:	SSE	Name:	AMOCO OIL
Agency ID:	7-000108			Address:	3780 MINNESOTA AVE
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	AMOCO OIL				

District of Columbia UST Data

District of Columbia Underground Storage Tank Data

Map ID#:	56	Distance (mi):	0.82420		
		Direction:	S	Name:	RIVER TERRACE
Agency ID:	7-000004			Address:	3393 BLAINE ST
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	BOULVARD HOUSING CORPORATION				

Map ID#:	58D	Distance (mi):	0.84309		
		Direction:	WSW	Name:	EXON
Agency ID:	6-000359			Address:	2651 BENNING ROAD
				City, State, Zip:	WASHINGTON, DC 20002
Owner:	EXXON COMPANY USA				

Map ID#:	60	Distance (mi):	0.85499		
		Direction:	ENE	Name:	KENILWORTH ELEMENTARY SCHOOL
Agency ID:	7-004441			Address:	1316 44TH ST
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	D.C. PUBLIC SCHOOL - PENN CENTER				

Map ID#:	62	Distance (mi):	0.86372		
		Direction:	SSE	Name:	CENTRAL CONSTRUCTION
Agency ID:	7-000267			Address:	3710 MINNESOTA AVE
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	CENTRAL CONSTRUCTION TILE				

Map ID#:	63	Distance (mi):	0.88702		
		Direction:	S	Name:	FORMER ESSO STATION
Agency ID:	0-000452			Address:	3625 AMES ST
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	GENE S & GETTY A SIEGEL				

Map ID#:	64A	Distance (mi):	0.90299		
		Direction:	E	Name:	KENILWORTH AVENUE BUILDING
Agency ID:	7-003931			Address:	1215 KENILWORTH AV
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	KENILWORTH AVENUE BUILDING				

Map ID#:	65A	Distance (mi):	0.90386		
		Direction:	W	Name:	UNKNOWN
Agency ID:	2-000073			Address:	904 22ND ST
				City, State, Zip:	WASHINGTON, DC 20002
Owner:	MYRL MULLIGAN				

Map ID#:	65B	Distance (mi):	0.90386		
		Direction:	W	Name:	UNKNOWN
Agency ID:	5-002493			Address:	904 22ND ST
				City, State, Zip:	WASHINGTON, DC 20002
Owner:	DC FIRE PREVENTION BRANCH				

Map ID#:	66	Distance (mi):	0.90507		
		Direction:	SE	Name:	BENING ELEMENTARY SCHOOL
Agency ID:	7-004432			Address:	41ST & BENNING ROAD
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	DC PUBLIC SCHOOL				

Map ID#:	67	Distance (mi):	0.90555		
		Direction:	SSW	Name:	UNKNOWN
Agency ID:	7-003926			Address:	20 KENILWORTH
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	DC FIRE PREVENTION BRANCH				

Map ID#:	68	Distance (mi):	0.90771		
		Direction:	E	Name:	SQUARE DEAR TRUCKING COMPANY
Agency ID:	7-003932			Address:	1221 KENILWORTH AV
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	GEORGE & PATRICIA GIEBEL				

District of Columbia UST Data

District of Columbia Underground Storage Tank Data

Map ID#:	69	Distance (mi):	0.91135		
		Direction:	WSW	Name:	UNKNOWN
Agency ID:	6-002001			Address:	2501 BENNING ROAD
				City, State, Zip:	WASHINGTON, DC 20002
Owner:	DC FIRE PREVENTION BRANCH				

Map ID#:	71	Distance (mi):	0.91763		
		Direction:	W	Name:	WIRE PROEPRTIES
Agency ID:	5-004205			Address:	2229 M ST
				City, State, Zip:	WASHINGTON, DC 20002
Owner:	NATIONAL CHILD DAY CARE ASSN				

Map ID#:	72	Distance (mi):	0.92472		
		Direction:	E	Name:	PENN REALTY CORP
Agency ID:	7-002381			Address:	4401 SHERIFF ROAD
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	DC F				

Map ID#:	74A	Distance (mi):	0.93342		
		Direction:	ESE	Name:	UNKNOWN
Agency ID:	7-004471			Address:	4427 HAYES ST
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	DC FIRE PREVENTION BRANCH				

Map ID#:	74B	Distance (mi):	0.93342		
		Direction:	ESE	Name:	UNKNOWN
Agency ID:	7-004086			Address:	4427 HAYES ST
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	UNKNOWN				

Map ID#:	76	Distance (mi):	0.93500		
		Direction:	E	Name:	UNKNOWN
Agency ID:	7-004552			Address:	4408 SHERIFF ROAD
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	DENNIS GARBIS				

Map ID#:	77B	Distance (mi):	0.93858		
		Direction:	S	Name:	GREENWAY APART
Agency ID:	6-000007			Address:	3525 E CAPITOL ST
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	CAFRTIZ LEASING MANG				

Map ID#:	78B	Distance (mi):	0.94580		
		Direction:	ENE	Name:	SQUARE DEAL TRUCKING COMPANY
Agency ID:	7-003934			Address:	1325 KENILWORTH AV
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	BUSINESS FUND OF FLORIDA				

Map ID#:	79F	Distance (mi):	0.94886		
		Direction:	ENE	Name:	LEES GAS AND CAR WASH
Agency ID:	7-000624			Address:	1329 KENILWORTH AV
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	RALPH L. FELTMAN JR				

Map ID#:	80AB	Distance (mi):	0.95017		
		Direction:	N	Name:	US NATIONAL ABORETUM
Agency ID:	5-000540			Address:	3501 NEW YORK AVE
				City, State, Zip:	WASHINGTON, DC 20002
Owner:	U S NATIONAL ABORETUM				

Map ID#:	80AI	Distance (mi):	0.95017		
		Direction:	N	Name:	US NAT ARB
Agency ID:	5-000541			Address:	3501 NEW YORK AVE
				City, State, Zip:	WASHINGTON, DC 20002
Owner:	U S NATIONAL ARBORETUM				

District of Columbia UST Data

District of Columbia Underground Storage Tank Data

Map ID#:	81	Distance (mi):	0.96334		
		Direction:	W	Name:	CARVER TERRACE APARTMENTS
Agency ID:	5-002976			Address:	1100-04 21ST PL
				City, State, Zip:	WASHINGTON, DC 20002
Owner:	DC FIRE PREVENTION BRANCH				

Map ID#:	82B	Distance (mi):	0.96776		
		Direction:	S	Name:	GREENWAY APARTMENTS
Agency ID:	6-000008			Address:	11 35TH ST
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	CAFRTIZ LEASING MANAGEMENT				

Map ID#:	83	Distance (mi):	0.97014		
		Direction:	SSW	Name:	UNKNOWN
Agency ID:	6-001339			Address:	3317 E CAPITOL ST
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	DC FIRE PREVENTION BRANCH				

Map ID#:	84	Distance (mi):	0.97775		
		Direction:	N	Name:	WASHINGTON TIMES BUILDING
Agency ID:	5-005286			Address:	3600 NEW YORK AVE
				City, State, Zip:	WASHINGTON, DC 20002
Owner:	NEWS WORLD COMMUNICATIONS				

Map ID#:	85B	Distance (mi):	0.98324		
		Direction:	NNW	Name:	PREMIUM DIST
Agency ID:	5-005285			Address:	3350 NEW YORK AVE
				City, State, Zip:	WASHINGTON, DC 20002
Owner:	PREMIUM DISTRUTORS INC				

Map ID#:	86	Distance (mi):	0.98581		
		Direction:	WSW	Name:	SPINGARN HIGH SCHOOL
Agency ID:	5-002000			Address:	24TH & BENNING ROAD
				City, State, Zip:	WASHINGTON, DC 20002
Owner:	DC PUBLIC SCHOOL PENN CENTER				

Map ID#:	87	Distance (mi):	0.99017		
		Direction:	E	Name:	CARVER ELEMENTARY SCHOOL
Agency ID:	7-004932			Address:	4525 LANE PL
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	DC PUBLIC SCHOOL				

Map ID#:	90	Distance (mi):	0.99312		
		Direction:	W	Name:	WIRE PROPERTIES
Agency ID:	5-002492			Address:	2115 MARYLAND AVE
				City, State, Zip:	WASHINGTON, DC 20002
Owner:	DC FIRE PREVENTION BRANCH				

Map ID#:	91	Distance (mi):	0.99552		
		Direction:	E	Name:	RANDALL MEMEORIAL METH CHURCH
Agency ID:	7-001990			Address:	1002 46TH ST NE
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	UNKNOWN				

Map ID#:	92	Distance (mi):	0.99830		
		Direction:	W	Name:	UNKNOWN
Agency ID:	5-005498			Address:	2109 MARYLAND AVE
				City, State, Zip:	WASHINGTON, DC 20002
Owner:	DC FIRE PREVENTION BRANCH				

Map ID#:	93	Distance (mi):	0.99853		
		Direction:	W	Name:	CARER TERRACE
Agency ID:	5-005500			Address:	2112 MARYLAND AVE
				City, State, Zip:	WASHINGTON, DC 20002
Owner:	DC FIRE PREVENTION BRANCH				

District of Columbia UST Data

District of Columbia Underground Storage Tank Data

Map ID#:	94A	Distance (mi):	0.99953		
		Direction:	SSE	Name:	GREENWAY APARTMENTS
Agency ID:	7-000007			Address:	1 ANACOSTIA RD SE
				City, State, Zip:	WASHINGTON, DC 20019
Owner:	CAFRITZ LEASING MANAGEMENT				

Unmappable Sites

A limitation of many records of governmental databases is incomplete or incorrect address information. Without proper addresses, it is more difficult to locate and map these sites.

Instead of leaving these potentially important sites out of the EcoSearch report, we implement a painstaking manual geocoding strategy aimed at plotting these unmappable sites by looking at zip codes, city names, and county names identified with the radius around your study site. The zip codes, cities, and counties searched are identified on the EcoSearch Statistical Overview page.

Our sophisticated mapping software, enhanced TIGER street maps, and address correction database processing methods find and plot most environmental sites. We then perform manual geocoding, plotting those sites the computer fails to find using a variety of resources. These include using our in-house collection of paper maps, directories, cross-referencing database information, and calling post offices, local government, or the sites themselves to accurately locate environmental records. We also correct obvious TIGER street map errors and omissions.

This effort at manual geocoding results in a short or non-existant orphan/unmappable list and increases accuracy and reliability of the data in our reports. We have elected not to computerize this part of our report due to the importance of presenting all data as completely and accurately as humanly possible. When this function is computerized it is impossible to produce a report as accurate as one where manual geocoding has taken place.

The limited number of sites which could not be reasonably found through our geocoding strategy are presented in this section for further review to assess their impact on your study site.

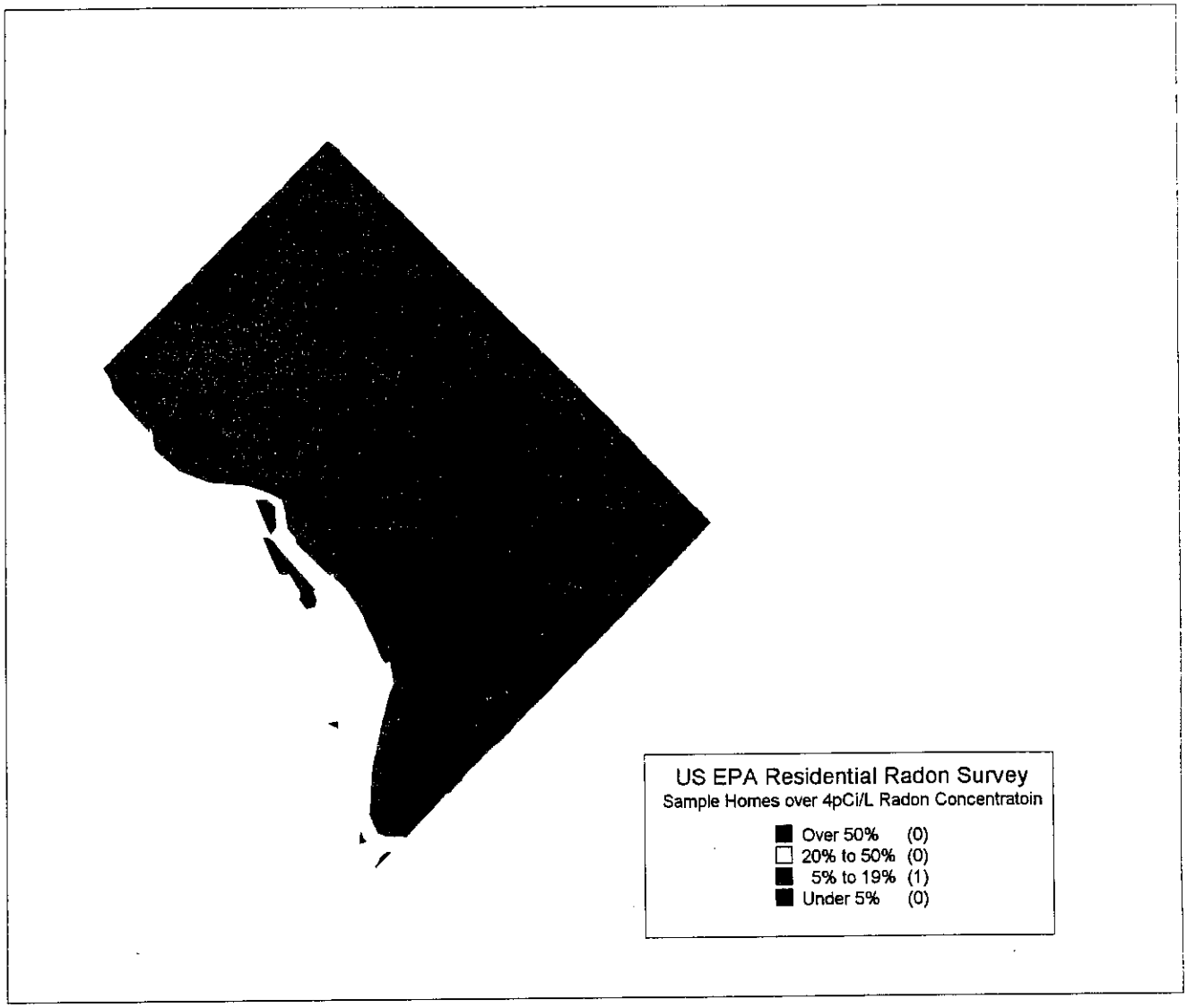
After the summary unmappable site information, detailed data follows.

Unmappable Sites

Database	Agency ID#	Site Name and Address	County

No unmappable sites were found for this report.

EcoSearch Radon Risk Map for the District of Columbia



SOURCE: EPA Map for Radon Zones (DC), September 1993. The data is based on the State/EPA Residential Radon Survey for the District of Columbia. This map shows the percentage of homes in each county registering over 4 pCi/L (picocuries per liter) radon concentration. For additional information on this survey, consult the next page.

Note: The information provided on this map is subject to the disclaimer on the first page. This map is NOT intended to determine if a property in a given county should be tested for radon. Properties with elevated levels of radon have been found in all counties. If or when radon is a concern, all properties should be tested regardless of the county designation.

EPA Residential Radon Survey for the District of Columbia

County	Sample Size	Homes over 4pCi/L Number	Homes over 4pCi/L Percentage	Homes over 20pCi/L Number	Homes over 20pCi/L Percentage
Washington	8,038	852	10.60%	39	0.49%

SOURCE: US EPA Map of Radon Zones (September 1993)

This EPA survey was conducted in the District of Columbia prior to April 1993. 8,038 homes were tested with short-term (2-7 day) charcoal canisters placed in the lowest livable area of the home. These tests determine the radon concentration, measured in pCi/L (picocuries per liter). The average radon concentration measurement in the U.S. is between 1 and 2 pCi/L. The EPA has established the guideline of 4 pCi/L as an "elevated" indoor radon level.

NOTE: The sample size in each county may not be sufficient to show statistical significance. This information is NOT intended to determine if a property in a given county should be tested for radon. If or when radon is a concern, all properties should be tested regardless of the county statistics.

Environmental Glossary

Acid
A large class of substances having a pH less than seven. An acid waste is considered hazardous when the pH is 2.0 or less.

Acute Effect
An adverse effect on a human or animal body, with severe symptoms developing rapidly and coming quickly to a crisis.

Acute Exposure
A dose that is delivered to the body in a single event or in a short period of time.

Aerobic
Occurring in the presence of free oxygen.

Alkaline
A substance with a pH between 7 and 14. An alkaline waste is considered hazardous when its pH is 12.5 or greater.

Ambient
Existing conditins of air, water, and other media at a particular time.

Anaerobic
Occurring in the absence of oxygen.

Assessment
An analysis or examination.

Background Environmental Sample
Samples that are considered to contain no contaminants or known concentrations of contaminants.

Base
A substance which forms a salt when reacted with an acid. Bases have a pH of greater than seven.

Buffer Zone
An area of land which surrounds a hazardous waste facility and on which certain land uses and activities are restricted to protect the public health and safety and the environment from existing or potential hazards caused by the migration of hazardous waste (CH&SC Sec. 25110.3).

Carcinogen
A substance or agent capable of causing or producing cancer in mammals.

Caustics
A large class of substances which form solutions having a high pH.

Chronic Effect
An adverse effect on a human or animal body, with symptoms which develop slowly over a long period of time or which reoccur frequently.

Chronic Exposure
Low doses repeatedly received by the body over a long period of time.

Combustible
A term used by the NFPA, DOT, and others to classify certain liquids that will burn, on the basis of flash points. Both the NFPA and DOT generally define "combustible liquids" as having a flash point of 100° F or higher.

Concentration
The relative amount of a substance when combined or mixed with other substances.

Contingency Plan
A document setting out an organized, planned, and coordinated course of action to be followed in case of a fire or explosion or release of a hazardous waste from a TSD or a generator's facility that could threaten human health or the environment (RCRA).

Corrosive
As defined by DOT, a corrosive material is a liquid or solid that causes visible destruction or irreversible alterations in human skin tissue at the site of contact or in the case of leakage from its packaging a liquid that has a severe corrosion rate on steel. A solid or liquid which exhibits these characteristics can be regulated as hazardous waste.

Decomposition
Breakdown of material or substance (by heat, chemical reaction, electrolysis, decay, or other processes) into elements or simpler compounds.

Decontamination
The process of removing contaminants from individuals and equipment.

Deep Well Injection
Disposal of wastes by injecting them into a geological formation deep in the ground, sometimes after pretreatment to avoid solidification.

EPA ID Number
This unique number assigned by EPA to each generator, transporter, or TSD.

Effluent
Waste material, either treated or untreated, discharged into the environment.

Environmental Assessment
The measurement or prediction of the transport, dispersion, and final location of a hazardous substance when released into the environment.

Environmental Emergencies
Incidents involving the release (or potential release) of hazardous materials into the environment which require immediate remedial action.

Environmental Hazard
A condition capable of posing risk of exposure to air, water, soil, plants, or wildlife.

Exception Report
A report that generators who transport waste off-site must submit if they do not receive a properly completed copy of their manifest within 45 days of the date on which the initial transporter accepted the waste.

Generator
The person or facility who, by nature or ownership, management or control, is responsible for causing or allowing to be caused, the creation of hazardous waste.

Glovebag
A device used to remove a section of pipe insulation without isolating the entire space or room.

Groundwater Hydrology
The study of the movement of water below the earth's surface.

Hazard
A circumstance or condition that can cause harm. Hazards are often categorized into four groups: biological, chemical, physical, and radiation.

Hazard Classes
A series of nine descriptive terms that have been established by the UN Committee of Experts to categorize the hazardous nature of chemical, physical, and biological materials. These categories are: flammable liquids, explosives, gases, oxidizers, radioactive materials, corrosives, flammable solids, poisonous and infectious substances, and dangerous substances.

Hazardous Waste
Any material that is subject to the hazardous waste manifest requirements of the EPA specified in the CFR, Title 40, Part 262 or would be subject to these requirements in the absence of an interim authorization to a State under CFR, Title 40, Part 123, Subpart F.

Heavy Metals
Certain metallic elements having a high density and generally toxic, e.g., lead, silver, mercury, and arsenic.

Immediate Removal
Actions undertaken to prevent or mitigate immediate and significant risk of harm to human life or health or the environment. As set forth in the National Contingency Plan, these actions shall be terminated after $1 million has been obligated or six months have elapsed from the date of initial response.

Incident
The release or potential release of a hazardous substance into the environment.

Inert
Exhibiting no chemical activity; totally unreactive.

Innocent Land Owner's Defense
The defense of a purchaser of real property that he or she exercised due diligence in having hazards assessed prior to purchase.

Interim Status
Allows owners and operators of TSDs that were in existence, or for which construction had commenced, prior to November 19, 1980 to continue to operate without a permit after this date pending final issuance from RCRA.

Joint and Several Liability
Under federal law each party that contributed to damages may be held liable for all damages, but each has the right to compel the others to contribute and indemnify.

Liability
Being subject to legal action for one's behavior.

MSDS Material Safety Data Sheet
Required by OSHA of owners to alert employees to hazards, their effect, and protective action.

Manifest
Form which indicates generator, quantity, and type of waste for each shipment of hazardous wastes disposed in off-site facilities.

National Contingency Plan
Policies and procedures that the Federal Government follows in implementing responses to incidents involving hazardous substances.

P Wastes
A federal waste list comprised of substances categorized as acutely hazardous.

Part A
The first part of a two part application that must be submitted by a TSD to receive a permit. It contains general facility information.

Part B
The second part of a two part application that must be submitted by a TSD to receive a permit. It contains highly technical and detailed information.

Planned Removal
The removal of released hazardous substances from the environment within a non-immediate, long term time period. Under CERCLA: Actions intended to minimize increases in exposure such that time and cost commitments are limited to six months and/or $1 million.

Poison, Class A
A DOT term for extremely dangerous poisons, that is, poisonous gases or liquids of such nature that a very small amount of the gas, or vapor of the liquid, mixed with air is dangerous to life. Some examples: phosgene, cyanogen, and hydrocyanic acid.

Poison, Class B
A DOT term for liquid, solid, paste, or semisolid substances, other than Class A poisons, which are known to be toxic to man as to afford a hazard to health during transportation.

Pollutant
A substance or mixture which after release into the environment and upon exposure to any organisms will or may reasonably be anticipated to cause adverse effects in such organisms and their offspring.

Priority Pollutants
A list of chemicals selected from the list of toxic pollutants by the EPA as priority toxic pollutants for regulation under the Clean Water Act.

Remedial Actions
Responses to releases of hazardous substances on the NPL that are consistent with a permanent remedy which would prevent or mitigate the migration of materials into the environment.

Risk
The probability that an unwanted event will occur.

Second Responders
Those personnel required to assist or relieve first responders at a hazardous material incident due to their specialized knowledge, equipment, or experience. These include State environmental protection or health officials, commercial response, cleanup companies, and appropriate industry representatives.

Strict Liability
Holds a party responsible for damages irrespective of the amount of care taken in handling a hazardous substance.

Subtitle C
The part of RCRA which pertains to the management of hazardous waste.

Subtitle I
The part of RCRA which pertains to the storage of petroleum products and hazardous substances, other than wastes, in USTs.

Superfund
See CERCLA.

Synergistic
The action of two materials together which is greater in effect than the sum of the individuals actions.

TIGER Files
The US Census Bureau's TIGER files provide a nationwide computerized map with address range information.

Tort
A legal wrong, sometimes referred to as negligence.

Toxicity
The ability of a substance to produce injury by non-mechanical means once it reaches a susceptible site in or on the body.

U Wastes
A federal list of hazardous wastes which consists of substances deemed to be hazardous for hazards other than acute hazards.

-- Adapted from Lincoln Graduate Center, 1993. Real Estate Environmental Screening. San Antonio, Texas.

Acronyms and Abbreviations

-AIRS	Aerometric Information Retrieval System
-AST	Aboveground Storage Tank
-ASTM	American Society for Testing and Materials
-BLM	Bureau of Land Management
-BNA	Bureau of National Affairs
-CAA	Clean Air Act
-CDC	Centers for Disease Control
-CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
-CERCLIS	CERCLA Information System
-CICIS	Chemicals in Commerce Information System
-COE	U.S. Army Corps of Engineers
-CWA	Clean Water Act
-DDT	Dicholoro-diphenyl-dichloroethane
-DOC	Department of Commerce
-DOCKET	Enforcement Docket System--Office of Enforcement and Compliance Monitoring
-DOE	Department of Energy
-DOT	Department of Transportation
-EPA	Environmental Protection Agency
-ERCS	Emergency Response Cleanup Services
-ERNS	Emergency Response Notification System
-ESA	Environmental Site Assessment
-FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
-FINDS	Facility Index System
-FOIA	Freedom of Information Act
-FWPCA	Federal Water Pollution Control Act
-HHS	Department of Health and Human Services
-HSWA	Hazardous and Solid Waste Amendments of 1984
-HUD	Department of Housing and Urban Development
-LUST	Leaking Underground Storage Tank
-MSDS	Material Safety Data Sheet
-NEPA	National Environment Policy Act
-NESHAP	National Emission Standards for Hazardous Air Pollutants
-NFRAP	No Further Remedial Action Planned (Delisted CERCLA Site)
-NOI	Notice of Intent
-NOV	Notice of Violation
-NPDES	National Pollution Discharge Elimination System
-NPL	National Priorities List
-NRC	Nuclear Regulatory Commission
-NRIS	Nuclear Regulatory Information System
-OSHA	Occupational Safety and Health Administration

Acronyms and Abbreviations

-PADS	PCB Activity Database System
-PCB	Polychlorinated Biphenyls
-POTW	Publicly-Owned Treatment Works
-PPM	Parts Per Million
-PRP	Potentially Responsible Parties
-RAATS	RCRA Administrative Action Tracking System
-RCRA	Resource Conservation and Recovery Act of 1976
-RCRIS	Resource Conservation and Recovery Information System
-RFA	RCRA Facility Assessment
-RFI	RCRA Facility Investigation
-RI	Remedial Investigation (CERCLA)
-SARA	Superfund Amendments and Reauthorization Act of 1986
-SCS	Soil Conservation Service
-SDWA	Safe Drinking Water Act
-SETS	Superfund Enforcement Tracking System
-SSTS	Section Seven Tracking System
-SWF/LF	Solid Waste Facilities / Landfills
-TIGER	Topologically Integrated Geographic Encoding and Referencing System
-TRI	Toxic Release Inventory
-TSCA	Toxic Substances Control Act
-TSD	Treatment, Storage, or Disposal Facility
-USDA	U.S. Department of Agriculture
-USGS	U.S. Geological Survey
-UST	Underground Storage Tank
-WWTP	Wastewater Treatment Plant

G

Well and Borehole Logs and Construction Diagrams

DRILLING LOG FOR MW-7

Project Name KENILWORTH PARK LANDFILL

Site Location KENILWORTH PARK. N.E. WASHINGTON DC.

Date Started/Finished 05/04/99 - 05/05/99

Drilling Company BADGER DRILLING

Driller's Name DON GRANT

Geologist's Name H. ALDIS

Geologist's Signature Hussein Aldis.

Rig Type (s) CME 750 ATV

Drilling Method (s) HOLLOW STEM AUGER

Bit Size (s) _____ Auger Size (s) 4 1/4" ID

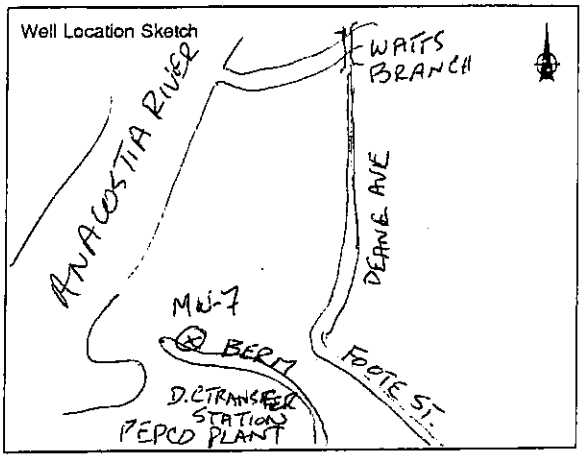
Auger/Split Spoon Refusal N/A

Total Depth of Borehole Is 29 ft bgs

Total Depth of Corehole Is N/A

Water Level (TOIC)		
Date	Time	Level(Feet)

Well Location Sketch



Depth(Feet)	Sample Number	Blows on Sampler	Soil Components CL SL S GR	Rock Profile	Penetration Times	Run Number	Core Recovery	RQD	Fracture Sketch	HNu/OVA (ppm)	Comments
1											0-2' MID BROWN CLAY LOAM FILL
2											2-5 MID GRAY-BROWN WITH SMALL STONES FILL
3											
4											5-6' DARK GREY FILL (WITH GLASS) PAPER
5										Explosive >20% LEL	
6											6'-7' ? RAILROAD TIES TIMBER
7											7-12 BLACK GRAVEL WITH WOOD AND CLAY
8											
9											
10											
11											
12											
13											
14											

MW-7. KENILWORTH PARK LANDFILL

Depth(feet)	Sample Number	Blows on Sampler		Soil Components CL SL S GR	Rock Profile	Penetration Times	Run Number	Core Recovery	RQD	Fracture Sketch	HNu/OVA (ppm)	Comments
16				15-17.5 BLACK GRAVEL WITH WOOD, CLAY, METAL WIRE								Stopped for night at 17.5
17												
18												EASIER DRILLING AT 19' PER DRILLER
19												
20												? WATER at 21'
21												
22												EXPLOSIMETER >LEL
23	1	5	7	7" BLACK GR WET 17" CLAY-SILT V.FINE SD				100%				KL-MW-7-S1 23-25' 23'7"
24		7	14									NATURAL SEDIMENT
25												NOT SAMPLED
26												
27												
28												
29												TD 29'
30												COLLECTED BLACK STINKING FILL MATERIAL FROM AUGERS AS THEY WERE WITHDRAWN
31												
32												
33												
34												
35												
36												
37												
38												
39												
40												
41												
42												
43												
44												

DRILLING LOG FOR MW-8 INSTALLED AT BH #16

Project Name KENILWORTH PARK LANDFILL

Site Location KENILWORTH PARK NE. WASHINGTON D.C.

Date Started/Finished 05/10/99 - 05/10/99

Drilling Company BADGER DRILLING

Driller's Name DON GRANT

Geologist's Name HUSSEIN ALDIS

Geologist's Signature Hussein Aldis.

Rig Type (s) CME 750 ATV

Drilling Method (s) HOLLOW STEM AUGER

Bit Size (s) _____ Auger Size (s) 4 1/4" I.D.

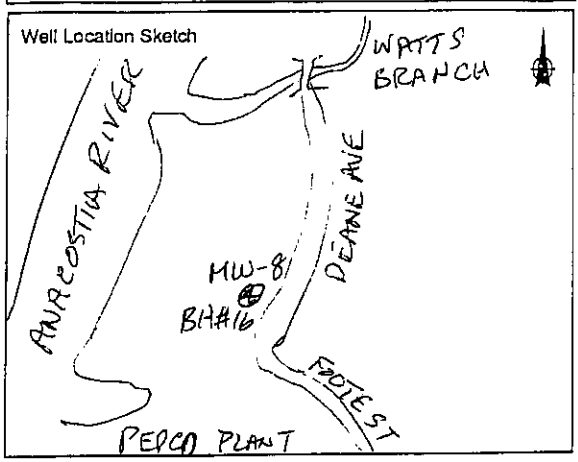
Auger/Split Spoon Refusal N/A

Total Depth of Borehole Is 25 ft bgs.

Total Depth of Corehole Is N/A.

Water Level (TOIC)		
Date	Time	Level(Feet)

Well Location Sketch



Depth(Feet)	Sample Number	Blows on Sampler	Soil Components CL SL S GR	Rock Profile	Penetration Times	Run Number	Core Recovery	RQD	Fracture Sketch	HNu/OVA (ppm)	Comments
1			LAND FILL MATERIAL TO 25'								
2											
3											
4			5'-7.5' METAL/ CONCRETE								
5											
6											
7											
8											
9											
10											
11											
12											
13											WATER ADDED 15 gallons To ease drilling
14											

MW-8 KENILWORTH LANDFILL

Depth(feet)	Sample Number	Blows on Sampler	Soil Components CL SL S GR	Rock Profile	Penetration Times	Run Number	Core Recovery	RQD	Fracture Sketch	HNu/OVA (ppm)	Comments
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											DRILLER ESTIMATES BOTTOM OF FILL AT 25' (BH#16)
26			BOTTOM OF MW-8								
27											
28											
29											
30											
31		1 3	BROWN CL								SPLITSPOON BH#16 KL-BH16-S3 30-32'
32		6 3	F.SAND CLEAN								
33											
34											
35											
36											
37											
38											
39											
40											
41											
42											
43											
44											

DRILLING LOG FOR MW-9

Project Name KENILWORTH PARK LANDFILL

Site Location KENILWORTH PARK N.E. WASHINGTON D.C.

Date Started/Finished 05/10/9

Drilling Company BADGER DRILLING

Driller's Name DON GRANT

Geologist's Name HUSSEIN ALDIS

Geologist's Signature Hussein Aldis

Rig Type (s) CME 75 ATV

Drilling Method (s) Hollow Stem Auger

Bit Size (s) _____ Auger Size (s) 4 1/4" ID.

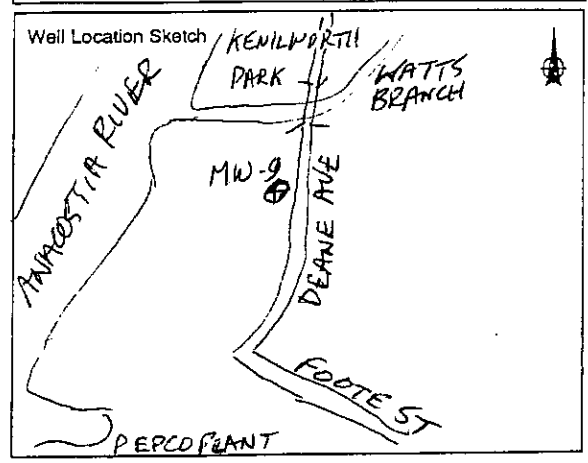
Auger/Split Spoon Refusal NOTE REAMED WITH AUGER to 25'

Total Depth of Borehole Is 25 FEET.

Total Depth of Corehole Is _____

Water Level (TOIC)		
Date	Time	Level(Feet)
05/10/9	3:30pm	18.1 BTOC

Well Location Sketch



Depth(Feet)	Sample Number	Blows on Sampler		Soil Components CL SL S GR	Rock Profile	Penetration Times	Run Number	Core Recovery	RQD	Fracture Sketch	HNu/OVA (ppm)	Comments
1				LANDFILL CAP CLAY								
2												
3												
4				LANDFILL MATERIAL BLACK GRAVEL, COBBLES ASH, CLAY								
5												
6												
7												
8												
9												
10												
11		10	12		SPLIT SPOON	10-12						0 RECOVERY
12	KL-MW9 -S1	16	8	MIXED FILL MATERIAL								6" RECOVERY BLACK GRAVEL ASH, SAND & SILT CLAY, GLASS metal 8OZ ONLY
13		6	17		"	12-14 KL-MW9 -S1		25%				
14		15	8									

recycled paper

ecology and environment

MW-9 KENILWORTH PARK LANDFILL

Depth(feet)	Sample Number	Blows on Sampler	Soil Components CL SL S GR	Rock Profile	Penetration Times	Run Number	Core Recovery	RQD	Fracture Sketch	HNu/OVA (ppm)	Comments
16											WET AT 15'
17											
18											
19											
20											
21											
22											
23											
24											WELL CONSTRUCTED
25			T.D								AT 25'
26			Note: WELL PULLED UP WHEN AUGER WITHDRAWN; WELL COMPLETED @ 22ft bgs								
27											
28											
29											
30											
31											
32											
33											
34											
35											
36											
37											
38											
39											
40											
41											
42											
43											
44											

DRILLING LOG FOR MW-10

Project Name KENILWORTH PARK LANDFILL

Site Location KENILWORTH PARK LANDFILL
KENILWORTH PARK NE, WASHINGTON D.C.

Date Started/Finished 05/10/99

Drilling Company BADGER DRILLING

Driller's Name DON GRANT

Geologist's Name HUSSEIN ALDIK

Geologist's Signature Hussein Aldik

Rig Type (s) CME 75 ATV

Drilling Method (s) HOLLOW STEM AUGER

Bit Size (s) _____ Auger Size (s) 4 1/4" ID

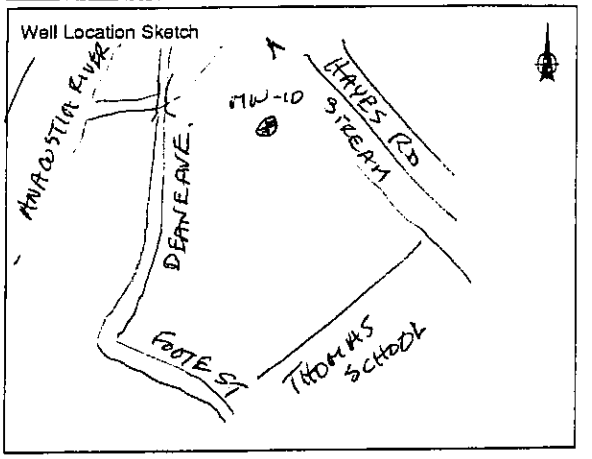
Auger/Split Spoon Refusal N/A

Total Depth of Borehole Is 15 feet

Total Depth of Corehole Is _____

Water Level (TOIC)		
Date	Time	Level(Feet)

Well Location Sketch



Depth(Feet)	Sample Number	Blows on Sampler		Soil Components CL SL S GR	Rock Profile	Penetration Times	Run Number	Core Recovery	RQD	Fracture Sketch	HNu/OVA (ppm)	Comments
1												
2												
3												STRONG SMELL OF PETROLEUM PRODUCT
4												
5												SAMPLE OF FILL TAKEN FROM AUGERS KL-MW10-S1 FOR ANALYSIS
6												
7												
8	KL-MW10-S2	1	1	SILT, SOME CLY LT BROWN				100%				
9		1	2	BROWN SOFT CLAY								
10												
11												
12												
13												
14												
15												T.D. 15'

DRILLING LOG FOR MW-11

Project Name KENILWORTH PARK LANDFILL

Site Location KENILWORTH PARK NE WASHINGTON D.C.

Date Started/Finished 05/11/99

Drilling Company BADGER DRILLING

Driller's Name DON GRANT

Geologist's Name HUSSEIN ALDIS

Geologist's Signature Hussein Aldis

Rig Type (s) CME 75 ATV

Drilling Method (s) HOLLOW STEM AUGER

Bit Size (s) _____ Auger Size (s) 4 1/4" I.D.

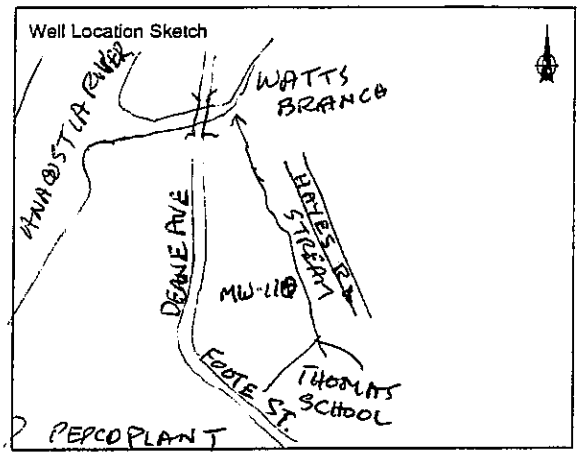
Auger/Split Spoon Refusal N/A

Total Depth of Borehole Is 15 FT

Total Depth of Corehole Is _____

Water Level (TOIC)		
Date	Time	Level(Feet)

Well Location Sketch



Depth(Feet)	Sample Number	Blows on Sampler		Soil Components CL SL S GR	Rock Profile	Penetration Times	Run Number	Core Recovery	RQD	Fracture Sketch	HNu/OVA (ppm)	Comments
				BROWN SILT LOAM W GR-COBBLES (FILL)								
1												
2												
3				GREYER AS ABOVE								
4												
5				GRAY CLY PLASTIC DK BRWN CL W. GRAVEL								
6												
7												
8											Explo^R 0PPM	8.5-9FT FILL
9		7	5	BLACK GR								9-10 NATURAL CLAYS/SDY
10		3	4	BRN CL/SD SOFT NATURAL?				50%				
11												
12												
13												
14												
15FT				T.D.								

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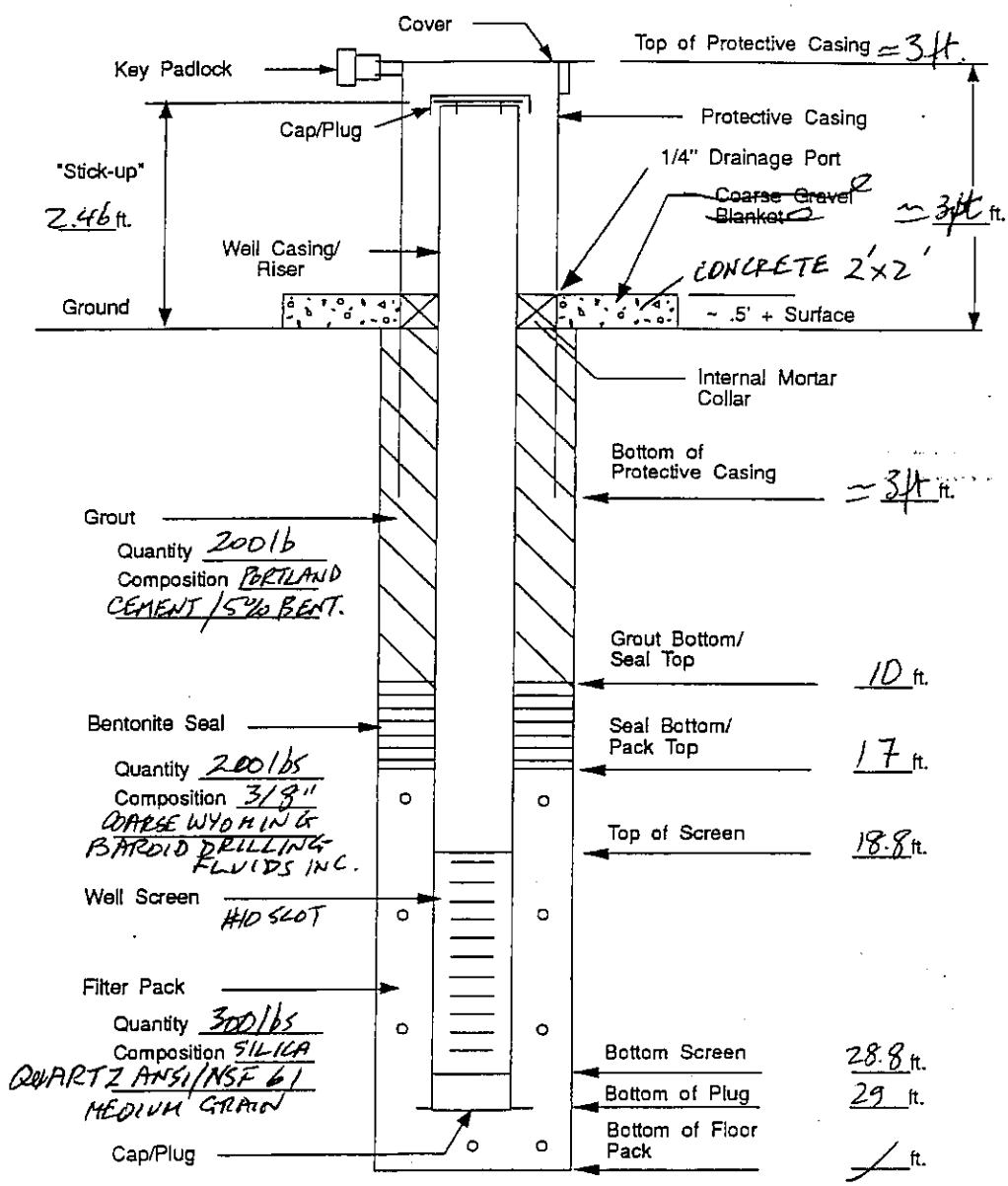
ecology and environment

Page: 1

Well Construction Log: KENILWORTH PARK LANDFILL
Site ID Number: N/A KENILWORTH PARK LANDFILL
Well Number: KL-MW-7
Today's Date: 05/05/99

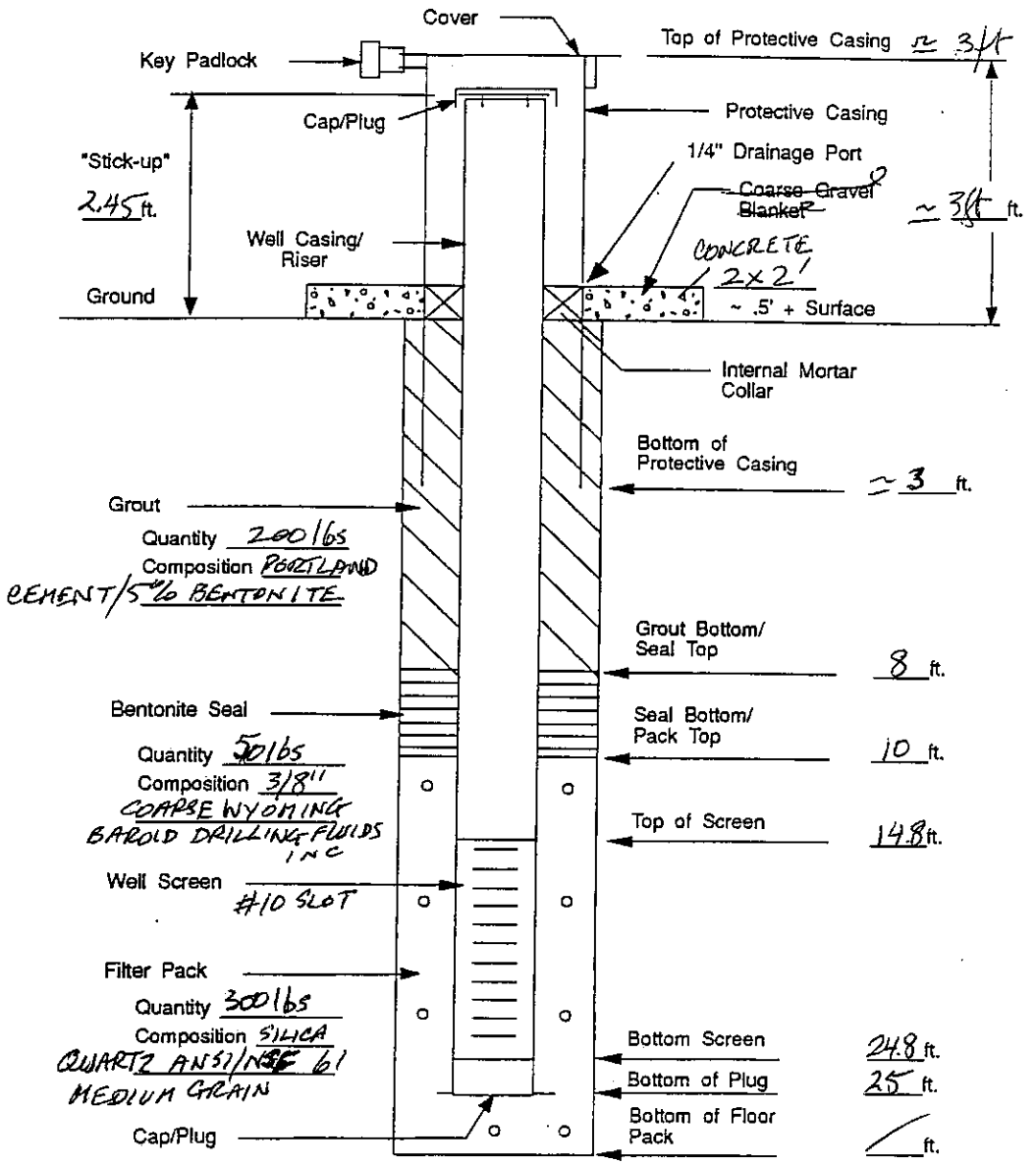
WELL CONSTRUCTION



Page: 1

Well Construction Log: KENILWORTH PARK LANDFILL
Site ID Number: N/A
Well Number: MW-8
Today's Date: 05/10/99

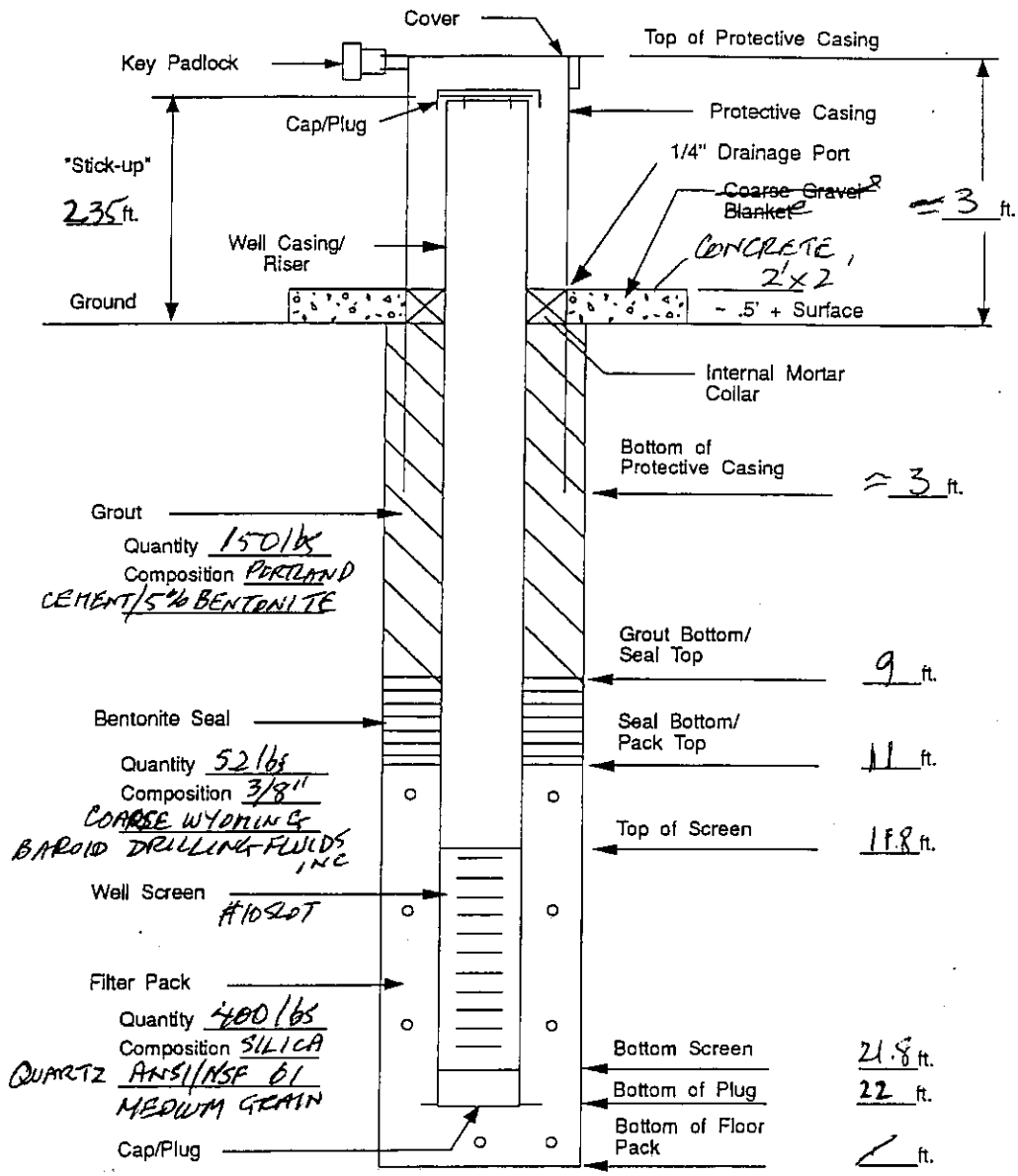
WELL CONSTRUCTION



Page: 1

Well Construction Log: KENILWORTH PARK LANDFILL
Site ID Number: N/A
Well Number: MW-9
Today's Date: 05/10/99

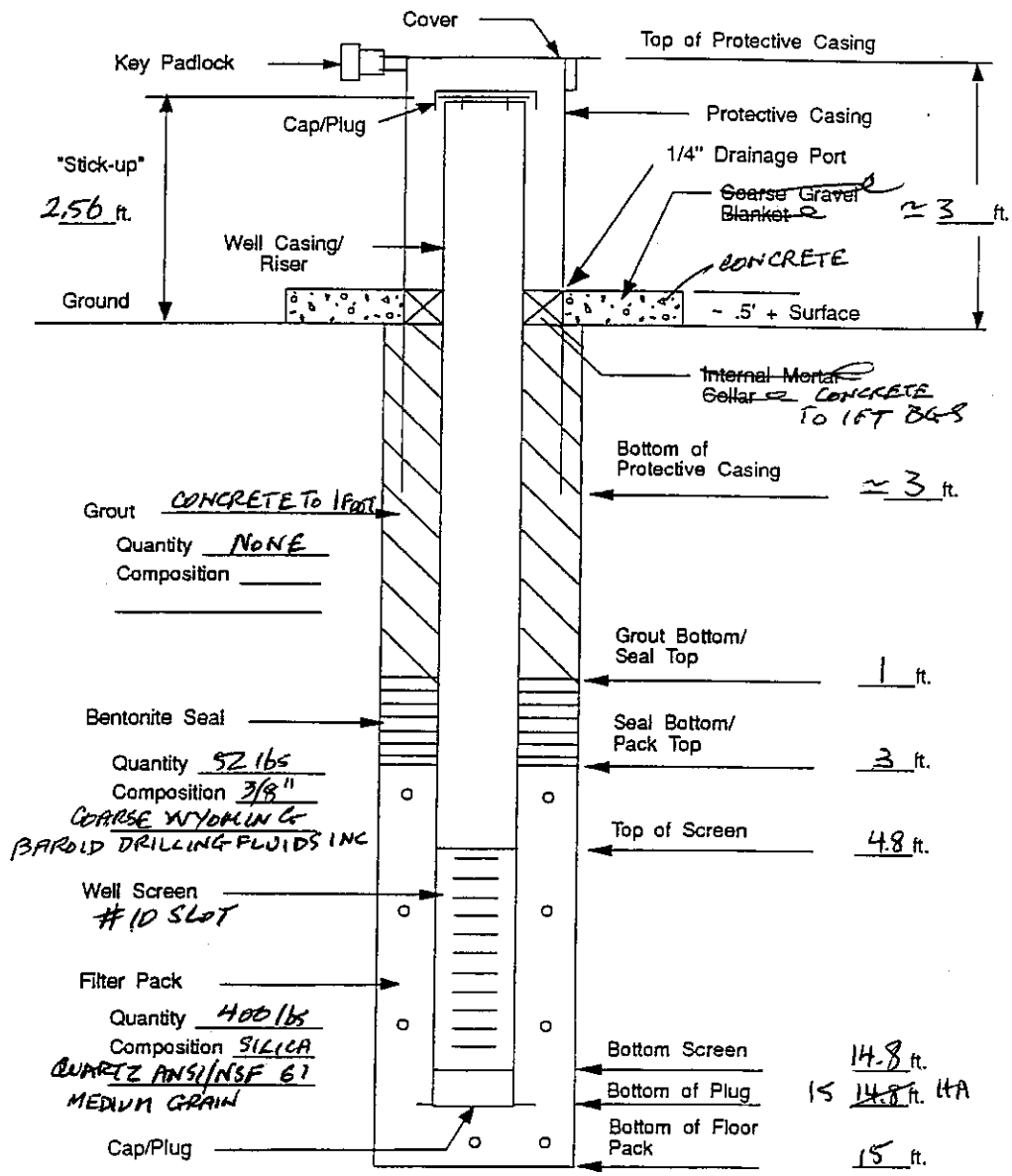
WELL CONSTRUCTION



Page: 1

Well Construction Log: KENILWORTH PARK LANFILL
Site ID Number: N/A
Well Number: MW-10
Today's Date: 05/10/99

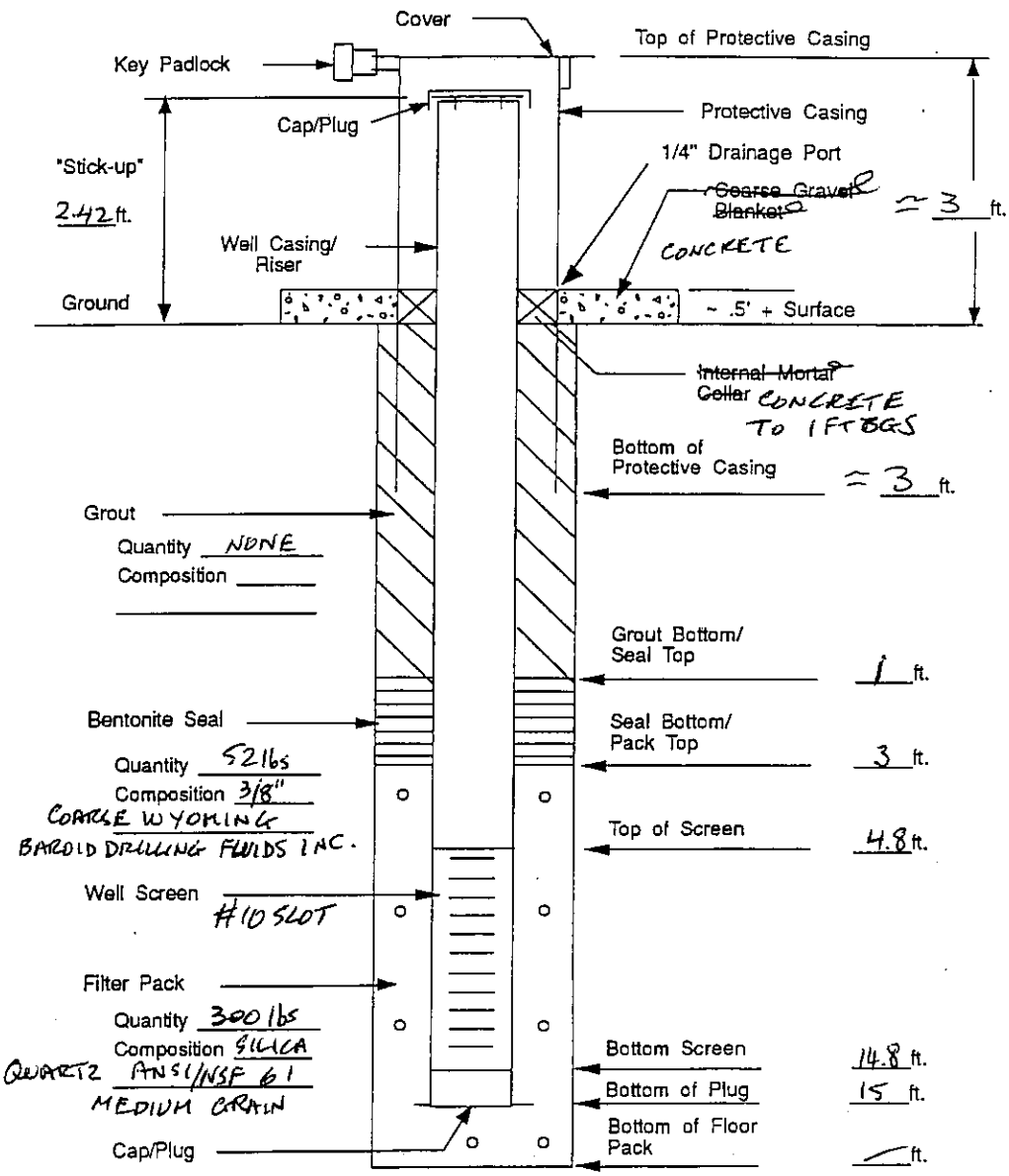
WELL CONSTRUCTION



Page: 1

Well Construction Log: KENILWORTH PARK LANDFILL
Site ID Number: N/A
Well Number: MW-11
Today's Date: 05/11/99

WELL CONSTRUCTION



recycled paper

ecology and environment

BADGER DRILLING, INC.

TECHNICIAN Hussein
DRILLER Dan
HELPER Jason
RIG NO. 750 CME

SURFACE ELEV.
BORING STARTED 5-5-99
BORING COMPLETED 5-5-99
STATION
OFF SET
CASING USED H.S.A SIZE 2 1/4"

Sheet 1 of 1
WATER LEVEL OBSERVATIONS
WL: Dry (WS) or WB
WL: BCR Dry (ACR)
WL: AB Hr.AB
WL: 24 Hr. AB

JOB NO. Ym 7030 BORING NO. 1 CLIENT Ecology + Environment WEATHER Sunny/clear ABBREVIATIONS

E.O.B @ 32'
5'-7' - easy drilling (soft)

sample no.	Depth or Elevation FROM	TO	Sampling Method	PENETRATION RECORD Split Spoon Blows 6"	6"	6"	6"	R Length Recovered in Feet	Qp Penetrometer Test in TSF	Strata Change	Sample Description
	5'	7'	P.A.								Soft/easily drilled.
1	10'	12'	S.S	5	7	8	9	14"			Sandy silt w/ some gravel
2	20'	22'	S.S	4	4	6	8	12"			clay/sand
3	30'	32'	S.S	5	17	18	25	16"			Sandy/silty/clay
											E.O.B. @ 32'

ABBREVIATIONS
F.T.-Fish Tail
W.O.-Wash Out
S.T.-Shelby Tube
S.S.-Split Spoon
D.B.-Diamond Bit
P.A.-Power Auger
R.B.-Rock Bit
W.S.-While Sampling
W.D.-While Drilling
B.C.R.-Before Casing Removal
A.C.R.-After Casing Removal
A.B.-After Boring

DRILL CREW CHECK LIST
Topsoil Thickness
Fill Thickness
CAVE IN LEVEL:
While Drilling and Sampling
After Boring Completion 19'
WATER LOSS:
At To
Percent Loss
At To
Percent Loss
BOULDERS OR OBSTRUCTIONS:
At To
At To
ARTESIAN PRESSURE:
Depth
Height of Soil Rise in Casing

BADGER DRILLING, INC.

Sheet 1 of 1

TECHNICIAN Hussein
DRILLER Don
HELPER Jason
RIG NO. 750 ME

SURFACE ELEV.
BORING STARTED 5-5-99
BORING COMPLETED 5-5-99
STATION
OFF SET
CASING USED H.S.A SIZE 2 1/4"

WATER LEVEL OBSERVATIONS
WL: Dry (WS) or WB
WL: BCR Dry (ACR)
WL: AB Hr. AB
WL: 24 Hr. AB

JOB NO. YM7030 BORING NO. 2 CLIENT Ecology + Environment WEATHER Sunny/Clear

sample no.	Depth or Elevation FROM	TO	Sampling Method	PENETRATION RECORD Split Spoon Blows 6"	6"	6"	6"	R Length Recovered in Feet	Qp Penetrometer Test in TSF	Strata Change	Sample Description
				← 2 Feet →							E.O.B @ 32'
1	10'	12'	SS	6	5	50/4		11"			Sandy silt with organics/cobble
2	20'	22'	SS	4	8	12	12	18"			silty sand w/ cobble
3	30'	32'	SS	20	28	50/5		10"			Silty sand w/ organics
											E.O.B @ 32'

ABBREVIATIONS
F.T.-Fish Tail
W.O.-Wash Out
S.T.-Shelby Tube
S.S.-Split Spoon
D.B.-Diamond Bit
P.A.-Power Auger
R.B.-Rock Bit
W.S.-While Sampling
W.D.-While Drilling
B.C.R.-Before Casing Removal
A.C.R.-After Casing Removal
A.B.-After Boring

DRILL CREW CHECK LIST
Topsoil Thickness
Fill Thickness

CAVE IN LEVEL:
While Drilling and Sampling
After Boring Completion 27'

WATER LOSS:
At To
Percent Loss
At To
Percent Loss

BOULDERS OR OBSTRUCTIONS:
At To
To

ARTESIAN PRESSURE:
Depth
Height of Soil Rise in Casing

BADGER DRILLING, INC.

Sheet 1 of 1

TECHNICIAN Hussein
DRILLER Don
HELPER Jason
RIG NO. 750 CME

SURFACE ELEV.
BORING STARTED 5-5-99
BORING COMPLETED 5-5-99
STATION
OFF SET
CASING USED H.S.A SIZE 2 1/4"

WATER LEVEL OBSERVATIONS
WL: DRY WS or WB
WL: BCR DRY ACR
WL: AB Hr. AB
WL: 24 Hr. AB

JOB NO. YM 7030 BORING NO. 3 CLIENT Ecology + Environment WEATHER Sunny / Clear

sample no.	Depth or Elevation FROM	TO	Sampling Method	PENETRATION RECORD Split Spoon Blows 6"	6"	6"	6"	R Length Recovered in Feet	Qp Penetrometer Test in TSF	Strata Change	Sample Description
				← 2 Feet →							E.O.B @ 32'
1	10'	12'	S.S	6	21	12	7	18"			Silty clay w/ traces sand
2	20'	22'	S.S.	50/5.5				4"			Silty clay w/ organics.
3	30'	32	S.S	22	23	13	7	8"			Same as above
											E.O.B @ 32'

ABBREVIATIONS
F.T.-Fish Tail
W.O.-Wash Out
S.T.-Shelby Tube
S.S.-Split Spoon
D.B.-Diamond Bit
P.A.-Power Auger
R.B.-Rock Bit
W.S.-While Sampling
W.D.-While Drilling
B.C.R.-Before Casing Removal
A.C.R.-After Casing Removal
A.B.-After Boring

DRILL CREW CHECK LIST
Topsoil Thickness
Fill Thickness

CAVE IN LEVEL:
While Drilling and Sampling
After Boring Completion 14'

WATER LOSS:
At To
Percent Loss
At To
Percent Loss

BOULDERS OR OBSTRUCTIONS:
At To
At To

ARTESIAN PRESSURE:
Depth
Height of Soil in Casing

BADGER DRILLING, INC.

Sheet 1 of 1

TECHNICIAN Hussein
DRILLER Don
HELPER Jason
RIG NO. CME 75D

SURFACE ELEV.
BORING STARTED 5-5-99
BORING COMPLETED 5-5-99
STATION
OFF SET 5' North CASING USED H.S.A SIZE 2 1/4"

WATER LEVEL OBSERVATIONS
WL: Dry (WS) or WB
WL: BCR Dry (ACR)
WL: AB Hr. AB
WL: 24 Hr. AB

JOB NO. YM7030 BORING NO. 4 CLIENT Ecology + Environment WEATHER Sunny

sample no.	Depth or Elevation FROM	TO	Sampling Method	PENETRATION RECORD Split Spoon Blows 6"	6"	6"	6"	R Length Recovered in Feet	Qp Penetrometer Test in TSF	Strata Change	Sample Description
				← 2 Feet →							E.O.B @ 32'
1	10'	12'	S.S.	7	7	11	12	17"			Sandy silt w/ some cobble
2	20'	22'	S.S.	38	33	13	50/1	10"			Same as above
3	30'	32'	S.S.	18	15	12	7	16"			Coarse black fill / Glass / Wood
											E.O.B @ 32'

ABBREVIATIONS
F.T.-Fish Tail
W.O.-Wash Out
S.T.-Shelby Tube
S.S.-Split Spoon
D.B.-Diamond Bit
P.A.-Power Auger
R.B.-Rock Bit
W.S.-While Sampling
W.D.-While Drilling
B.C.R.-Before Casing Removal
A.C.R.-After Casing Removal
A.B.-After Boring

DRILL CREW CHECK LIST
Topsoil Thickness
Fill Thickness

CAVE IN LEVEL:
While Drilling and Sampling
After Boring Completion 28'

WATER LOSS:
At To
Percent Loss
At To
Percent Loss

BOULDERS OR OBSTRUCTIONS:
At To
At To

ARTESIAN PRESSURE:
Depth
Height of Soil Rise in Casing

BADGER DRILLING, INC.

TECHNICIAN Hussein
DRILLER Don
HELPER Jason / Mike
RIG NO. CME 750

SURFACE ELEV.
BORING STARTED 5-6-99
BORING COMPLETED 5-6-99
STATION
OFF SET
CASING USED H.S.A SIZE 2¼'

Sheet 1 of 1
WATER LEVEL OBSERVATIONS
WL: Dry (WS) or WB
WL: BCR Dry (ACR)
WL: AB Hr.AB
WL: 24 Hr. AB

JOB NO. YM7030 BORING NO. 5 CLIENT Ecology + Environment WEATHER Overcast

sample no.	Depth or Elevation FROM	TO	Sampling Method	PENETRATION RECORD Split Spoon Blows 6"	6"	6"	6"	R Length Recovered in Feet	Qp Penetrometer Test in TSF	Strata Change	Sample Description
				← 2 Feet →							E.O.B @ 39'
1	10'	12'	S.S.	5	9	12	7	16"			Clay w/ sand and trace of cobble.
2	20'	22'	S.S.	12	10	8	11	10"			Clay w/ organics and traces of sand.
3	30'	32'	S.S.	7	8	12	12	19"			red/brn clay w/ sand
4	34'	36'	S.S	48	32	12	7	0"			No recovery
5	37'	39'	S.S	15	12	7	8	15"			Black organics w/ sand - landfill
											E.O.B @ 39'

ABBREVIATIONS
F.T.-Fish Tail
W.O.-Wash Out
S.T.-Shelby Tube
S.S.-Split Spoon
D.B.-Diamond Bit
F.A.-Power Auger
R.B.-Rock Bit
W.S.-While Sampling
W.D.-While Drilling
B.C.R.-Before Casing Removal
A.C.R.-After Casing Removal
A.B.-After Boring

DRILL CREW CHECK LIST
Topsoil Thickness
Fill Thickness
CAVE IN LEVEL:
While Drilling and Sampling
After Boring Completion 5'
WATER LOSS:
At To
Percent Loss
At To
Percent Loss
BOULDERS OR OBSTRUCTIONS:
At To
At To
ARTESIAN PRESSURE:
Depth
Height of Soil Rise in Casing

BADGER DRILLING, INC.

TECHNICIAN Hussein
DRILLER Don
HELPER Jason / Mike
RIG NO. CME 750

SURFACE ELEV.
BORING STARTED 5-6-99
BORING COMPLETED 5-6-99
STATION
OFF SET
CASING USED H.S.A SIZE 2 1/4"

Sheet 1 of 1
WATER LEVEL OBSERVATIONS
WL: Dry (WS) or WB
WL: BCR Dry (ACR)
WL: AB Hr. AB
WL: 24 Hr. AB

JOB NO. YM7030 BORING NO. 6 CLIENT Ecology + Environment WEATHER Overcast

sample no.	Depth or Elevation FROM	TO	Sampling Method	PENETRATION RECORD Split Spoon Blows 6"	6"	6"	6"	R Length Recovered in Feet	Qp Penetrometer Test in TSF	Strata Change	Sample Description
				← 2 Feet →							E.O.B @ 36'
1	10'	12'	S.S.	28	23	11	11	15"			Sandy clay w/ organics (brn)
2	20'	22'	S.S	6	5	10	13	16"			Same as above
3	30'	32'	SS	11	17	18	31	9"			light brn sandy/clay/wood
4	34'	36'	SS	11	12	14	11	16"			black organics - landfill
											E.O.B @ 36"

ABBREVIATIONS
F.T.-Fish Tail
W.O.-Wash Out
S.T.-Shelby Tube
S.S.-Split Spoon
D.B.-Diamond Bit
P.A.-Power Auger
R.B.-Rock Bit
W.S.-While Sampling
W.D.-While Drilling
B.C.R.-Before Casing Removal
A.C.R.-After Casing Removal
A.B.-After Boring

DRILL CREW CHECKLIST
Topsoil Thickness
Fill Thickness
CAVE IN LEVEL:
While Drilling and Sampling
After Boring Completion 17'
WATER LOSS:
At To
Percent Loss
At To
Percent Loss
BOULDERS OR OBSTRUCTIONS:
At To
At To
ARTESIAN PRESSURE:
Depth
Height of Soil Rise in Casing

BADGER DRILLING, INC.

TECHNICIAN Hussein
DRILLER Don
HELPER Jason / Mike
RIG NO. CME 750

SURFACE ELEV.
BORING STARTED 5-6-99
BORING COMPLETED 5-6-99
STATION
OFF SET
CASING USED H.S.A SIZE 2 1/4"

Sheet 1 of 1
WATER LEVEL OBSERVATIONS
WL: Wet (WS) or WB
WL: BCR ACR
WL: AB Hr.AB
WL: 24 Hr. AB

JOB NO. YM7030 BORING NO. 7 CLIENT Ecology + Environment WEATHER Overcast

sample no.	Depth or Elevation FROM	TO	Sampling Method	PENETRATION RECORD Split Spoon Blows 6"	6"	6"	6"	R Length Recovered in Feet	Qp Penetrometer Test in TSF	Strata Change	Sample Description
				← 2 Feet →							E.O.B @ 32'
1	10'	12'	S.S.	2	2	3	4	14"			Red/Brown module clay w/ trace sand.
2	20'	22'	S.S.	36	6	11	24	9"			Clay w/ sand and organics.
3	30'	32'	S.S.	22	66	50/5		16"			Brn/black silty sand w/ organics
	—										water @ 30'
											E.O.B. @ 32'

ABBREVIATIONS
F.T.-Fish Tail
W.O.-Wash Out
S.T.-Shelby Tube
S.S.-Split Spoon
D.B.-Diamond Bit
P.A.-Power Auger
R.B.-Rock Bit
W.S.-While Sampling
W.D.-While Drilling
B.C.R.-Before Casing Removal
A.C.R.-After Casing Removal
A.B.-After Boring

DRILL CREW CHECK LIST
Topsoil Thickness
Fill Thickness
CAVE IN LEVEL:
While Drilling and Sampling
After Boring Completion 14'
WATER LOSS:
At To
Percent Loss
At To
Percent Loss
BOULDERS OR OBSTRUCTIONS:
At To
At To
ARTESIAN PRESSURE:
Depth
Height of Soil Plug in Casing

BADGER DRILLING, INC.

Sheet 1 of 1

TECHNICIAN Hussien
DRILLER Don
HELPER Mike/Jason
RIG NO. BOCME

SURFACE ELEV.
BORING STARTED 5-6-99
BORING COMPLETED 5-6-99
STATION
OFF SET 4' NE
CASING USED H.S.A SIZE 2 1/4"

WATER LEVEL OBSERVATIONS
WL: Dry (WS) or WB
WL: Dry BCR (ACR)
WL: AB Hr. AB
WL: 24 Hr. AB

JOB NO. YM703C BORING NO. #8 CLIENT Ecology & Environment WEATHER Overcast

sample no.	Depth or Elevation FROM	TO	Sampling Method	PENETRATION RECORD Split Spoon Blows 6"	6"	6"	6"	R Length Recovered in Feet	Qp Penetrometer Test in TSF	Strata Change	Sample Description
											E.O.B @ 32'
											Auger Refusal @ 8'
	0	8'	P.A								Auger Refusal @ 8'
1	10'	12'	S.S	16	26	24	22	10"			Black organics w/ sandy silt
~~2~~	~~20'~~	~~22'~~	~~S.S~~	~~12~~	~~22~~	~~33~~	~~50/5.5~~				
2	20'	22'	S.S	12	22	33	50/5.5	12"			Black organics w/ traces of sand
3	30'	32'	S.S	8	9	10	12	10"			Brn silty sands.
											E.O.B @ 32'

ABBREVIATIONS
F.T.-Fish Tail
W.O.-Wash Out
S.T.-Shelby Tube
S.S.-Split Spoon
D.B.-Diamond Bit
P.A.-Power Auger
R.B.-Rock Bit
W.S.-While Sampling
W.D.-While Drilling
B.C.R.-Before Casing Removal
A.C.R.-After Casing Removal
A.B.-After Boring

DRILL CREW CHECK LIST
Topsoil Thickness
Fill Thickness
CAVE IN LEVEL:
While Drilling and Sampling
After Boring Completion
WATER LOSS 25'7"
At To
Percent Loss
At To
Percent Loss
BOULDERS OR OBSTRUCTIONS:
At To
At To
ARTESIAN PRESSURE:
Depth
Height of Soil Rise in Casing

BADGER DRILLING, INC.

Sheet 1 of 1

TECHNICIAN Hussein
DRILLER Ron
HELPER Mike/Jason
RIG NO. 750 CME

SURFACE ELEV.
BORING STARTED 5-6-99
BORING COMPLETED 5-6-99
STATION
OFF SET
CASING USED H.S.A. SIZE 2 1/4"

WATER LEVEL OBSERVATIONS
WL: Dry (WS) or WB
WL: BCR Dry (ACR)
WL: AB Hr.AB
WL: 24 Hr. AB

JOB NO. YM7030 BORING NO. #9 CLIENT Ecology & Environment WEATHER Overcast

sample no.	Depth or Elevation FROM	TO	Sampling Method	PENETRATION RECORD Split Spoon Blows 6"	6"	6"	6"	R Length Recovered in Feet	Qp Penetrometer Test in TSF	Strata Change	Sample Description
				← 2 Feet →							E.O.B @ 32'
1	10'	12'	SS	3	4	6	7	8"			Red brown clay/sand
2	20'	22'	S.S.	4	11	8	8	0"			No recovery
3	23'	25'	S.S	3	4	12	7	16"			light brn clay w/ some sand.
4	30'	32'	S.S	32	16	11	13	14"			Same as above.
											E.O.B @ 32'

ABBREVIATIONS
F.T.-Fish Tail
W.O.-Wash Out
S.T.-Shelby Tube
S.S.-Split Spoon
D.B.-Diamond Bit
P.A.-Power Auger
R.B.-Rock Bit
W.S.-While Sampling
W.D.-While Drilling
B.C.R.-Before Casing Removal
A.C.R.-After Casing Removal
A.B.-After Boring

DRILL CREW CHECK LIST
Topsoil Thickness
Fill Thickness
CAVE IN LEVEL:
While Drilling and Sampling
After Boring Completion 7.5'
WATER LOSS:
At To
Percent Loss
At To
Percent Loss
BOULDERS OR OBSTRUCTIONS:
At To
At To
ARTESIAN PRESSURE:
Depth
Height of Soil Rise in Casing

BADGER DRILLING, INC.

Sheet 1 of 1

TECHNICIAN Hussein SURFACE ELEV.
DRILLER Jon BORING STARTED 5-6-99
HELPER Mike & Jason BORING COMPLETED 5-6-99
RIG NO. 750CME STATION
OFF SET CASING USED HSA SIZE 2'1/4"

WATER LEVEL OBSERVATIONS
WL: Dry (WS) or WB
WL: BCR Dry (ACR)
WL: AB Hr.AB
WL: 24 Hr. AB

JOB NO. YM7030 BORING NO. #10 CLIENT Ecology & Environment WEATHER overcast

sample no.	Depth or Elevation FROM	TO	Sampling Method	PENETRATION RECORD Split Spoon Blows 6"	6"	6"	6" (2 Feet)	R Length Recovered in Feet	Qp Penetrometer Test in TSF	Strata Change	Sample Description
											E.O.B @ 32'
1	10'	12'	SS	16	10	7	9	6"			light brn sandy / clay / gravel
2	20'	22'	SS	3	9	15	18	17"			grey clay / bricks
3	30'	32'	SS	32	16	12	23	12"			Garbage - no soils recovered
											E.O.B @ 32'

ABBREVIATIONS
F.T.-Fish Tail
W.O.-Wash Out
S.T.-Shelby Tube
S.S.-Split Spoon
D.B.-Diamond Bit
P.A.-Power Auger
R.B.-Rock Bit
W.S.-While Sampling
W.D.-While Drilling
B.C.R.-Before Casing Removal
A.C.R.-After Casing Removal
A.B.-After Boring

DRILL CREW CHECK LIST
Topsoil Thickness
Fill Thickness

CAVE IN LEVEL:
While Drilling and Sampling
After Boring Completion 29'

WATER LOSS:
At To
Percent Loss
At To
Percent Loss

BOULDERS OR OBSTRUCTIONS:
At To
At To

ARTESIAN PRESSURE:
Depth
Height of Soil Rise in Casing

TECHNICIAN Hussein
DRILLER Dan
HELPER Mike / Jason
RIG NO. 750CME

SURFACE ELEV.
BORING STARTED 5-7-99
BORING COMPLETED 5-7-99
STATION
OFF SET
CASING USED H.S.A SIZE 2 1/4"

WL: Dry (WS) or WB
WL: 7 BCR Dry (ACR)
WL: AB 4 Hr. AB
WL: 24 Hr. AB

JOB NO. YM7030 BORING NO. #11 CLIENT Ecology & Environment WEATHER Overcast / Drizzle

sample no.	Depth or Elevation FROM	TO	Sampling Method	PENETRATION RECORD Split Spoon Blows 6"	6"	6"	6" (2 feet)	R Length Recovered in Feet	Qp Penetrometer Test in TSF	Strata Change	Sample Description
											EOB @ 27'
1	16	12'	SS	3	5	4	8	10"			light brn sandy / clay
2	20	22'	SS	2	7	9	13	16"			same as above
~~[illegible]~~											
3	25	27'	SS	14	8	10	17	16"			Landfill / wood / silt / sand
											EOB @ 27'

ABBREVIATIONS
F.T.-Fish Tail
W.O.-Wash Out
S.T.-Shelby Tube
S.S.-Split Spoon
D.B.-Diamond Bit
P.A.-Power Auger
R.B.-Rock Bit
W.S.-While Sampling
W.D.-While Drilling
B.C.R.-Before Casing Removal
A.C.R.-After Casing Removal
A.B.-After Boring

DRILL CREW CHECK LIST
Topsoil Thickness
Fill Thickness
CAVE IN LEVEL:
While Drilling and Sampling
After Boring Completion 18'
WATER LOSS:
At To
Percent Loss
At To
Percent Loss
BOULDERS OR OBSTRUCTIONS:
At To
At To
ARTESIAN PRESSURE:
Depth
Height of Soil Rise in Casing

BADGER DRILLING, INC.

Sheet 1 of 1

TECHNICIAN Hussein
DRILLER Don
HELPER Mike / Joseph
RIG NO. CME 750

SURFACE ELEV.
BORING STARTED 5-7-99
BORING COMPLETED 5-7-99
STATION
OFF SET
CASING USED H.S.A SIZE 2 1/4"

WATER LEVEL OBSERVATIONS
WL: Dry WS or WB
WL: 9 BCR Wet ACR
WL: AB Hr. AB
WL: 24 Hr. AB

JOB NO. YM7030 BORING NO. # 12 CLIENT Ecology + Environment WEATHER Overcast/drizzle

sample no.	Depth or Elevation FROM	TO	Sampling Method	PENETRATION RECORD Split Spoon Blows 6"	6"	6"	6"	R Length Recovered in Feet	Qp Penetrometer Test in TSF	Strata Change	Sample Description
				← 2 feet →							E.O.B. @ 28'
1	10'	12'	SS	7	8	6	8	15"			Black Landfill with sand/clays
2	20'	22'	SS	7	8	15	29	20"			Landfill / sand / paper
											E.O.B @ 22'
											Water @ 17'

ABBREVIATIONS
F.T.-Fish Tail
W.O.-Wash Out
S.T.-Shelby Tube
S.S.-Split Spoon
D.B.-Diamond Bit
F.A.-Power Auger
R.B.-Rock Bit
W.S.-While Sampling
W.D.-While Drilling
B.C.R.-Before Casing Removal
A.C.R.-After Casing Removal
A.B.-After Boring

DRILL CREW CHECK LIST
Topsoil Thickness
Fill Thickness

CAVE IN LEVEL:
While Drilling and Sampling
After Boring Completion 16.5'

WATER LOSS:
At To
Percent Loss
At To
Percent Loss

BOULDERS OR OBSTRUCTIONS:
At To
At To

ARTESIAN PRESSURE:
Depth
Height of Soil Rise in Casing

BADGER DRILLING, INC.

Sheet 1 of 1

TECHNICIAN Hussein
DRILLER Don
HELPER Mike/Jason
RIG NO. CME 750

SURFACE ELEV.
BORING STARTED 5-2-94
BORING COMPLETED 5-2-94
STATION
OFF SET
CASING USED H.S.A. SIZE 2 1/4"

WATER LEVEL OBSERVATIONS
WL: Dry WS or WB
WL: BCR Dry ACR
WL: AB Hr. AB
WL: 24 Hr. AB

JOB NO. YM7030 BORING NO. # 13 CLIENT Ecology + Environment WEATHER Cloudy

sample no.	Depth or Elevation FROM	TO	Sampling Method	PENETRATION RECORD Split Spoon Blows 6"	6"	6"	6"	R Length Recovered in Feet	Qp Penetrometer Test in TSF	Strata Change	Sample Description
				← 2 Feet →							E.O.B @ 32'
1	10'	12'	SS	4	4	4	6	14"			Sandy silt w/ organics
2	20'	22'	SS	3	5	6	4	16"			grey sandy/silty/clay
3	30'	32'	SS	9	11	15	7	14"			Landfill/gravel/sand/glass
											E.O.B @ 32'

ABBREVIATIONS
F.T.-Fish Tail
W.O.-Wash Out
S.T.-Shelby Tube
S.S.-Split Spoon
D.B.-Diamond Bit
P.A.-Power Auger
R.B.-Rock Bit
W.S.-While Sampling
W.D.-While Drilling
B.C.R.-Before Casing Removal
A.C.R.-After Casing Removal
A.B.-After Boring

DRILL CREW CHECK LIST
Topsoil Thickness
Fill Thickness
CAVE IN LEVEL:
While Drilling and Sampling
After Boring Completion 23.6'
WATER LOSS:
At To
Percent Loss
At To
Percent Loss
BOULDERS OR OBSTRUCTIONS:
At To
At To
ARTESIAN PRESSURE:
Depth
Height of Soil Rise in Casing

BADGER DRILLING, INC.

Sheet 1 of 1

TECHNICIAN Russell
DRILLER Don
HELPER Mike/Jason
RIG NO. 750 CME

SURFACE ELEV.
BORING STARTED 5-7-99
BORING COMPLETED 5-7-99
STATION
OFF SET 4' N.E.
CASING USED H.S.A SIZE 2 1/4"

WATER LEVEL OBSERVATIONS
WL: Dry (WS) or WB
WL: BCR Dry (ACR)
WL: AB Hr.AB
WL: 24 Hr. AB

JOB NO. YM7030 BORING NO. #14 CLIENT Ecology & Environment WEATHER Cloudy

sample no.	Depth or Elevation FROM	TO	Sampling Method	PENETRATION RECORD Split Spoon Blows 6"	6"	6"	6"	R Length Recovered in Feet	Qp Penetrometer Test in TSF	Strata Change	Sample Description
				← 2 Feet →							E.O.B @ 32' Offset due to debris causing crooked hole.
1	10'	12	SS	34	17	14	13	11"			sandy / gravel / bricks / Fill
2	20'	22'	SS	4	11	10	16	4"			brn clay w/ sand and cobble.
3	30'	32'	SS	96	66	24	11	10"			landfill debris
											E.O.B. @ 32'

ABBREVIATIONS
F.T.-Fish Tail
W.O.-Wash Out
S.T.-Shelby Tube
S.S.-Split Spoon
D.B.-Diamond Bit
P.A.-Power Auger
R.B.-Rock Bit
W.S.-While Sampling
W.D.-While Drilling
B.C.R.-Before Casing Removal
A.C.R.-After Casing Removal
A.B.-After Boring

DRILL CREW CHECK LIST
Topsoil Thickness
Fill Thickness

CAVE IN LEVEL:
While Drilling and Sampling
After Boring Completion 7'

WATER LOSS:
At To
Percent Loss
At To
Percent Loss

BOULDERS OR OBSTRUCTIONS:
At To
At To

ARTESIAN F
Depth
Ho

BADGER DRILLING, INC.

TECHNICIAN Hussein
DRILLER Don
HELPER Mike / Jason
RIG NO. 75 CME

SURFACE ELEV.
BORING STARTED 5-7-99
BORING COMPLETED 5-7-99
STATION
OFF SET
CASING USED H.S.A SIZE 2 1/4"

Sheet 1 of 1
WATER LEVEL OBSERVATIONS
WL: Dry (WS) or WB.
WL: BCR Dry (ACR)
WL: AB 1 Hr.AB
WL: 24 Hr. AB

JOB NO. YM7030 BORING NO. #15 CLIENT Ecology & Environment WEATHER Cloudy

sample no.	Depth or Elevation FROM	TO	Sampling Method	PENETRATION RECORD Split Spoon Blows 6"	6"	6"	6"	R Length Recovered in Feet	Qp Penetrometer Test in TSF	Strata Change	Sample Description
				← 2 Feet →							E.O.B @ 26.5'
1	10'	12'	SS	3	4	7	6	14"			Mixed fill clay/silt/gravel
2	20'	22'	SS	10	27	13	11	5"			
[redacted]											
3	26½'		PA								Refusal of augers - rebar
											E.O.B @ 26.5'

ABBREVIATIONS
F.T.-Fish Tail
W.O.-Wash Out
S.T.-Shelby Tube
S.S.-Split Spoon
D.B.-Diamond Bit
P.A.-Power Auger
R.B.-Rock Bit
W.S.-While Sampling
W.D.-While Drilling
B.C.R.-Before Casing Removal
A.C.R.-After Casing Removal
A.B.-After Boring

DRILL CREW CHECK LIST
Topsoil Thickness
Fill Thickness
CAVE IN LEVEL:
While Drilling and Sampling
After Boring Completion 7'
WATER LOSS:
At To
Percent Loss
At To
Percent Loss
BOULDERS OR OBSTRUCTIONS:
At To
At To
ARTESIAN PRESSURE:
Depth
Height of Soil Rise in Casing

BADGER DRILLING, INC.

Sheet 1 of 1

TECHNICIAN Hussein
DRILLER Don
HELPER Mike / Jason
RIG NO. [redacted] CME 750

SURFACE ELEV.
BORING STARTED 5-11-99
BORING COMPLETED 5-11-99
STATION
OFF SET
CASING USED H.S.A SIZE 2 1/4"

WATER LEVEL OBSERVATIONS
WL: Dry WS or WB
WL: BCR Dry ACR
WL: AB Hr. AB
WL: 24 Hr. AB

JOB NO. YM7030 BORING NO. 17 CLIENT Ecology + Environment WEATHER Sunny

sample no.	Depth or Elevation FROM	TO	Sampling Method	PENETRATION RECORD Split Spoon Blows 6"	6"	6"	6"	R Length Recovered in Feet	Qp Penetrometer Test in TSF	Strata Change	Sample Description
				← 2 Feet →							E.O.B @ 7'
1	5'	7'	S.S.	9	10	11	10				Brn sandy silt w/ gravel
											E.O.B. @ 7'

ABBREVIATIONS
F.T.-Fish Tail
W.O.-Wash Out
S.T.-Shelby Tube
S.S.-Split Spoon
D.B.-Diamond Bit
P.A.-Power Auger
R.B.-Rock Bit
W.S.-While Sampling
W.D.-While Drilling
B.C.R.-Before Casing Removal
A.C.R.-After Casing Removal
A.B.-After Boring

DRILL CREW CHECK LIST
Topsoil Thickness
Fill Thickness
CAVE IN LEVEL:
While Drilling and Sampling
After Boring Completion 3'
WATER LOSS:
At To
Percent Loss
At To
Percent Loss
BOULDERS OR OBSTRUCTIONS:
At To
At To
ARTESIAN PRESSURE:
Depth
Height of Soil Rise in Casing

BADGER DRILLING, INC.

Sheet 1 of 1

TECHNICIAN Hussein
DRILLER Don
HELPER Mike/Jason
RIG NO.

SURFACE ELEV.
BORING STARTED 5-11-99
BORING COMPLETED 5-11-99
STATION
OFF SET
CASING USED H.S.A SIZE 4 1/4"

WATER LEVEL OBSERVATIONS
WL: Bailer (WS) or WB
WL: BCR ACR
WL: AB Hr.AB
WL: 24 Hr. AB

JOB NO. YM7030 BORING NO. M.W #11 CLIENT Ecology & Environment WEATHER Sunny

sample no.	Depth or Elevation FROM	TO	Sampling Method	PENETRATION RECORD Split Spoon Blows 6"	6"	6"	6"	R Length Recovered in Feet	Qp Penetrometer Test in TSF	Strata Change	Sample Description
				← 2 Feet →							E.O.B @ 15'
1	8.5	10.5	S.S.	7	5	3	4	12"			Dk brn silty sand
											Water @ 8.5' W.S.
											E.O.B @ 15'

ABBREVIATIONS
F.T.-Fish Tail
W.O.-Wash Out
S.T.-Shelby Tube
S.S.-Split Spoon
D.B.-Diamond Bit
P.A.-Power Auger
R.B.-Roch Bit
W.S.-While Sampling
W.D.-While Drilling
B.C.R.-Before Casing Removal
A.C.R.-After Casing Removal
A.B.-After Boring

DRILL CREW CHECK LIST
Topsoil Thickness
FM Thickness

CAVE IN LEVEL:
While Drilling and Sampling
After Boring Completion

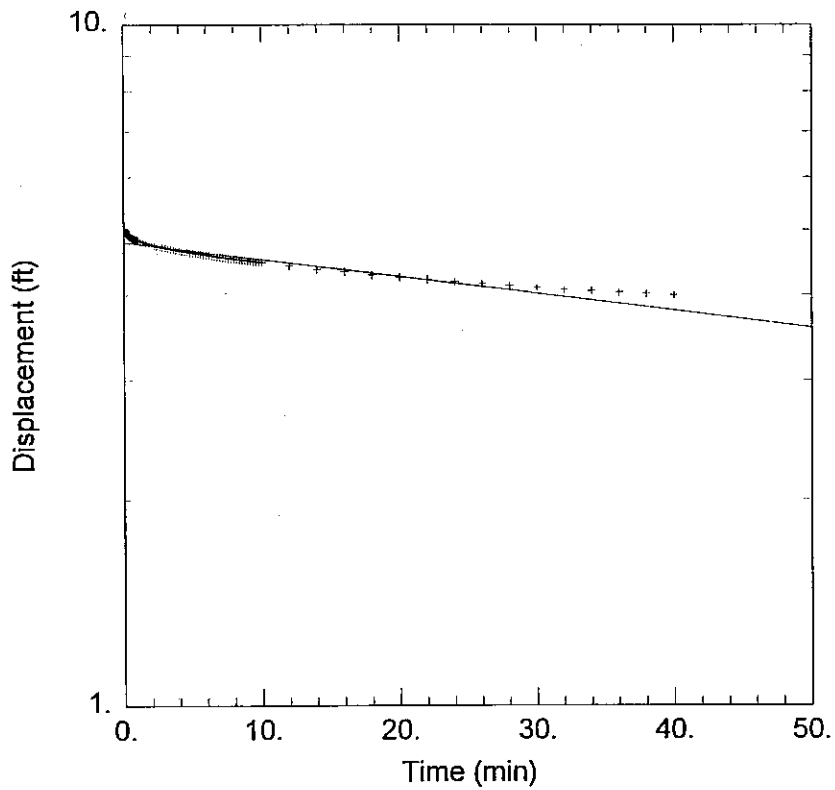
WATER LOSS:
At To
Percent Loss
At To
Percent Loss

BOULDERS OR OBSTRUCTIONS:
At To
At To

ARTESIAN PRESSURE:
Depth
Height of Soil Rise in Casing

H

Slug Test Data and Interpretations



KL-MW01 - RISING HEAD SLUG TEST

Data Set: C:\AQT\KLMW01.AQT
Date: 06/23/99 Time: 14:38:14

PROJECT INFORMATION

Company: Ecology & Environment, Inc.
Project: Kenilworth Landfill
Test Location: Kenilworth
Test Well: KL-MW01
Test Date: 05/21/99

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 7.331E-06 cm/sec
y0 = 4.789 ft

AQUIFER DATA

Saturated Thickness: 5. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Initial Displacement: 5.08 ft
Casing Radius: 0.083 ft
Screen Length: 5. ft
Water Column Height: 4.25 ft
Wellbore Radius: 0.125 ft
Gravel Pack Porosity: 0.35

Data Set: C:\AQT\KLMW01.AQT
Title: KL-MW01 - RISING HEAD SLUG TEST
Date: 06/23/99
Time: 14:38:24

PROJECT INFORMATION

Company: Ecology & Environment, Inc.
Project: Kenilworth Landfill
Location: Kenilworth
Test Date: 05/21/99
Test Well: KL-MW01

AQUIFER DATA

Saturated Thickness: 5. ft
Anisotropy Ratio (Kz/Kr): 0.1

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: KL-MW01

X Location: 0. ft
Y Location: 0. ft

No. of observations: 141

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.	5.08	0.3	4.916	0.8666	4.834	6.6	4.569
0.0083	5.029	0.3083	4.913	0.8833	4.831	6.8	4.563
0.0166	5.014	0.3166	4.913	0.9	4.831	7.	4.557
0.025	5.004	0.325	4.91	0.9166	4.828	7.2	4.55

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0333	4.998	0.3333	4.91	0.9333	4.828	7.4	4.547
0.0416	4.995	0.35	4.906	0.95	4.824	7.6	4.541
0.05	4.988	0.3666	4.903	0.9666	4.824	7.8	4.534
0.0583	4.985	0.3833	4.9	0.9833	4.821	8.	4.528
0.0666	4.982	0.4	4.897	1.	4.821	8.2	4.525
0.075	4.979	0.4166	4.894	1.2	4.809	8.4	4.519
0.0833	4.976	0.4333	4.891	1.4	4.793	8.6	4.512
0.0916	4.973	0.45	4.888	1.6	4.777	8.8	4.509
0.1	4.969	0.4666	4.884	1.8	4.768	9.	4.503
0.1083	4.966	0.4833	4.881	2.	4.755	9.2	4.497
0.1166	4.963	0.5	4.878	2.2	4.746	9.4	4.49
0.125	4.96	0.5166	4.878	2.4	4.736	9.6	4.484
0.1333	4.957	0.5333	4.875	2.6	4.727	9.8	4.478
0.1416	4.957	0.55	4.872	2.8	4.714	10.	4.475
0.15	4.954	0.5666	4.869	3.	4.708	12.	4.427
0.1583	4.951	0.5833	4.865	3.2	4.698	14.	4.374
0.1666	4.947	0.6	4.865	3.4	4.689	16.	4.336
0.175	4.947	0.6166	4.862	3.6	4.679	18.	4.289
0.1833	4.944	0.6333	4.859	3.8	4.67	20.	4.251
0.1916	4.941	0.65	4.856	4.	4.664	22.	4.222
0.2	4.941	0.6666	4.856	4.2	4.654	24.	4.188
0.2083	4.938	0.6833	4.853	4.4	4.648	26.	4.156
0.2166	4.935	0.7	4.85	4.6	4.642	28.	4.134
0.225	4.935	0.7166	4.85	4.8	4.632	30.	4.109
0.2333	4.932	0.7333	4.847	5.	4.626	32.	4.077
0.2416	4.929	0.75	4.847	5.2	4.616	34.	4.058
0.25	4.925	0.7666	4.843	5.4	4.61	36.	4.036
0.2583	4.925	0.7833	4.843	5.6	4.604	38.	4.017
0.2666	4.922	0.8	4.84	5.8	4.598	40.	3.999
0.275	4.922	0.8166	4.837	6.	4.591		
0.2833	4.919	0.8333	4.837	6.2	4.585		
0.2916	4.919	0.85	4.834	6.4	4.575		

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	7.331E-06	cm/sec
y0	4.789	ft

AUTOMATIC ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	Std. Error	
K	7.331E-06	2.497E-07	cm/sec
y0	4.789	0.008007	ft

Parameter Correlations

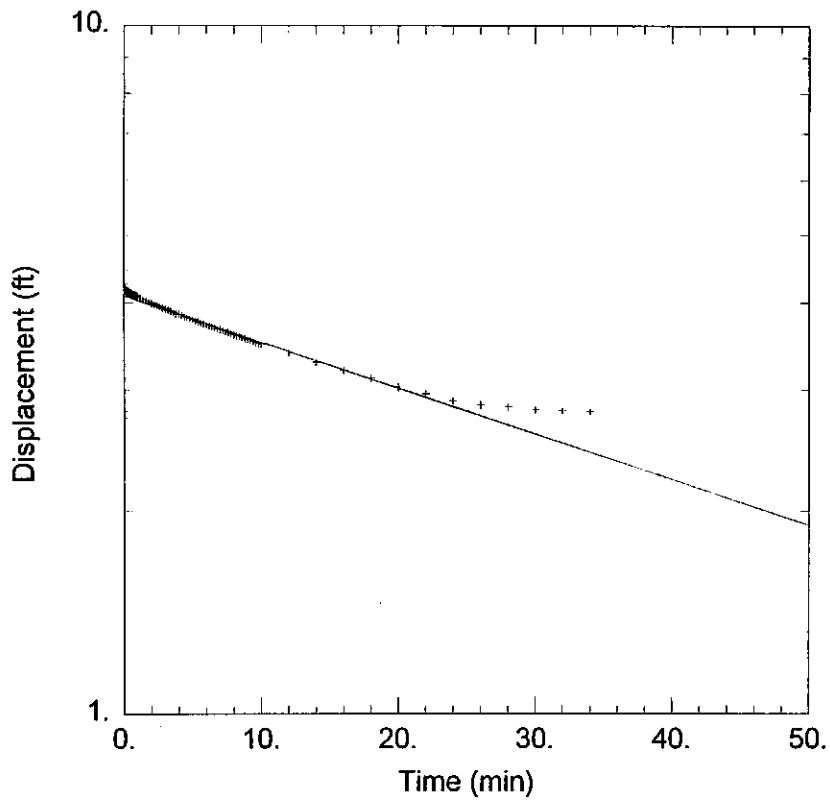
	K	y0
K	1.00	0.48
y0	0.48	1.00

Residual Statistics

for weighted residuals

Sum of Squares.... 0.9087 ft^2
Variance ..... 0.006538 ft^2
Std. Deviation..... 0.08086 ft
Mean ..... 0.0001232 ft
No. of Residuals ... 141.

No. of Estimates . . . 2



KL-MW02 - RISING HEAD SLUG TEST

Data Set: C:\AQT\KLMW02.AQT
Date: 06/23/99 Time: 15:37:11

PROJECT INFORMATION

Company: Ecology & Environment, Inc.
Project: Kenilworth Landfill
Test Location: Kenilworth
Test Well: KL-MW02
Test Date: 05/21/99

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 1.883E-05 cm/sec
y0 = 4.093 ft

AQUIFER DATA

Saturated Thickness: 6. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Initial Displacement: 4.448 ft
Casing Radius: 0.083 ft
Screen Length: 5. ft
Water Column Height: 5.26 ft
Wellbore Radius: 0.125 ft

Data Set: C:\AQT\KLMW02.AQT
Title: KL-MW02 - RISING HEAD SLUG TEST
Date: 06/23/99
Time: 15:37:16

PROJECT INFORMATION

Company: Ecology & Environment, Inc.
Project: Kenilworth Landfill
Location: Kenilworth
Test Date: 05/21/99
Test Well: KL-MW02

AQUIFER DATA

Saturated Thickness: 6. ft
Anisotropy Ratio (Kz/Kr): 0.1

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: KL-MW02

X Location: 0. ft
Y Location: 0. ft

No. of observations: 138

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.	2.736	0.2916	4.149	0.8333	4.098	6.	3.733
0.0083	2.796	0.3	4.149	0.85	4.095	6.2	3.72
0.0166	4.448	0.3083	4.145	0.8666	4.095	6.4	3.707
0.025	4.259	0.3166	4.145	0.8833	4.095	6.6	3.695

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0333	4.256	0.325	4.145	0.9	4.092	6.8	3.682
0.0416	4.231	0.3333	4.145	0.9166	4.092	7.	3.669
0.05	4.231	0.35	4.145	0.9333	4.089	7.2	3.657
0.0583	4.212	0.3666	4.142	0.95	4.089	7.4	3.647
0.0666	4.215	0.3833	4.142	0.9666	4.086	7.6	3.635
0.075	4.196	0.4	4.139	0.9833	4.086	7.8	3.622
0.0833	4.186	0.4166	4.139	1.	4.082	8.	3.61
0.0916	4.186	0.4333	4.136	1.2	4.067	8.2	3.6
0.1	4.18	0.45	4.136	1.4	4.054	8.4	3.588
0.1083	4.177	0.4666	4.133	1.6	4.038	8.6	3.578
0.1166	4.174	0.4833	4.133	1.8	4.019	8.8	3.562
0.125	4.174	0.5	4.13	2.	4.	9.	3.55
0.1333	4.171	0.5166	4.13	2.2	3.991	9.2	3.54
0.1416	4.168	0.5333	4.127	2.4	3.975	9.4	3.528
0.15	4.168	0.55	4.127	2.6	3.959	9.6	3.515
0.1583	4.164	0.5666	4.123	2.8	3.944	9.8	3.506
0.1666	4.164	0.5833	4.12	3.	3.931	10.	3.493
0.175	4.164	0.6	4.12	3.2	3.919	12.	3.395
0.1833	4.161	0.6166	4.117	3.4	3.9	14.	3.294
0.1916	4.161	0.6333	4.114	3.6	3.887	16.	3.203
0.2	4.158	0.65	4.114	3.8	3.868	18.	3.124
0.2083	4.158	0.6666	4.111	4.	3.859	20.	3.03
0.2166	4.158	0.6833	4.111	4.2	3.849	22.	2.96
0.225	4.155	0.7	4.111	4.4	3.837	24.	2.894
0.2333	4.155	0.7166	4.108	4.6	3.824	26.	2.856
0.2416	4.155	0.7333	4.108	4.8	3.811	28.	2.84
0.25	4.152	0.75	4.105	5.	3.796	30.	2.809
0.2583	4.152	0.7666	4.105	5.2	3.783	32.	2.803
0.2666	4.152	0.7833	4.101	5.4	3.77	34.	2.793
0.275	4.152	0.8	4.101	5.6	3.755		
0.2833	4.155	0.8166	4.098	5.8	3.742		

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	1.883E-05	cm/sec
y0	4.093	ft

AUTOMATIC ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	Std. Error	
K	1.375E-05	2.339E-07	cm/sec
y0	4.15	0.006457	ft

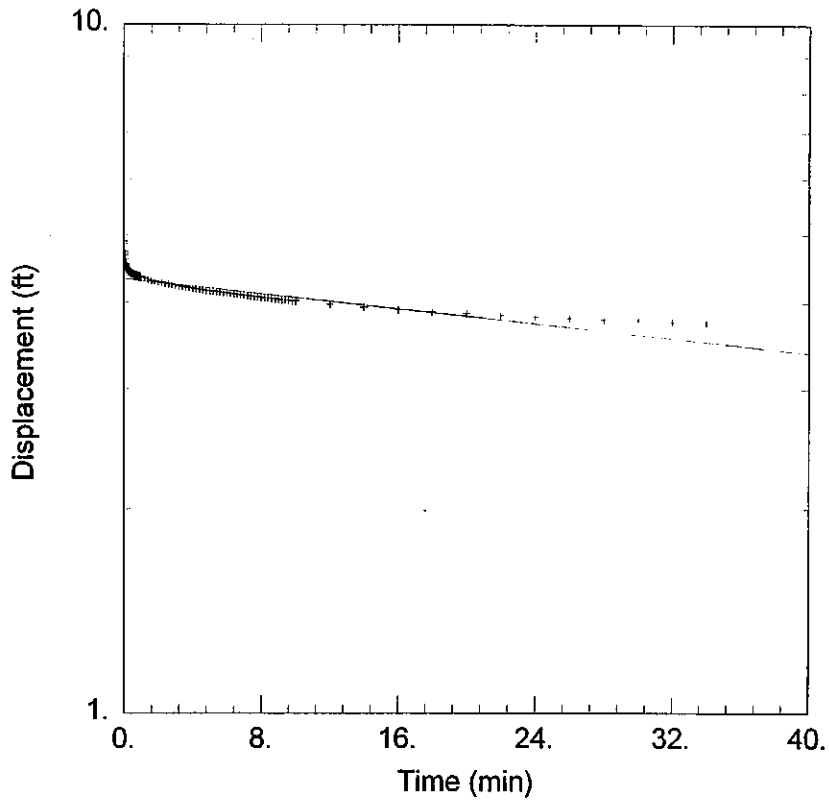
Parameter Correlations

	K	y0
K	1.00	0.50
y0	0.50	1.00

Residual Statistics

for weighted residuals

Sum of Squares.... 0.5128 ft^2
Variance ..... 0.003827 ft^2
Std. Deviation..... 0.06186 ft
Mean ..... 0.0003931 ft
No. of Residuals ... 136.
No. of Estimates ... 2



KL-MW03 - RISING HEAD SLUG TEST

Data Set: C:\AQT\KLMW03.AQT
Date: 06/23/99 Time: 13:50:38

PROJECT INFORMATION

Company: Ecology & Environment, Inc.
Project: Kenilworth Landfill
Test Location: Kenilworth
Test Well: KL-MW03
Test Date: 05/21/99

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 7.812E-06 cm/sec
y0 = 4.325 ft

AQUIFER DATA

Saturated Thickness: 5. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Initial Displacement: 4.898 ft
Casing Radius: 0.083 ft
Screen Length: 5. ft
Water Column Height: 4.34 ft
Wellbore Radius: 0.125 ft
Gravel Pack Porosity: 0.35

Data Set: C:\AQT\KLMW03.AQT
Title: KL-MW03 - RISING HEAD SLUG TEST
Date: 06/23/99
Time: 13:50:45

PROJECT INFORMATION

Company: Ecology & Environment, Inc.
Project: Kenilworth Landfill
Location: Kenilworth
Test Date: 05/21/99
Test Well: KL-MW03

AQUIFER DATA

Saturated Thickness: 5. ft
Anisotropy Ratio (Kz/Kr): 0.1

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: KL-MW03

X Location: 0. ft
Y Location: 0. ft

No. of observations: 138

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.	4.898	0.2916	4.438	0.8333	4.366	6.	4.129
0.0083	4.892	0.3	4.438	0.85	4.362	6.2	4.123
0.0166	4.857	0.3083	4.435	0.8666	4.362	6.4	4.117
0.025	4.82	0.3166	4.435	0.8833	4.359	6.6	4.11

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0333	4.788	0.325	4.432	0.9	4.359	6.8	4.104
0.0416	4.757	0.3333	4.429	0.9166	4.356	7.	4.098
0.05	4.728	0.35	4.426	0.9333	4.356	7.2	4.091
0.0583	4.7	0.3666	4.422	0.95	4.356	7.4	4.088
0.0666	4.671	0.3833	4.419	0.9666	4.353	7.6	4.082
0.075	4.646	0.4	4.416	0.9833	4.35	7.8	4.076
0.0833	4.621	0.4166	4.413	1.	4.35	8.	4.069
0.0916	4.596	0.4333	4.41	1.2	4.334	8.2	4.063
0.1	4.574	0.45	4.41	1.4	4.322	8.4	4.06
0.1083	4.555	0.4666	4.407	1.6	4.306	8.6	4.054
0.1166	4.539	0.4833	4.403	1.8	4.296	8.8	4.047
0.125	4.526	0.5	4.4	2.	4.284	9.	4.044
0.1333	4.514	0.5166	4.4	2.2	4.274	9.2	4.038
0.1416	4.508	0.5333	4.397	2.4	4.265	9.4	4.035
0.15	4.501	0.55	4.394	2.6	4.255	9.6	4.028
0.1583	4.492	0.5666	4.394	2.8	4.246	9.8	4.025
0.1666	4.489	0.5833	4.391	3.	4.236	10.	4.022
0.175	4.485	0.6	4.388	3.2	4.227	12.	3.978
0.1833	4.479	0.6166	4.388	3.4	4.217	14.	3.943
0.1916	4.476	0.6333	4.385	3.6	4.208	16.	3.905
0.2	4.47	0.65	4.381	3.8	4.202	18.	3.883
0.2083	4.47	0.6666	4.381	4.	4.195	20.	3.858
0.2166	4.463	0.6833	4.378	4.2	4.186	22.	3.836
0.225	4.46	0.7	4.378	4.4	4.18	24.	3.817
0.2333	4.457	0.7166	4.375	4.6	4.176	26.	3.801
0.2416	4.457	0.7333	4.375	4.8	4.167	28.	3.786
0.25	4.454	0.75	4.372	5.	4.161	30.	3.776
0.2583	4.451	0.7666	4.372	5.2	4.154	32.	3.754
0.2666	4.448	0.7833	4.369	5.4	4.148	34.	3.745
0.275	4.444	0.8	4.366	5.6	4.142		
0.2833	4.441	0.8166	4.366	5.8	4.136		

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	7.812E-06	cm/sec
y0	4.325	ft

AUTOMATIC ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	Std. Error	
K	9.319E-06	5.368E-07	cm/sec
y0	4.436	0.01295	ft

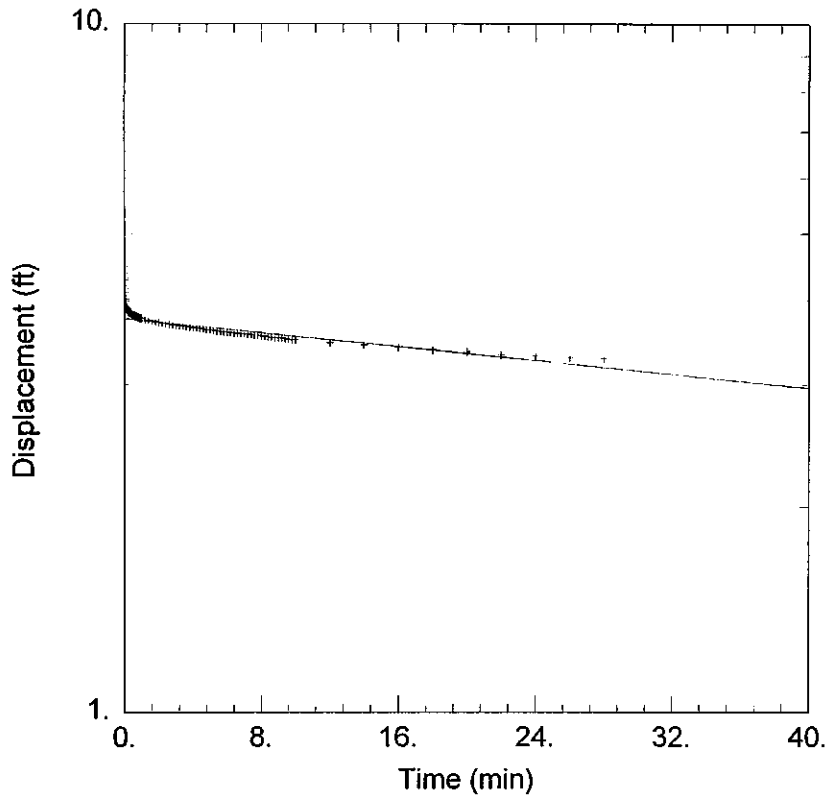
Parameter Correlations

	K	y0
K	1.00	0.50
y0	0.50	1.00

Residual Statistics

for weighted residuals

Sum of Squares.... 2.227 ft^2
Variance ..... 0.01638 ft^2
Std. Deviation..... 0.128 ft
Mean ..... 0.0001453 ft
No. of Residuals ... 138.
No. of Estimates ... 2



KL-MW04 - RISING HEAD SLUG TEST

Data Set: C:\AQT\KLMW04.AQT
Date: 06/23/99 Time: 13:54:52

PROJECT INFORMATION

Company: Ecology & Environment, Inc.
Project: Kenilworth Landfill
Test Location: Kenilworth
Test Well: KL-MW04
Test Date: 05/21/99

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 8.526E-06 cm/sec
y0 = 3.745 ft

AQUIFER DATA

Saturated Thickness: 5. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Initial Displacement: 4.473 ft
Casing Radius: 0.083 ft
Screen Length: 5. ft
Water Column Height: 4.98 ft
Wellbore Radius: 0.125 ft
Gravel Pack Porosity: 0.35

Data Set: C:\AQT\KLMW04.AQT
Title: KL-MW04 - RISING HEAD SLUG TEST
Date: 06/23/99
Time: 13:54:59

PROJECT INFORMATION

Company: Ecology & Environment, Inc.
Project: Kenilworth Landfill
Location: Kenilworth
Test Date: 05/21/99
Test Well: KL-MW04

AQUIFER DATA

Saturated Thickness: 5. ft
Anisotropy Ratio (Kz/Kr): 0.1

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: KL-MW04

X Location: 0. ft
Y Location: 0. ft

No. of observations: 135

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.	4.473	0.2833	3.836	0.8	3.77	5.4	3.6
0.0083	4.372	0.2916	3.833	0.8166	3.767	5.6	3.593
0.0166	4.306	0.3	3.833	0.8333	3.767	5.8	3.587
0.025	4.271	0.3083	3.83	0.85	3.763	6.	3.581

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0333	4.202	0.3166	3.83	0.8666	3.763	6.2	3.577
0.0416	4.148	0.325	3.827	0.8833	3.763	6.4	3.574
0.05	4.098	0.3333	3.827	0.9	3.76	6.6	3.571
0.0583	4.053	0.35	3.823	0.9166	3.76	6.8	3.568
0.0666	4.013	0.3666	3.82	0.9333	3.76	7.	3.562
0.075	3.975	0.3833	3.817	0.95	3.757	7.2	3.555
0.0833	3.943	0.4	3.814	0.9666	3.757	7.4	3.552
0.0916	3.921	0.4166	3.811	0.9833	3.754	7.6	3.546
0.1	3.908	0.4333	3.811	1.	3.754	7.8	3.543
0.1083	3.896	0.45	3.808	1.2	3.741	8.	3.536
0.1166	3.89	0.4666	3.804	1.4	3.732	8.2	3.533
0.125	3.883	0.4833	3.804	1.6	3.722	8.4	3.527
0.1333	3.88	0.5	3.801	1.8	3.716	8.6	3.521
0.1416	3.877	0.5166	3.798	2.	3.704	8.8	3.514
0.15	3.874	0.5333	3.798	2.2	3.697	9.	3.514
0.1583	3.874	0.55	3.795	2.4	3.688	9.2	3.511
0.1666	3.871	0.5666	3.795	2.6	3.682	9.4	3.505
0.175	3.868	0.5833	3.792	2.8	3.675	9.6	3.499
0.1833	3.864	0.6	3.789	3.	3.669	9.8	3.492
0.1916	3.861	0.6166	3.789	3.2	3.663	10.	3.489
0.2	3.858	0.6333	3.786	3.4	3.659	12.	3.455
0.2083	3.858	0.65	3.786	3.6	3.65	14.	3.429
0.2166	3.855	0.6666	3.786	3.8	3.644	16.	3.401
0.225	3.852	0.6833	3.782	4.	3.641	18.	3.373
0.2333	3.849	0.7	3.779	4.2	3.634	20.	3.354
0.2416	3.845	0.7166	3.779	4.4	3.628	22.	3.319
0.25	3.845	0.7333	3.776	4.6	3.622	24.	3.306
0.2583	3.842	0.75	3.773	4.8	3.615	26.	3.291
0.2666	3.839	0.7666	3.773	5.	3.612	28.	3.275
0.275	3.836	0.7833	3.77	5.2	3.606		

SOLUTION

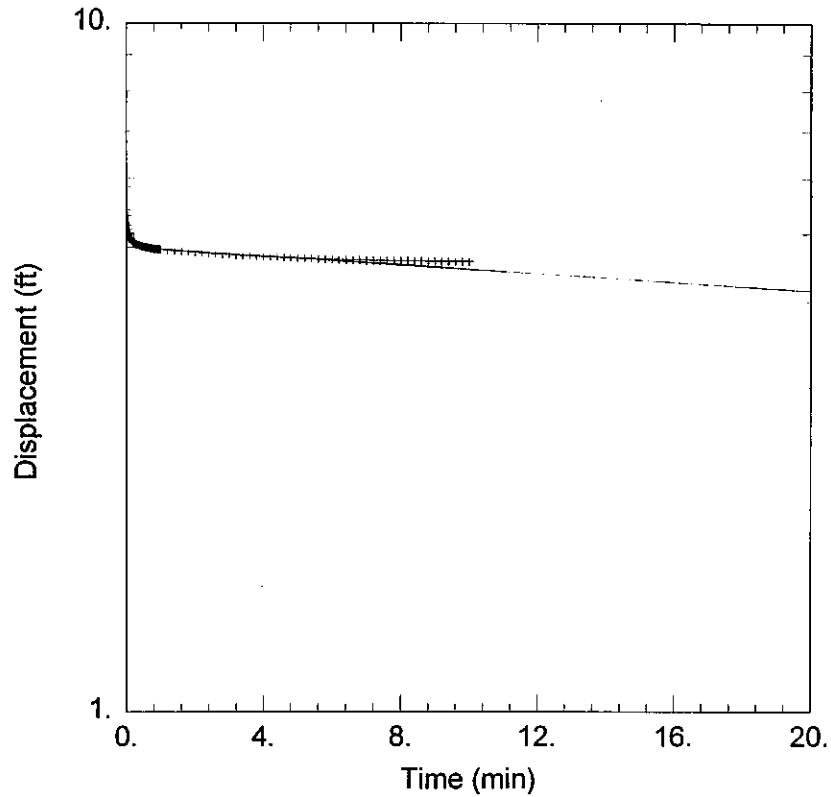
Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	8.526E-06	cm/sec
y0	3.745	ft



KL-MW05 - RISING HEAD SLUG TEST

Data Set: C:\AQT\KLMW05.AQT
Date: 06/23/99 Time: 13:57:58

PROJECT INFORMATION

Company: Ecology & Environment, Inc.
Project: Kenilworth Landfill
Test Location: Kenilworth
Test Well: KL-MW05
Test Date: 05/20/99

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 8.434E-06 cm/sec
y0 = 4.775 ft

AQUIFER DATA

Saturated Thickness: 5. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Initial Displacement: 5.829 ft
Casing Radius: 0.083 ft
Screen Length: 5. ft
Water Column Height: 3.45 ft
Wellbore Radius: 0.125 ft
Gravel Pack Porosity: 0.35

Data Set: C:\AQT\KLMW05.AQT
Title: KL-MW05 - RISING HEAD SLUG TEST
Date: 06/23/99
Time: 13:58:02

PROJECT INFORMATION

Company: Ecology & Environment, Inc.
Project: Kenilworth Landfill
Location: Kenilworth
Test Date: 05/20/99
Test Well: KL-MW05

AQUIFER DATA

Saturated Thickness: 5. ft
Anisotropy Ratio (Kz/Kr): 0.1

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: KL-MW05

X Location: 0. ft
Y Location: 0. ft

No. of observations: 126

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.	5.829	0.2666	4.833	0.7333	4.763	4.2	4.631
0.0083	5.416	0.275	4.83	0.75	4.763	4.4	4.628
0.0166	5.362	0.2833	4.826	0.7666	4.76	4.6	4.621
0.025	5.312	0.2916	4.826	0.7833	4.76	4.8	4.618

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0333	5.265	0.3	4.823	0.8	4.757	5.	4.615
0.0416	5.22	0.3083	4.823	0.8166	4.757	5.2	4.612
0.05	5.176	0.3166	4.82	0.8333	4.757	5.4	4.609
0.0583	5.138	0.325	4.82	0.85	4.754	5.6	4.606
0.0666	5.101	0.3333	4.817	0.8666	4.754	5.8	4.599
0.075	5.069	0.35	4.814	0.8833	4.751	6.	4.596
0.0833	5.041	0.3666	4.811	0.9	4.751	6.2	4.59
0.0916	5.016	0.3833	4.807	0.9166	4.751	6.4	4.587
0.1	4.987	0.4	4.804	0.9333	4.748	6.6	4.587
0.1083	4.968	0.4166	4.801	0.95	4.748	6.8	4.587
0.1166	4.949	0.4333	4.798	0.9666	4.744	7.	4.584
0.125	4.934	0.45	4.798	0.9833	4.744	7.2	4.58
0.1333	4.921	0.4666	4.795	1.	4.744	7.4	4.577
0.1416	4.908	0.4833	4.792	1.2	4.732	7.6	4.574
0.15	4.896	0.5	4.789	1.4	4.722	7.8	4.574
0.1583	4.886	0.5166	4.789	1.6	4.716	8.	4.574
0.1666	4.88	0.5333	4.785	1.8	4.707	8.2	4.574
0.175	4.874	0.55	4.782	2.	4.697	8.4	4.571
0.1833	4.867	0.5666	4.779	2.2	4.691	8.6	4.571
0.1916	4.861	0.5833	4.779	2.4	4.681	8.8	4.568
0.2	4.855	0.6	4.776	2.6	4.672	9.	4.568
0.2083	4.852	0.6166	4.776	2.8	4.666	9.2	4.565
0.2166	4.848	0.6333	4.773	3.	4.662	9.4	4.565
0.225	4.845	0.65	4.773	3.2	4.653	9.6	4.565
0.2333	4.842	0.6666	4.77	3.4	4.65	9.8	4.565
0.2416	4.839	0.6833	4.766	3.6	4.647	10.	4.562
0.25	4.836	0.7	4.766	3.8	4.64		
0.2583	4.833	0.7166	4.766	4.	4.634		

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	8.434E-06	cm/sec
y0	4.775	ft

AUTOMATIC ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	Std. Error	
K	1.099E-05	1.138E-06	cm/sec
y0	4.884	0.01665	ft

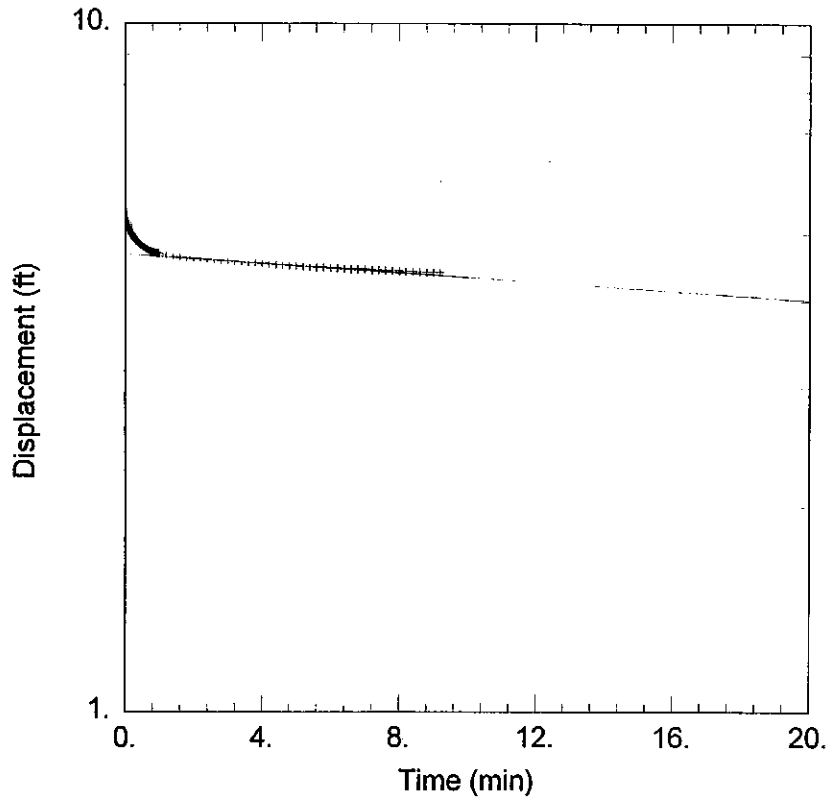
Parameter Correlations

	K	y0
K	1.00	0.60
y0	0.60	1.00

Residual Statistics

for weighted residuals

Sum of Squares.... 2.672 ft^2
Variance ..... 0.02155 ft^2
Std. Deviation..... 0.1468 ft
Mean ..... 1.749E-05 ft
No. of Residuals ... 126.
No. of Estimates ... 2



KL-MW06 - RISING HEAD SLUG TEST

Data Set: C:\AQT\KLMW06.AQT
Date: 06/23/99 Time: 14:00:03

PROJECT INFORMATION

Company: Ecology & Environment, Inc.
Project: Kenilworth Landfill
Test Location: Kenilworth
Test Well: KL-MW06
Test Date: 05/20/99

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 9.026E-06 cm/sec
y0 = 4.669 ft

AQUIFER DATA

Saturated Thickness: 5. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Initial Displacement: 5.813 ft
Casing Radius: 0.083 ft
Screen Length: 5. ft
Water Column Height: 3.62 ft
Wellbore Radius: 0.125 ft
Gravel Pack Porosity: 0.35

Data Set: C:\AQT\KLMW06.AQT
Title: KL-MW06 - RISING HEAD SLUG TEST
Date: 06/23/99
Time: 14:00:09

PROJECT INFORMATION

Company: Ecology & Environment, Inc.
Project: Kenilworth Landfill
Location: Kenilworth
Test Date: 05/20/99
Test Well: KL-MW06

AQUIFER DATA

Saturated Thickness: 5. ft
Anisotropy Ratio (Kz/Kr): 0.1

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: KL-MW06

X Location: 0. ft
Y Location: 0. ft

No. of observations: 122

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.	5.813	0.2583	4.936	0.7	4.738	3.6	4.545
0.0083	5.457	0.2666	4.93	0.7166	4.731	3.8	4.539
0.0166	5.416	0.275	4.924	0.7333	4.728	4.	4.533
0.025	5.371	0.2833	4.917	0.75	4.725	4.2	4.52

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0333	5.33	0.2916	4.911	0.7666	4.722	4.4	4.514
0.0416	5.296	0.3	4.908	0.7833	4.716	4.6	4.508
0.05	5.261	0.3083	4.902	0.8	4.713	4.8	4.501
0.0583	5.233	0.3166	4.895	0.8166	4.709	5.	4.498
0.0666	5.208	0.325	4.892	0.8333	4.706	5.2	4.492
0.075	5.185	0.3333	4.886	0.85	4.703	5.4	4.486
0.0833	5.167	0.35	4.876	0.8666	4.703	5.6	4.482
0.0916	5.148	0.3666	4.867	0.8833	4.697	5.8	4.476
0.1	5.129	0.3833	4.858	0.9	4.697	6.	4.473
0.1083	5.113	0.4	4.851	0.9166	4.694	6.2	4.47
0.1166	5.097	0.4166	4.842	0.9333	4.694	6.4	4.464
0.125	5.081	0.4333	4.836	0.95	4.691	6.6	4.454
0.1333	5.069	0.45	4.826	0.9666	4.687	6.8	4.451
0.1416	5.059	0.4666	4.82	0.9833	4.687	7.	4.451
0.15	5.047	0.4833	4.813	1.	4.684	7.2	4.445
0.1583	5.034	0.5	4.804	1.2	4.662	7.4	4.441
0.1666	5.022	0.5166	4.801	1.4	4.646	7.6	4.435
0.175	5.012	0.5333	4.791	1.6	4.634	7.8	4.432
0.1833	5.003	0.55	4.785	1.8	4.624	8.	4.426
0.1916	4.993	0.5666	4.779	2.	4.615	8.2	4.419
0.2	4.987	0.5833	4.772	2.2	4.605	8.4	4.416
0.2083	4.977	0.6	4.766	2.4	4.596	8.6	4.41
0.2166	4.971	0.6166	4.763	2.6	4.583	8.8	4.407
0.225	4.962	0.6333	4.757	2.8	4.577	9.	4.407
0.2333	4.955	0.65	4.754	3.	4.574	9.2	4.404
0.2416	4.949	0.6666	4.747	3.2	4.561		
0.25	4.94	0.6833	4.741	3.4	4.555		

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	9.026E-06	cm/sec
y0	4.669	ft

AUTOMATIC ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	Std. Error	
K	2.003E-05	1.576E-06	cm/sec
y0	4.942	0.02002	ft

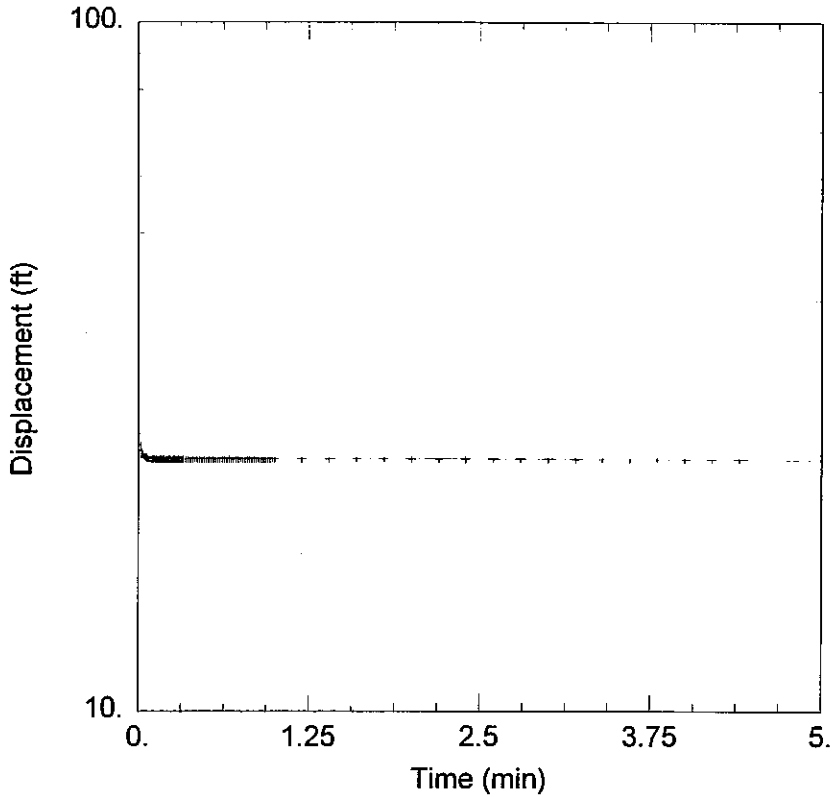
Parameter Correlations

	K	y0
K	1.00	0.59
y0	0.59	1.00

Residual Statistics

for weighted residuals

Sum of Squares.... 3.61 ft^2
Variance ..... 0.03009 ft^2
Std. Deviation..... 0.1735 ft
Mean ..... 7.229E-05 ft
No. of Residuals ... 122.
No. of Estimates ... 2



KL-MW07 - RISING HEAD SLUG TEST

Data Set: C:\AQT\KLMW07.AQT
Date: 06/28/99 Time: 18:16:33

PROJECT INFORMATION

Company: Ecology & Environment, Inc.
Project: Kenilworth Landfill
Test Location: Kenilworth
Test Well: KL-MW07
Test Date: 05/20/99

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 3.898E-06 cm/sec
y0 = 23.42 ft

AQUIFER DATA

Saturated Thickness: 9. ft

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Initial Displacement: 24.01 ft
Casing Radius: 0.083 ft
Screen Length: 10. ft

Water Column Height: 8.44 ft
Wellbore Radius: 0.35 ft
Gravel Pack Porosity: 0.35

Data Set: C:\AQT\KLMW07.AQT
Title: KL-MW07 - RISING HEAD SLUG TEST
Date: 06/28/99
Time: 18:16:39

PROJECT INFORMATION

Company: Ecology & Environment, Inc.
Project: Kenilworth Landfill
Location: Kenilworth
Test Date: 05/20/99
Test Well: KL-MW07

AQUIFER DATA

Saturated Thickness: 9. ft
Anisotropy Ratio (Kz/Kr): 0.1

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: KL-MW07

X Location: 0. ft
Y Location: 0. ft

No. of observations: 98

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.	24.01	0.2083	23.31	0.5	23.29	0.9166	23.3
0.0083	25.32	0.2166	23.31	0.5166	23.29	0.9333	23.3
0.0166	24.44	0.225	23.31	0.5333	23.29	0.95	23.29
0.025	23.93	0.2333	23.31	0.55	23.29	0.9666	23.3

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0333	23.68	0.2416	23.3	0.5666	23.29	0.9833	23.3
0.0416	23.54	0.25	23.3	0.5833	23.29	1.	23.3
0.05	23.47	0.2583	23.3	0.6	23.29	1.2	23.3
0.0583	23.42	0.2666	23.3	0.6166	23.29	1.4	23.3
0.0666	23.39	0.275	23.3	0.6333	23.29	1.6	23.3
0.075	23.38	0.2833	23.3	0.65	23.29	1.8	23.3
0.0833	23.37	0.2916	23.3	0.6666	23.29	2.	23.3
0.0916	23.36	0.3	23.3	0.6833	23.29	2.2	23.3
0.1	23.35	0.3083	23.3	0.7	23.29	2.4	23.3
0.1083	23.34	0.3166	23.3	0.7166	23.3	2.6	23.3
0.1166	23.34	0.325	23.3	0.7333	23.29	2.8	23.3
0.125	23.33	0.3333	23.3	0.75	23.29	3.	23.3
0.1333	23.33	0.35	23.3	0.7666	23.29	3.2	23.3
0.1416	23.32	0.3666	23.3	0.7833	23.29	3.4	23.29
0.15	23.32	0.3833	23.3	0.8	23.29	3.6	23.29
0.1583	23.32	0.4	23.3	0.8166	23.29	3.8	23.29
0.1666	23.32	0.4166	23.3	0.8333	23.29	4.	23.29
0.175	23.31	0.4333	23.29	0.85	23.29	4.2	23.29
0.1833	23.31	0.45	23.29	0.8666	23.29	4.4	23.29
0.1916	23.31	0.4666	23.29	0.8833	23.3		
0.2	23.31	0.4833	23.29	0.9	23.3		

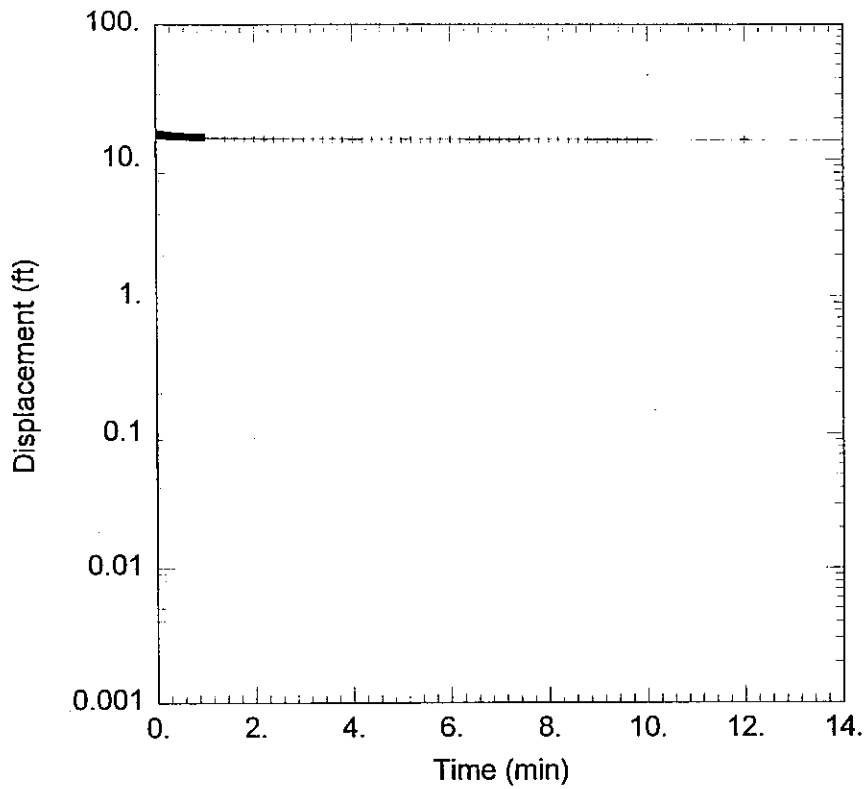
SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	3.898E-06	cm/sec
y0	23.42	ft



KL-MW08 - RISING HEAD SLUG TEST

Data Set: C:\AQT\KLMW08.AQT
Date: 06/28/99 Time: 18:15:32

PROJECT INFORMATION

Company: Ecology & Environment, Inc.
Project: Kenilworth Landfill
Test Location: Kenilworth
Test Well: KL-MW08
Test Date: 05/20/99

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 9.82E-06 cm/sec
y0 = 14.23 ft

AQUIFER DATA

Saturated Thickness: 14. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Initial Displacement: 15.96 ft
Casing Radius: 0.083 ft
Screen Length: 10. ft
Water Column Height: 13.33 ft
Wellbore Radius: 0.35 ft
Gravel Pack Porosity: 0.35

Data Set: C:\AQT\KLMW08.AQT
Title: KL-MW08 - RISING HEAD SLUG TEST
Date: 06/28/99
Time: 18:15:39

PROJECT INFORMATION

Company: Ecology & Environment, Inc.
Project: Kenilworth Landfill
Location: Kenilworth
Test Date: 05/20/99
Test Well: KL-MW08

AQUIFER DATA

Saturated Thickness: 14. ft
Anisotropy Ratio (Kz/Kr): 0.1

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: KL-MW08

X Location: 0. ft
Y Location: 0. ft

No. of observations: 127

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.	15.96	0.2666	15.04	0.7333	14.66	4.2	14.08
0.0083	15.82	0.275	15.03	0.75	14.65	4.4	14.07
0.0166	15.64	0.2833	15.02	0.7666	14.64	4.6	14.06
0.025	15.53	0.2916	15.02	0.7833	14.63	4.8	14.05

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0333	15.44	0.3	15.01	0.8	14.62	5.	14.05
0.0416	15.4	0.3083	15.	0.8166	14.61	5.2	14.05
0.05	15.37	0.3166	14.99	0.8333	14.61	5.4	14.04
0.0583	15.34	0.325	14.98	0.85	14.6	5.6	14.04
0.0666	15.33	0.3333	14.97	0.8666	14.59	5.8	14.04
0.075	15.31	0.35	14.96	0.8833	14.58	6.	14.03
0.0833	15.3	0.3666	14.94	0.9	14.57	6.2	14.03
0.0916	15.29	0.3833	14.92	0.9166	14.56	6.4	14.03
0.1	15.27	0.4	14.9	0.9333	14.56	6.6	14.02
0.1083	15.26	0.4166	14.89	0.95	14.55	6.8	14.02
0.1166	15.24	0.4333	14.88	0.9666	14.54	7.	14.02
0.125	15.23	0.45	14.86	0.9833	14.54	7.2	14.02
0.1333	15.22	0.4666	14.85	1.	14.53	7.4	14.02
0.1416	15.2	0.4833	14.84	1.2	14.44	7.6	14.02
0.15	15.19	0.5	14.82	1.4	14.38	7.8	14.02
0.1583	15.18	0.5166	14.81	1.6	14.32	8.	14.01
0.1666	15.17	0.5333	14.79	1.8	14.28	8.2	14.01
0.175	15.16	0.55	14.78	2.	14.25	8.4	14.01
0.1833	15.14	0.5666	14.77	2.2	14.23	8.6	14.01
0.1916	15.14	0.5833	14.76	2.4	14.2	8.8	14.01
0.2	15.13	0.6	14.74	2.6	14.18	9.	14.01
0.2083	15.12	0.6166	14.73	2.8	14.16	9.2	14.
0.2166	15.1	0.6333	14.72	3.	14.15	9.4	14.
0.225	15.09	0.65	14.71	3.2	14.13	9.6	14.
0.2333	15.08	0.6666	14.7	3.4	14.12	9.8	14.
0.2416	15.07	0.6833	14.69	3.6	14.11	10.	14.
0.25	15.06	0.7	14.68	3.8	14.1	12.	14.
0.2583	15.05	0.7166	14.67	4.	14.09		

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	9.82E-06	cm/sec
y0	14.23	ft

AUTOMATIC ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	Std. Error	
K	2.294E-05	5.173E-05	cm/sec
y0	9.121	0.6412	ft

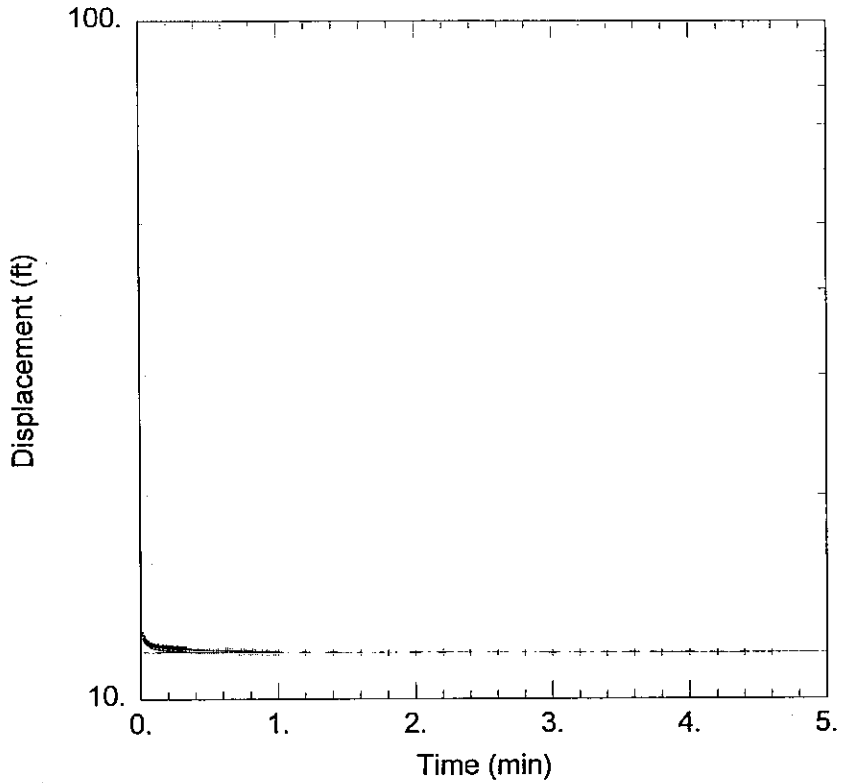
Parameter Correlations

	K	y0
K	1.00	0.60
y0	0.60	1.00

Residual Statistics

for weighted residuals

Sum of Squares.... 4061.9 ft^2
Variance ..... 32.5 ft^2
Std. Deviation..... 5.7 ft
Mean ..... 5.642 ft
No. of Residuals ... 127.
No. of Estimates ... 2



KL-MW10 - RISING HEAD SLUG TEST

Data Set: C:\AQT\KLMW10.AQT
Date: 06/23/99 Time: 15:34:29

PROJECT INFORMATION

Company: Ecology & Environment, Inc.
Project: Kenilworth Landfill
Test Location: Kenilworth
Test Well: KL-MW10
Test Date: 05/20/99

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 1.798E-06 cm/sec
y0 = 11.74 ft

AQUIFER DATA

Saturated Thickness: 6. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Initial Displacement: 12.75 ft
Casing Radius: 0.083 ft
Screen Length: 10. ft
Water Column Height: 5.83 ft
Wellbore Radius: 0.35 ft
Gravel Pack Porosity: 0.35

Data Set: C:\AQT\KLMW10.AQT
Title: KL-MW10 - RISING HEAD SLUG TEST
Date: 06/23/99
Time: 15:34:33

PROJECT INFORMATION

Company: Ecology & Environment, Inc.
Project: Kenilworth Landfill
Location: Kenilworth
Test Date: 05/20/99
Test Well: KL-MW10

AQUIFER DATA

Saturated Thickness: 6. ft
Anisotropy Ratio (Kz/Kr): 0.1

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: KL-MW10

X Location: 0. ft
Y Location: 0. ft

No. of observations: 99

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.	12.75	0.2083	11.92	0.5	11.83	0.9166	11.77
0.0083	12.6	0.2166	11.92	0.5166	11.82	0.9333	11.77
0.0166	12.44	0.225	11.91	0.5333	11.82	0.95	11.76
0.025	12.32	0.2333	11.91	0.55	11.82	0.9666	11.76

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0333	12.24	0.2416	11.91	0.5666	11.82	0.9833	11.76
0.0416	12.17	0.25	11.9	0.5833	11.81	1.	11.76
0.05	12.12	0.2583	11.9	0.6	11.81	1.2	11.74
0.0583	12.09	0.2666	11.9	0.6166	11.8	1.4	11.73
0.0666	12.07	0.275	11.9	0.6333	11.8	1.6	11.73
0.075	12.05	0.2833	11.89	0.65	11.8	1.8	11.72
0.0833	12.03	0.2916	11.89	0.6666	11.8	2.	11.72
0.0916	12.02	0.3	11.89	0.6833	11.79	2.2	11.72
0.1	12.01	0.3083	11.88	0.7	11.79	2.4	11.71
0.1083	12.	0.3166	11.88	0.7166	11.79	2.6	11.71
0.1166	11.99	0.325	11.88	0.7333	11.79	2.8	11.71
0.125	11.98	0.3333	11.87	0.75	11.79	3.	11.71
0.1333	11.97	0.35	11.87	0.7666	11.78	3.2	11.71
0.1416	11.97	0.3666	11.86	0.7833	11.78	3.4	11.7
0.15	11.96	0.3833	11.86	0.8	11.78	3.6	11.71
0.1583	11.96	0.4	11.85	0.8166	11.78	3.8	11.71
0.1666	11.95	0.4166	11.85	0.8333	11.78	4.	11.71
0.175	11.94	0.4333	11.84	0.85	11.77	4.2	11.71
0.1833	11.94	0.45	11.84	0.8666	11.77	4.4	11.7
0.1916	11.93	0.4666	11.84	0.8833	11.77	4.6	11.7
0.2	11.93	0.4833	11.83	0.9	11.77		

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	1.798E-06	cm/sec
y0	11.74	ft

AUTOMATIC ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	Std. Error	
K	1.798E-06	3.696E-05	cm/sec
y0	11.74	0.3601	ft

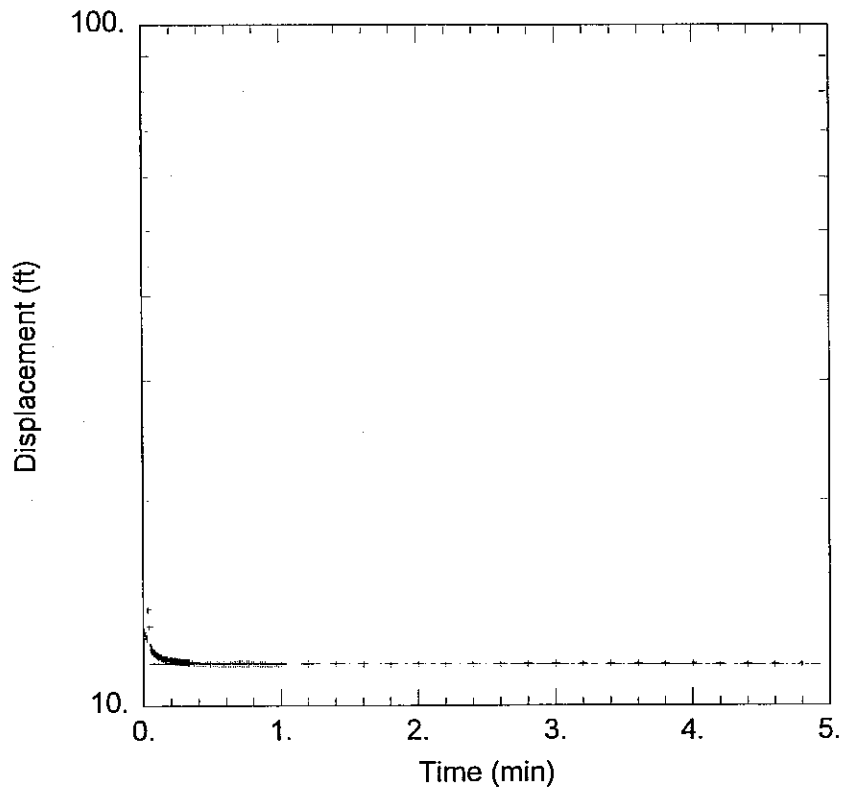
Parameter Correlations

	K	y0
K	1.00	0.62
y0	0.62	1.00

Residual Statistics

for weighted residuals

Sum of Squares.... 759.3 ft^2
Variance ..... 7.828 ft^2
Std. Deviation..... 2.798 ft
Mean ..... 2.764 ft
No. of Residuals ... 99.
No. of Estimates ... 2



KL-MW11 - RISING HEAD SLUG TEST

Data Set: C:\AQT\KLMW11.AQT
Date: 06/23/99 Time: 15:35:57

PROJECT INFORMATION

Company: Ecology & Environment, Inc.
Project: Kenilworth Landfill
Test Location: Kenilworth
Test Well: KL-MW11
Test Date: 05/20/99

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 3.373E-06 cm/sec
y0 = 11.52 ft

AQUIFER DATA

Saturated Thickness: 7. ft

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Initial Displacement: 12.96 ft
Casing Radius: 0.083 ft
Screen Length: 10. ft

Water Column Height: 6.02 ft
Wellbore Radius: 0.35 ft
Gravel Pack Porosity: 0.35

Data Set: C:\AQT\KLMW11.AQT
Title: KL-MW11 - RISING HEAD SLUG TEST
Date: 06/23/99
Time: 15:36:05

PROJECT INFORMATION

Company: Ecology & Environment, Inc.
Project: Kenilworth Landfill
Location: Kenilworth
Test Date: 05/20/99
Test Well: KL-MW11

AQUIFER DATA

Saturated Thickness: 7. ft
Anisotropy Ratio (Kz/Kr): 0.1

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: KL-MW11

X Location: 0. ft
Y Location: 0. ft

No. of observations: 100

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.	12.96	0.2083	11.64	0.5	11.54	0.9166	11.52
0.0083	12.79	0.2166	11.64	0.5166	11.53	0.9333	11.52
0.0166	12.65	0.225	11.63	0.5333	11.53	0.95	11.52
0.025	12.53	0.2333	11.62	0.55	11.53	0.9666	11.51

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0333	13.84	0.2416	11.61	0.5666	11.53	0.9833	11.52
0.0416	13.06	0.25	11.61	0.5833	11.53	1.	11.52
0.05	12.26	0.2583	11.6	0.6	11.53	1.2	11.51
0.0583	12.08	0.2666	11.6	0.6166	11.53	1.4	11.51
0.0666	12.01	0.275	11.59	0.6333	11.53	1.6	11.51
0.075	11.94	0.2833	11.59	0.65	11.53	1.8	11.5
0.0833	11.9	0.2916	11.59	0.6666	11.53	2.	11.5
0.0916	11.86	0.3	11.58	0.6833	11.52	2.2	11.5
0.1	11.83	0.3083	11.58	0.7	11.52	2.4	11.5
0.1083	11.8	0.3166	11.58	0.7166	11.52	2.6	11.5
0.1166	11.78	0.325	11.57	0.7333	11.52	2.8	11.5
0.125	11.76	0.3333	11.57	0.75	11.52	3.	11.5
0.1333	11.74	0.35	11.57	0.7666	11.52	3.2	11.51
0.1416	11.73	0.3666	11.56	0.7833	11.52	3.4	11.51
0.15	11.71	0.3833	11.56	0.8	11.52	3.6	11.51
0.1583	11.7	0.4	11.55	0.8166	11.52	3.8	11.51
0.1666	11.69	0.4166	11.55	0.8333	11.52	4.	11.51
0.175	11.68	0.4333	11.55	0.85	11.52	4.2	11.5
0.1833	11.67	0.45	11.54	0.8666	11.52	4.4	11.5
0.1916	11.66	0.4666	11.54	0.8833	11.52	4.6	11.5
0.2	11.65	0.4833	11.54	0.9	11.52	4.8	11.5

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	3.373E-06	cm/sec
y0	11.52	ft

AUTOMATIC ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	Std. Error	
K	3.373E-06	2.437E-05	cm/sec
y0	11.52	0.3338	ft

Parameter Correlations

	K	y0
K	1.00	0.62
y0	0.62	1.00

Residual Statistics

for weighted residuals

Sum of Squares.... 671.8 ft^2
Variance ..... 6.855 ft^2
Std. Deviation..... 2.618 ft
Mean ..... 2.566 ft
No. of Residuals ... 100.
No. of Estimates ... 2

Anacostia Watershed Restoration, 1998

Anacostia Watershed
Restoration Progress and Conditions Report
1990-1997

prepared for:
Anacostia Watershed Restoration Committee

prepared by:
Department of Environmental Programs
Metropolitan Washington Council of Governments

May 1998

Background

Historical Perspective

The Anacostia watershed remains a largely degraded urban ecosystem located in suburban Maryland and the District of Columbia. Within its 176 square mile drainage, Figure 1, there are nearly 805,000 inhabitants (1990 census), making it one of the most densely populated watersheds in the Chesapeake Bay basin. By the year 2010 that population is expected to increase by another 35,000 inhabitants (Warner et al., 1997).

During the 17th century the watershed was vastly different. It was a thriving center of Indian culture set amidst the Piedmont and Coastal Plain provinces. It contained healthy populations of sturgeon, american and hickory shad, white and yellow perch, redbreast sunfish, pickeral, catfish and herring, and provided the native Indians with an abundant food supply. Lush forests and abundant wildlife complemented clean waters that flowed into the Potomac River and ultimately emptied into the Chesapeake Bay.

In 1608, English Captain John Smith first surveyed the river, opening the watershed to European settlement and initiating changes in land use that have dramatically altered the watershed. Characterized by over 300 years of successive waves of cultivation of tobacco and cotton, small grains, corn and other row crops; dairying and livestock production; and urbanization; these changes have left little that resembles this once highly productive ecosystem.

The loss of important forest and wetland habitats, alteration of natural drainage patterns and streamflow, increases in erosion, sedimentation and nonpoint source pollution, and discharges of combined sewer overflow and industrial waste have all contributed to the decline of the ecological health of the watershed. Although the once pristine watershed reflects a system that has suffered from years of environmental neglect and urbanization, major restoration efforts since 1987 are beginning to improve conditions.

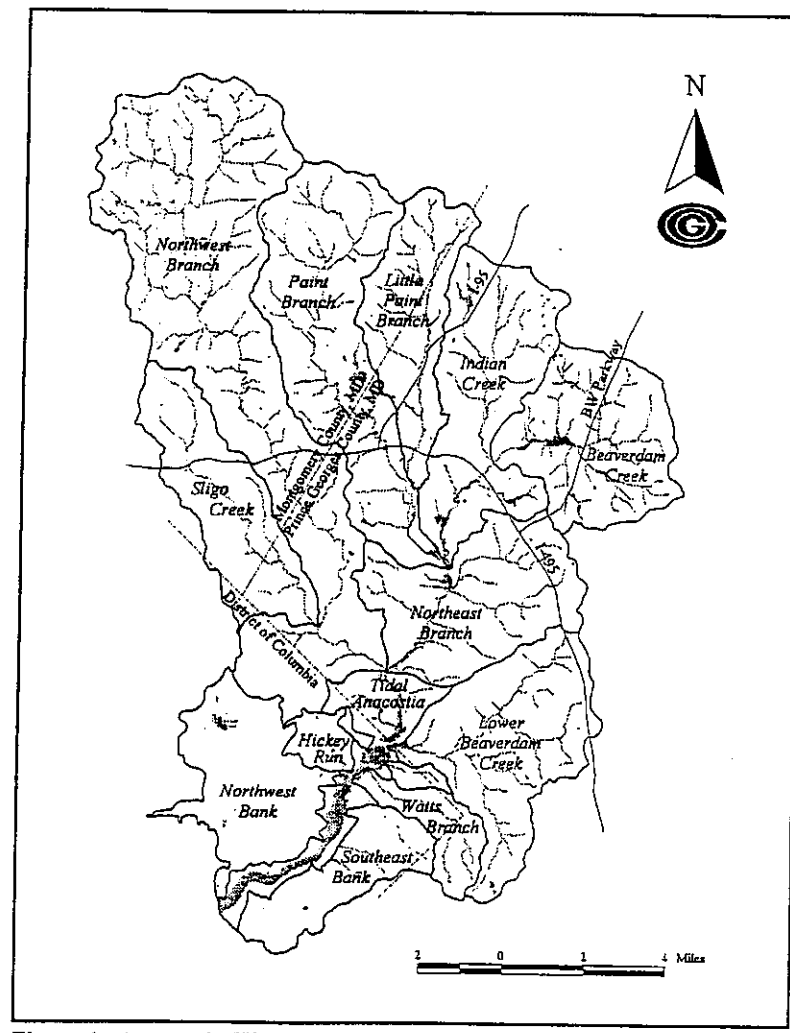


Figure 1. Anacostia Watershed and Major Subwatersheds.

Land Use

Current land use in the Anacostia watershed reflects the general pattern of other metropolitan areas. The densest development is generally concentrated near the urban center (i.e., inside the Capital Beltway).

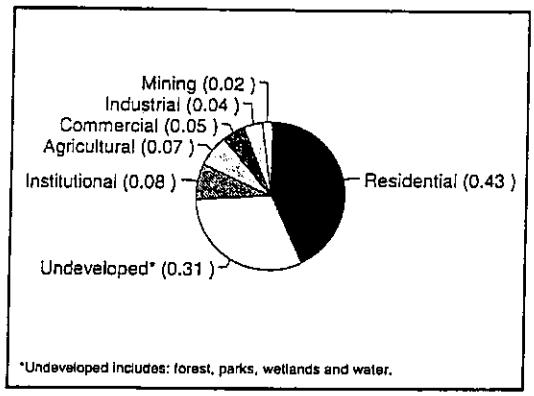


Figure 2. Anacostia Watershed Existing Land Use (modified from Warner, 1996).

As of 1990, nearly 70 percent of the Anacostia watershed has been developed. Residential development (single family houses, townhouses and apartments) is the single largest land use, comprising 43 percent of the watershed (Figure 2). Impervious surfaces associated with development, such as parking lots, roads, and roof tops, cover approximately 23 percent of the watershed (Warner et al., 1997). Runoff from these areas carries a variety of pollutants to streams and can seriously degrade aquatic habitat. Streams typically become degraded when impervious surfaces cover more than 10 percent of a watershed, unless mitigated by effective stormwater management controls. As Figure 3 shows, imperviousness in individual subwatersheds ranges from a low of 11 percent in Beaverdam Creek to 48 percent for the tidal Northwest Bank portion in the District of Columbia.

Tidal River Hydrology

The Anacostia River is formed by two major tributaries, the Northwest and Northeast Branches (Figure 1). Downstream of the confluence of these two streams, the Anacostia is a channelized, freshwater tidal river which flows approximately 8.4 miles before joining the Potomac River. The hydrology of the entire Anacostia tributary system may be broadly characterized as being flashy (i.e., quick flow response to rainfall); whereas, the tidal river portion can be described as being sluggish with an average water residence time on the order of 30 to 35 days. Under periods of extremely low flow, this residence time can be as long as 100 to 110 days. As seen in Table 1, average daily inflow into the tidal river is approximately 138 cubic feet per second (i.e., 61,934 gallons per minute).

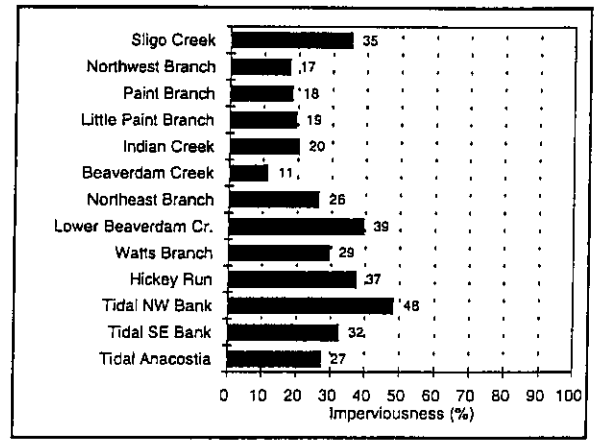


Figure 3. Anacostia Subwatersheds Percent Impervious Land Surface (modified from Warner et al., 1997).

Average Daily Discharge (cfs)[1]	Maximum Discharge, June 1972[2] (cfs)	Minimum Discharge, Sept. 1966 (cfs)	Surface Area of Tidal River (acres)	Average Volume of Tidal River (gallons x 10^9)	Average Tidal Volume (gallons x 10^6)	Average Tidal Range (feet)
138	31,180	1.8	850	3.72	765.6	2.95

[1] 1 cfs (cubic feet per second) = 7.48 gallons per second or 448.8 gallons per minute.
[2] Maximum discharge associated with Hurricane Agnes.

Table 1. Anacostia River Hydrography (Scatena, 1986).

Restoration Effort

Within the greater Washington metropolitan area, the Anacostia River has often been called "the other river" or "the forgotten river" (ICPRB, 1988). Prior to 1987, much of the environmental concern and focus was on the larger ailing Potomac River. However, a concerted and focused effort to restore and protect the Anacostia watershed began over a decade ago. During that time, local, state, regional and Federal government agencies, as well as environmental organizations, businesses and dedicated citizens have contributed significant resources toward its restoration and protection. Formal cooperation between government agencies came with the signing of the 1987 Anacostia Watershed Restoration Agreement and the establishment of the Anacostia Watershed Restoration Committee (AWRC) to oversee the restoration. Members of the AWRC include the District of Columbia, Montgomery and Prince George's counties in Maryland, the state of Maryland, and the U. S. Army Corps of Engineers. In addition to the members, the Metropolitan Washington Council of Governments and the Interstate Commission on the Potomac River Basin provide both technical and administrative staff support to the AWRC and its restoration efforts (Figure 4).

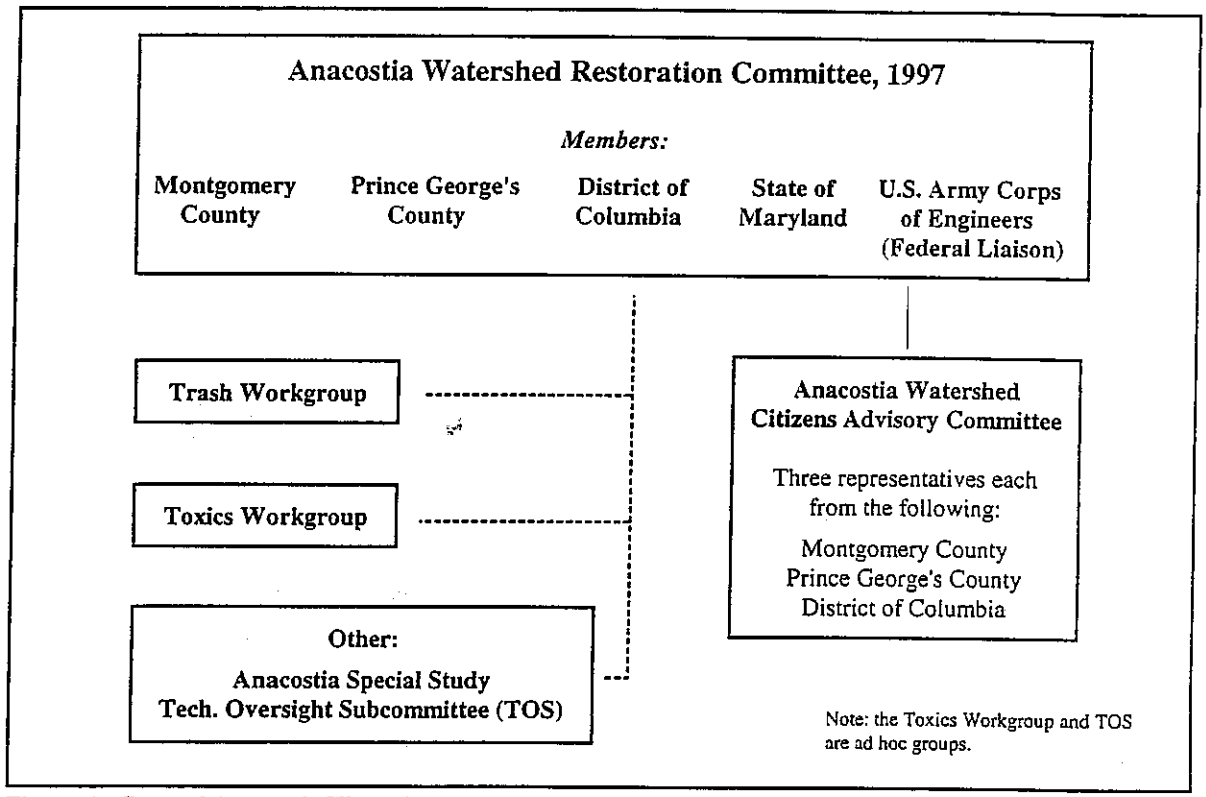


Figure 4. General Anacostia Watershed Restoration Committee Structure

Over the last 10 years, actions taken by the AWRC and affiliated organizations have resulted in substantial restoration progress. Shortly after it was created, the AWRC established a framework to guide long-term restoration efforts. The vision for a comprehensive, ecologically based restoration effort was laid out in a document: *A Commitment to Restore Our Home River: A Six-Point Action Plan to Restore the Anacostia River* (COG, 1991). To achieve those goals, the AWRC has identified some 580 restoration projects designed to correct existing environmental problems and enhance overall ecosystem quality. Of these, approximately 29 percent have either been completed or are in progress.

Goal 1: Dramatically reduce pollutant loads delivered to the tidal river to measurably improve water quality conditions by the turn of the century.

PROBLEM: The tidal Anacostia River suffers from overall poor water quality due to a variety of factors that plague many urban rivers. Due to intense development, a high percentage of impervious surface and high stormwater runoff volumes, it receives large amounts of pollutants including sediment, excess nutrients, toxics and trash and debris. Additionally, with almost every significant rainfall event, it experiences combined sewer and stormwater overflows which discharge sewage and other pollutants directly into the river. Many of these factors contribute to both chronically low dissolved oxygen levels that frequently violate water quality standards and threaten aquatic life and high bacterial levels which make water contact activities (such as swimming and wading) unsafe.

Sediment

For well over 200 years, excessive erosion and subsequent sediment deposition have been a major Anacostia River problem. High sedimentation rates, associated with early tobacco growing in the 17th and 18th centuries, necessitated the first dredging of the Anacostia River in 1804. Continued high sediment deposition in the tidal river ultimately led, by 1830, to the demise and abandonment of Bladensburg as a major Atlantic seaport (Wright, 1977).

Figure 6. M-NCPPC's Hydraulic Dredge (a.k.a., Mud Cat) Used For Removing River Sediment.

Because the Anacostia River functions in many ways like a tidal lake, it is a very efficient sediment trap. It has been estimated that approximately 85 percent of the incoming sediment load remains trapped within the river (Scatena, 1986). This has necessitated frequent and costly sediment removal to maintain marina areas and navigation channels (Figure 6). In addition to adversely impacting navigation, reducing water clarity, degrading aquatic habitat and associated biota, sediment serves as a binding site for a broad range of urban pollutants and toxicants. These include: petroleum hydrocarbons, trace metals such as lead, mercury, cadmium, copper and zinc, PCBs, pesticides, herbicides, nutrients and bacteria.

Sediment-related stream quality degradation in the non-tidal portion of the Anacostia has been equally profound. Related impacts include: impairment of riffle and pool habitat through deposition of fine sediments such as sand, silt and clay; accelerated streambank and streambed erosion during stormflows; and high suspended solids loads which impair the biological community by obscuring the water for sight feeders and clogging or irritating exposed gills.

Using general suspended sediment-watershed area curves (Schueler, 1987), COG staff estimated annual total suspended solids loads (TSS) generated in the Anacostia watershed. As seen in Figure 7, the two largest subwatersheds (Northwest and Northeast Branch) each contribute the largest total TSS loads. Not surprisingly, TSS loads are generally a function of drainage area and land use, with the largest subwatershed and/or most highly developed one contributing the largest load. TSS loads for the intensively developed Lower Beaverdam Creek subwatershed are the highest per unit area in the watershed. Annual TSS loadings in the Anacostia watershed are estimated to be 48,200 tons, for an average of 0.43 tons/acre/year (Warner et al., 1997).

Nutrients

In freshwater ecosystems, two nutrients, phosphorus and nitrogen, can significantly impact receiving waters. When present in sufficient concentrations they often trigger algal blooms, which eventually reduce the dissolved oxygen (DO) level of the water as decaying algal and other organic matter is broken down by microorganisms. Typical sources of phosphorus and nitrogen include fertilizers, animal wastes, automotive exhaust, organic material, soil, etc.

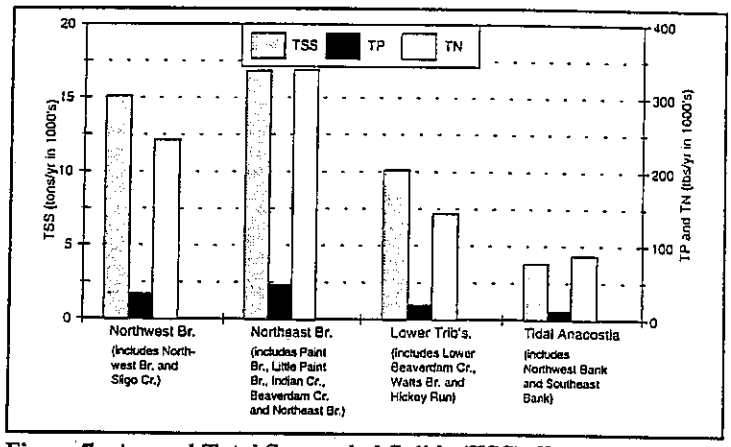


Figure 7. Annual Total Suspended Solids (TSS), Total Phosphorus (TP) and Total Nitrogen (TN) Pollutant Load Estimates, 1990 (data from Warner et al., 1997).

Using the Simple Method (Schueler, 1987), COG staff estimated total phosphorus (TP) and total nitrogen (TN) loads for the entire Anacostia watershed (Figure 7). As expected, the larger Northeast Branch portion of the watershed generates the largest TP and TN loads (50,000 and 340,000 lbs/year, respectively). However, when viewed on a pollutant load per acre basis, it is evident that the Lower Tributaries and Tidal Anacostia areas contribute disproportionately to the overall problem. Much of this is due to the high amount of impervious surface, low number of stormwater management controls, age of sanitary sewer lines, storm drainage and combined sewer systems present.

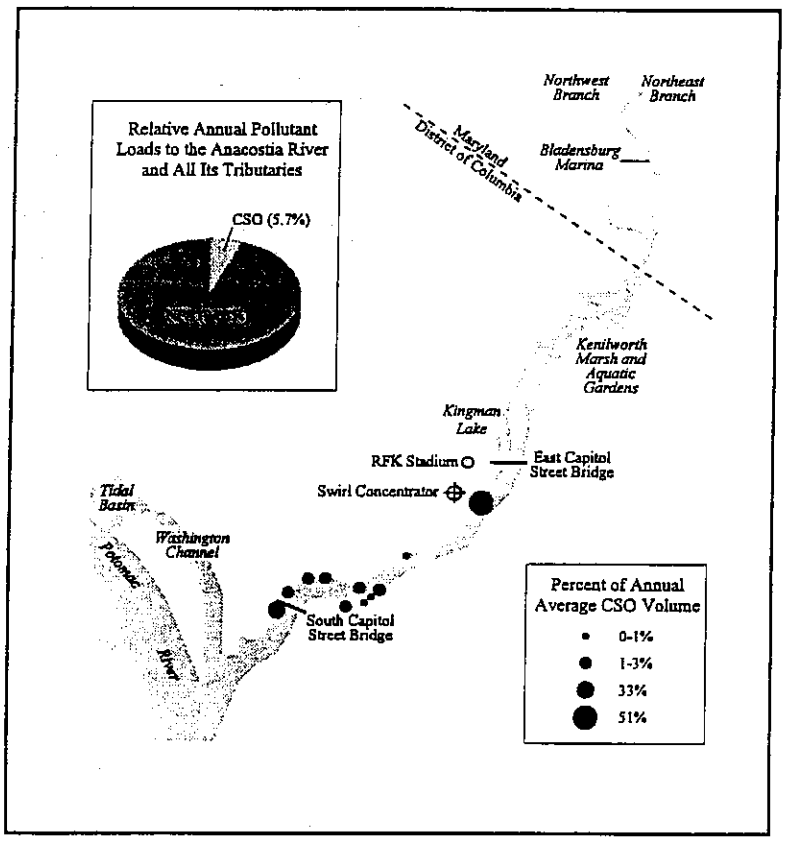


Figure 8. Location and Relative Size of CSO Discharges to the Tidal Anacostia River (COG, 1998).

Combined Sewer Overflows-CSOs

Approximately 60 percent of the Anacostia watershed within the District of Columbia drains directly to the tidal Anacostia River via a combined sanitary and storm sewer system dating back as early as the late 1800s. As seen in Figure 8, there are 11 major combined sewer outfalls to the Anacostia River and all discharge in the vicinity of the East Capitol Street and South Capitol Street bridges. A CSO event occurs when rainfall exceeds the capacity of this combined system causing discharges of untreated sanitary waste and stormwater directly into the river. On average, overflows occur roughly 40 to 50 times a year, resulting

in approximately 1.3 billion gallons of sanitary waste discharged to the tidal river.

CSOs are the primary point source pollutants degrading the Anacostia River's water quality. However, only about six percent of the annual pollutant loads to the Anacostia River are from CSOs compared to about 94 percent from nonpoint sources (Warner et al., 1997). In recognition of the CSO problem, the District of Columbia initiated its CSO Abatement Program in the early 1980s (Nemura and Pontikakis-Coyne, 1991). Retrofitting of existing combined sewer systems, between 1988 to 1990, with inflatable dams and construction of an overflow treatment facility (a.k.a., swirl concentrator) have produced some improvement. However, it is estimated that well over $1 billion dollars may be required to correct the existing CSO problem.

Toxics

Toxics refer to a variety of contaminants including trace metals such as arsenic, mercury, copper, cadmium and lead; and organic compounds such as PAHs (polycyclic aromatic hydrocarbons), PCBs (polychlorinated biphenyls) and pesticides and herbicides (e.g., DDT, Chlordane and atrazine) which reach receiving waters from stormwater runoff, atmospheric deposition and industrial and municipal discharges.

These contaminants typically cling to particles suspended in water and settle to the bottom, whereupon, they can become ingested by bottom feeding organisms and potentially find their way up the food chain. As seen in Figure 9, the Anacostia River is one of three areas in the Chesapeake Bay recognized as posing a significant risk to aquatic life due to high levels of sediment contamination. It has been designated by the Chesapeake Bay Program as a "Region of Concern" and the District of Columbia Department of Consumer and Regulatory Affairs has developed an "Action Plan" to address the issue of toxics in the river (CBP, 1995).

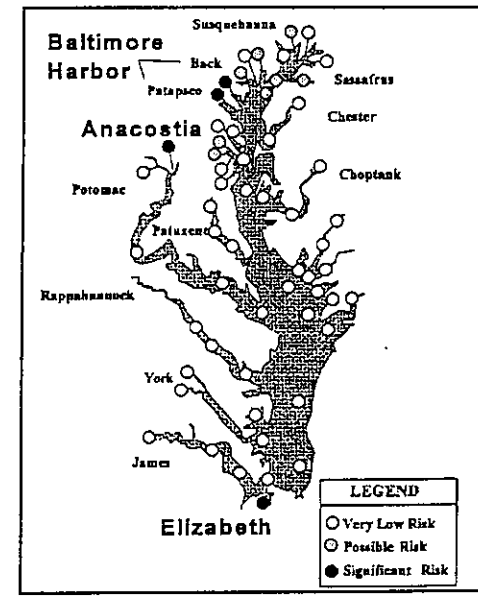


Figure 9. Sediment Contamination and Risk to Aquatic Life from Chesapeake Bay Tributaries (modified from CBP, 1995).

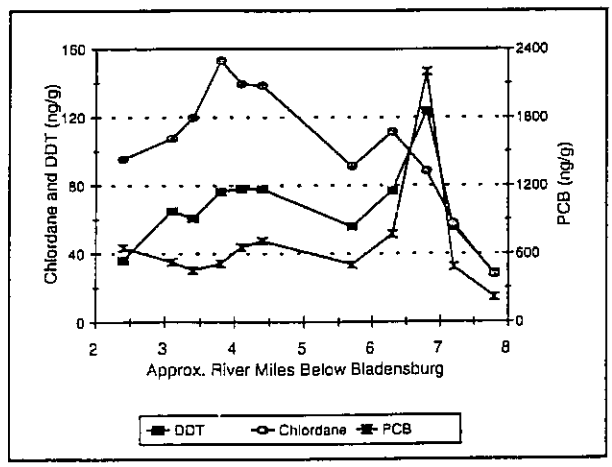


Figure 10. Sediment Concentrations of Select Organic Compounds in the Anacostia River and Kingman Lake, 1991 (modified from Velinsky et al., 1992).

Several studies of tidal river sediments have found PCBs, DDT, DDE, Chlordane, trace metals and PAHs at detectable levels at all tidal Anacostia River sampling stations with levels of PCBs and Chlordane exceeding suggested criteria throughout the tidal river. However, the source(s) of contaminants could not be definitively determined (LTI, 1990). A subsequent study of tidal river sediments conducted in 1991 found concentrations of trace metals, such as cadmium, mercury, lead and zinc in the vicinity of the Washington Navy Yard to be at levels several times those expected to occur naturally. In addition, the study also found sharp increases in two organic sediment contaminants, DDT and PCB, just downstream of the Navy Yard (Figure 10). Potential sources identified include: the Navy Yard, the Bureau

of Engraving and Printing, the old Lionel freight yard and the U.S. Botanical Gardens. In contrast, concentrations of Chlordane were highest in and just downstream of Kingman Lake.

Currently, a major initiative, led by the District of Columbia Department of Health, is underway to study both toxic loadings to the tidal river from the Northwest and Northeast Branches, as well as, the control of and management of contaminated river sediments. Because of elevated levels of PCBs and Chlordane found in fish tissue, the District of Columbia, in 1994, issued a fish consumption advisory recommending that no bottom dwelling fish (such as catfish, eel and carp) be consumed and no more than 0.5 pounds of gamefish (such as largemouth bass and sunfish) be consumed by an adult per week. This advisory remains in effect.

Organic Loadings

Stormwater runoff, combined sewer overflows, leaking sewer lines, as well as natural processes, all contribute significant amounts of organic matter to the Anacostia River. Organic matter, which refers to anything derived from living organisms, must then be broken down or decomposed by microorganisms within the river. Depending on the timing and size of the load, the decomposition of this material can require a substantial amount of oxygen. One measure of the amount of oxygen required to decompose organic matter (principally organic carbon) over a fixed amount of time (typically 5 days) is termed the five-day biochemical oxygen demand (BOD_5). While BOD_5 does not account for the total oxygen demand to a water body, it does provide a good representation. When characterized as a pollutant load, BOD_5 is expressed in terms of the total organic load to a receiving waterbody that is biologically oxidizable.

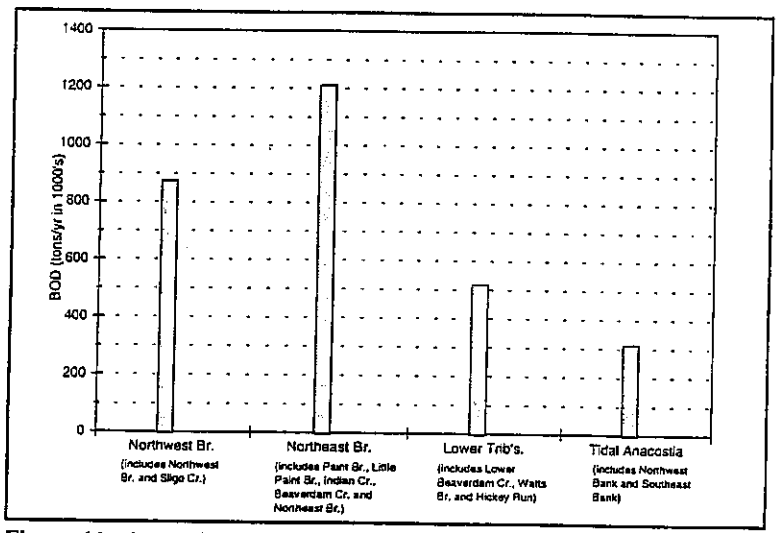


Figure 11. Annual Biochemical Oxygen Demand (BOD_5) Pollutant Load Estimates, 1990 (data from Warner et al., 1997).

Again, using the Simple Method (Schueler, 1987), COG staff estimated BOD_5 pollutant loads for the entire Anacostia watershed. As seen in Figure 11, the Northwest and Northeast Branches (which together comprise approximately 74 percent of the total Anacostia watershed area) generate roughly 72 percent of the watershed's BOD_5 loads. In general, BOD_5 pollutant loads per subdrainage area increase with increasing subdrainage area size. The total BOD_5 pollutant load for the entire watershed is an estimated 2,915,680 lbs/year. This level is approximately 5 to 6 times higher than under pre-European settlement conditions.

High BOD_5 loads, particularly during the warmer summer months, can reduce tidal river dissolved oxygen (DO) concentrations to levels that are lethal to fish and other aquatic organisms. Other factors that influence DO concentrations include river flow, water temperature, CSO events, algal blooms and sediment oxygen demand (SOD). SOD has been found to have a major negative influence on DO within the tidal Anacostia River, particularly in the vicinity of CSO outfalls (An, 1992). The District of Columbia has established a minimum DO concentration of 5.0 mg/L to support aquatic life. Unfortunately, chronically low DO levels below this threshold have been and continue to be a major problem along the tidal river (Figure 12). For a significant portion of the tidal river, from below

Kenilworth Marsh downstream to approximately the South Capitol Street bridge, minimum summer DO levels were at or below 1.0 mg/L for the years 1987 to 1990 (Herson-Jones et al., 1994). While only two continuous DO monitoring stations have remained operational since 1990, data through 1996 show that very low summer DO levels are still a common occurrence.

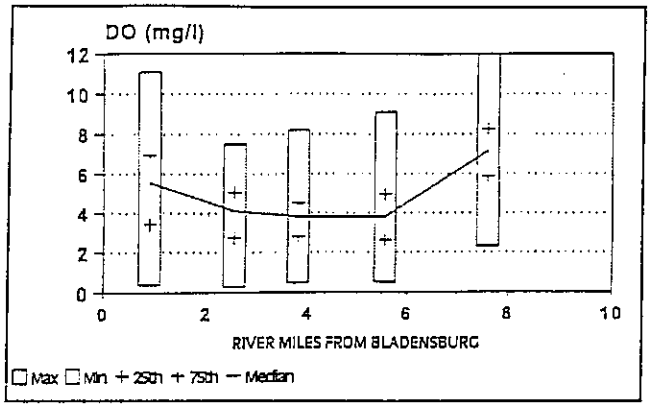


Figure 12. Summer Dissolved Oxygen Levels for the Tidal Anacostia River, 1987-1990 (Herson-Jones et al., 1994).

Despite low DO levels, the number of fish kills reported in the tidal river over the past 10 years has generally been declining. The District of Columbia's Fisheries Management Branch which investigates reports of fish kills within the Anacostia River roughly defines a fish kill as the death of approximately 50 or more individuals within a spatially confined area (Tilak, 1997). From 1990 to 1996, the Fisheries Management Branch has observed two fish kills, one in June 1991 and the other in June 1992. Extremely low DO levels were believed responsible for the 1991 fish kill in which at least 10 fish species were identified. DO levels associated with the fish kill ranged from 0.4 to 1.8 mg/L (Tilak, 1997).

Trash and Debris

It is estimated that over 20,000 tons of trash and debris enter the Anacostia River annually (PG DER, 1994). Without question, it remains one of the watershed's most highly visible and aesthetic problems (Figure 13). Trash and non-woody debris, which enter the watershed's tributaries and tidal river largely through urban storm drain systems, also have chemical and biological impacts on receiving waters including: interference with the establishment of aquatic plants, leaching of toxics from certain types of trash such as used oil filters and batteries, and floating trash hazards to wildlife through ingestion of or entanglement in floating debris (Herson-Jones et al., 1994). The types of trash and debris and the sources are many, making the management of this ubiquitous problem quite a formidable task (Figure 14).

Figure 13. Anacostia River Bank North of New York Avenue Bridge (photo: DC WASA, 1993).

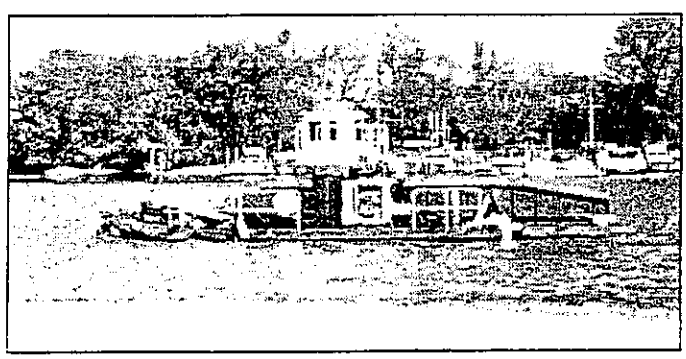


Figure 14. District of Columbia Trash Skimmer Boat Removing Floating Trash (photo: DC WASA, 1993).

In 1992, the Floating Debris Removal Program for the Anacostia and Potomac Rivers was developed by the District of Columbia Department of Public Works as a pilot project to address debris control problems intrinsic to the tidal Anacostia River. These control problems include: relatively low flow rates and long turnover times of approximately 90 days in flushing out debris, many stormwater and CSO outfalls, and many mudflats and deltas exposed at low tides, all of which tend to retain debris (Durrum, no date). While the collection of trash and debris does not address nor begin to control the sources of the problem, it does provide a means for quantifying it.

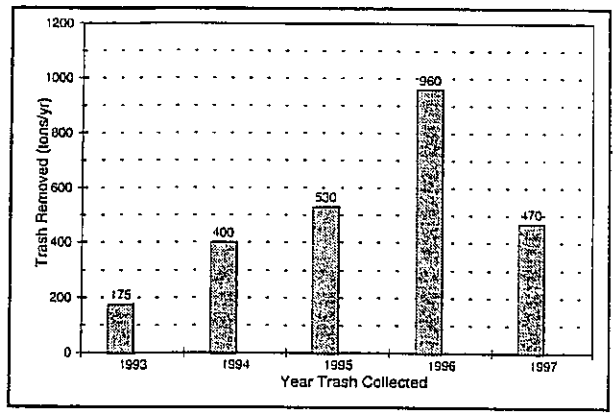


Figure 15. Tons of Trash Removed Annually from the Tidal Anacostia River, 1993-1997 (DC WASA, 1998).

The District of Columbia Water and Sewer Authority which currently runs the debris removal program collected approximately 960 tons of trash and debris in 1996 (Figure 15). The significant increase collected in 1996 over the previous year was primarily due to several high runoff events. The increase in tonnage after 1993 was in part due to additional trash and debris collecting equipment (Donaldson, 1997).

STRATEGY: Appreciably reduce and/or eliminate the impact from combined sewer/stormwater overflow events and stormwater pollutant loadings; effectively control stormwater loadings from new and existing development; remove trash and debris currently trapped in the tidal river as well as throughout the watershed; prevent future trash and debris deposition through community education and heighten public awareness; evaluate and address the problem of toxic sediments in the tidal river.

PROGRESS:

Reduced Fish Kills

As previously stated, there have been no reported fish kills in the tidal river since June 1992. Despite generally poor water quality conditions present, the tidal Anacostia continues to support a relatively stable and diverse population of gamefish (Figure 16). Also, while still well below historical levels, some 37 fish species called the tidal Anacostia River their home in 1996.

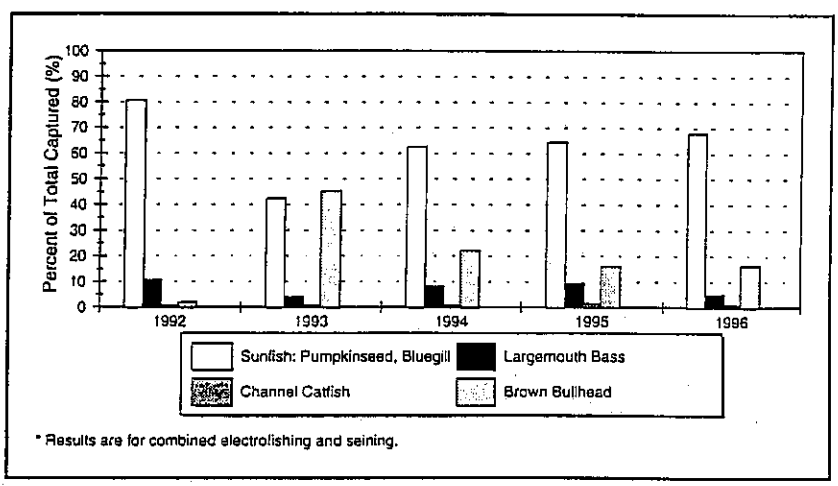


Figure 16. Representative Gamefish Distribution in the Tidal River, 1992-1996 (data from DC FMP, 1993-97).

Erosion and Sediment Control

Since the mid-1980s, Montgomery and Prince George's counties and the District of Columbia have instituted stringent erosion and sediment and stormwater management controls for all new development. In the intervening years, hundreds of urban stormwater best management practices, such as wetlands, wet ponds, infiltration trenches, extended detention

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Naval Research Lab, 1998

Contaminant Distribution and Fate in Anacostia River Sediments: Particulate Transport Survey

Naval Research Laboratory
Washington, DC 20375-5320

NRL/MR/6115--98-8139

Contaminant Distribution and Fate in Anacostia River Sediments: Particulate Transport Survey

RICHARD B. COFFIN

Environmental Quality Sciences Section
Chemistry Division

MARSHALL ORR
EARL CAREY

Acoustic Signal Processing Branch
Acoustic Division

LUIS CIFUENTES

Texas A&M, College Station, TX

JOHN POHLMAN

Geo-Centers, Inc., Landover MD

February 27, 1998

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R.B. Coffin, M. Orr, E. Carey, L. Cifuenties,* and J. Pohlman†

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Washington, DC 20375-5320

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*Texas A&M, College Station, TX
†Geo-Centers, Inc., Landover, MD

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13. ABSTRACT (*Maximum 200 words*)

This report consists of preliminary data from a current research program, "Contaminant Distribution and Fate in Anacostia River Sediments," funded by the Environmental Regulatory Coordinator to Parmely H. Pritchard and Richard B. Coffin, Naval Research Laboratory, Washington, DC. The Anacostia River is impacted by urban development, input of untreated sewage from combined sewer outfalls, non-point source surface runoff from agricultural activities and storm drains, and the release of chemical contaminants from industrial and federal facilities. As a first step in restoring the watershed, it is necessary to determine the contaminant sources, mechanisms of distribution and fate in the river sediments. Most of the major contaminants in the river (PCBs, PAHs, metals, pesticides, etc.) are particle reactive, resulting in a significant potential for transport through the river. This study focuses on contaminant distribution through analysis of suspended solid transport and deposition. The objective of this survey is to establish regions of river from which contaminants originate and to determine the levels of contaminant transport on suspended particles through the river.

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Contaminant Distribution and Fate in Anacostia River Sediments: Particulate Transport Survey

1. Program Description: This preliminary project summary is a component of the program "Contaminant Distribution and Fate in Anacostia River Sediments" funded by the Environmental Regulatory Coordinator to Parmely H. Pritchard and Richard B. Coffin, Naval Research Laboratory, Washington DC. The Anacostia River is impacted by urban development, input of untreated sewage from combined sewer outfalls, non-point source surface runoff from agricultural activities and storm drains, and the release of chemical contaminants from industrial and federal facilities. These impacts have affected the ecology of the river by reducing biological diversity, compromising oxygen levels, and diminishing natural resources (Washington DCRA, 1996). Recent surveys of the sediments in the Anacostia River (Velinsky et al., 1994, Wade et al., 1994) revealed significant concentrations of heavy metals, polychlorinated biphenyls (PCBs), hydrocarbons, and chlordane. Long term military, agricultural and industrial activity in the Anacostia and Potomac Rivers are potential sources of these contaminants. Highest concentrations of many contaminants have been located in the sediments at the lower reaches of the Anacostia near the confluence with the Potomac River. As a first step in restoring the watershed, it is necessary to determine the contaminant sources, mechanisms of distribution and fate in the river sediments. Most of the major contaminants in the river (PCBs, PAHs, metals, pesticides, etc.) are particle reactive, resulting in a significant potential for transport through the river. This study focuses on contaminant distribution through analysis of suspended solid transport and deposition. The objective of this survey is to establish regions of river from which contaminants originate and to determine the levels of contaminant transport on suspended particles through the river. This preliminary program description is a summary of the results of field work conducted during 23 to 28 June 1997.

2. Approach: In this study analysis of particle-attached contaminant transport is addressed using a broad base of parameters to survey sources and fate of organic and metal contaminants. Two approaches are applied toward this goal: 1) analysis of contaminant deposition by the installation of sediment traps through the river; and 2) calculations of contaminant deposition through analysis of the physical dynamics of the river and variations in particle sizes. Parameters employed to analyze contaminant transport include acoustic analysis of particle distributions, suspended particle concentrations, sedimentation rates, variations in current velocities, and concentrations of organic and metal contaminants associated with particles. Sample stations through the Anacostia River were S0, S1, S4, S5, and S7 (Figure 1). This segment of the project represents the summer component of a seasonal analysis. As a result of the large variations in current flow rates that were observed during the initiation of the survey, future field work will specifically address the impact of tidal energy on particle transport. This document outlines the significance of organic and metal contaminants attached to particulate organic matter relative to concentrations that previously have been measured in the sediment.

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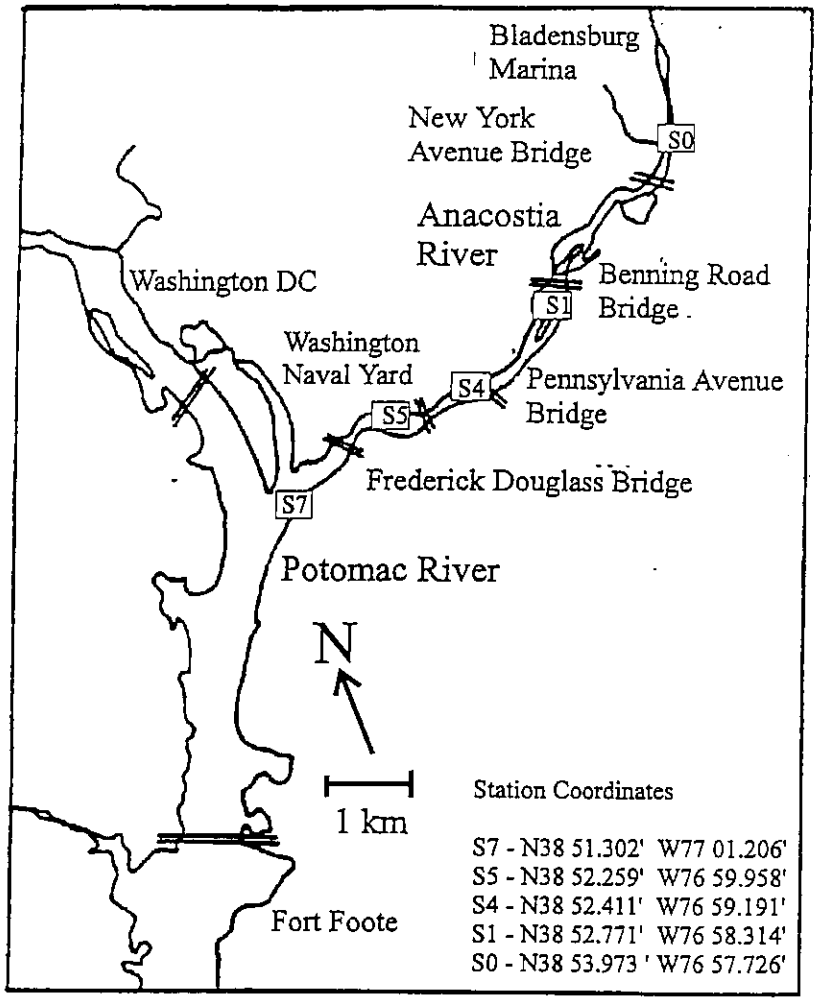


Figure 1: Sample locations through the Anacostia River.

Basic Water Column Analysis: Temperature was measured through the water column at stations during each sampling. Profiles were conducted at 0.5 m intervals using a Hydrolab Datasonde-4. The Datasonde-4 probes were individually calibrated in the laboratory prior to field operations.

Particle Distribution: Particle distribution through the river was monitored with the analysis of acoustic signals. Acoustic signals are scattered by suspended particles in the water column. Acoustic systems which detect the scattered signals can be used to monitor the vertical distribution of suspend particles and, when towed from a vessel, detect the vertical and horizontal distribution of particles. A 311 kHz narrow beam acoustic backscatter system was used to estimate the total suspended particle load as a function of depth (Orr and Baxter, 1983). Signal levels are correlated to particle

concentrations measured from space/time coincident water samples. This approach is acceptable because particle size distribution does not vary over spatial or temporal scales (presented below). The system projected a pulse of acoustic energy from the water surface downward into the water column and detected, recorded and displayed backscattered signal level. The transducer was mounted to a frame on the research vessel and pointed vertically down (Figure 2). The transducer depth was held at about 10 cm from the surface. Differential global positioning satellite data (DGPS) was taken in time coincidence with the acoustic data. Acoustic pulses of 50 or 400 microsecond duration were projected into the water column 10 times per second, allowing a vertical resolution of about 3.75 cm and 30 cm, respectively. The transducer head size was 14.5 cm diameter. Full beam width at the 3 dB down point is about 2 degrees. At a range of 5 m, the transducer is expected to receive scattered signals (3 dB down points) from a patch of ocean ~ 15 cm on a side. The system is presently in the early stages of calibration for analysis of particles in turbid rivers. The volume resolved by a 50 microsecond pulse is ~ 120 cm^3. The acoustic system is a specially modified WESMAR High Definition 600E Series Sonar. The data acquisition system is a modified Triton Technology, Inc. 8 channel Isis System.

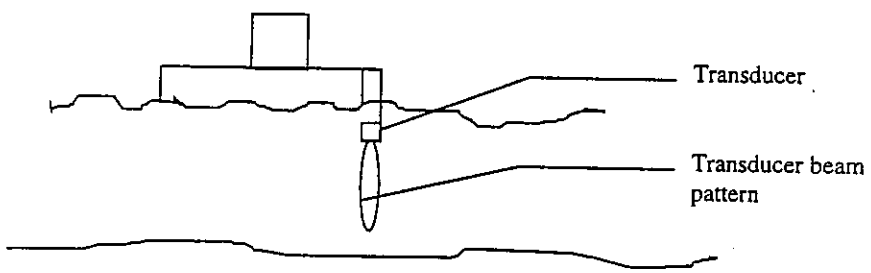


Figure 2: Schematic diagram of the acoustic monitoring system employed to survey particle concentrations through the Anacostia River.

Water Sampling: Water samples for analyses outlined below, except metals (described in 'Metal Sampling and Analysis'), were collected by using a teflon-lined pneumatic pump with silicon tubing. Water sampling was conducted in conjunction with the water column acoustic analysis, horizontally within 1 m of the system.

Particle Size Analysis: Particle sizes were analyzed in water that was passed through 10 μm latex polypropylene cartridges and in unfiltered samples using a Coulter Model N4 MD sub-micron counter for particles greater than 3.2 μm and a Coulter Multisizer II for particles from 0.2 to 3.2 μm. The coulter counter was calibrated with 0.5 and 2.1 μm latex microspheres. Water samples were stored in the dark at ambient temperatures and analyzed within 4 hours of sampling.

Sediment Deposition: Sediment deposition rates were measured with traps deployed at three sites in the River, S1, S4, and S5 (see Figure 1). At each site sediment traps were set 1 meter from the sediment surface and left for 24 hrs. Sediment traps consisted of polycarbonate barrels 7.0 cm in diameter and 1 meter long. The traps were fitted with polycarbonate grating at the top to prevent resuspension of the sediments by current flow and tidal energy.

After traps were retrieved, sediments were allowed to settle, water was siphoned from the barrels, and remaining sediments were poured in to weigh-boats and dried. The concentration of the sediment was calculated by subtracting weights of the boats with and without dry sediments.

Current Flow: Current flow rates were measured in a boat separate from the water column acoustic analysis. For each measurement the sample boat was anchored to prevent misinterpretation of the current velocity. Flow rates were measured using a Marsh McBirney Flo-Mate 2000, at 0.5 m depth intervals through the water column. The meter was calibrated in a flow tank at Marsh McBirney. Sites for current flow measurements included S0, S1, S4, S5, and S7 (Figure 1).

Organic Contaminant Sampling and Analysis: For analysis of organic contaminants attached to particles, samples were filtered through 127 mm diameter Whatman GF/F filters (ashed 500°C for 4 hours). Non-powdered vinyl gloves were worn at each sampling point. Filtrate volumes during the particle concentrations, measured in graduate cylinders; ranged from 5-20 L. Filters were placed on dry ice in the field, and stored at -70°C until analysis. Sample blanks were run in the field by filtering de-ionized water through filters.

PCBs and PAHs were extracted from sediments through pressurized fluid extraction (PFE) using a Dionex ASE200 accelerated solvent extractor (US EPA Method 3545). Analysis of organic contaminant concentrations include PCB and PAH compounds. PCBs include compounds contained in PCB congeners and Aroclor standard kits. Twelve PAH compounds were analyzed, including naphthalene, acenaphthalene, acenaphthene, fluorene, and dibenzo (a, h) anthracene. phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, indeno[1,2,3-cd]pyrene and benzo[g,h,I]perylene. Concentrations of the organic compounds in the samples were calculated by comparison to the slope of standard peak areas through linear ranges in concentrations. Samples were analyzed on a HP 6890/5973 GC/ITMS equipped with a 0.25 mm (i.d.) 60 m, DB5 (5% phenyl and 90% methyl) capillary column. Confirmation of individual compounds was conducted by subtraction of the baseline and scanning the compound identification and purity in the ITMS library.

Metal Contaminant Sampling and Analysis: All field sampling was performed using clean metals sampling techniques in accordance with the U.S. Environmental Protection Agency method 1669 (EPA. 1995. Method 1669: Sampling ambient water for trace

metals at EPA water quality criteria levels. EPA 821-R-95034 April 1995. Office of Water, Washington, DC. 36 pp.). New, non-powdered vinyl gloves were worn at each sampling point by any person touching any of the sampling equipment. All sample bottles (low density polyethylene) were pre-cleaned with detergent, nitric acid and hydrochloric acid with thorough de-ionized water rinses between each step. Each bottle received a final rinse with double quartz distilled analyte-free reagent water and was dried in a cleanroom. The sampling bottles were all pre-labeled with permanent, non-contaminating labels. Other bottles used in the sampling (e.g. compositing bottle, bottles holding de-ionized water) were pre-cleaned in the same way. Filter cartridges (0.45 μm for taking dissolved samples) were pre-cleaned using hydrochloric acid, de-ionized water and double quartz distilled water, neutralized with ultrapure ammonium hydroxide and sealed in double plastic bags.

Field blanks are collected to confirm that field samples were collected without contamination. Field blanks were collected at the beginning and end of each day's sampling. Field blanks are taken by passing analyte-free reagent water through the same sampling equipment used to collect field samples. Field duplicates were collected each day to evaluate sampling variability. As required by EPA method 1669, a grab sample tubing set equipment blank and bottle blank were taken at TERL's laboratory prior to shipping the field sampling equipment.

All samples were analyzed by inductively-coupled plasma mass spectrometry (ICP-MS) according to EPA methods 200.8 (EPA. 1991. Metal analysis included As, Be, Cu, Cr, Cd, Hg, Pb, and Zn. Methods for the determination of metals in environmental samples. EPA/600/4-91/010. Office of Research and Development, Washington, DC. 293 pp.) and 1638 (EPA. 1995. Method 1638: Determination of trace elements in ambient waters by inductively coupled plasma-mass spectrometry. EPA 821-R-95-031. Office of Water, Washington, DC. 47 pp.). Mercury was determined according to the cold vapor method (EPA 245.1 in EPA 1991) except that an atomic fluorescence detector was used to achieve enhanced sensitivity. A full suite of laboratory QA samples (i.e. certified reference materials, duplicates, matrix spikes, blank spikes and method blanks) was run with each analytical batch to validate data accuracy and precision.

Seston: Seston was measured through filtration of water samples onto pre-weighed Millipore 0.45 μm, 47 mm diameter filters. Filters were dried after filtration and weighed again for measurements of suspended seston.

3. Results:

Basic Water Column Analysis: Flow rates measured during the June sampling were found to be inaccurate because the current vein was not sensitive to the low currents in the river. Installation of a current vein with larger surface area was built and calibrated for application in the river. Current velocity was measured in a transect at stations 1, 4, 5, and 7, on 6 August 1997. At each station vertical current profiles were measured in the center of the river and near the eastern and western shore. During an ebbing tide the

overall current velocities ranged from 0 to 0.38 m sec^{-1}, with most rapid rates measured in the upper river at S1 and S4; lower rates were measured at S5 and S7 (Figure 3). After the transect was completed a second rapid transect was conducted in the mid-river stations S1, S4, S5 and S7, during the slack tide. Current rates ranged from 0 to 0.09 m sec^{-1} (Figure 4), substantially lower values were measured during the slack tide.

Temperature in the river demonstrated thermal stratification at S4 and S5 (Figure 5). The maximum thermal gradient was found at S4 with a change of 1.3°C through a 2 m depth. Colder temperatures were measured at the mouth of the Anacostia River and in the Potomac River, where values were consistently around 28.1°C. These trends in thermal stratification at S4 and S5 result from tidal circulation. Data from this one analysis indicates thermal stratification, river current velocity and tidal stages needs to be monitored to predict the transport and settling of seston in the river.

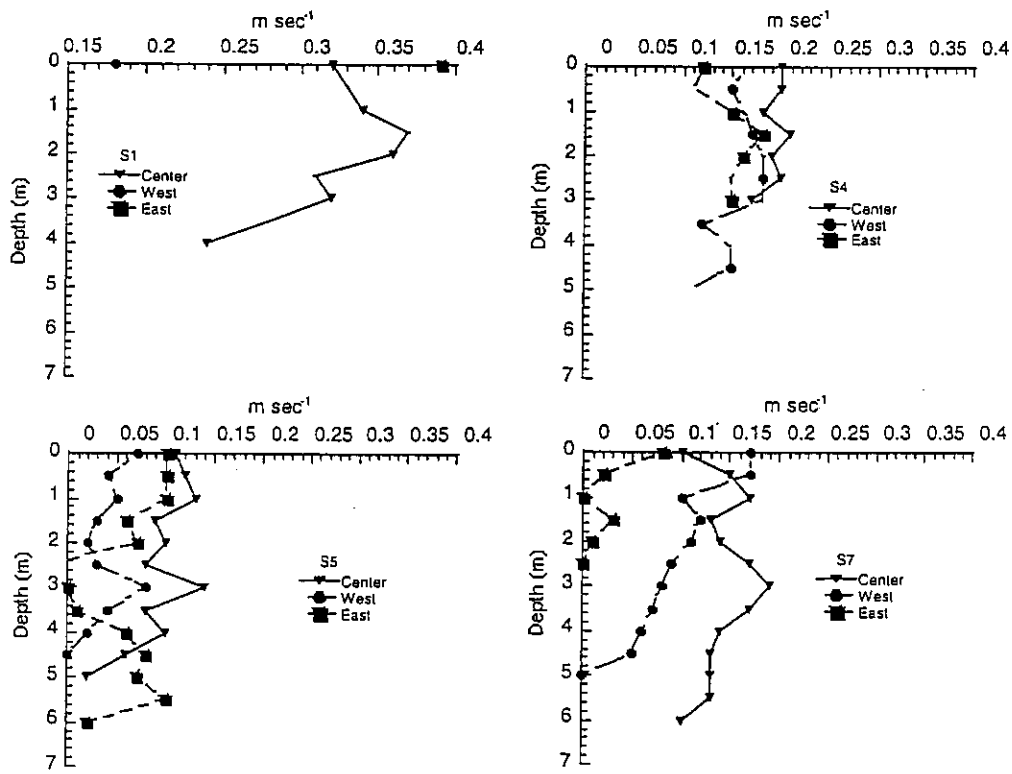


Figure 3: Current flow rates measured vertically and horizontally in the Anacostia River on 6 August 1997. Resulting from the shallow water column at S1, East and West site current velocities were only measured at 1 m depth.

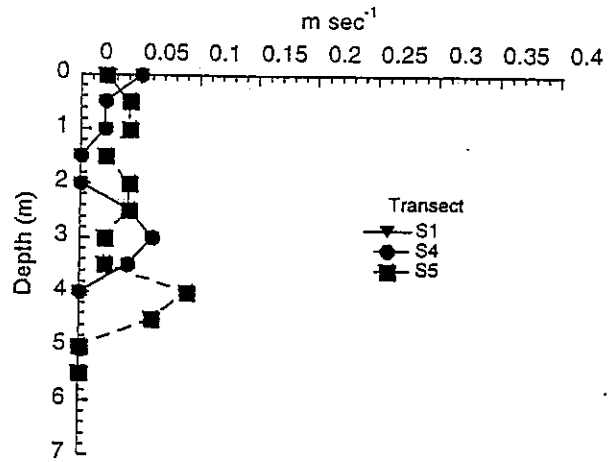


Figure 4: Current flow rates measured in the center of the river at S1, S4, and S5 in the Anacostia River on 6 August 1997.

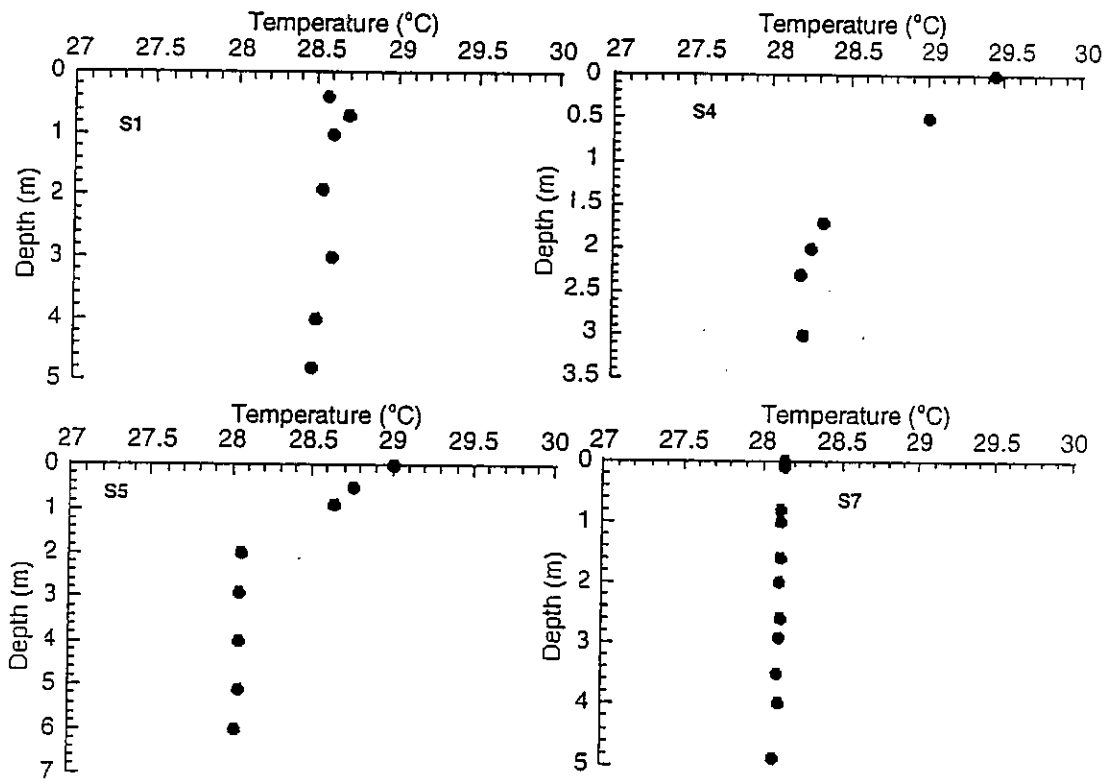


Figure 5: Temperature profiles for the Anacostia River, taken in the center of the river during 25 June 1997.

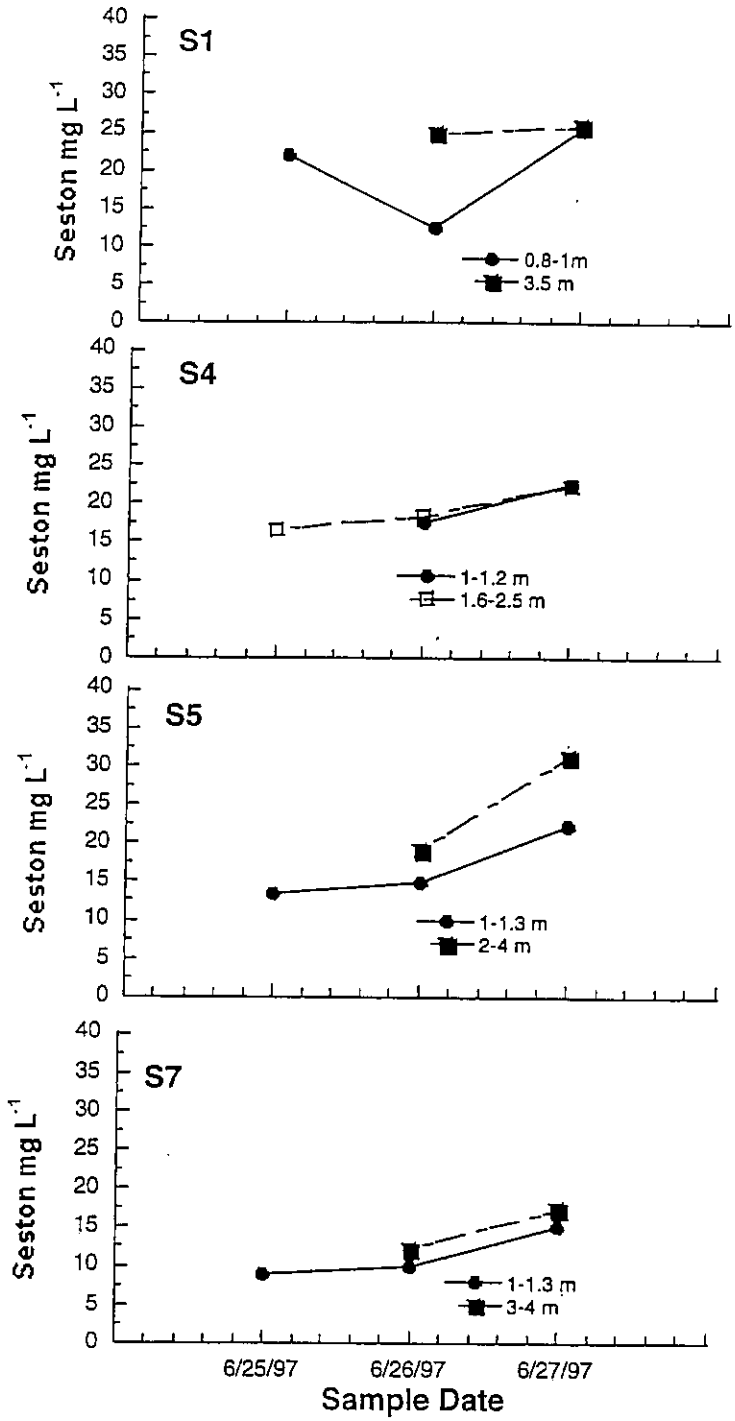


Figure 6: Variations in Anacostia River Seston at S1, S4, S5, and S7 through 25-27 June 1997.

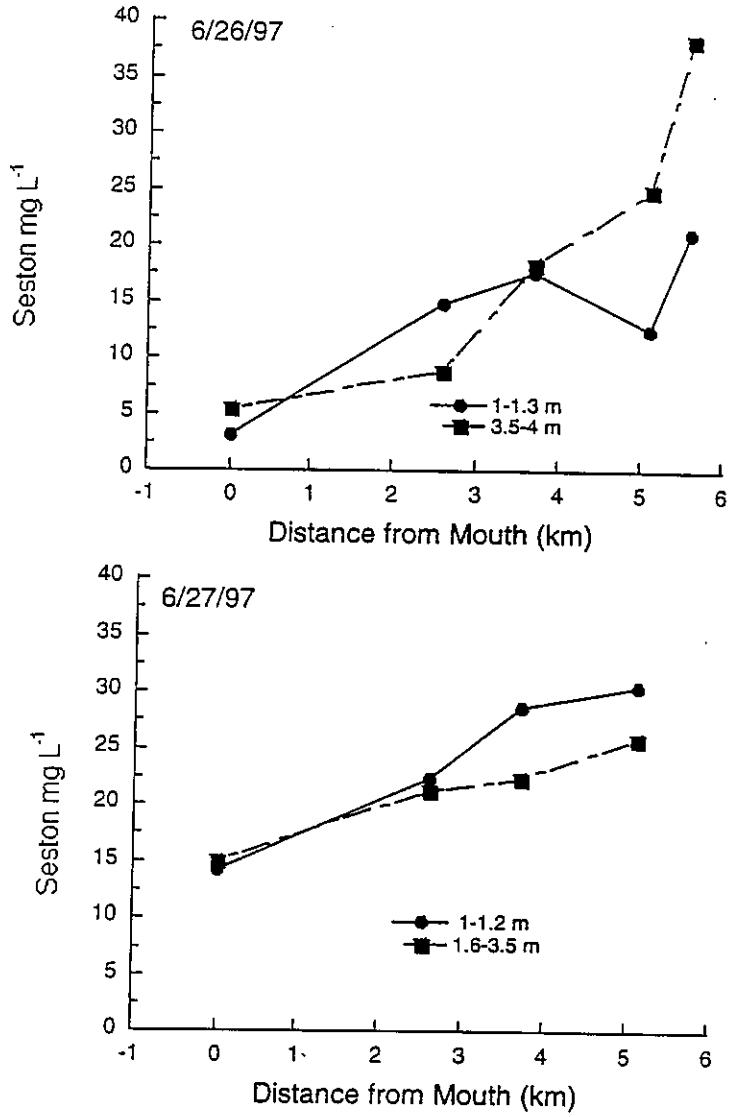


Figure 7: Seston concentrations through Anacostia River transects for shallow and deep samples during 26 and 27 June 1997.

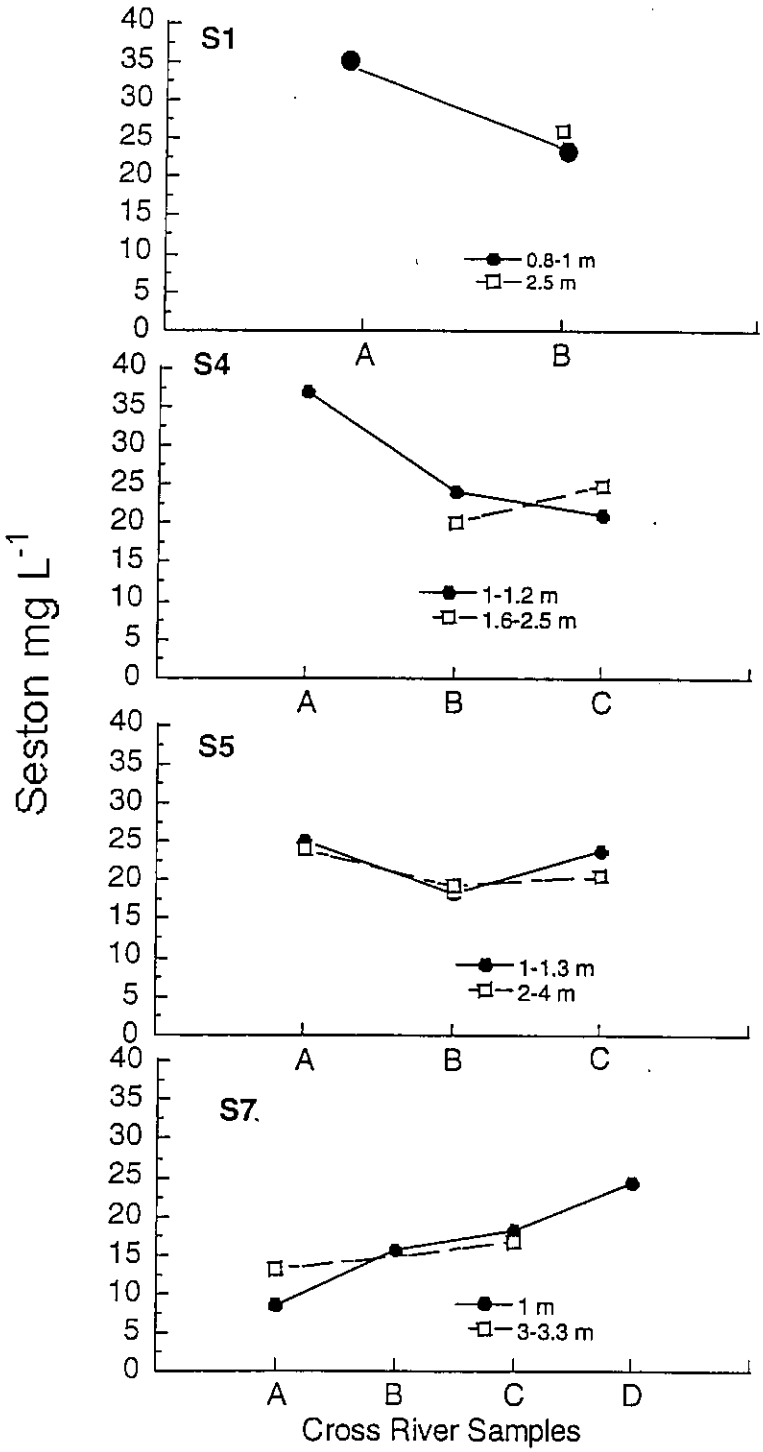


Figure 8: Variation in seston concentrations during cross river transects at S1, S4, S5, S7.

Seston: Seston was compared through the sampling region during flood and ebb tidal cycles, across the river at S1, S4, S5 and S7, above and below the thermocline (Figures 6, 7, and 8). Seston varied through temporal and spatial analysis, with largest changes found in transects from the upper river to the mouth (Figure 6 and 7). Variations in seston were also observed between shallow and deep water samples (Figure 7) and through cross river transects at S1, S4, S5, and S7 (Figure 8).

Particle Size Analysis: Particle analysis was segmented into three size categories, ranging from 0.2 to 1.0 µm, 1.01 to 3.0 µm and 3.01 to 5.0 µm (Table 1). At stations S1, S4, S5, and S7 particles were predominantly in the 3.01 to 5.0 µm size fraction, averaging 58.2%. At S1, S4 and S5 the 0.2 to 1.0 µm and 1.01 to 3.0 µm size fraction averaged 21.9% and 22.1%, respectively. At S7 the segment of small particles 0.2 to 1.0 µm dropped substantially at 6.5%.

Table 1: Particle size analysis for samples from stations S1, S4, S5 and S7 during 25 and 26 June 1997. Comparison of particle sizes is based on percent.

Particle Size (µm)		S1	S4	S5	S7
0.2 to 1.0	Ave.	24.7	21	19.9	6.5
	s.d.	2.9	5.6	5.0	4.9
	n	3	3	3	2
1.01 to 3.0	Ave.	21.2	23.4	21.8	28.9
	s.d.	5.4	3.3	7.9	1.3
	n	3	3	3	2
3.01 to 5.0	Ave.	54.1	55.6	58.3	64.6
	s.d.	6.6	6.8	11.6	3.6
	n	3	3	3	2

Particle Distribution: The acoustic data taken at Stations 4, 5, and 7 were displayed by averaging 20 pings of acoustic data. These data were acquired at the same time as water samples and CTD samples described in other sections of this report. The amplitudes of the signals have not yet been normalized to one another to compensate for changes in projected signal power and system gain. The signal amplitudes of the 20 ping averaged data have been corrected for spherical spreading and intrinsic attenuation. Qualitative interpretation of the acoustic data sets follow. Note the seston concentrations (Figs. 6-8) ranged from ~5-35 mg/l. As noted above, an acoustic pulse of 50 microsec duration samples ~120 cm^3 of water. If the seston were uniformly distributed and of small radius (<< 1mm) the acoustic pulse will be scattering from ~ 0.6-4.2 mg of particles.

Acoustic analysis of particle distribution through depth in the water column is presented in Figures 9-11. This 20 ping average data has been compensated for range dependent spherical spreading and intrinsic attenuation loss. The compensation of spherical spreading causes the receiver amplifier noise floor to increase with depth (see the 6-8 m region of the figures). Voltage on the x-axis is proportional to changes in the amplitude of the scattered acoustic signal. The large amplitude signals near 4 m depth are reflections from the river bottom. The visible signals in the 0-2.5 m depth range are scattered from particles in the water column. The records displayed in this document for June 27, 1997 and are representative of the data taken on June 25 and 26. This data is one picture in time of the continuous acoustic survey that was conducted in transects through the river. Typically through a 2 minute time-span 1200 acoustic profiles of the water column were collected.

All station sites monitored on June 27, 1997 show the presence of horizontal scattering layers in the water column. These scattering layers appeared to be independent of temperature or water density since layering occurred at all sites. It is anticipated that the scattering is from nearly neutrally buoyant particles which assemble in layers. The scattering layers were found to change in vertical thickness and numbers of layers as the monitoring vessel moved from station to station. The layers are on the order of a few 10's of cm thick. The composition of the scatterers has not been analyzed. The presence of the scattering layers at 0.5 to 1 m CTD sample intervals in water that is not thermally stratified is an interesting result of the acoustic analysis.

During the analysis of the data set there was suspicion that some of the layers near the surface may be do to transducer sidelobe scatter from the support vessel hull. The hull at the water line was about 2 m from the transducer. Changes in the transducer sonodone encasement are being made to minimize the influence of sidelobe reflection and confirm if sidelobe scatter contamination is present in the records.

<u>Sediment Deposition:</u> Sedimentation rates for 26 June 1997 are presented in Figure 12. Highest sedimentation was measured in the upper river at 1150 mg d^{-1} for S1 and lower values were observed at S5 with an average of 170 mg d^{-1}. A rapid change in sedimentation was observed between S5 and S4 over a short distance. The observed differences in sedimentation is thought to be a function of tidal mixing, current flow rates and the effect of river morphology on particle transport.

<u>Organic Contaminant Concentrations:</u> Individual PAH concentrations ranged from 309 ng C l^{-1} to below the limits of detection (Figure 13). The dominant compound at all locations was naphthalene. Fluoranthene concentrations were substantially higher at S0 and S1 than down river sites. The concentration of total PAHs was substantially higher at the up river locations and diminished at S5 and S7 (Figure 14a). The concentration of PAHs relative to seston did not vary between stations (Figure 14b), therefore, differences between stations were due to changes in seston concentrations.

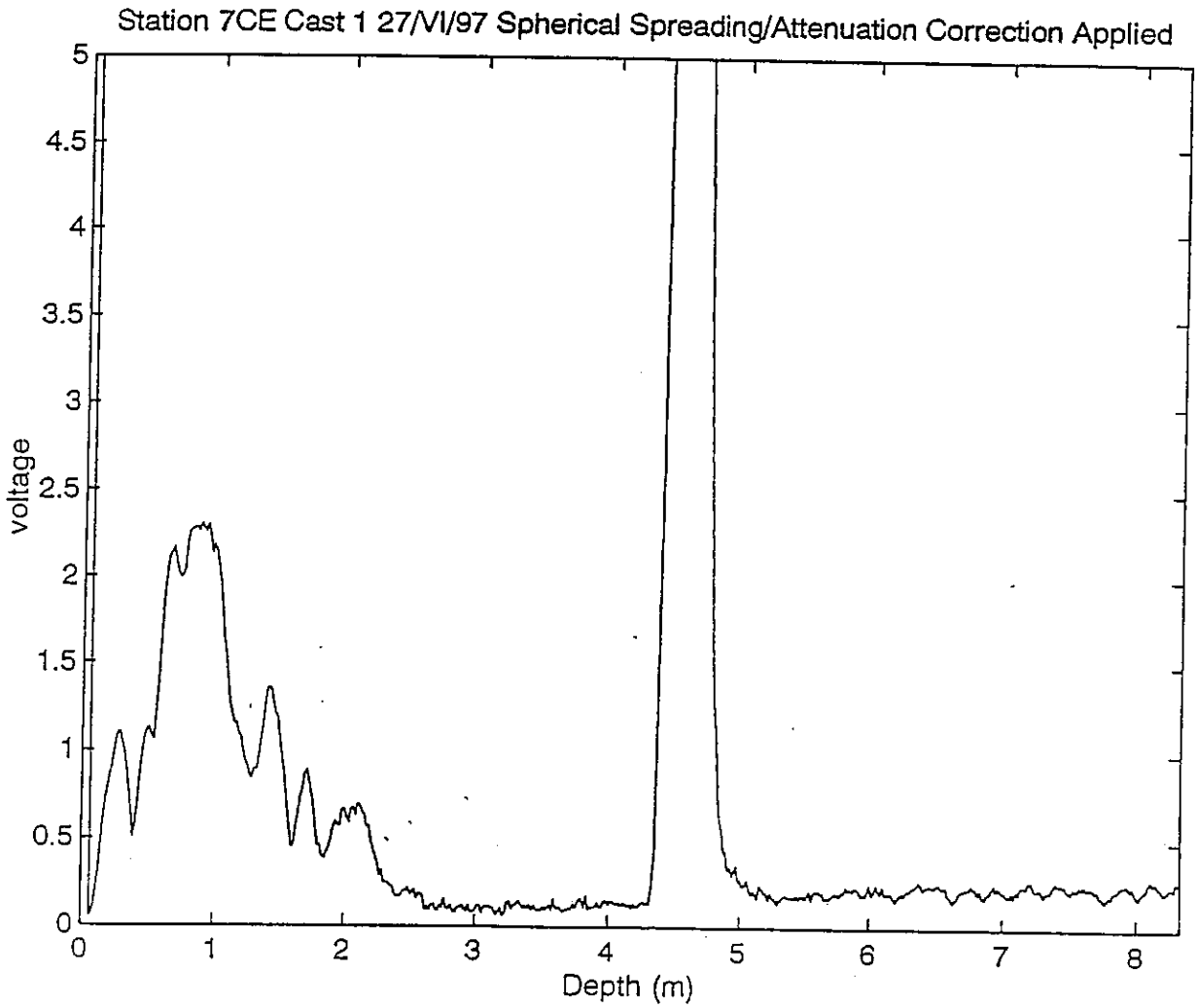


Figure 9: Acoustic particle analysis at S7 in the Anacostia River watercolumn on 27 June 1997.

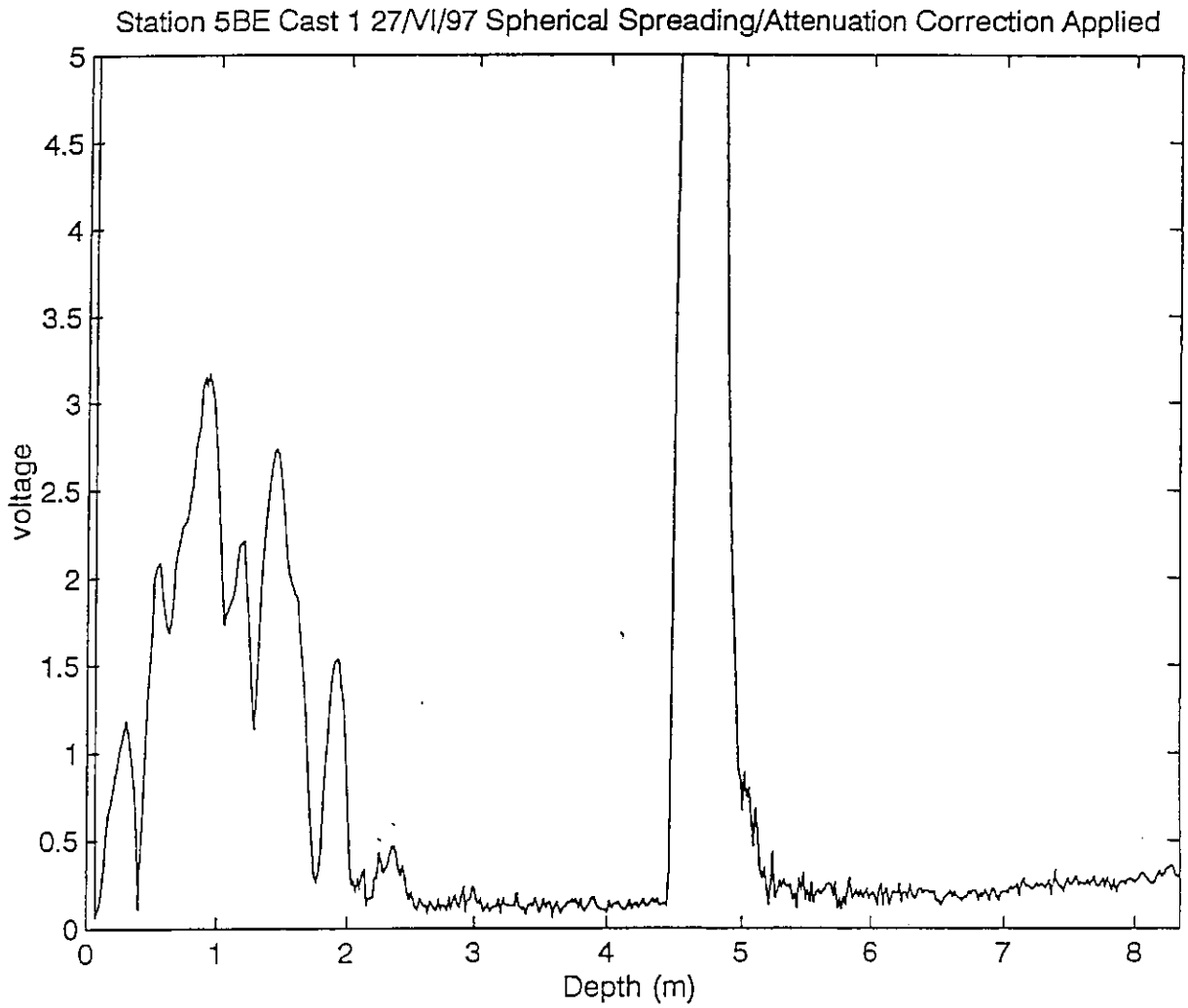


Figure 10: Acoustic particle analysis at S5 in the Anacostia River watercolumn on 27 June 1997.

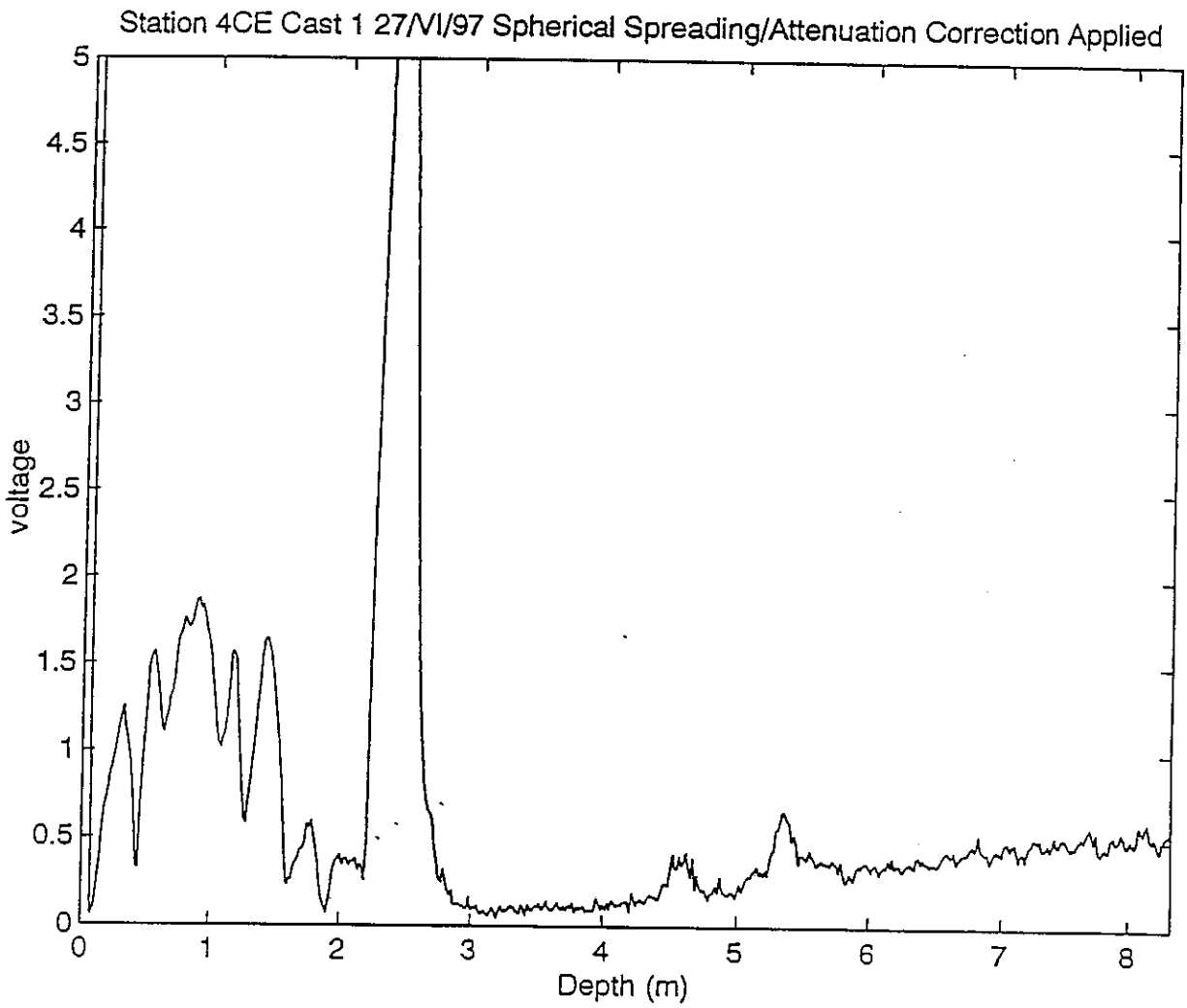


Figure 11: Acoustic particle analysis at S4 in the Anacostia River watercolumn on 27 June 1997.

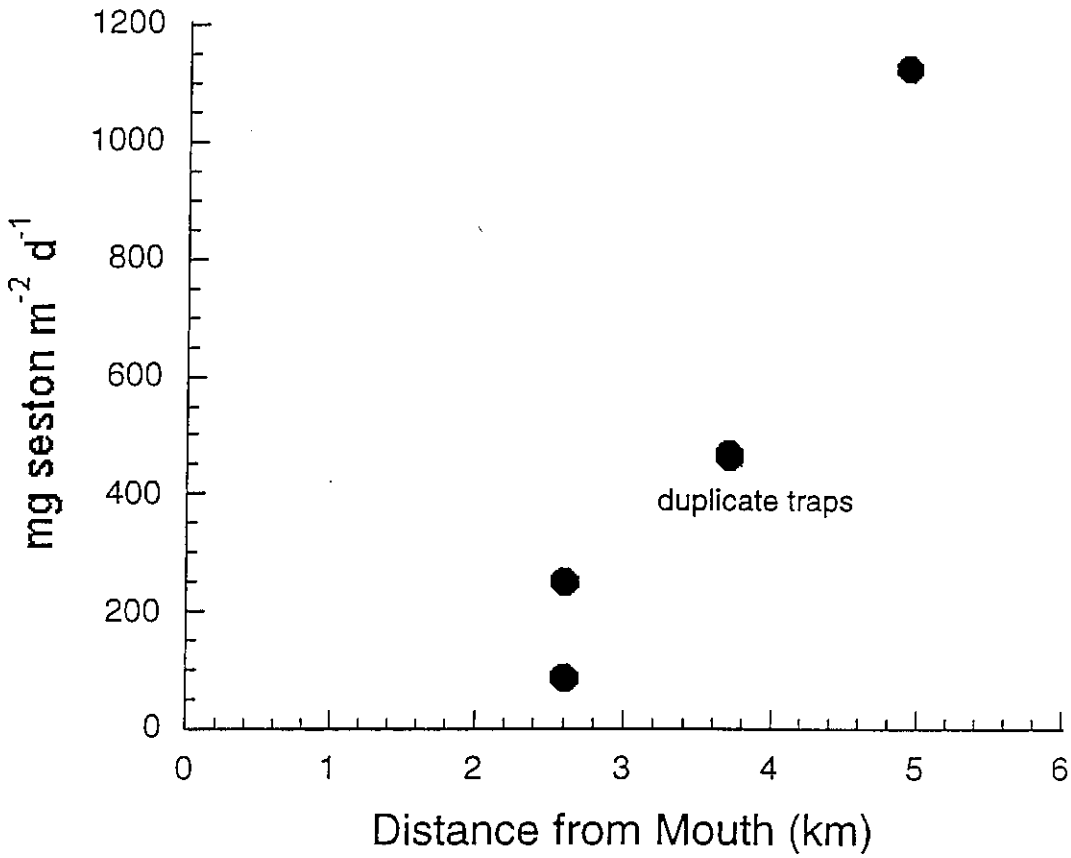


Figure 12: Sedimentation rates measured in fixed sediment traps at S1, S4 and S5 for 26 June 1997.

Concentrations of PCBs were not detectable using the GC/ITMS. Subsequent analysis for concentrations was conducted with using a gas chromatograph equipped with an electron capture detector. Detection limits for this methods are currently being determined.

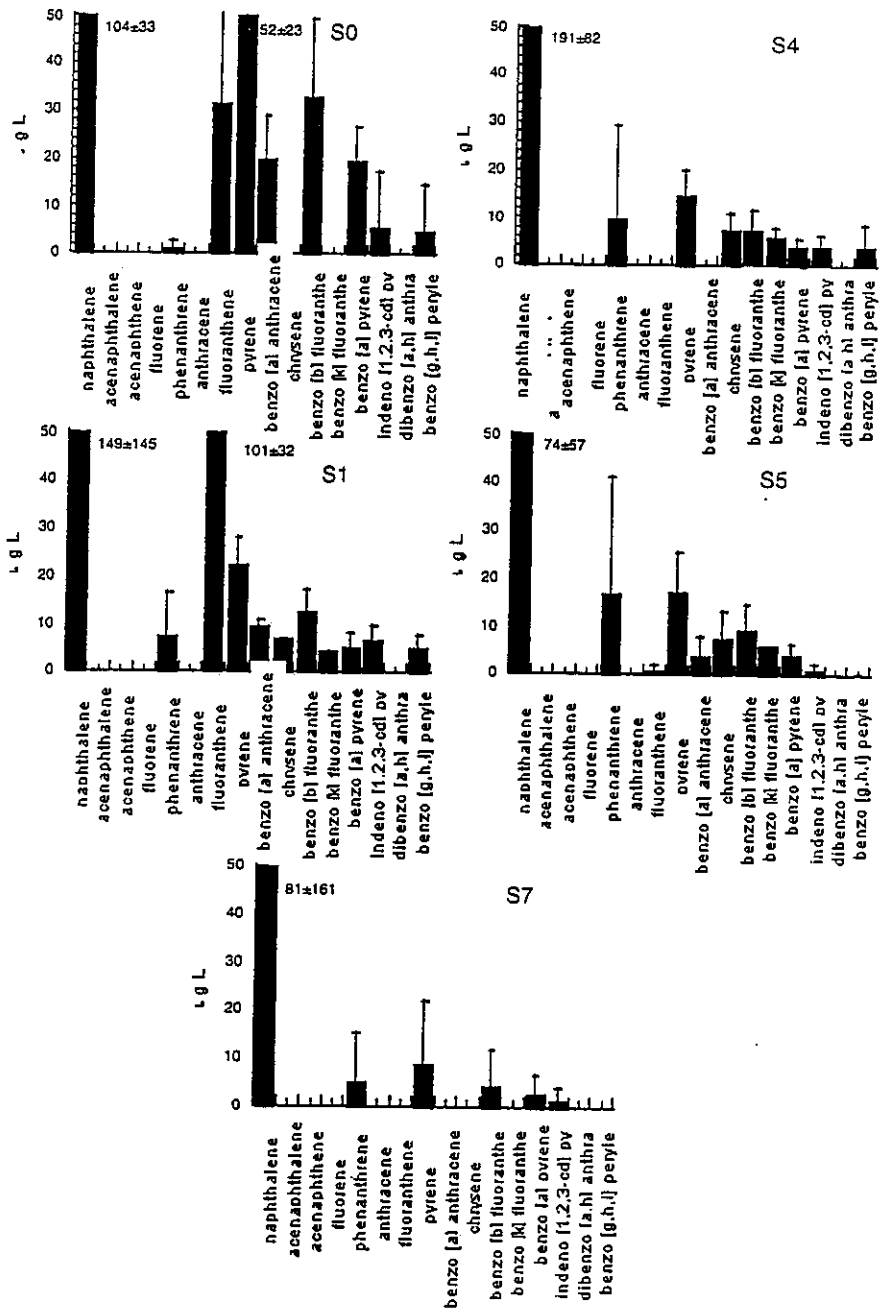
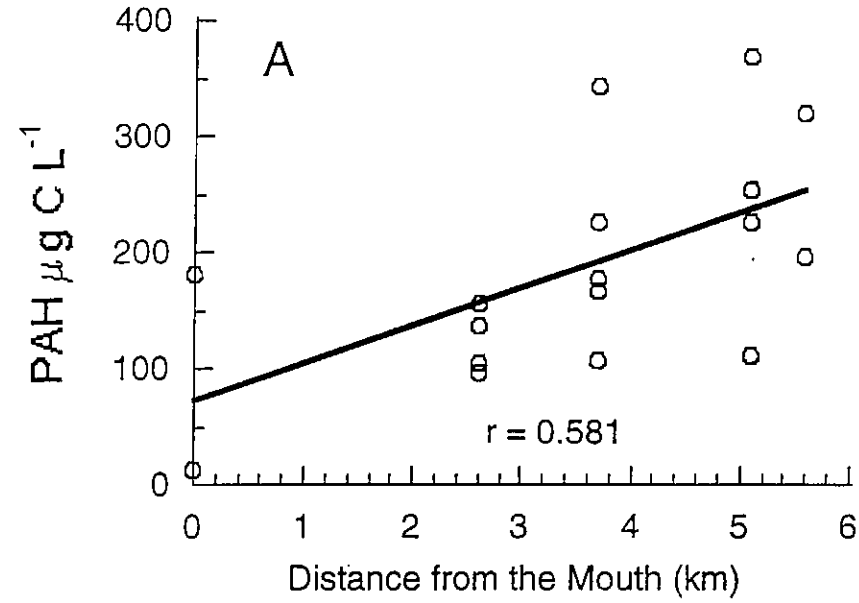


Figure 13: Concentrations of specific PAH compounds measured in seston through the Anacostia for S0, S1, S4, S5, and S7 during 25-26 June 1997. Error bars presented for S7 and S0 represent the range of concentrations, for each of these sites two samplings were conducted. For sites S1, S4. And S5 3-4 samplings were accomplished.



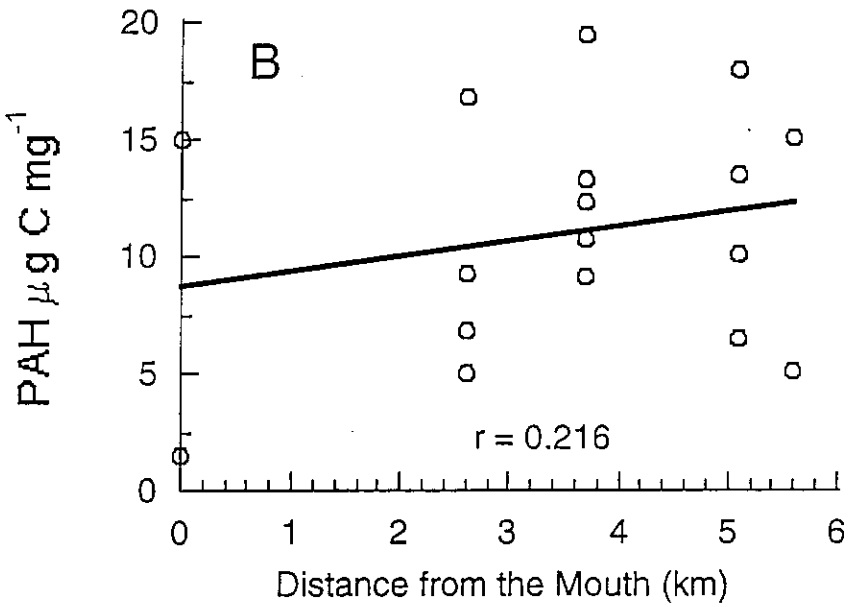


Figure 14: Total PAH concentrations attached to seston relative volume of water filtered (A) and total seston in samples (B) from 25-26 June 1997.

Metal Contaminant Concentrations: Metals were found in substantially higher concentrations attached to particles than in the dissolved phase (Figures 15 and 16). Of the metals surveyed Zn and Pb were found in the highest concentrations ranging from 3.2 to 7.4 $\mu g\ l^{-1}$ and 0.83 to 4.4 $\mu g\ l^{-1}$, respectively (Figure 15). Significant concentrations of Cu and Cr were also measured with values ranging from 0.8 to 1.6 $\mu g\ l^{-1}$ and 0.92 to 1.7 $\mu g\ l^{-1}$, respectively. Concentrations near the detection limits were observed for Be, Cd, and Hg (Figure 13). For all of the metals attached to particles, concentrations were highest in the upper regions of the river as a function of seston concentrations (presented for PAHs in Figure 14b).

Highest concentrations of the dissolved metals were Cu and Zn, ranging from 1.3 to 1.5 $\mu g\ l^{-1}$ and 1.0 to 1.3 $\mu g\ l^{-1}$, respectively (Figure 15). For Cr, Pb and Hg the dissolved concentrations were less than 0.4 $\mu g\ l^{-1}$. Dissolved metal concentrations did not follow the pattern observed for the compounds in the particulate phase. Cu and Zn were similar in concentration through the river, while Cr and Hg increased, and Pb decreased. Dissolved concentrations of Be and Cd were below the limits of detection.

The was a large variation in the percent of the metals measured in particulate phase. For Cu the dissolved concentrations were higher than the values in the particulate phase, with an average of 45.6% found attached to seston. Relative to Cu, a substantially large fraction of Cr, Pb and Zn, 81.7% to 92.7%, was attached to seston. Less Hg, 58.5%, was also found in the dissolved phase, however, the concentrations were low and variation between phases was large.

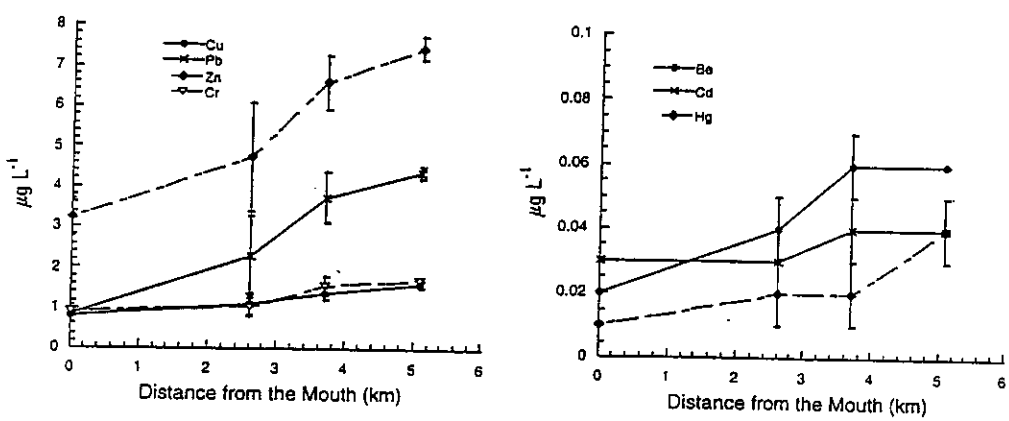


Figure 15: Concentrations of metals attached to seston at stations through the Anacostia River. Concentrations are averages of values measured in samples taken 25-26 June 1997.

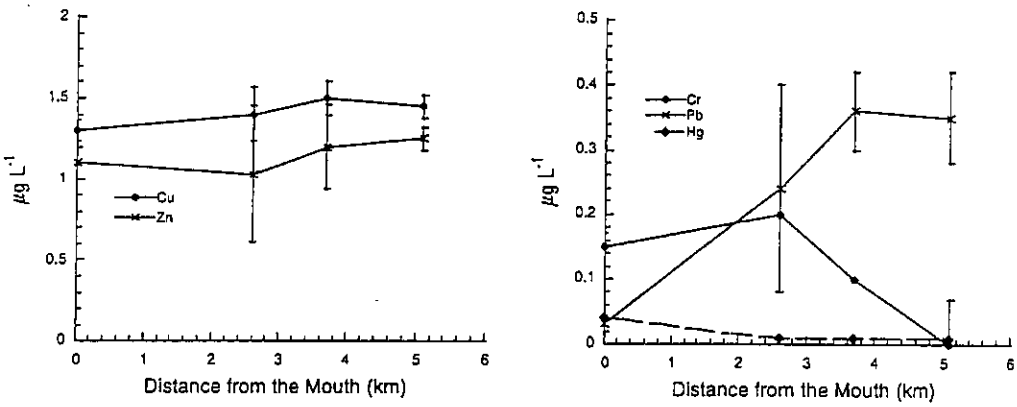


Figure 16: Dissolved metal concentrations at stations through the Anacostia River. Concentrations are averages of values measured in samples taken 25-26 June 1997.

4. Summary: Data from this June 1997 survey represents the initiation of a year long study designed to focus on the seasonal dynamics of metal and organic contaminant transport through and sedimentation in the Anacostia River. The analytical parameters that have been selected for the survey provide two independent approaches for studying particle transport. A direct analysis of contaminant concentrations and sedimentation provides preliminary estimates. An alternate evaluation will combine particle size analysis, variations in current flow rates and acoustic analysis of particle distribution to characterize contaminant transport.

The Anacostia River is a freshwater system that is subject to tidal energy. Understanding the transport of particles in this system requires measurements of the impact of tidal energy on current flow rates and the degree that thermal stratification induces water transport from the Potomac River. Current flow through the Anacostia River is highly variable as a result of tidal energy. The dynamic current rates require a more thorough analysis in river during the sampling. In addition, as a function of temperature differences between the Potomac and Anacostia Rivers and tidal circulation of water, the Anacostia River was thermally stratified, especially at S4 and S5. The thermal stratification is likely to vary with seasons. During some periods of the year thermal stratification and tidal action may result in more complex transport of particle bound contaminants to upper regions of the river. Particle size and current flow analysis will assist in determining the extent that upriver particle transport controls the distribution of the contaminants.

Large variations in seston concentrations were measured throughout the river. For successful analysis of contaminant transport in the river, acoustic analysis of particles

in the water column has potential to provide a thorough analysis of the variation. Acoustic records taken during the June 1997 study of the Anacostia River detected large amplitude scatterers in the first 2-3 m of the water column and relatively weak scatterers in deeper sections of the water column. The scatterers were often layered. The character of the layers changed as the acoustic system support vessel moved between stations. The acoustic data was used to guide the water sampling strategies in real time. The large variation in the acoustic records indicates that seasonal records are required for thorough analysis of particle distribution for estimation of contaminant levels in the river. The acoustic records will provide the ability to integrate contaminant loading through the river in future modeling efforts.

For this preliminary segment of the survey, the concentrations of PAHs attached to seston in the water column ranged from 1.5 to 19.5 $\mu g\ g^{-1}$ dw through the river. Acoustic surveys demonstrated high variations in particle loading. High variation in PAH concentrations in seston may be related to the spatial variation in particle distribution. With higher seston concentrations found in the upper river, total PAH concentrations in the particulate phase were substantially higher at S0 and S1. The concentrations of PAHs attached to seston in the water column were similar to values reported in the sediment of the Anacostia River, ranging from 5.6 to 28.3 $\mu g\ g^{-1}$ dw (Wade et al., 1994). In that study highest concentrations were measured in sediments adjacent and downstream from the Washington Navy Yard.

Similar to the findings for PAHs, as a function of higher concentrations of suspended seston, the concentrations of metals in the water column were greater in the upper regions of the river. Through the river the order of the concentrations was Zn>Pb>Cr>Cu>Be>Cd>Hg with Be, Cd and Hg present in concentrations that were 2-3 orders of magnitude less than Zn, Pb, Cr and Cu. The concentrations of metals, attached to particles in the water, is similar to values in that have been reported by Velinsky et al.(1994) for the Anacostia River sediments in the Anacostia River (Table 2).

Table 2: Average concentrations of metals attached to suspended particles in the Anacostia River compared to concentrations in the sediments. Analysis of metal concentrations in the sediments were conducted by Velinsky et al. (1994). Standard deviations presented represent the variation between sample sites.

	Zn	Pb	Cr	Cu	Be	Cd	Hg
			$\mu g\ gm^{-1}$				
Seston	333±55	157±56	81±19	75±13	2.6±0.6	2.2±0.8	1.3±0.1
Sediment	387±77	177±116	117±23	91±22	n.d.	1.9±0.8	0.5±0.3

5. **Recent Field Work:** The results of field work during June has initiated additional sampling efforts. Some of the current efforts are described below.

a. The preliminary field work demonstrated large variation in basic parameters such as turbidity, temperature and oxygen concentrations. These background data will provide important information for understanding the fate of the contaminants and development of modeling efforts. During September 1997, thorough spatial and seasonal analysis of basic parameters was initiated.

b. The variation in current flow rates, resulting from cycles in tidal energy, is likely to be a major factor in the transport of particles through the Anacostia River. A more thorough analysis of variations in current flow rates was initiated with a combination of the a hand held current meter and placement of fixed acoustic doppler current profilers in the sediment at S4 and S5 during September 1997. This effort allows for the calibration of the hand held system which will be used to measure current rates through the river in horizontal and vertical transects. The fixed Doppler system will provide vertical analysis of current flow at S4 and S5 through entire sampling effort. Corresponding seston and contaminant samples and data currently are being analyzed.

c. Acoustic analysis indicated a large variation in the vertical distribution of particles through the water column. Field work conducted during September 1997 focused on a fine scale vertical variation in particle concentrations, sizes, and contaminant distributions. This work will assist in the development of modeling efforts to predict the transport of organic and metal contaminants through the river.

d. Previous analysis of sediment metal and organic contaminants was conducted in 1991 and reported in 1994 (Velinsky et al., 1994; Wade et al., 1994). Current analysis of the fate of particle attached contaminants requires simultaneous analysis of the contaminants in the water column and sediment. Sampling of contaminants attached to seston and particles at the sediment water interface was initiated during October 1997.

e. PCB concentrations in seston were measured during the June 1997 sampling to be below the limits of detection with the GC/ITMS system. An alternate method for evaluation will be used to determine if particle transport is a significant factor that controls concentration in the sediment.

6. **Future Program Plans:** The following objectives will be initiated during FY'98.

a. Seasonal surveys of organic and metal contaminant transport through the river will be continued. Collaborative funding is currently being organized with the District of Columbia Water Resources Management Division for the application of *in situ* acoustic surveys of particle transport in the river. Long term analysis of particle transport will assist in measuring contaminant transport through the river.

Parsons, T. R., Y. Maita, and C. M. Lalli. 1984. A manual of chemical and biological methods of seawater analysis. Pergamon Press, New York.

US EPA Extraction Method 3545, pressurized fluid extraction.

US EPA Method 8270, PAH concentrations by capillary column gas chromatography.

US EPA Method 8082, PCBs concentrations by capillary column gas chromatography

Velinsky, D. J., T. L. Wade, C. E. Schlekat, B. L. McGee, and B. J. Presley. 1994. Tidal river distribution in the Washington D. C. Area. I. Distribution and source of trace metals. Estuaries 17:305-320.

Wade, T. L., D. J. Velinsky, E. Reinharz and C. E. Schlekat. 1994. Tidal river sediments in the Washington, D. C. Area. II. Distribution and sources of organic contaminants.

b. Preliminary analysis of seston attached contaminants indicates significant transport of the some compounds from upper regions of the river. However tidal dilution with water from the Potomac River has potential to mask the sources of contaminants in river regions that are adjacent to Navy Bases. Work over the next year will measure the degree that contaminants can be diluted through tidal mixing by water from the Potomac River. This segment of the program will be collaborative with an additional project organized through Dr. Pritchard for determining the seasonal variations in tidal excursion.

c. Sediment sampling for concentrations of metal and organic contaminants will be initiated. The first step, conducted in January, will be an acoustic survey of the river for identification of regions at which there is high sediment deposition. This survey will be used to organize spring sediment coring.

d. Preliminary sampling indicates that a substantial fraction of the PAHs in sediments may originate from upriver sources. Determination of the contribution by upriver sources of PAHs to the sediments will be addressed in future field work with; 1) analysis of PAH speciation through the river and 2) stable carbon isotope analysis for an outline of PAH sources.

e. Determining bacterial degradation of the PAH and PCB compounds is an important factor for analysis of the contaminant fate and planning of ecosystem remediation protocols. Seasonal analysis of bacterial degradation of PAH and PCB compounds will be initiated.

f. Toxicity risk assessment will be initiated in the river, for aquatic life and other animals and humans potentially impacted, to outline remedial priorities and develop a baseline for interpreting the success of cleanup efforts. Risk will be assessed by examining alterations in genetic and other tissue biomarkers, from the gross to molecular level.

7. Literature Cited:

District of Columbia, DCRA. 1996. Anacostia River Toxics Management Action Plan. Interstate Commission on the Potomac River Basin.

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Naval Research Lab, 1999

Fate and Transportation of PAH and Metal Contaminants in the Anacostia River Tidal Region

Naval Research Laboratory
Washington, DC 20375-5320

NRL/MR/6110--99-8327

Fate and Transportation of PAH and Metal Comtaminants in the Anacostia River Tidal Region

RICHARD B. COFFIN

Environmental Quality Sciences Section
Chemistry Division

JOHN W. POHLMAN
CLARK S. MITCHELL

Geo-Centers, Inc.
Landover, MD

February 12, 1999

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R.B. Coffin, J.W. Pohlman,* and C.S. Mitchell*

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13. ABSTRACT (*Maximum 200 words*)

PAH and metal contaminant transport has been studied in the Anacostia River tidal region quarterly since June 1997. Data from this report indicates that the physical transport of total suspended solids (TSS) through the tidal region of the Anacostia River has a substantial impact on the concentrations and fate of PAHs. Result show that the upper tidal region is a source of PAHs to the lower region.

To initiate an understanding of the fate of PAHs attached to TSS, sediment traps were placed through the river. Sediment deposition at the wide and deep region of the river was similar to or greater than values measured in the upper regions where TSS concentrations are elevated. This observation has been supported with the following approaches: (1) comparison of river volumes in the upper river relative to the wide and deep region, and (2) measurements in the variation of current velocity through the river. These results indicate that this segment of the river is a region of substantial sedimentation of TSS attached PAHs attached. This correlates with previous studies that report high concentrations of PAH contaminants in sediments at this region of the river.

14. SUBJECT TERMS

Contaminant	PAH	Source
Sediment	Metals	Transport
Ventilation doctrine	Tenability	

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FATE AND TRANSPORT OF PAH AND METAL CONTAMINANTS IN THE ANACOSTIA RIVER RIDAL REGION

I. BACKGROUND

To address concerns regarding contaminant input to the Anacostia River, scientists at the Naval Research Laboratory conducted an initial survey of contaminant transport during June 1997 (Coffin et al. 1997). The primary goal of this project was to determine the concentrations and transport of polycyclic aromatic hydrocarbons (PAH) and heavy metal contaminants through the tidal region of the river. This initial survey has been extended to include 4 additional sampling events and provides the ability to identify potential sources and sinks of contaminants in the river. A full description of project goals and strategies is presented in Coffin et al. (1997). Complete data interpretation from these sampling dates is currently underway. This document provides a summary of current findings. A final report will be provided April 15, 1999.

Based on results from the initial field work and reorganization in funding levels, several components of the program have been changed. These are listed below:

1. Acoustic surveys of particle transport have been omitted. Total suspended solid (TSS) concentrations were measured using standard methods for each sample site.

2. In addition to measurement of the concentrations and speciation of PAHs attached to TSS in the water column, measurements on samples from sediment traps and the nepheloid layer (active particle layer at the sediment-water column interface) were applied to increase the understanding of distribution and transport.

3. During the June 1997 sampling polychlorinated biphenyl (PCB) concentrations on TSS were below limits of detection (Coffin et al., 1997). However, considering high sedimentation rates through the Anacostia River and typically slow turnover of PCBs, trace levels of PCBs may be detected if larger amounts of TSS could be sampled.

II. OUTLINE OF FIELD WORK TO DATE

Samplings were conducted from June 24 to 27, 1997; September 14 to 17, 1997; February 24 to 27 1998; and May 27 to June 3, 1998. Parameters measured during each sampling event were: 1) current velocity through Acoustic Doppler Current Profiles (ADCP) and a hand-held velocity meter on the sampling vessel, 2) TSS in the water column and nepheloid layer, and total solids in sediment traps, 3) carbon and nitrogen content of TSS, 4) PAH concentration in all TSS samples, and 5) dissolved and particulate metals. Nepheloid and sediment trap PAH samplings were not performed on June 1997 sampling. Sampling was conducted at stations S0, S1, S4, S5, and S7 (Fig. 1). Sampling schedules through these periods were as follows:

Day 1: Set ADCP (Acoustic Doppler Current Profile) systems at S4 and S5
Set sediment traps at S1, S4, S5, and S7

Day 2: Conduct two river transects at S0, S1, S4, S5, and S7 during different tidal stages

Manuscript approved January 6, 1999.

Day 3: Conduct cross river transects at S4, S5, and S7, and repeat sampling at S0 and S1

Day 4: Retrieve sediment traps
Retrieve ADCP systems and download current velocity

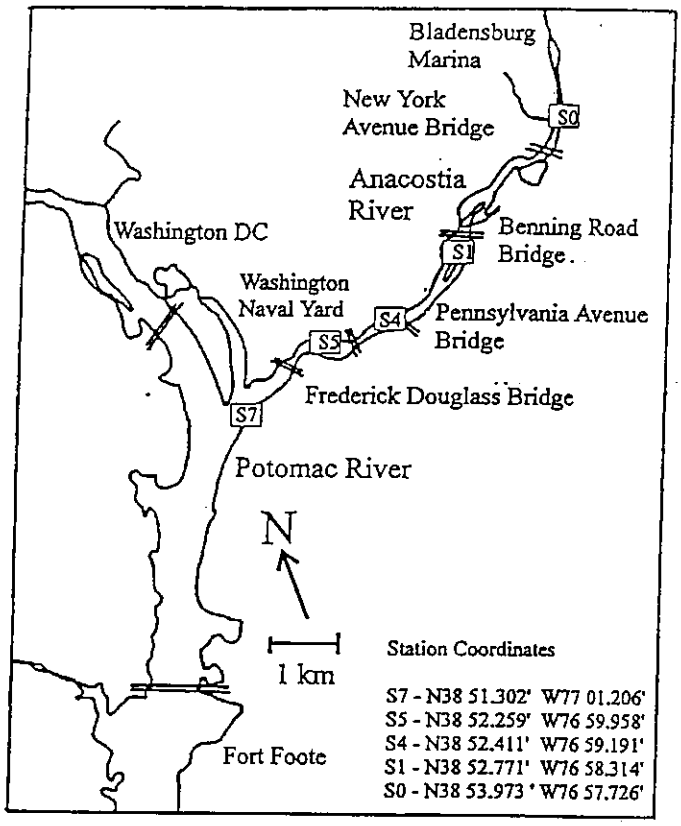


Fig. 1: Sample locations in the tidal region of the Anacostia River.

Methods for field sampling and laboratory analysis are presented in Coffin et al. (1997), with the exception of nepheloid sampling. This was accomplished by inverting a weighted nalgene funnel to the sediment-water column interface and using a pneumatic pump to draw samples. Typically, 1 L samples were obtained. In the laboratory, samples were processed with the same method described for sediment traps.

III. RESULTS

A. Current Velocity

A key component to developing an understanding of the contaminant transport through the tidal region of the Anacostia River has been to determine the factors that

control the TSS concentration and distribution. Variations in current velocities and thermal profiles are important. Current velocities were examined by using two approaches. During each sample event, an ADCP system was installed at S4 and S5 (Fig. 1) to provide continuous analysis of current velocities. In addition, a hand-held current meter was deployed from the sampling vessel at each station. Data from the ADCP system showed that flow direction was dependent on the tidal cycle. Through the water column current velocity was more rapid at S4 than at S5 (Table 1). The slower current velocity at S5, in front of the Washington Naval Yard (WNY), indicates that greater sediment deposition could occur at this point. This observation supports the preliminary conclusion (Coffin et al., 1997) that the river morphology makes this region a primary TSS sedimentation zone, possibly resulting in higher concentrations of contaminants in the sediments.

Table 1: ADCP profiles of current velocities for June 1997. Averaged velocities are presented at selected depths through the water column at stations S4 and S5.

Water Column Depth	Current Velocity (cm sec^{-1})	
(cm)	Station S4	Station S5
50	13.4	8.2
100	13.0	8.3
150	11.3	8.7
200	13.6	8.8
250	13.2	9.0

The ADCP system was also used to calibrate the hand-held current meter. Large spatial and temporal variations in current velocity, within and between sampling stations, were evident from the hand-held current meter (Fig. 2). This variation was a function of the volume of water transported from the upper regions of the river and tidal energy. Velocity at station S5 was consistently low, relative to S1, S4, and S7. The average current velocity for the all sample events was 0.08 ± 0.05 m sec^{-1} ($n = 113$) while values for S7, S4, and S1 were 0.21 ± 0.19 ($n = 115$), 0.13 ± 0.08 ($n = 71$), and 0.22 ± 0.20 ($n = 89$) m sec^{-1}, respectively. The current velocity at S5 was significantly slower (Student's t-test) than for stations S7 ($P < 0.01$, $n = 228$), S4 ($P < 0.01$, $n = 182$) and S1 ($P < 0.01$, $n = 202$). The variation in current velocity at S1 is likely to result from variation in tidal energy and the narrow channel and the bridge supports in the channel. Variations at S7 occur as a result of tidal energy and convergence with the Potomac River.

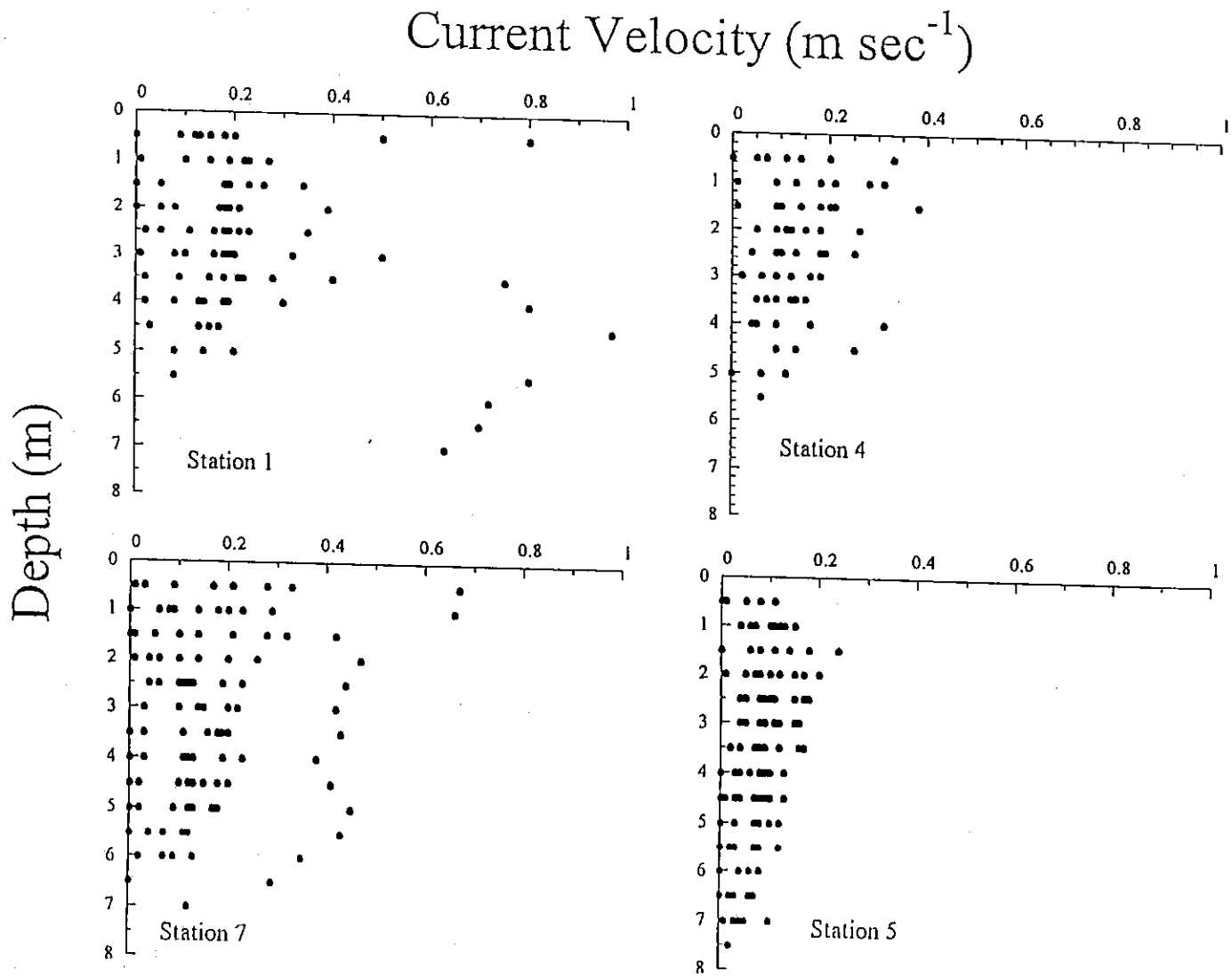


Figure 2: Summary of current velocity measured with a hand-held meter for June 1997, November 1997, and February 1998. Stations are S1, S4, S5, and S7 at 5.0, 3.6, 2.7 and 0 km from the river mouth.

B. Thermal Stratification

Thermal profiles obtained during the initial June 1997 sampling demonstrated stratification at stations S4 and S5 indicating tidal transport of colder Potomac River water into the Anacostia River (Coffin et al., 1997). Stratification at these stations was also observed during September and February, but the degree of stratification was less (0.5 C vs 1.5 C) and the stratification profile varied with depth; 1 to 4 m in June, 1.5 to 2.5 m in September, and 3 to 4 m February (Fig. 3). On some occasions thermal stratification was not observed, e.g., station S5 during September 1997. Stratification varies through different tide stages; it is greatest during the flooding tides (Fig. 4). These results again demonstrate the tidal influence of the Potomac River. The physical parameters that are likely to alter these thermal profiles include wind velocity and direction, river flow velocity, and tidal energy ranging between spring and neap tidal events. Temperature stratification may increase the upriver transport of TSS and attached contaminants or may reduce amounts of TSS deposition in certain areas. Thus it is an important parameter for the development of transport models and investigation of upstream contaminant transport.

C. Total Suspended Solids

A large seasonal variation in total suspended solids was evident through the year, ranging from 2.1 to 69.0 mg L^{-1}, with highest concentrations consistently measured in the upper reaches of the river – stations S0, S1 and S4 – as shown in Fig. 5. The TSS concentrations were significantly lower in the river at S5 than at the upper region ($P < 0.05$, $n = 66$). The lower TSS concentrations may be the result of greater sediment deposition during lower current velocities. With the data acquired to date, average TSS concentrations through the entire river were 19.4 ± 6.8 ($n = 38$), 20.0 ± 12.2 ($n = 49$), 38.8 ± 5.6 ($n = 12$) and 25.0 ± 9.6 ($n = 20$) mg L^{-1} for June 1997, September 1997, February 1998, and May 1998, respectively. In February TSS concentrations were significantly higher ($P < 0.01$, $n = 536$) than at other sampling dates. Averaged velocities through the river measured between September 1997 and February 1998 were 0.09 ± 0.07 and 0.23 ± 0.21 m sec^{-1}, respectively, suggesting that TSS values increased with higher flow velocities in the river. However, tidal dilution with water from the Potomac River and thermal gradients will also alter TSS.

This program initially included acoustic analysis to monitor the TSS distribution in the water column. However, budget restraints prevented continuing this work. We are currently testing the calibration of a hand-held nephelometric instrument to measure TSS concentrations. Calibration of this instrument with field samples demonstrated a linear relationship between TSS and light absorption during a recent sampling ($r^2 = 0.998$, $n = 8$). Preliminary field data using the nephelometric instrument indicates a strong relationship between the current velocity and TSS concentrations (Fig. 6). This approach will be tested at different locations through time to confirm this application.

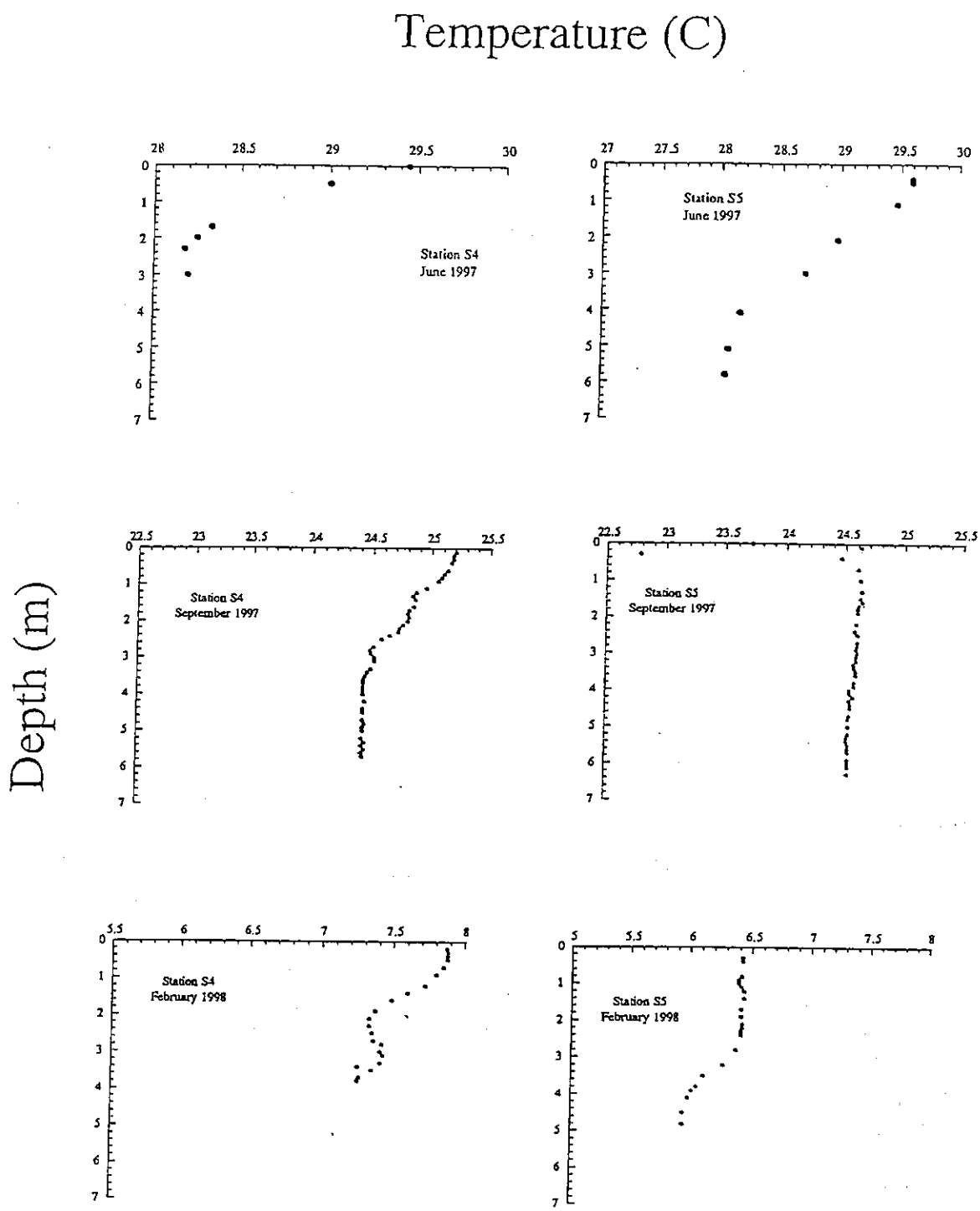


Figure 3: Seasonal variation in thermal profiles at S4 and S5 in the Anacostia River.

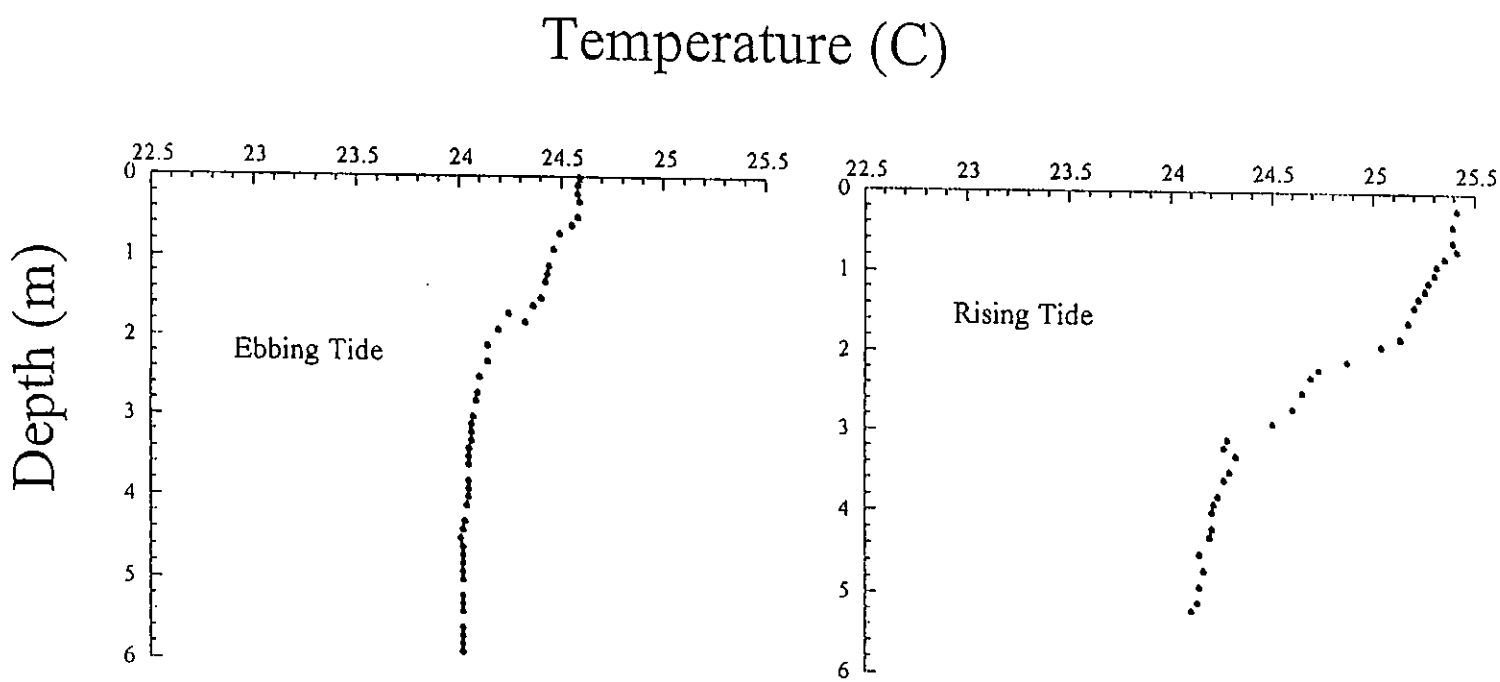


Figure 4: Thermal profiles during ebbing and rising tides in the Anacostia River at Station S5 during September 16, 1997.

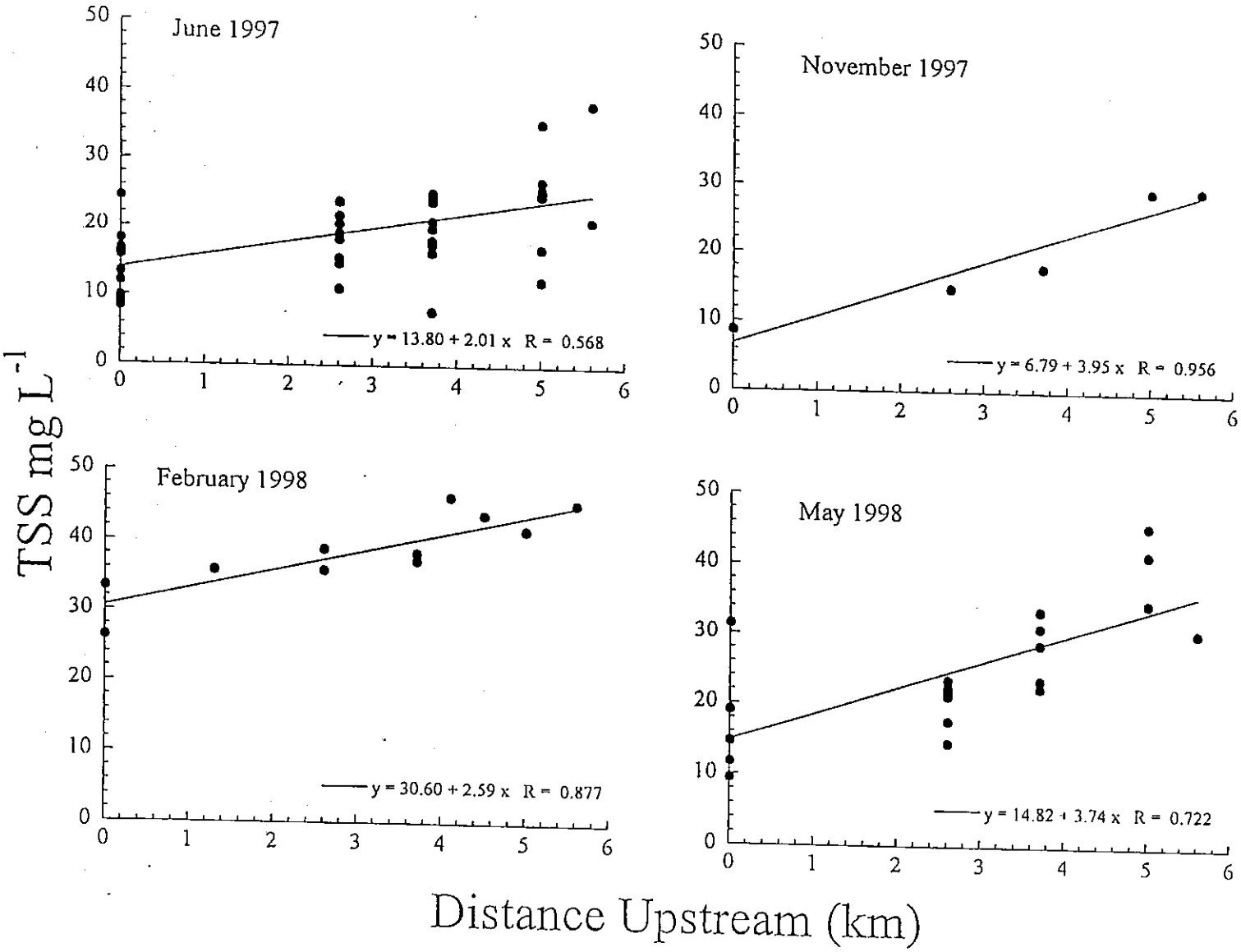


Figure 5: TSS concentration in the Anacostia River for June 1997, November 1997, February 1998, and May 1998. Stations are S0, S1, S4, S5, and S7 at 5.6, 5.0, 3.6, 2.7 and 0 km from the mouth of the river.

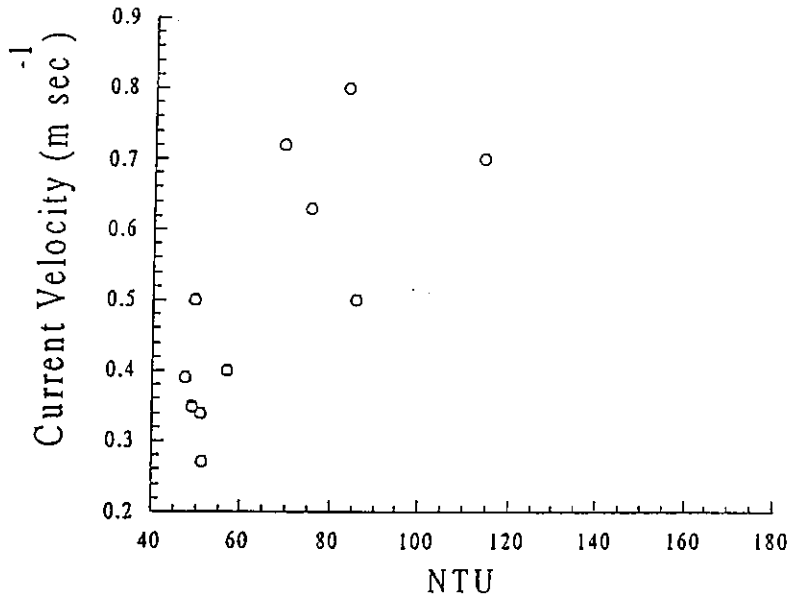


Fig. 6: Nephelometric analysis (NTU) of TSS loading relative to current velocity measured at S1 during June 1998 sampling.

D. PAH Concentrations

In the initial June 1997 sampling, significant concentrations of PAHs were found associated with particulates in the water column. This analysis was continued in subsequent samplings and, in addition, PAH concentrations on particulates in the nepheloid layer and in sediments collected in sediment traps were determined. PAH concentrations were measured in the water column in terms of TSS weight and water volume (Fig. 7). Large variations in PAH concentration throughout the river are evident and, as a result, a significant difference in PAH concentrations was not observed between S5 (high sedimentation region) and the upper river ($P>0.05$). Variations of PAH concentration was probably the result of tidal transport and seasonal variations in current velocity.

Since there was an apparent decrease in PAH concentrations with distance down stream, slopes based on concentrations at each station S0 to S7 were compared in terms of PAH $\mu g\ C\ gm^{-1}\ TSS^{-1}$ and PAH $ng\ C\ L^{-1}$ (Fig. 7). The slope is substantially greater in terms of volume. The small slope for the PAH concentration based on TSS concentrations, coupled with the observation of higher TSS in the upper river (presented above), suggests PAHs from the upper regions of the river is an important factor in the total loading to the tidal region.

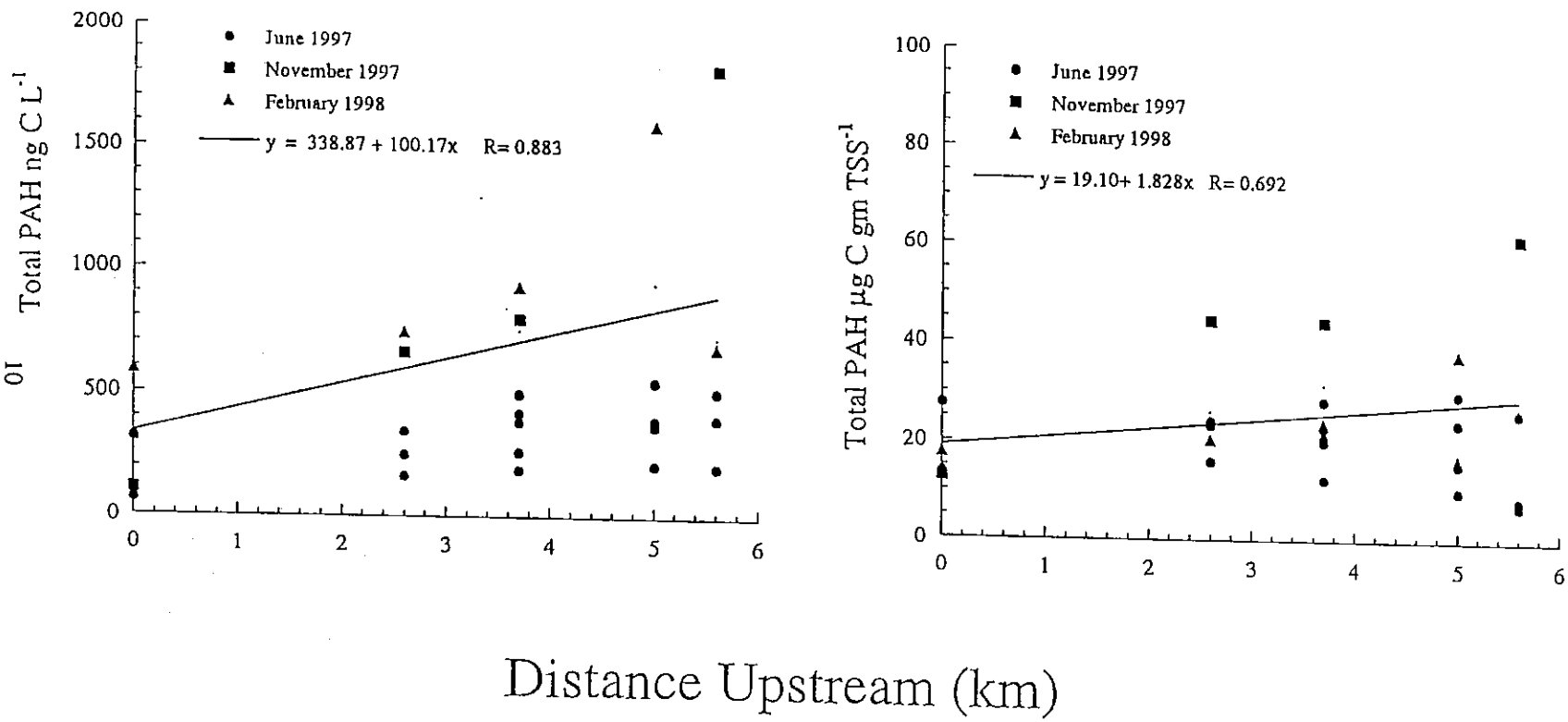


Figure 7: PAH concentrations in the Anacostia River, presented in terms of filtration volume and TSS. Stations referenced in the text are S0, S1, S4, S5, and S7 at 5.6, 5.0, 3.6, 2.7 and 0 km from the river mouth.

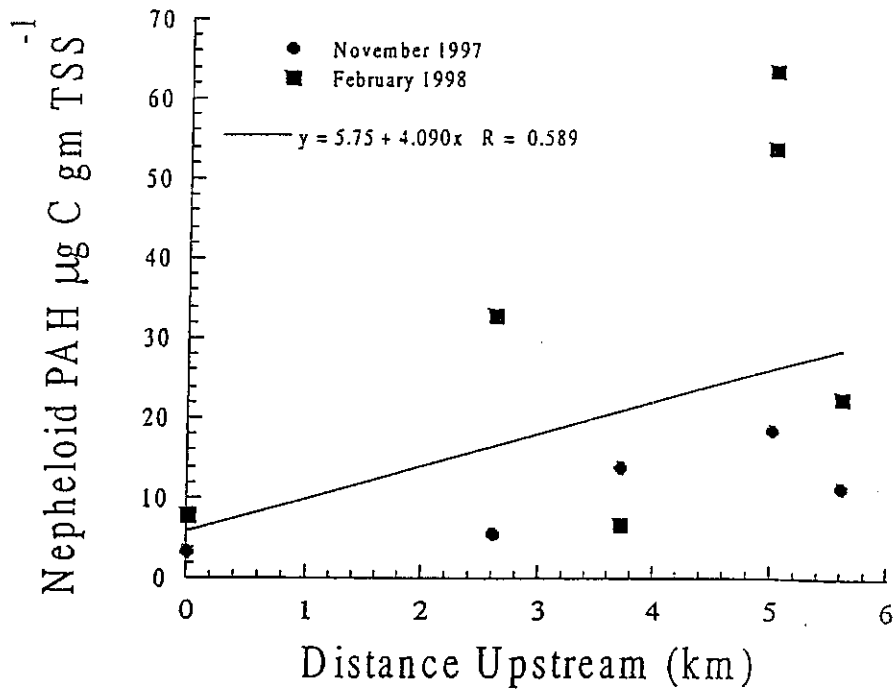


Fig. 8: PAH concentrations measured in the sediment nepheloid zone throughout the Anacostia River tidal region. Stations referenced in the text are S0, S1, S4, S5, and S7 located at 5.6, 5.0, 3.6, 2.7 and 0 km, respectively, from the mouth of the river.

PAH concentrations were measured in the nepheloid layer during the November 1997 and May 1998 samplings. Distribution of PAHs in the nepheloid mirror that of the TSS in the water column, i.e., the highest concentrations were found in the upper reaches of the tidal zone (Fig. 8). There is not a significant difference ($P > 0.5$) in PAH concentrations between the upper regions of the river and S5, the primary sedimentation region. The total quantity of PAHs in the nepheloid layer was much greater than in the water column. There is an interesting difference in the slopes of PAH concentrations in the water column and the nepheloid TSS through the river. For PAHs attached to particles in the water column, the slope of concentrations through the river was approximately 1.8 and for PAHs in the nepheloid layer, the slope was 4.1 (Fig. 7). This comparison suggests that the sedimentation of PAHs is occurring at a more rapid rate than the degradation through the river. Analysis of data from subsequent sampling events will assist in understanding the relative contribution of sedimentation, transport, and degradation of the PAHs in both phases.

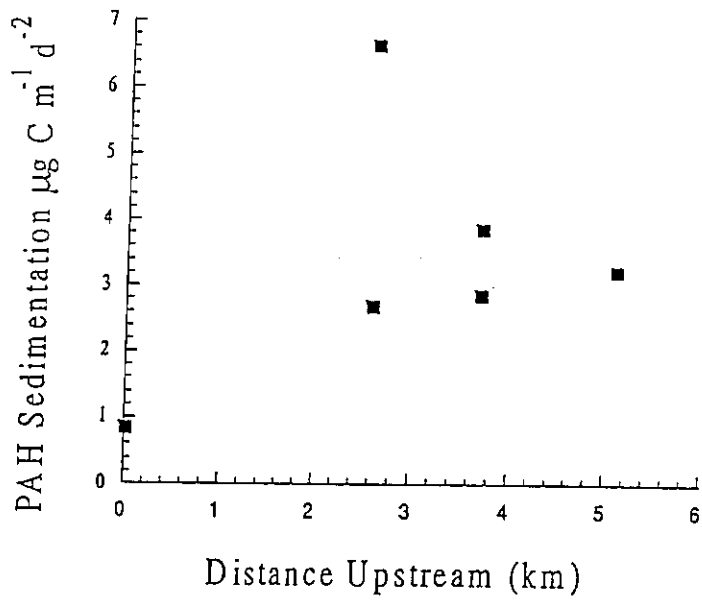


Fig. 9: PAH concentrations in sediment traps at sampling stations in the Anacostia River during February 1998. Stations referenced in the text are S0, S1, S4, S5, and S7 located at 5.6, 5.0, 3.6, 2.7 and 0 km, respectively, from the mouth of the river.

Preliminary analysis of PAH concentrations in sediment traps showed values to be higher or equivalent in sediment traps at S5 to the upper river sampling sites where TSS was substantially greater (Fig. 9). In the upper regions of the river, similar or slightly smaller concentrations of PAHs were measured in the traps. This analysis needs confirmation of sedimentation rates with an accurate elemental tracer and additional sediment trap analysis to determine statistical variations.

IV. SUMMARY

This survey of the Anacostia River is designed to afford an understanding of the transport of PAH contaminants through the tidal region. Data presented in the survey show that concentrations of PAHs attached to total suspended solids in the water column and in the nepheloid layer are significant and correspond with a previous survey of the distribution of PAHs in the sediment (Wade et al., 1994). This result necessitates understanding the physical transport and fate of particle-bound PAHs. The database outlined in this report shows that the physical transport of TSS through the tidal region of the Anacostia River has a substantial impact on the concentrations and fate of PAHs. Tidal mixing, resulting in reversed river currents and transport of TSS, makes spatial interpretation of variations in PAH concentrations in the river difficult. While there is not a large variation in concentrations of PAHs attached to TSS, there is a substantial decline in the total TSS loading from the upper tidal region to the mouth of the Anacostia River.

L

Geohydrology and Water Supply Potential of the Lower Patapsco Aquifer and Patuxent Aquifers

Mack and Harry Hansen contributed their expertise in southern Maryland geohydrology. Jonathan Edwards, Jr. examined drill cuttings from the test-well sites and described the basement rocks. Throughout the investigation, a review committee composed of representatives from the Charles County and Prince George's County governments, Town of Indian Head, and U.S. Naval Surface Warfare Center provided critical comments. Also included on the committee were two citizen representatives, Arthur Krueger and Lawrence Berger. David Drummond, Maryland Geological Survey, and William Fleck, U.S. Geological Survey (Water Resources Division) provided technical reviews of the report. The manuscript was edited and typed by Donajean Appel with additional editorial review by Claire Richardson.

GEOHYDROLOGY OF THE LOWER PATAPSCO AQUIFER AND PATUXENT AQUIFERS

FRAMEWORK

The study area is located within the Coastal Plain province of Maryland (fig. 1). The Coastal Plain province consists of layers of gravel, sand, silt, and clay that are gently sloped downward toward the southeast. The layers form geologic formations that range in age from Cretaceous to Holocene. The geologic units of principal concern in this study are the Patuxent Formation, Arundel Clay, and Patapsco Formation (tab. 1). Collectively, these formations, consisting of alternating beds of sand, silt, and clay, form the Potomac Group. The outcrop area of the Potomac Group occurs within an irregular band northwest of the study area in Virginia and Washington, D.C. (Cooke and Cloos, 1951; Mixon and others, 1989). Sand layers, which generally allow the transmission and extraction of water, form aquifers. In contrast, silt and clay layers, which impede flow of ground water and do not yield water to wells, form confining beds. The aquifers considered in this report consist of multiple sand layers within the Patapsco and Patuxent Formations; they include, from shallowest to deepest, the upper Patapsco aquifer, lower Patapsco aquifer, upper Patuxent aquifer, and lower Patuxent aquifer. The lower Patapsco aquifer is separated from the upper Patuxent aquifer by the Arundel Clay. The Patuxent aquifer was informally divided into the upper and lower aquifer units based on the presence of two discrete sand bodies within the Patuxent Formation. The outcrop areas of the aquifers occur within the outcrop area of the Potomac Group. Outcrop areas of the individual aquifers are not differentiated from the Potomac Group outcrop.

Four geohydrologic cross-sections extending through the study area were prepared (figs. 4-6, and pl. 2) along with a series of structure maps showing the altitude of the top of the basement rock and the altitude of the top and thickness of the lower Patapsco and upper Patuxent aquifers (figs. 7-11).

The top of basement rock is at approximately 680 ft below sea level west of Chapman's Landing at Hallowing Point, Virginia and increases in depth to about 1,730 ft below sea level at La Plata and about 2,550 ft below sea level at Lexington Park (figs. 4, 5, and 7; pl. 2). The dip of the basement rock is steepest near the western edge of the Coastal Plain sediments (about 50 ft per mile [ft/mi]) and decreases to about 30 ft/mi in the eastern part of Charles County. Seismic reflection data reported by Jacobeen (1972), Dames & Moore (1973), and Hansen (1978) suggest that faulting may offset the Coastal Plain—basement-rock contact by as much as 250 ft along a line extending from southern Prince George's County, through Waldorf, to about La Plata. An interpretation of this structure (called the Brandywine fault system) is shown in Wilson and Fleck (1990, fig. 3, pl. 3). The Brandywine fault system may also affect the overlying Coastal Plain sediments, resulting in offsets or dip reversals in the Patuxent and Patapsco aquifers near the proposed fault trend (Wilson and Fleck, 1990, fig. 4, pl. 3). The structure maps and cross-sections presented in this report are generalized in the area of the Brandywine fault system and do not display possible effects of faulting.

Fragments of basement rock recovered from CH Bd 52 and Cc 34 consist of fine-grained biotite-plagioclase-quartz gneiss (Appendix B). This rock resembles the Oella Formation, a crystalline rock that outcrops in the Piedmont of Baltimore and Howard

(Text continued on p. 19.)

Table 1. Geohydrologic units included in this study

[ft = feet]

Erathem	System	Series	Group	Formation	Lithology	Aquifers and confining beds	Approximate formation thickness (ft) in well CH Bc 80
Cenozoic	Tertiary	Pliocene		Upland deposits	Sand, gravel, silt, and clay; yellow and brown	Surficial aquifer	50
		Paleocene	Pamunkey	Aquia	Sand, silt, and clay; glauconitic; dark gray		90
Mesozoic	Cretaceous	Lower Cretaceous	Potomac	Patapsco	Sand, interbedded with multi-colored clay	upper Patapsco aquifer	170
					Clay and silt	Confining bed	70
					Alternating beds of fine to coarse sand, interbedded with thicker layers of dense clay	lower Patapsco aquifer	Total: 300 Sand (84) Clay and silt (216)
				Arundel	Clay, dense; red, purple, and brown with relatively thin beds of fine-grained sand	Arundel confining bed	120
				Patuxent	Sand, medium to coarse; clean; light gray; quartzose; with some small gravel	upper Patuxent aquifer	Total: 135 Sand and silt (80) Clay and silt (35)
					Clay and silt	Confining bed	93
					Sand with intergranular silt and clay	lower Patuxent aquifer	Total: 115 Sand (50) Clay and silt (65)
Pre-Cretaceous				Basement complex	Granite gneiss	None	Unknown

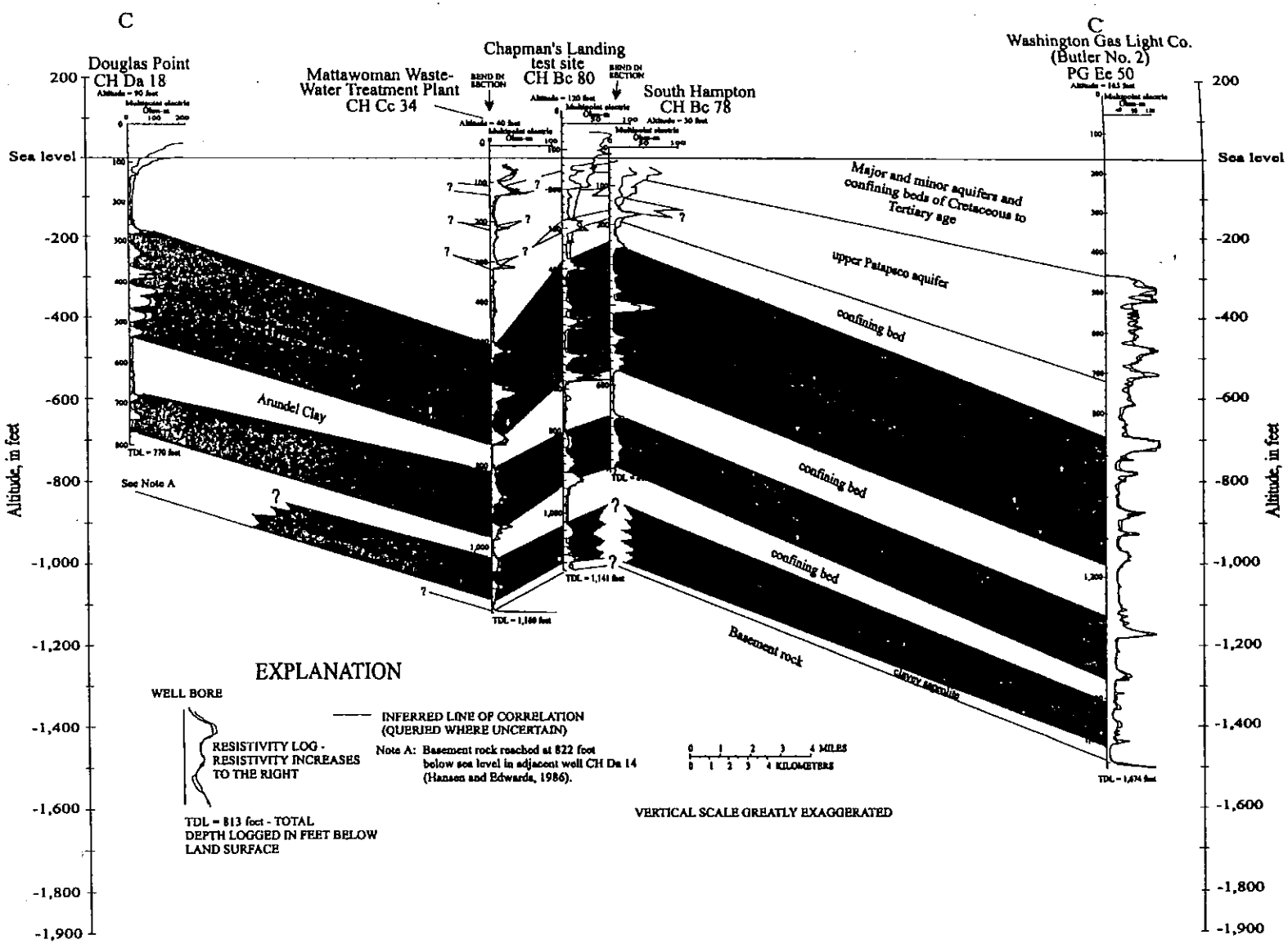


Figure 6. Geohydrologic cross-section C-C′ from Douglas Point to southern Prince George's County, Maryland.

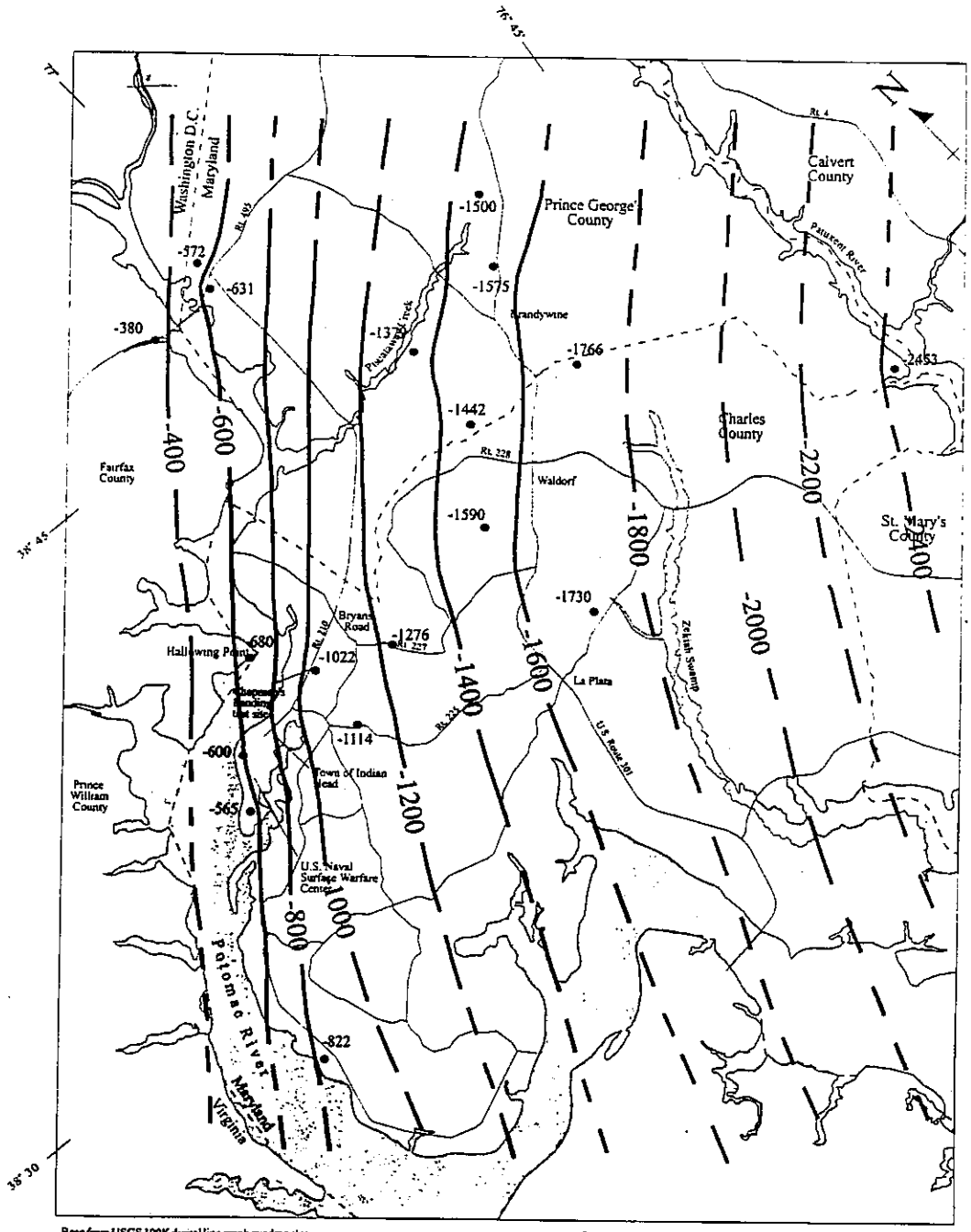


Figure 7. Approximate altitude of the top of the basement rock.

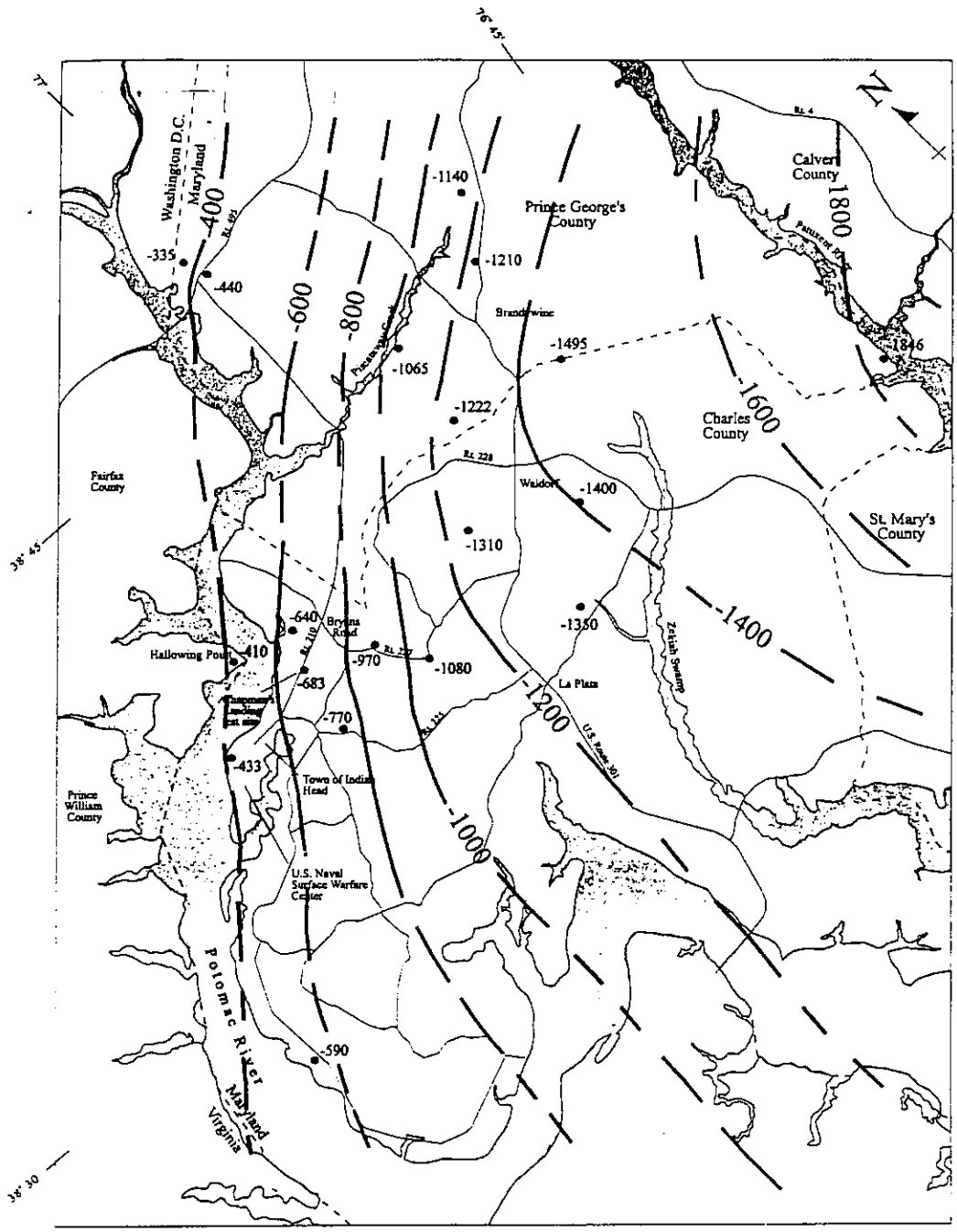
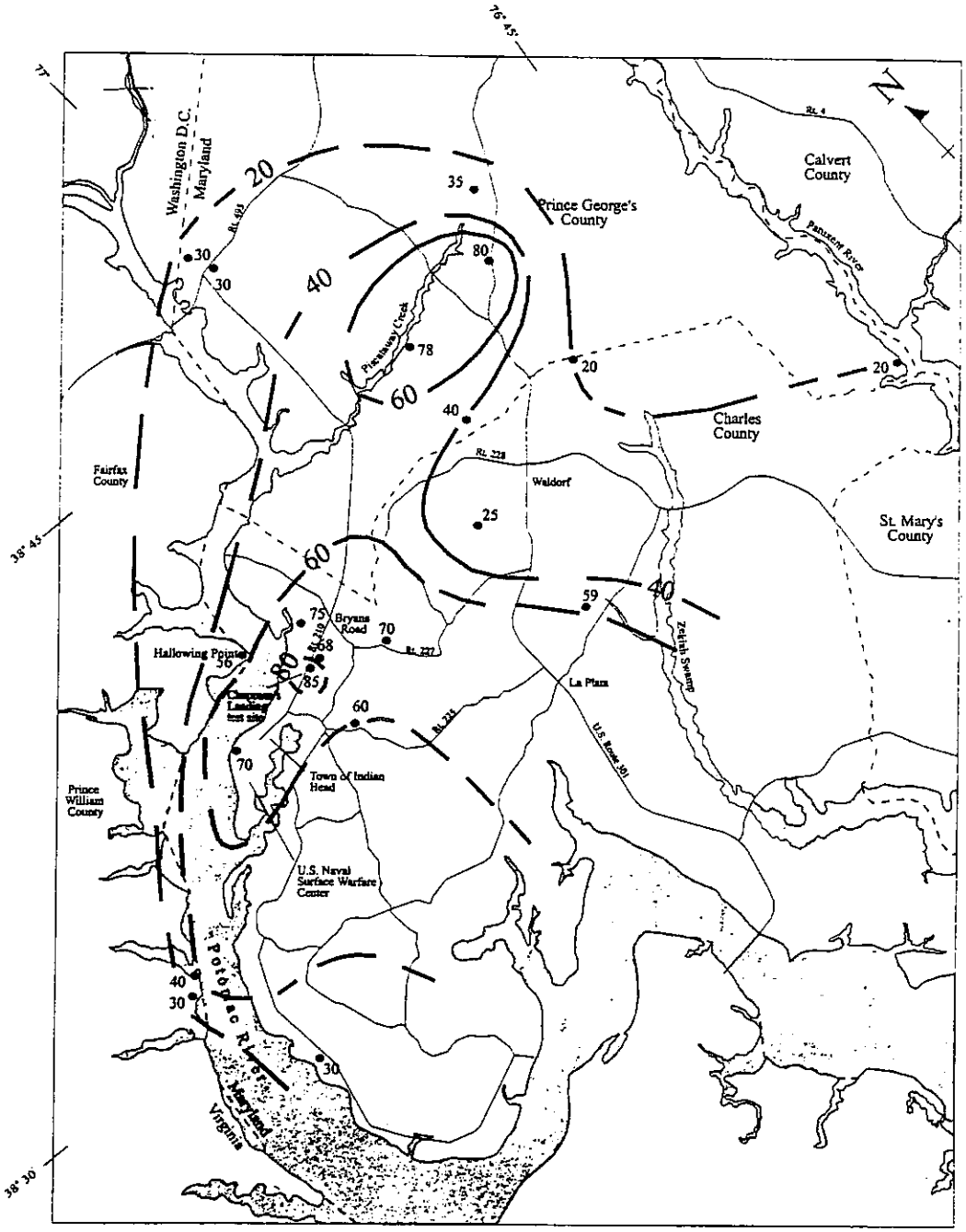


Figure 8. Approximate altitude of the top of the upper Patuxent aquifer.



EXPLANATION

40 LINE OF EQUAL AQUIFER THICKNESS. Interval 20 feet. Dashed where uncertain.

20 CONTROL WELL. Number is total aquifer thickness, in feet.

Figure 9. Approximate thickness of the upper Patuxent aquifer.

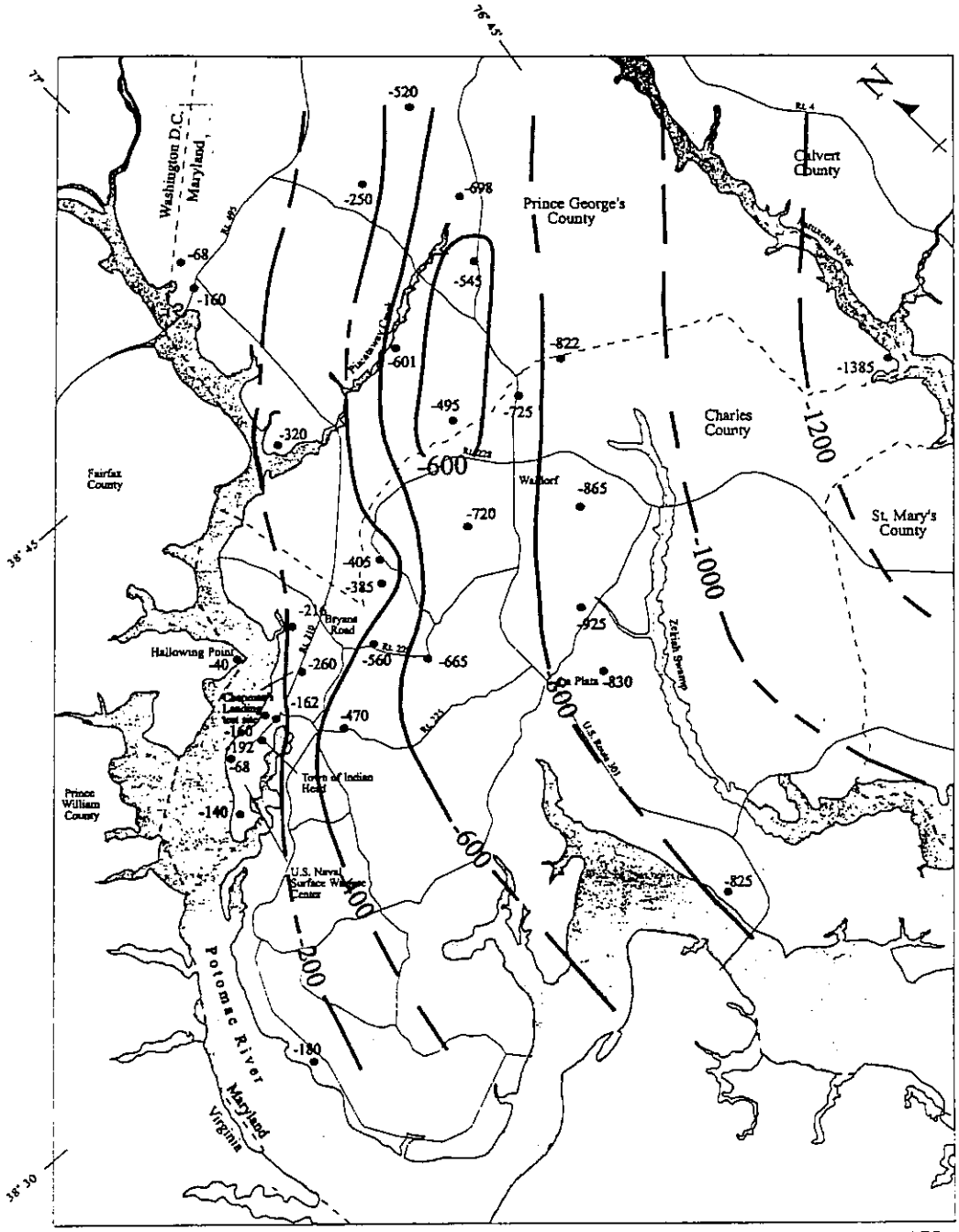
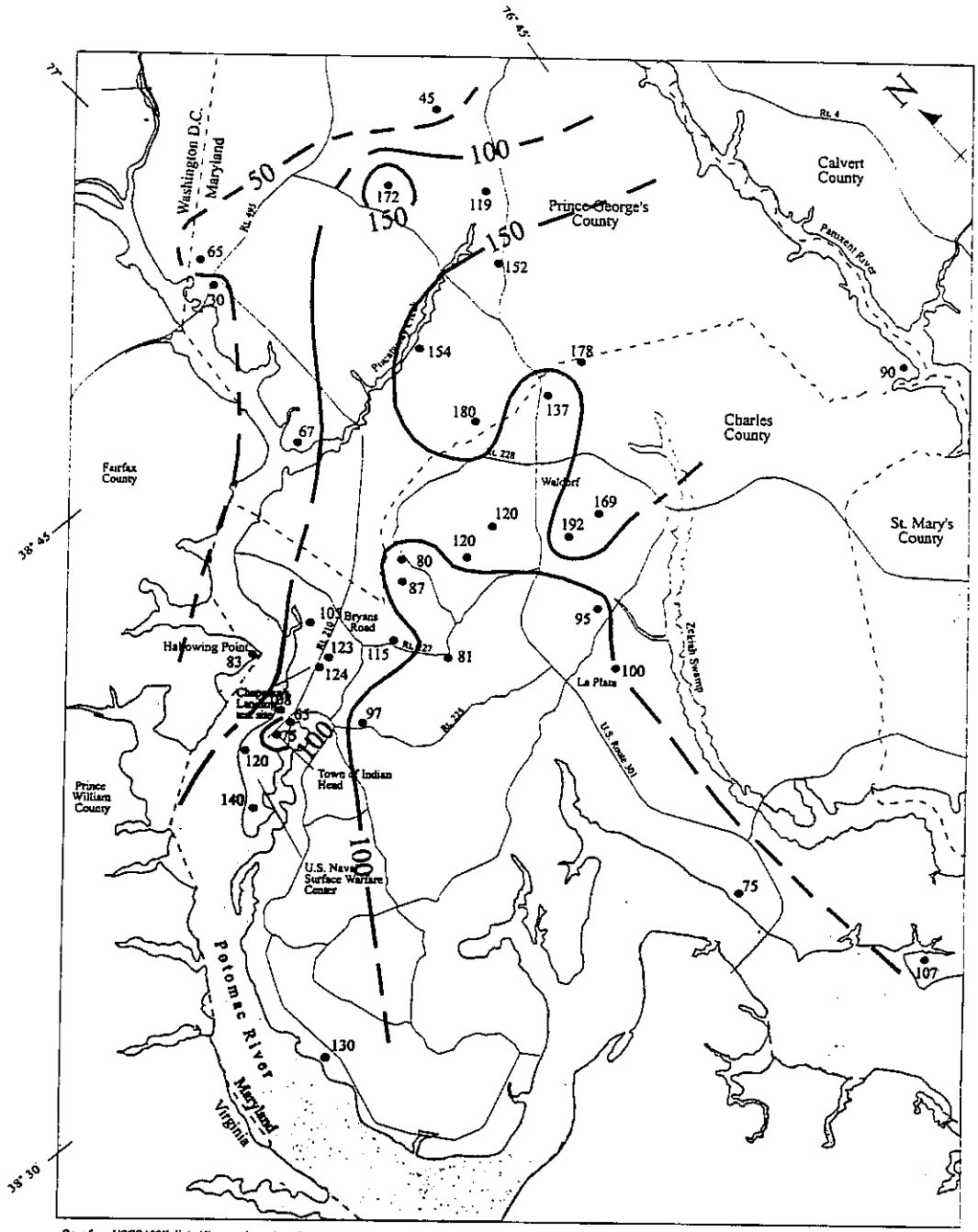


Figure 10. Approximate altitude of the top of the lower Patapsco aquifer.



Base from USGS 100K digital line graph quadrangles

EXPLANATION

50 LINE OF EQUAL AQUIFER THICKNESS. Interval is 50 feet. Dashed where uncertain.

130 CONTROL WELL. Number is total aquifer thickness, in feet

Figure 11. Approximate thickness of the lower Patapsco aquifer.

Counties (Jonathan Edwards, written commun., 1996). Rock chips collected in drill cuttings from CH Bc 75 (located near CH Bc 80) consist of coarse-grained, microcline-quartz granite or granite gneiss and fine-grained, garnetiferous, muscovite-biotite-plagioclase gneiss (Appendix B.).

The Patuxent Formation overlies the basement-rock complex. Contact between the basement rock and the Patuxent Formation is typically marked by 10 to 20 ft of light green, clayey saprolite (weathered rock). Sands within the Patuxent Formation are informally divided into the upper and lower aquifer units. Sand within the lower Patuxent aquifer is generally less abundant and finer-grained than sand in the upper Patuxent aquifer. Also, electric resistivity logs generally show lower values in the lower aquifer, indicating a higher clay content. Visual examination of the cores collected at 1,050 ft and 1,115 ft from well CH Bc 80 shows that the intergranular space is filled with a silt-clay matrix (Appendix C). Sieve analyses of the core samples show a relatively high percentage (19 percent) of silt-clay (Appendix C). The lower Patuxent aquifer is unlikely, therefore, to yield significant quantities of water. The top of the lower Patuxent aquifer is about 550 ft below sea level at Indian Head and increases to about 1,575 ft below sea level at La Plata (fig. 5). In the Indian Head-Bryans Road area, the lower Patuxent aquifer is about 20 to 50 ft thick. The lower Patuxent aquifer is overlain by approximately 20 to 90 ft of dense clay.

The upper Patuxent aquifer consists chiefly of fine to coarse sand separated by dense green and brown clay layers. A core sample collected at 825 ft in well CH Bc 80 indicates that the sand may, in places, contain appreciable amounts of silt and clay (Appendix C). The top of the aquifer varies in depth from about 400 ft below sea level at Indian Head to about 1,350 ft below sea level at Waldorf (figs. 4, 5, and 8). The thickness of the upper Patuxent aquifer is greatest at the Chapman's Landing test site (85 ft) and in an area near Piscataway Creek in southern Prince George's County (80 ft). Generally, however, it is less than 60 ft in the rest of the model area. The increased thickness at the Chapman's Landing test site may be attributed to local stacking of fluvial, channel-sand deposits. In places individual channel-fill deposits may coalesce vertically to form multistory sand bodies (Potter, 1967).

The upper and lower Patuxent aquifers are, at least locally, hydraulically connected through a leaky confining layer. Evidence of this is provided in the response of water levels in the lower Patuxent aquifer to pumpage in the upper Patuxent aquifer at the Chapman's Landing test site (well CH Bc 80).

The upper Patuxent aquifer is separated from the overlying lower Patapsco aquifer by the Arundel Clay. Within the study area, the Arundel Clay is a relatively low permeability clay interbedded with thin beds of fine-grained, gray sand. Drill cuttings from the test holes indicate a dense, red, purple, and brown clay (Appendix B). Cores from test well CH Bc 80 indicate a light gray, reddish-brown, tough clay, interbedded with thin layers of sand (Appendix C). The altitude of the top of the Arundel Clay varies from about 275 ft below sea level at Indian Head (fig. 5) to about 1,500 ft below sea level in the eastern part of Charles County (pl. 2). Total thickness ranges from about 55 ft in the test well at Mattawoman Waste-Water Treatment Plant to more than 300 ft in the southeastern part of Prince George's County. The Arundel Clay is approximately 120 ft thick at the Chapman's Landing test site. The Arundel Clay functions as an effective confining layer separating the upper Patuxent and lower Patapsco aquifers in most areas because it is a relatively thick, low-permeability clay. The hydraulic connection between the Patuxent and Patapsco aquifers is greatest at sites where the Arundel Clay is thinner than normal or unusually sandy.

The lower Patapsco aquifer is composed of alternating layers of fine to coarse, light gray and brown sand, and tough clay. The lower Patapsco aquifer referred to in this report correlates downdip with the La Plata aquifer system (Wilson and Fleck, 1990). The depth to the top of the aquifer ranges from 68 ft below sea level at Indian Head to more than 1,300 ft below sea level in the eastern part of Charles County (fig. 10). Aquifer thickness ranges from approximately 60 ft at Indian Head to more than 150 ft in north-central Charles County and south-central Prince George's County (fig. 11). Most of the wells in the project area previously described as being completed in the Patuxent aquifer (Otton, 1955; Slaughter and Otton, 1968; Hiortdahl, 1997) were reassigned to the lower Patapsco aquifer based on newly obtained test-well data.

The lower Patapsco aquifer is overlain by a relatively thick (up to 300 ft), low permeability clay layer within the Patapsco Formation. This clay layer, separating the lower Patapsco aquifer from the overlying upper Patapsco aquifer, restricts the flow of water between the aquifers. Channeling beneath the Potomac River (either recent channeling or paleochannels) may have reduced the thickness of the clay layer overlying the lower Patapsco aquifer (Hiortdahl, 1997). The extent

to which the confining layer has been eroded adjacent to the Indian Head-Bryans Road area is unknown.

HYDRAULIC PROPERTIES

Transmissivity is the measure of an aquifer's ability to transmit water. Transmissivity of the upper Patuxent aquifer, determined by constant-rate aquifer tests in two test wells drilled during this study, was 656 and 152 feet squared per day (ft^2/d) for wells CH Bd 52 and CH Cc 34, respectively. The recovering water level was plotted against the ratio of time since pumping started divided by time since pumping stopped (fig. 12). Transmissivity was calculated using a formula developed by Theis (1935) and Cooper and Jacob (1946). The wells were pumped at rates of 60 gallons per minute (gpm) in well CH Bd 52 and 50 gpm in well CH Cc 34, both for 8 hours. The calculated transmissivity values are probably lower than the actual transmissivity due in part to the short length of well screen (20 ft), partial penetration of the well screens in the aquifer, and incomplete well development. Transmissivity of the lower Patuxent aquifer was 51 ft^2/d in test well CH Bc 80 (fig. 12). This well was pumped at a rate of 35 gpm for 8 hours.

Transmissivity determined in eight additional wells screened in the upper Patuxent aquifer and three wells screened in both the upper and lower Patuxent aquifers within the model area ranged from 104 to 2,600 ft^2/d (tab. 2). These wells were not screened in all sands of the aquifers, so estimates of total transmissivity were made to account for partial penetration. First, the horizontal hydraulic conductivity of the sand layers screened was estimated by dividing the calculated transmissivity by the length of the well screen. The total sand thickness determined by geophysical and lithologic logs was then multiplied by the horizontal hydraulic conductivity. The estimated transmissivity for the total aquifer thickness ranged from 230 to 4,400 ft^2/d for the wells screened in the upper Patuxent aquifer. Transmissivity is greatest in the area between Bryans Road and Indian Head, as determined by aquifer tests on wells CH Bc 75 and 77 (Chapman's Landing wells 2 and 1, respectively). Transmissivity decreases to the north, south, and east of this area. A possible explanation for the localized area of high transmissivity may be the presence of stacked channel-sand deposits. The transmissivity of the upper Patuxent aquifer in the Indian Head area has not been tested; however, geophysical logs show less sand compared to the Chapman's Landing test site, indicating a lower transmissivity. The distribution of transmissivity values determined by aquifer tests for the upper Patuxent aquifer is shown in figure 13. Regional trends in transmissivity distribution across the model area can not be established given the scarcity of data points.

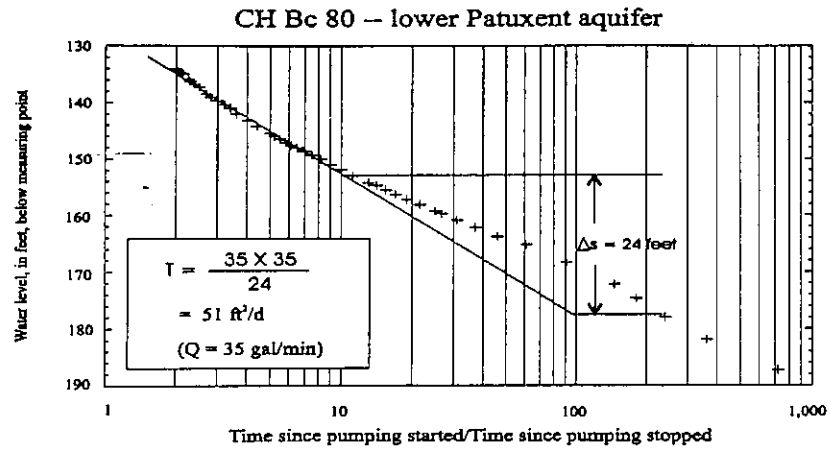
Storage coefficient is a measure of an aquifer's ability to release or take into storage water per unit change in hydraulic head. Storage coefficient of the upper and lower Patuxent aquifers were estimated from the barometric efficiency determined in the test wells using a formula described by Jacob (1940) (cited in Lohman, 1972, p. 9). The resulting storage coefficients for wells CH Bc 80, Bc 77, Bd 52, and Cc 34 were 3.4×10^{-5}, 1.1×10^{-4}, 9.2×10^{-5}, and 1.6×10^{-4}, respectively. The median value is 1.5×10^{-4}. Fleck and Vroblesky (1996) reported storage coefficients of the Patuxent aquifer from 1×10^{-5} to 1×10^{-3} with an average of 2.6×10^{-4}.

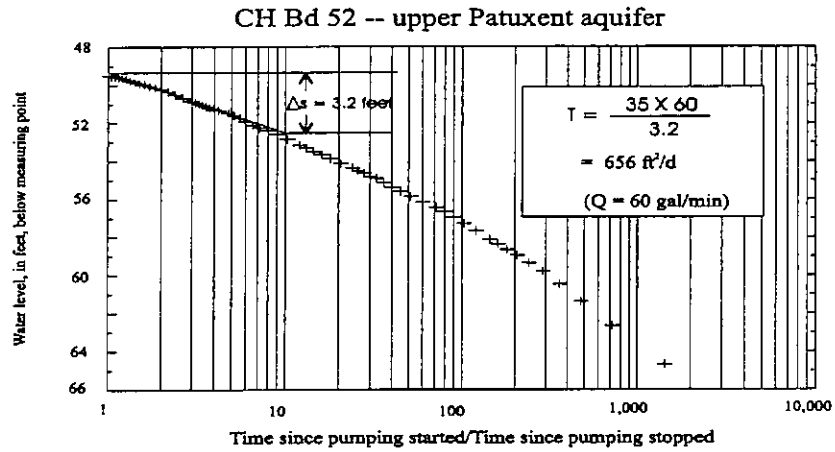
Transmissivity values of the lower Patapsco aquifer determined from aquifer tests range from approximately 190 to 3,500 ft^2/d within the model area (tab. 3). Transmissivity of the full aquifer estimated using the previously described method ranged from 250 to 5,600 ft^2/d. The distribution of transmissivity determined by aquifer tests of the lower Patapsco aquifer is shown in figure 14. In the vicinity of Waldorf and La Plata transmissivity ranges between 500 and 3,500 ft^2/d. In comparison, the transmissivity of the lower Patapsco aquifer is less than 1,200 ft^2/d in the Indian Head-Bryans Road area.

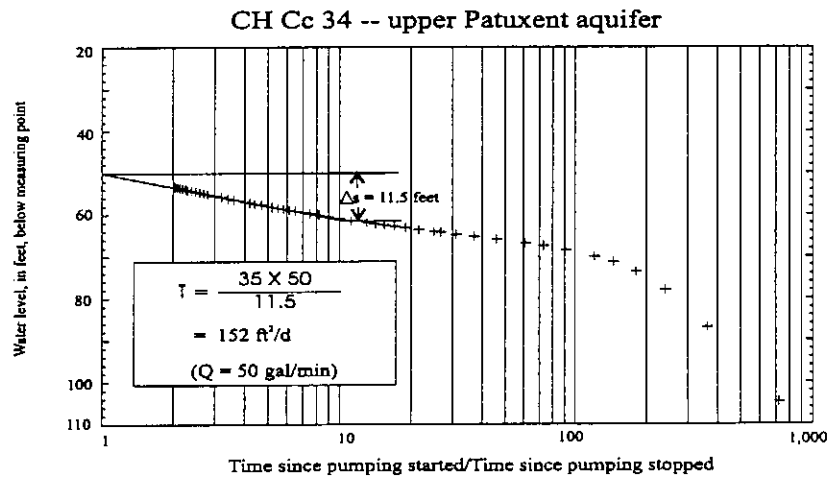
Storage coefficients of the lower Patapsco in southern Maryland are reported to range from 3×10^{-5} to 5×10^{-3} (Mack, 1962; Hansen, 1972; Fleck and Vroblesky, 1996). Slaughter and Otton (1968) reported storage coefficients ranging from 2×10^{-4} to 4×10^{-3} in the Indian Head area.

WATER LEVELS AND DIRECTION OF GROUND-WATER FLOW

The potentiometric surface of the lower Patapsco aquifer during the fall of 1997 is shown in figure 15. Also shown on the map are locations of wells or well fields pumping more than 10,000 gallons per day (gal/d) (annual average). The highest water level occurs in southern Prince George's County at 8 ft above sea level. The potentiometric surface decreases southward toward cones-of-depression centered around well fields in Waldorf and La Plata. The deepest water level, 169 ft below sea level, was measured at Waldorf. A shallower







$$T \text{ (transmissivity)} = \frac{35 \times Q}{\Delta s}$$, in feet squared per day (ft^2/d)

Q = pumping rate, in gallons per minute (gal/min)

Δs = drawdown, in feet (ft) per log cycle

Figure 12. Calculation of transmissivity using the Jacob straight-line method for the upper Patuxent aquifer in test wells drilled during this study.

Table 2. Transmissivity data for the upper Patuxent aquifer in Charles County and southern Prince George's County, Maryland and Prince William County, Virginia

[ft = feet; ft/d = feet per day; ft²/d = feet squared per day]

Well number	Cumulative screen length, (ft)	Total aquifer thickness, (ft)	Horizontal hydraulic conductivity, (ft/d)	Transmissivity, (ft²/d)	
				Aquifer test analyses	Estimated using total aquifer thickness
[1]Quantico well 2	42	42	–	520	[2]520
[1]Quantico well 4	26	26	–	440	[2]440
CH Bc 75	50	85	52	2,600	4,400
CH Bc 77	30	68	61	1,830	4,100
CH Bc 78	90	75	–	937	[2]937
[3]CH Bc 80	20	40	2	51	80
CH Bd 52	20	65	33	656	2,100
CH Cc 34	20	64	8	152	510
CH Ce 57	60	117	2	104	230
CH Da 18	20	20	–	637	[2]637
[1]PG Eb 2	30	30	–	900	[2]900
[4]PG Ec 41	20	30	70	1,400	2,100
PG Ec 46	20	approx. 30	25	500	750
PG Fd 59	30	approx. 80	4	113	320

[1]Well is screened in both the upper and lower sands of the Patuxent aquifer
[2]Entire aquifer was screened
[3]Well is screened in the lower Patuxent aquifer
[4]Test on well screen set in the upper Patuxent aquifer

cone-of-depression occurs in the vicinity of the Potomac Electric Power Company's (PEPCO) Morgantown Power Plant located in the southern part of Charles County. The highest concentrated pumpage in the Indian Head-Bryans Road area, (0.86 Mgal/d in 1997), is located on the Indian Head peninsula at the U.S. Naval Surface Warfare Center; however, less drawdown (higher water levels) occurs in this area than in other parts of the study area where the pumpage is lower. This is likely the result of a combination of higher transmissivity in this area and a possible interconnection with the Potomac River through channels eroded into the aquifer. A hydraulic interconnection between the aquifer and the Potomac River would result in a recharge boundary, thereby stabilizing water levels.

Current heads in the lower Patapsco aquifer have declined significantly from estimated pre-stressed levels. All pre-stressed heads in the lower Patapsco aquifer had to be equal to or greater than sea level. In an unstressed Coastal Plain aquifer, all heads must be equal to or greater than the altitude of the lowest discharge boundary (ocean or bay at sea-level altitude). Compared to prepumping conditions, heads in the lower Patapsco aquifer have declined by as much as 170 ft at Waldorf and 40 to 105 ft in the Indian Head-Bryans Road area.

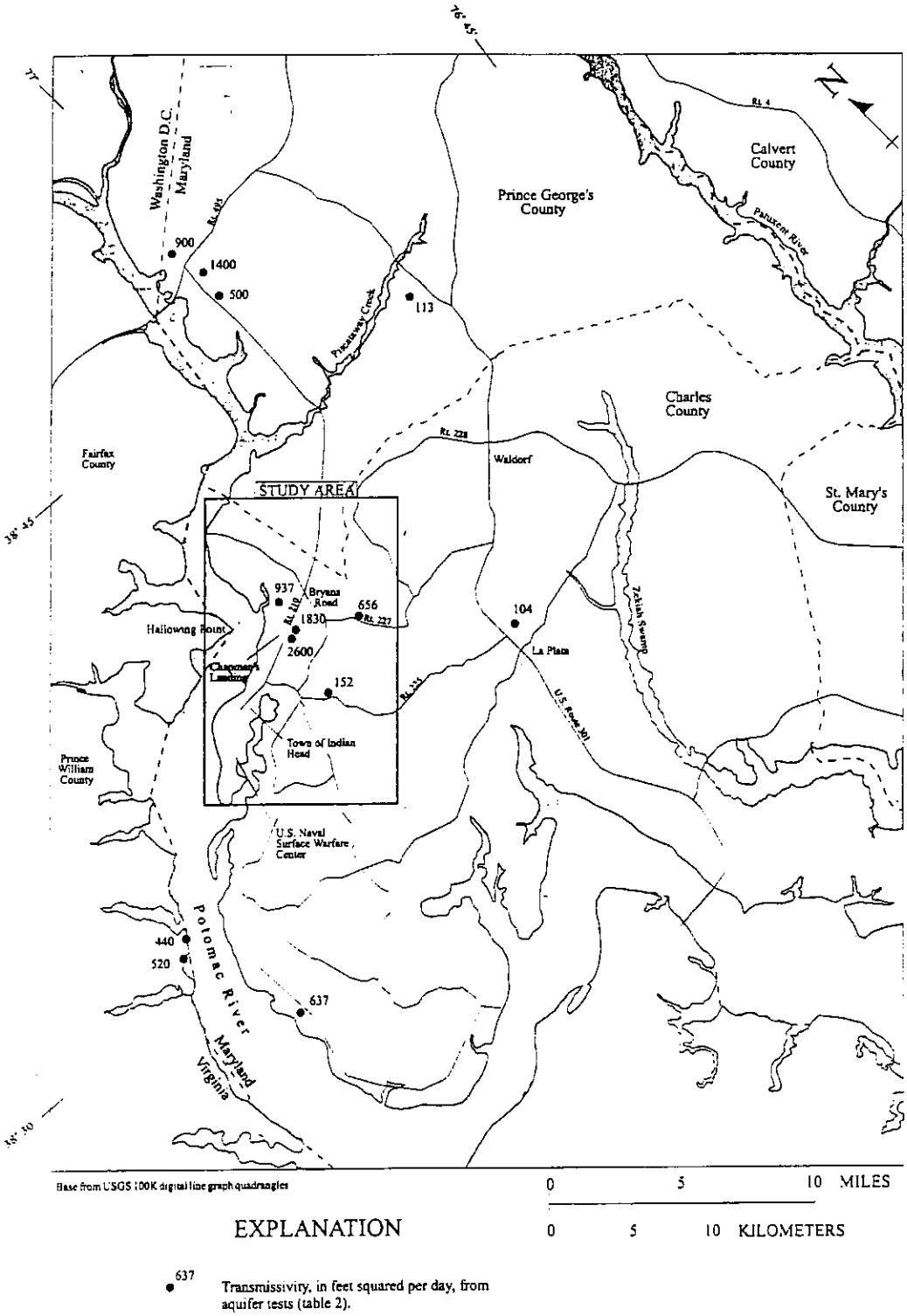


Figure 13. Transmissivity distribution of the upper Patuxent aquifer in Charles County and southern Prince George's County.

Table 3. Transmissivity data for the lower Patapsco aquifer in Charles County and southern Prince George's County

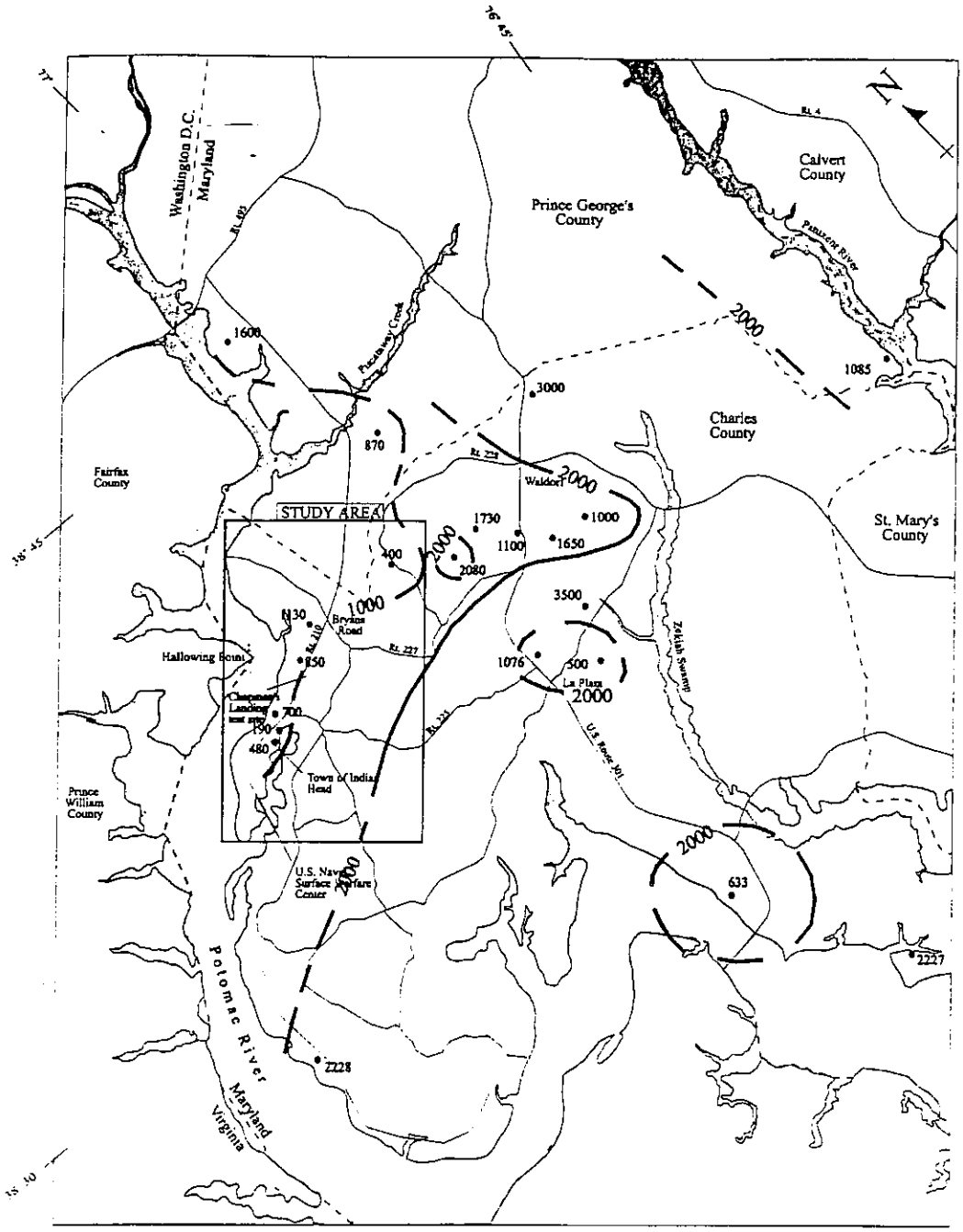
[ft = feet; ft/d = feet per day; ft²/d = feet squared per day]

Well number	Cumulative screen length, (ft)	Total aquifer thickness, (ft)	Horizontal hydraulic conductivity, (ft/d)	Transmissivity, (ft²/d)	
				Aquifer test analyses	Estimated using total aquifer thickness
CH Bc 6	50	approx. 110	14	700	1,500
CH Bc 70	50	65	3.8	190	250
CH Bc 72	63	75	7.6	480	570
CH Bc 74	36	approx. 44	24	850	1,100
CH Bc 76	65			1,130	[1]1,130
CH Bd 46	45	80	9	400	700
CH Be 58	151			1,730	[1]1,730
CH Be 64	95	103	12	1,100	1,240
CH Be 66	104	120	20	2,080	2,400
CH Be 67	192			1,650	[1]1,650
CH Bf 147	169			1,000	[1]1,000
CH Bf 150	140			3,000	[1]3,000
CH Ce 43	95	95	37	3,500	3,500
CH Ce 51	90	100	6	500	600
CH Ce 56	125			1,076	[1]1,076
CH Da 19	50	80	44	2,228	3,500
CH Ee 91	55	75	12	633	900
CH Ff 60	84	107	26	2,227	2,800
PG Eb 20	60			1,600	[1]1,600
PG Fc 31	14	approx. 90	62	870	5,600
PG Hf 31	52	90	21	1,085	1,900

[1]Entire aquifer was screened

The general direction of horizontal ground-water flow in the lower Patapsco aquifer is indicated on figure 15. The primary direction of flow is from the north and west toward well fields at Indian Head, Bryans Road, Waldorf, La Plata, and Morgantown. Water entering from the recharge area (located within the aquifer outcrop area) in Virginia and Washington, D.C. flows downdip and is captured by the pumping wells. Part of the ground-water flow bypasses the pumping wells and continues in a downdip direction towards the southeast.

In contrast to water levels in the lower Patapsco aquifer, water levels in the upper Patuxent aquifer are much higher. Water levels in the upper Patuxent aquifer measured in observation wells during the fall of 1997



Base from USGS 100K digital line graph quadrangles

0 5 10 MILES

0 5 10 KILOMETERS

EXPLANATION

1000 — Approximate line of equal transmissivity, in feet squared per day. Contour interval is irregular. Dashed where uncertain.

• 2228 Transmissivity, in feet squared per day, from aquifer tests (table 3).

Figure 14. Transmissivity distribution of the lower Patapsco aquifer in Charles County and southern Prince George's County.

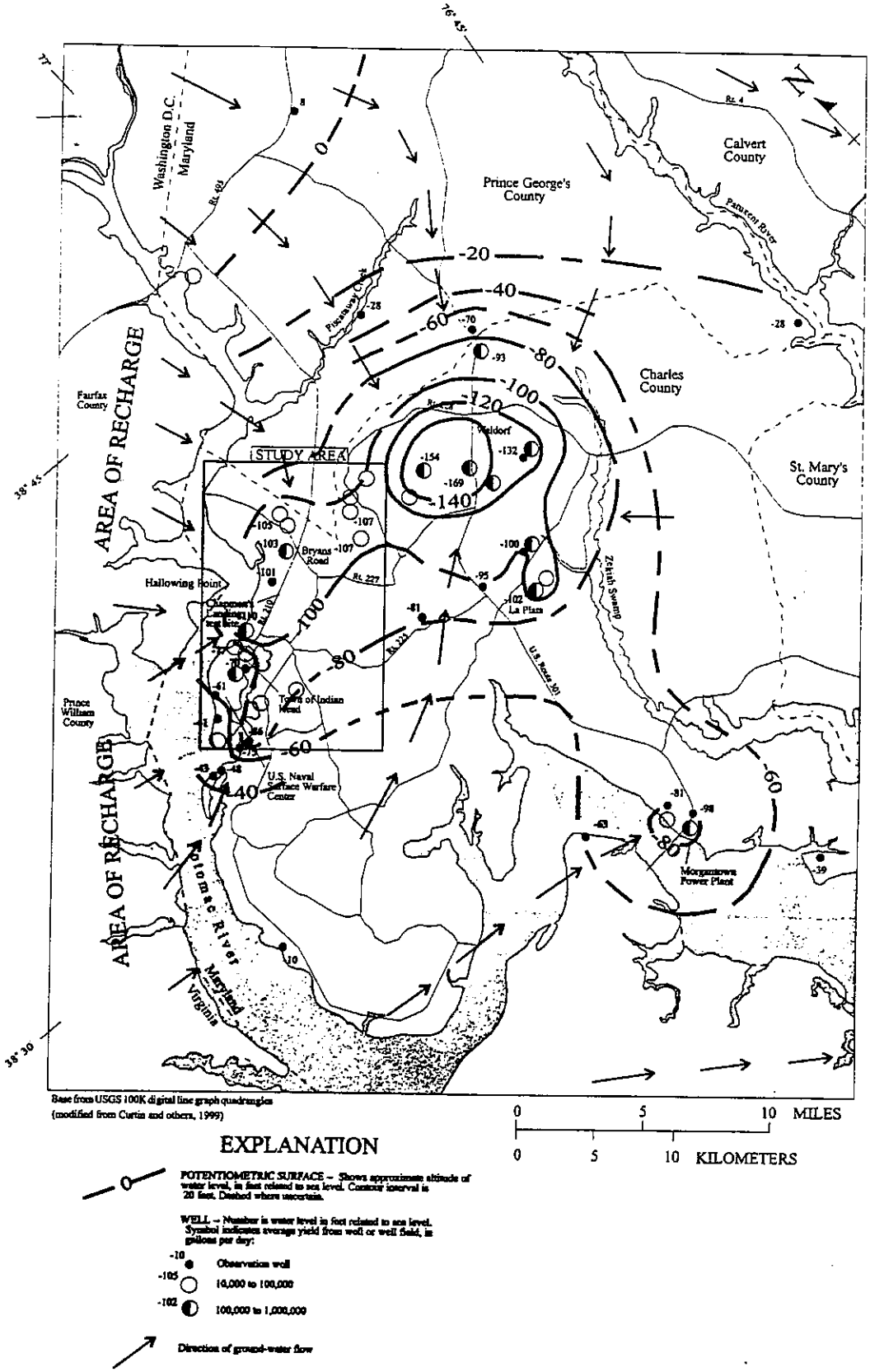


Figure 15. Potentiometric surface of the lower Patapsco aquifer in Charles County and southern Prince George's County during the fall, 1997.

ranged from 8 ft below sea level to 8 ft above sea level (fig. 16). Water levels within the study area are affected by pumping from a production well screened in the upper Patuxent aquifer at South Hampton (CH Bc 78). Prior to the start of pumping at South Hampton in March 1997, water levels measured in the upper Patuxent aquifer were above sea level with the exception of CH Da 18 at Douglas Point and CH Cc 34 at the Mattawoman Waste-Water Treatment Plant. The deeper water levels at those sites may be attributed to leakage upwards to the lower Patapsco aquifer.

EFFECTS OF PUMPAGE ON WATER LEVELS

Regulatory guidelines established by the Maryland Department of the Environment prohibit drawdowns resulting from pumpage to exceed the 80-percent management water level (fig. 3). In the Indian Head-Bryans Road area, the amount of remaining available drawdown under prepumping conditions ranged from 90 to 300 ft for the lower Patapsco aquifer and 350 to 650 ft for the upper Patuxent aquifer. Pumping from the lower Patapsco aquifer has significantly reduced the amount of remaining available drawdown within the study area. The remaining drawdown available in the lower Patapsco aquifer in 1997 ranged from 0 to 200 ft (0 to 60 percent) in the Indian Head-Bryans Road area and 30 to 400 ft (30 to 70 percent) elsewhere in the study area (fig. 17). The 80-percent management level was reached in a small area along the Potomac River shoreline in the central part of the Indian Head peninsula. Less drawdown is available in updip (northwest) areas of the aquifer because the top of the aquifer is relatively shallow. In the vicinity of Waldorf and La Plata, the percentage of available drawdown remaining in the lower Patapsco aquifer ranges from 60 to 70 percent (460 to 700 ft).

The percentage of available drawdown remaining in the upper Patuxent aquifer in 1997 is only slightly less than its original amount because of the small amount of water currently being pumped. Available drawdown remaining in 1997 ranged from 350 to 700 ft in the Indian Head-Bryans Road area (fig. 17).

Long-term water-level data indicate that lower Patapsco water levels have stabilized or recovered slightly at the U.S. Naval Surface Warfare Center (Curtin and Dine, 1995). This is related to a pumpage decrease of approximately 0.5 Mgal/d at the U.S. Naval Surface Warfare Center between 1985 and 1997 (Appendix F). Water levels northeast of Indian Head continue to decline at a rate of approximately 2 to 3 feet per year (ft/yr) as a result of the expanding cone-of-depression centered in the Waldorf area and from increased pumping at the Town of Indian Head and in the Bryans Road area. Pumpage at the Town of Indian Head and in the Bryans Road well field has increased by approximately 0.08 Mgal/d between 1985 and 1997, and 0.04 Mgal/d between 1985 and 1996, respectively. Lower Patapsco pumpage in the Bryans Road well field decreased in 1997 when the upper Patuxent well (CH Bc 78 at South Hampton) began pumping.

Water levels in the upper Patuxent aquifer in two wells, CH Be 57 (Smallwood West near Waldorf) and CH Da 18 (Douglas Point), have been declining at a rate of approximately 1 ft/yr since about 1986 (fig. 18). The downward trend parallels that of water levels in the lower Patapsco in two other wells, CH Da 20 (Douglas Point) and CH Ce 37 (La Plata), which have declined as a result of the increased use of that aquifer in Charles County. The correlation between the water-level trends in the lower Patapsco aquifer and the upper Patuxent aquifer suggests that the two aquifers are hydraulically connected in these areas through relatively thin or sandy sections in the intervening Arundel Clay. This interconnection is probably limited areally, given the general continuity of the Arundel Clay throughout most of Charles County (figs. 4, 5, 6; pl. 2). Appreciable leakage through the confining bed itself is unlikely because in most well borings the Arundel Clay has the characteristics of a thick (100 to 300 ft), dense, impermeable clay bed. Pumpage in the upper Patuxent aquifer probably is not the cause of the declining heads in these wells because the closest significant withdrawals occur at a substantial distance from the observation wells. The City of Bowie in Prince George's County pumped an average of approximately 1 Mgal/d in 1995 from the Patuxent aquifer. This well field is approximately 25 mi north of Charles County. There is no known major pumpage from the Patuxent aquifer adjacent to Charles County in Virginia.

Leakage upward from the upper Patuxent aquifer to the lower Patapsco aquifer may also be occurring in the vicinity of the test well at the Mattawoman Waste-Water Treatment Plant. Water levels measured in that well are deeper relative to the upper Patuxent aquifer water levels measured in other wells within the study area. Also, the Arundel Clay is thinner (55 ft) at that site.

A 5-day aquifer test of the upper Patuxent aquifer was conducted to (1) determine the lateral hydraulic connection between sands within the upper Patuxent

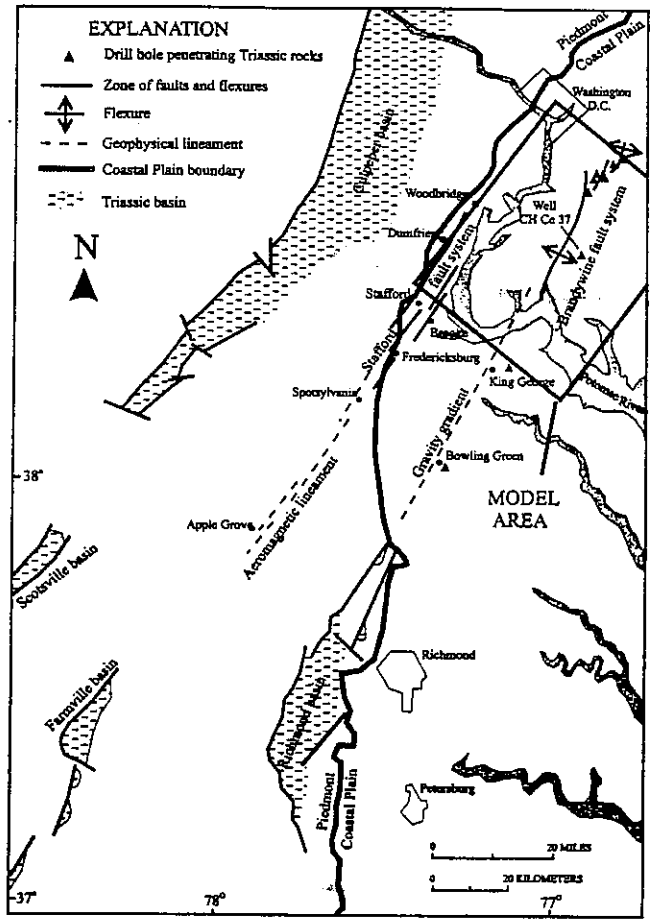


Figure 23. Alignment of the Stafford and Brandywine fault systems proposed by Mixon and Newell (1977).

continuity of the aquifer. Faults can also disrupt lateral hydraulic continuity by vertically displacing sand layers. The occurrence of faults in the underlying basement rock has been documented by previous investigators. Using seismic data, Jacobeen (1972) described a series of *en echelon*[2], high-angle reverse faults (Brandywine fault system) in southern Prince George's County. Wilson and Fleck (1990) presented evidence of the continuation of that fault system southward toward Waldorf, and described the geohydrologic implications of the faulting in Charles County. A series of *en echelon*, northeast-striking, northwest-dipping, high-angle reverse faults (Stafford fault system) was mapped southwest of the study area in Virginia by Mixon and Newell (1977) and Mixon and others (1988) (fig. 23). The Stafford fault system parallels the northeast-trending reach of the Potomac River and may extend into the project area. The displacement across the faults in Virginia attains a maximum of 200 ft and decreases upward through the Potomac Group sediments (Mixon and Newell, 1977).

The location of the barrier indicated by the aquifer-test data could not be determined without additional observation wells. Also, subsurface lithologic control is insufficient to identify and map the barrier. The estimated location of the barrier is probably updip from South Hampton and the Chapman's Landing test site based on the following observations: (1) As previously discussed, the upper Patuxent aquifer is hydraulically

[2]Faults having overlapping or staggered alignments.

continuous within the study area and eastward to the Waldorf, La Plata, and Douglas Point areas. The hydraulic connection with sands of the upper Patuxent aquifer updip in Virginia, however, has not been determined; (2) this location coincides with the trend of the Stafford fault system; and (3) the Coastal Plain sediments updip from the well sites in Charles County thin considerably toward the Fall Line in Virginia. Flow barriers in the upper Patuxent aquifer could reduce its productivity, at least locally, by restricting the amount of lateral ground-water flow.

WATER QUALITY OF THE UPPER AND LOWER PATUXENT AQUIFERS

Chemical analyses were conducted on water from wells screened in the lower Patuxent aquifer (CH Bc 80), and upper Patuxent aquifer (CH Bc 75, CH Bd 52, and CH Cc 34). Results indicate that the water from both aquifers is a sodium bicarbonate type of good quality. Table 4 lists the constituents analyzed. All reporting levels for dissolved constituents are within the recommended limits set by the U.S. Environmental Protection Agency (1986). Dissolved solids, pH (field), and specific conductance (laboratory) range from 214 to 378 milligrams per liter (mg/L), 7.7 to 7.9, and 322 to 627 microsiemens per centimeter (µS/cm), respectively. Fluoride concentrations range between 0.8 to 1.3 mg/L, which provide natural fluoridation (Kula and Hansen, 1989). Dissolved iron concentrations range from 17 to 100 micrograms per liter (µg/L). The lowest value for iron (17 µg/L) is from CH Bc 75 and the highest value (100 µg/L) is from CH Cc 34. Dissolved chloride, ranging from 16 to 43 mg/L, exceeds the typical background concentrations found in overlying, confined aquifers. For example, Chapelle and Drummond (1983) and Wilson and Fleck (1990) reported that the concentration of naturally occurring chloride in the Aquia, Magothy, and Patapsco aquifers is less than 4 mg/L in southern Maryland.

GROUND-WATER USE

Stress on the Magothy and upper Patapsco aquifers caused by the water demands of a growing population in the northern and central parts of Charles County has resulted in increased use of the deeper lower Patapsco aquifer, particularly in the vicinity of Waldorf. Ground-water use for large users (average pumpage greater than 10,000 gal/d) from the lower Patapsco aquifer in the model area increased from less than 0.5 Mgal/d prior to 1920 to 2.9 Mgal/d in 1975 (Appendixes E and F). In 1997, the amount withdrawn from the lower Patapsco in the model area equaled 5.5 Mgal/d (Appendix D, Part I). The majority of this pumpage (2.6 Mgal/d) occurred in the Waldorf area (fig. 24).

Ground-water use for large users (average pumpage greater than 10,000 gal/d) from the lower Patapsco aquifer in the Indian Head-Bryans Road area increased from less than 0.5 Mgal/d prior to 1920 to 1.8 Mgal/d in 1975 (Appendixes E and F). In 1997, the amount withdrawn from the lower Patapsco in the Indian Head-Bryans Road area equaled 1.6 Mgal/d (Appendix D). The decline in pumpage between 1975 and 1997 is attributed mainly to a decrease in pumpage at the U.S. Naval Surface Warfare Center.

Individual, residential wells screened in the lower Patapsco aquifer within the study area pumped an estimated 0.16 Mgal/d; the majority of the residential wells in the study area occur outside of the Indian Head-Bryans Road area which is serviced almost exclusively by public-supply wells. This figure is based on approximately 550 wells pumping an average of 300 gal/d. The well count was made by comparing well depths for wells completed between 1970 and 1992 to the altitude of the lower Patapsco aquifer (Maryland Department of the Environment, per. commun., 1998). The majority of residential pumpage from the lower Patapsco aquifer is in the area north of the Indian Head-Bryans Road area. South of the Indian Head-Bryans Road area, most residential wells are screened in the upper Patapsco aquifer.

The largest ground-water users in 1997 in the Indian Head-Bryans Road area were the U.S. Naval Surface Warfare Center and the Town of Indian Head, which pumped approximately 0.9 and 0.3 Mgal/d, respectively, from the lower Patapsco aquifer. Included in this amount are production wells CH Bc 67 (Town of Indian Head well 3) and CH Cb 35 (U.S. Naval Surface Warfare Center well 16A) that withdrew 0.12 Mgal/d from a sandy zone considered to be part of the Arundel Clay.

The only ground-water appropriation permits issued for the upper Patuxent aquifer in the study area are for a well at South Hampton operated by the Charles County Department of Facilities (Maryland Department of the Environment Ground-Water

Table 4. Chemical analyses of water from the upper and lower Patuxent aquifers sampled in test wells CH Bc 80, Bd 52, and Cc 34, and production well CH Bc 75

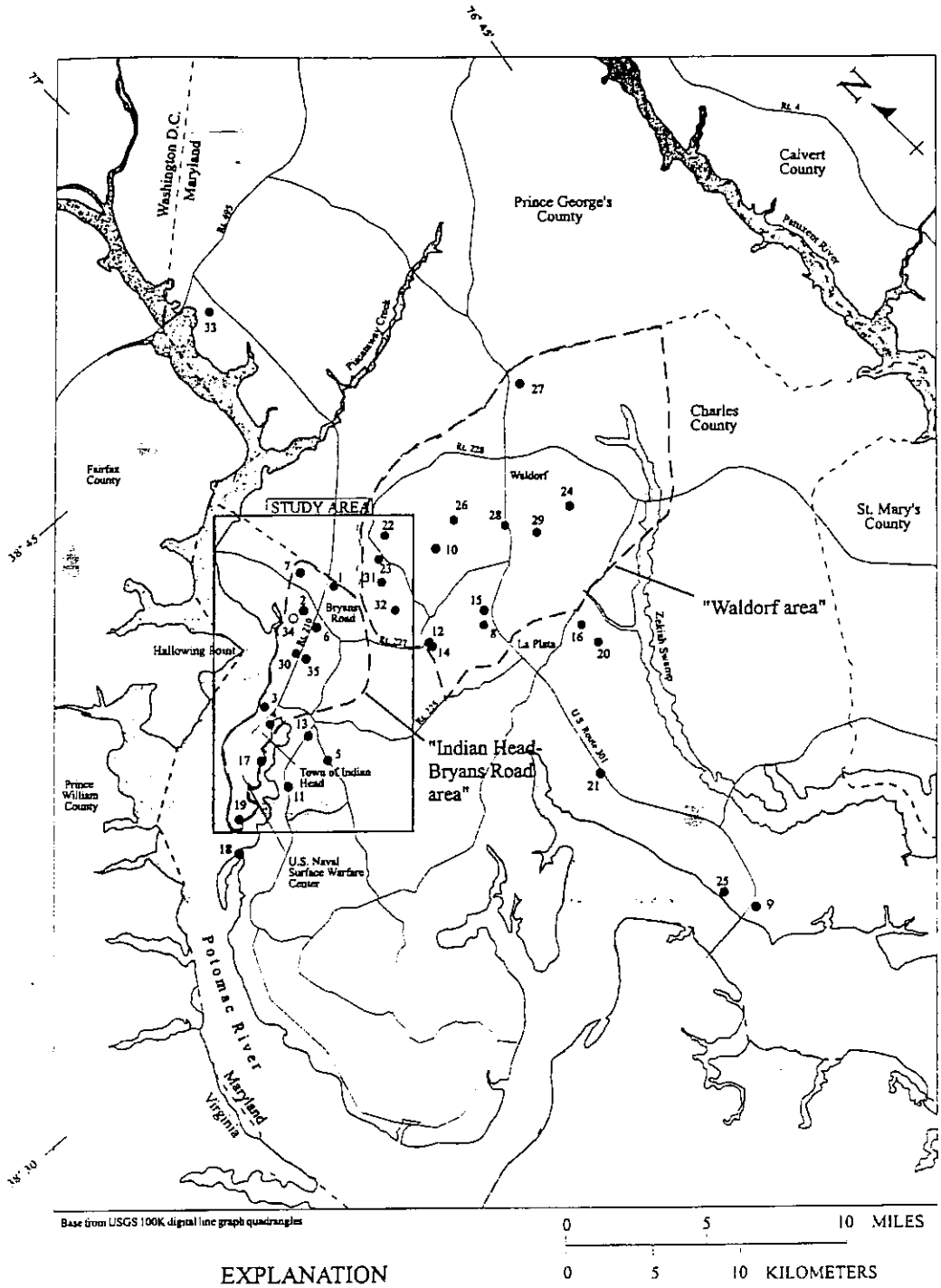
[mg/L = milligrams per liter; µg/L = micrograms per liter; µS/cm = microsiemens per centimeter at 25°C; deg. C = degrees Centigrade]

Well number	Aquifer	Alkalinity, laboratory (mg/L as $CaCO_3$)	Bromide, dissolved (mg/L)	Calcium, dissolved (mg/L)	Chloride, dissolved (mg/L)	Fluoride, dissolved (mg/L)	Iron, dissolved (µg/L)	Iron, total (µg/L)
CH Bc 75	upper Patuxent	129	--	0.47	16	0.90	17	30
CH Bc 80	lower Patuxent	252	0.16	.48	43	.90	48	580
CH Bd 52	upper Patuxent	192	.10	.83	20	.80	80	250
CH Cc 34	upper Patuxent	151	.090	.29	21	1.3	100	--

Well number	Magnesium, dissolved (mg/L)	Manganese, dissolved (µg/L)	Manganese, total (µg/L)	Nitrogen, NO_2 + NO^3 total (mg/L)	pH, field	pH, laboratory	Potassium, dissolved (mg/L)	Phosphorus, total (mg/L)
CH Bc 75	0.08	2	10	--	7.9	8.2	1.8	2
CH Bc 80	.23	8	20	--	7.8	8.2	3.3	--
CH Bd 52	.15	9	10	--	7.7	8.0	2.4	--
CH Cc 34	.11	13	--	0.090	7.8	8.0	2.5	1.30

Well number	Silica, dissolved (mg/L)	Specific conductance, field (µS/cm)	Specific conductance, laboratory, (µS/cm)	Sodium, dissolved (mg/L)	Dissolved solids residue at 180 deg. C, dissolved (mg/L)	Sulfate, dissolved (mg/L)	Tempera-ture, (deg. C)
CH Bc 75	22	306	322	68	214	7.7	19.5
CH Bc 80	16	593	627	150	378	7.8	21.3
CH Bd 52	34	425	443	98	278	8.4	20.3
CH Cc 34	38	373	381	85	244	9.0	21.4

Appropriation Permit CH95G023) and for private wells at Chapman's Landing (Permit CH93G029). The yearly average amounts appropriated are 0.16 Mgal/d and 0.39 Mgal/d for South Hampton and Chapman's Landing, respectively (Appendix D, Part II). In March 1997, South Hampton well 2 (CH Bc 78) was put into production. Average daily discharge based on monthly totals ranged from 0.045 to 0.19 Mgal/d for the period March 1997 through February 1998 (Charles County Department of Utilities, written commun., 1998). This pumpage is the first confirmed use of the upper Patuxent aquifer within the study area. Aside from water withdrawn during aquifer tests, the wells at Chapman's Landing (CH Bc 75 and CH Bc 77) have not been pumped.



EXPLANATION

Well or well field. Number next to symbol is the site identifier (see Appendix D)

● 9 lower Patapsco aquifer

○ 34 upper Patuxent aquifer

Figure 24. Locations of appropriated water use in 1997 greater than 10,000 gallons per day in the lower Patapsco and upper Patuxent aquifers.

WATER-SUPPLY POTENTIAL OF THE LOWER PATAPSCO AND UPPER PATUXENT AQUIFERS

The water-supply potential of the lower Patapsco and upper Patuxent aquifers was evaluated through a two-step process. First, the geohydrologic information (i.e., geohydrologic framework, hydraulic properties, and water levels) presented in the first part of this report was used to construct a three-dimensional, ground-water-flow model. Then, the calibrated flow model was used to estimate the water-supply potential of the two aquifers. The water-supply potential of the lower Patuxent aquifer was not evaluated since it functions only as a minor aquifer and, therefore, is not an important source for future supply. The effect on water levels from direct pumpage and from leakage across confining layers was also evaluated.

SIMULATION OF GROUND-WATER FLOW

Ground-water flow in the lower Patapsco aquifer and Patuxent aquifers was simulated using the U.S. Geological Survey's MODFLOW program, a three-dimensional, finite-difference ground-water-flow model code (McDonald and Harbaugh, 1988). The modeling process consisted of: (1) developing a conceptual flow model, (2) developing geohydrologic parameter arrays representative of the real system, (3) simulating water levels for (a) steady-state, prepumping conditions and (b) transient conditions for the period 1900 through 1997; geohydrologic parameter arrays were calibrated in an iterative process using estimated prepumping heads and measured water-level data from 1952 through 1997, and (4) simulating water levels for the period from 1998 to 2020 for selected pumping scenarios. The model area (fig. 1) in Maryland includes most of Charles County, northern Calvert and St. Mary's Counties, and southern Prince George's County. The model area also extends into the southern part of the District of Columbia and into Fairfax, King George, Prince William, and Stafford Counties in Virginia.

Conceptual Model

The first step in developing a digital representation of the ground-water-flow system is the construction of a conceptual model. The purpose of the conceptual model is to define, in general terms, the geohydrologic framework, direction of ground-water flow under pumping and non-pumping conditions, recharge and discharge areas, and boundary conditions. Cross-sectional schematics of the conceptual flow models for prepumping and current pumping conditions are shown in figure 25. The cross-sections extend midway through the model area from the Fall Line in Virginia southeast to St. Mary's County.

The principal aquifers of concern in this study include the lower Patapsco aquifer and Patuxent aquifers. The Patuxent aquifer was sub-divided into upper and lower units based on borehole geophysical evidence that shows two distinct sand zones throughout most of the study area. The lower Patuxent aquifer is underlain by low-permeability clay and saprolite which directly overlies either crystalline or sedimentary basement rocks. The lower Patapsco aquifer is overlain by a clay layer. This thick (up to 300 ft), low-permeability clay layer restricts the flow of water between the lower Patapsco aquifer and the shallower upper Patapsco aquifer. In the cross-sections shown in figure 25, the aquifers are shown as laterally continuous across the model area. Thinning beds, pinchouts, or vertical displacement of beds caused by faulting may, however, locally disrupt the lateral continuity of the aquifers. Aquifer tests on wells CH Bc 75 and CH Bc 78, screened in the upper Patuxent aquifer, indicated the presence of a flow barrier or boundary that reduced the amount of recharge flowing to the wells from the outcrop (recharge) area. The presence of a boundary in the upper Patuxent aquifer suggests a more complex flow system than is presented in the conceptual model.

Under prepumping conditions, water enters the outcrop areas (recharge areas) of the lower Patapsco and upper and lower Patuxent aquifers as precipitation and flows downdip in a southeasterly direction. The recharge areas for these aquifers within the model area are located mostly in the Coastal Plain part of northern Virginia and southern Washington, D.C.. The general patterns of ground-water-flow were based on topographic relief and prepumping head distributions simulated by two

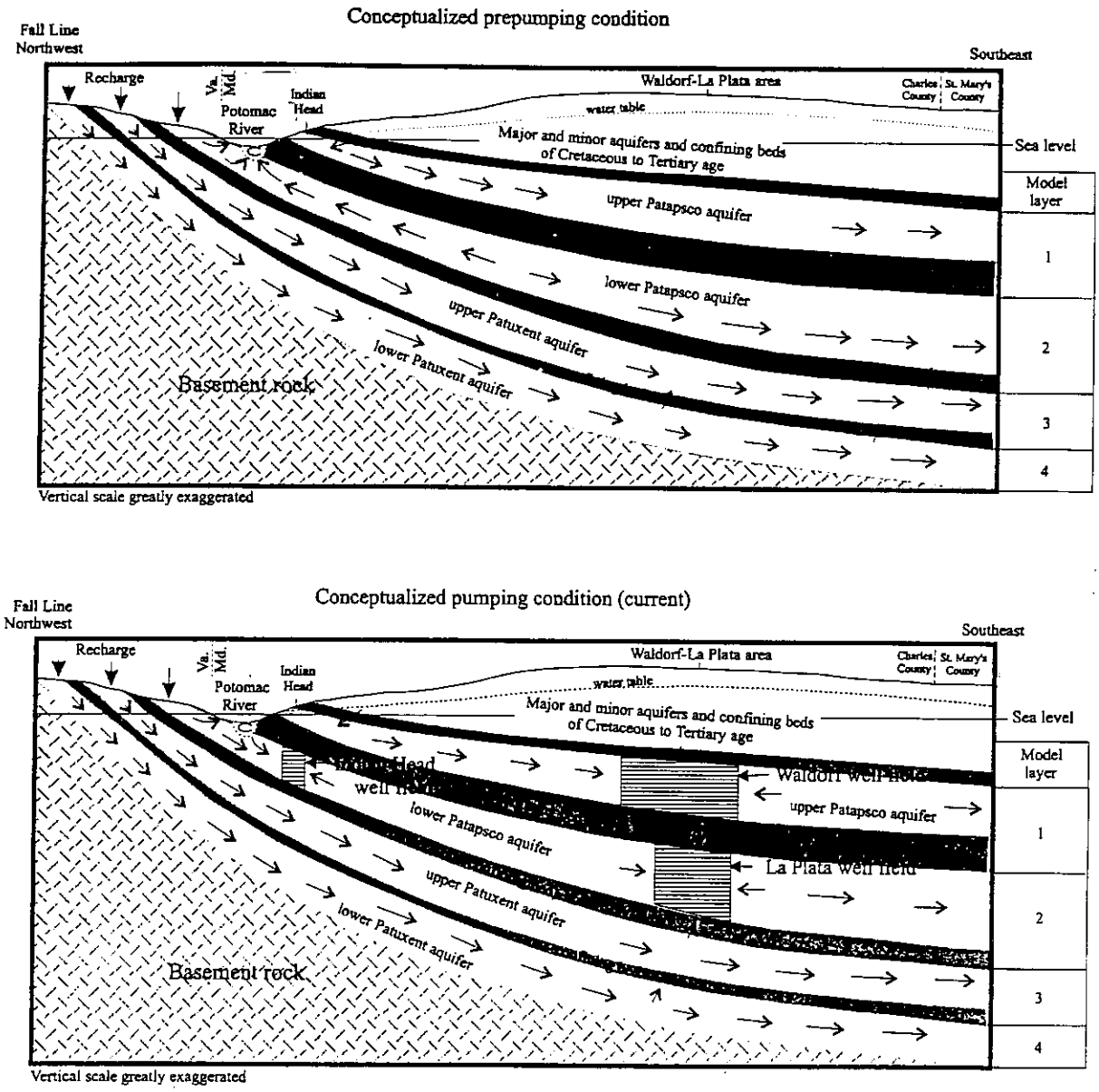


Figure 25. Conceptual ground-water-flow model.

regional ground-water-flow models (Harsh and Laczniak, 1990; Fleck and Vroblesky, 1996). Within the recharge areas some water is captured by tidal and non-tidal Potomac River tributaries. Water from recharge (outcrop) areas located outside of the model area enters along the northeastern and southwestern sides of the model in both the Patuxent aquifers and lower Patapsco aquifer. Ground water discharges to the Potomac River in the updip areas or flows downdip. Flow in the confined or artesian part of the ground-water system is predominantly horizontal due to relatively low vertical head gradients between aquifers and low vertical hydraulic conductivity of the confining beds.

Ground-water flow within the model area is altered with the introduction of pumping wells. To illustrate the effect of pumping on the current flow system, pumping centers in the upper and lower Patapsco aquifers at Indian Head, Waldorf and La Plata were projected onto the cross-section shown in figure 25. In the vicinity of the pumping centers, horizontal ground-water-flow rates are increased and flow paths are altered towards pumping centers. Increased vertical head gradients associated with pumping in the vicinity of Waldorf and La Plata causes some vertical flow between the upper and lower Patapsco aquifers; however, the magnitude of vertical flow is low because of the presence of a thick, low-permeability confining layer separating the aquifers. Vertical flow from the upper Patuxent aquifer to the lower Patapsco aquifer occurs where the aquifers are hydraulically connected through unusually thin or sandy zones in the Arundel Clay. Pumping in the lower Patapsco aquifer near the Potomac River induces flow from the Potomac River. Recharging river water enters the lower Patapsco aquifer through its subcrop under Occoquan Bay or through channeling in the overlying confining bed. The presence of elevated chloride concentrations in well water sampled in the Indian Head area near the brackish Potomac River indicates that the lower Patapsco aquifer is recharged in part by the Potomac River (Hiortdahl, 1997).

Grid Design and Model Layers

The model area was discretized into a grid containing 6,696 cells (93 rows and 72 columns) (fig. 26). Cell dimensions are irregular, with the smallest cells (measuring 1,000 x 1,000 ft) placed in the study area. The northwestern edge of the model coincides approximately with the Fall Line. The model area measures approximately 41 x 32 mi. The model consisted of four layers, representing, from top to bottom: layer 1—upper Patapsco aquifer southeast of the Potomac River, and the outcrop or recharge areas of the lower Patapsco and upper and lower Patuxent aquifers northwest of the Potomac River; layer 2—lower Patapsco aquifer; layer 3—upper Patuxent aquifer; and layer 4—lower Patuxent aquifer (fig. 27). Model cells in layers 2 to 4 were active; that is, the model solved for head in these layers, whereas heads in model layer 1 were specified. Model layers 2 to 4 were treated as confined aquifers with transmissivity constant through time.

Boundary Conditions

The types of boundaries used in the model include no-flow boundaries, constant-head boundaries, and general-head boundaries. No-flow (inactive) cells were assigned at the base of layer 4 to represent the contact between the lower Patuxent aquifer and the low permeability clay and saprolite overlying the basement rocks (fig. 27). No-flow cells were also assigned in layers 1, 2, 3, and 4 to represent the approximate updip extent of the upper Patapsco, lower Patapsco, upper Patuxent, and lower Patuxent aquifers (fig. 26).

The outcrop or recharge areas, where water-table conditions prevail in the upper and lower Patuxent and lower Patapsco aquifers, function as a boundary. This recharge boundary was represented in model layers 2 to 4 by placing constant-head cells set to an approximate water-table altitude in model layer 1 and assigning high vertical leakance to the confining bed overlying each aquifer in its outcrop area. The use of constant-head cells to represent the water table is justified because the water table does not fluctuate significantly. The constant-head boundary in layer 1 and the direct hydraulic connection between layer 1 and layers 2 to 4 provides an infinite source of water. The water-table altitude was estimated from the altitude of land surface and was not varied during transient simulations. Outcrop areas are only generally located because of the difficulty in differentiating between aquifer units at the surface. Constant-head cells (sea-level altitude) were assigned to layer 1 in areas where the lower Patapsco aquifer and Patuxent aquifers subcrop beneath the Potomac

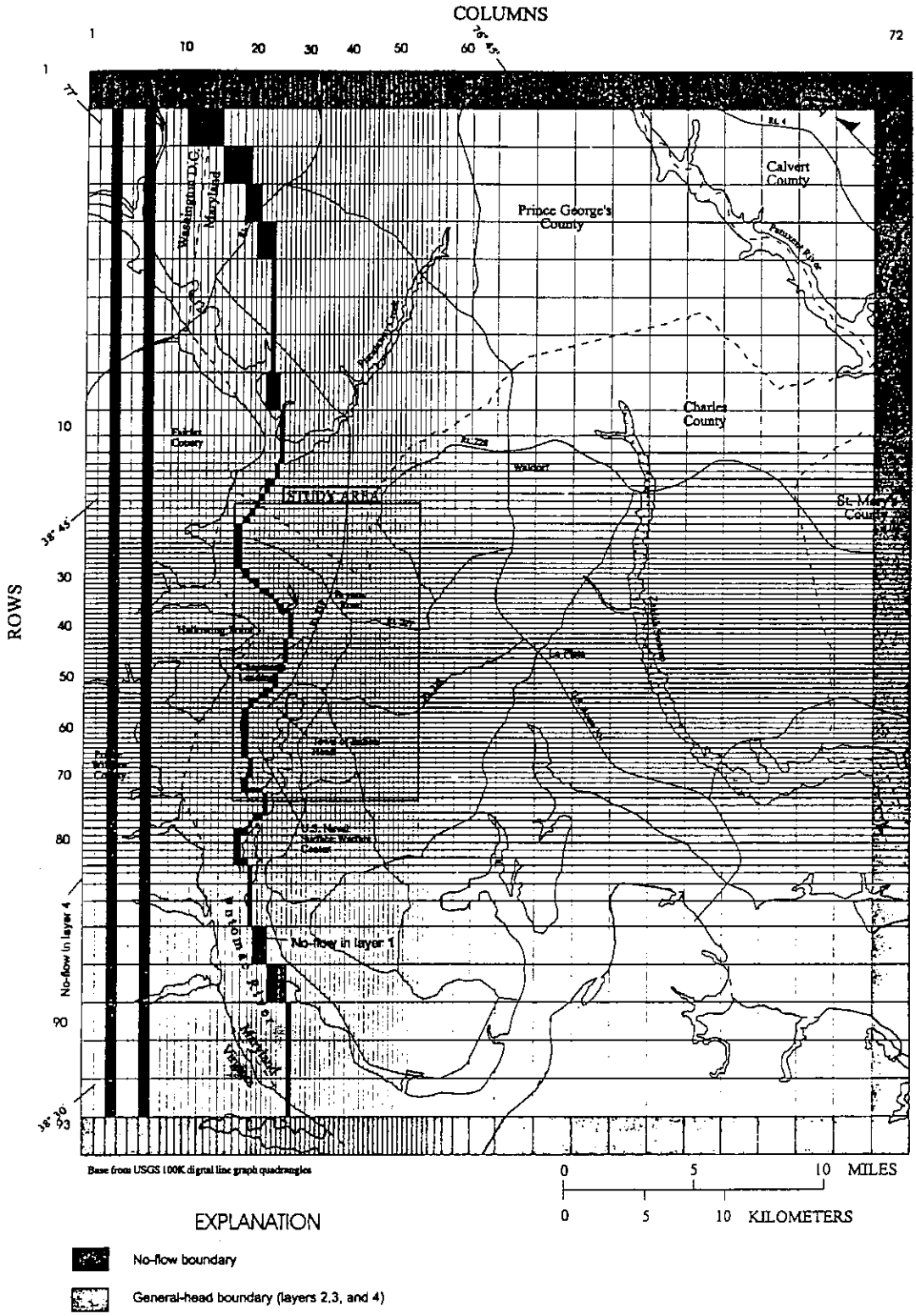


Figure 26. Grid and boundary conditions used in the finite-difference ground-water-flow model.

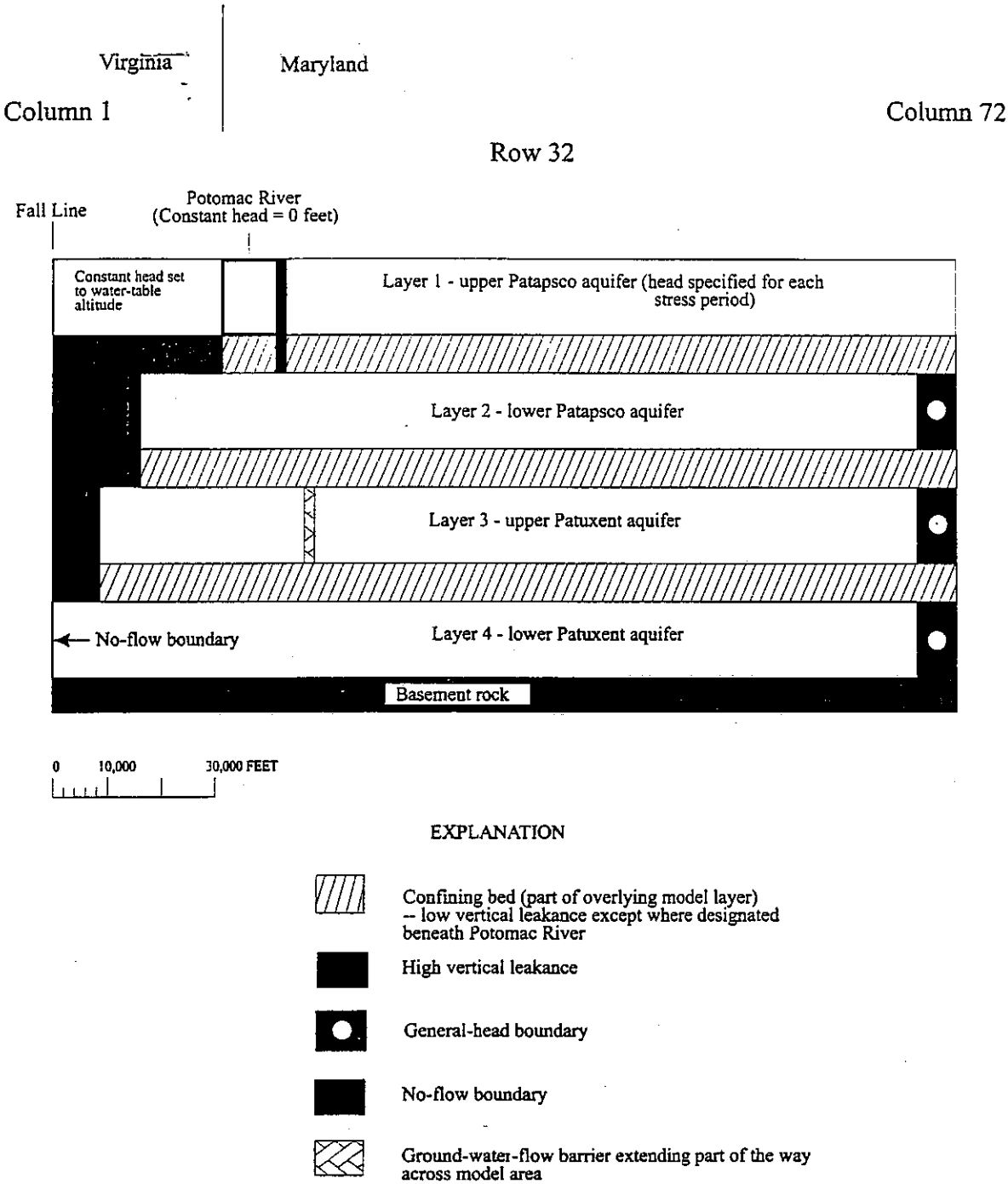


Figure 27. Generalized cross-section along model row 32.

River and its tributaries. Further discussion of the recharge boundary is given in the subsequent section entitled "Recharge".

Specified-head cells (cells held at a constant-head value for each stress period) in the transient model simulations were assigned in layer 1 to represent water-level fluctuations in the upper Patapsco aquifer. In the steady-state simulation, constant-head cells represent estimated, prepumping water levels in the upper Patapsco aquifer.

The northeastern, southeastern, and southwestern sides of the model lack natural flow boundaries. To simulate flow in those areas, general-head boundaries were used in model layers 2, 3, and 4. A general-head boundary allows the flux across the boundary to vary as a function of the head gradient. Flow into or out of a cell containing the boundary is proportional to: (1) the difference between the simulated head in the cell and the head assigned to an external specified-head source, and (2) the hydraulic conductance between the cell and the source (McDonald and Harbaugh, 1988). Heads assigned to the general-head boundary were adjusted during the transient simulation (1900-97) to represent temporal changes in head outside the model area.

A ground-water flow-barrier in the upper Patuxent aquifer (layer 3), surmised from aquifer tests of wells CH Bc 75 and CH Bc 78, is simulated in the model. The effect of the barrier on the ground-water system is a reduction in flow from the recharge area. This barrier is represented by a line of low horizontal hydraulic conductivity (1×10^{-9} ft/d) in model layer 3. It is simulated in the model as approximately 10 mi long and is positioned roughly parallel to the Fall Line. The barrier is located about 1.2 mi from well CH Bc 75 (Chapman's Landing well 2). The location, extent, and horizontal hydraulic conductivity of the barrier were determined during transient model calibration. In the model, the barrier is restricted to layer 3 and in this regard is more representative of a lithologic change within the aquifer than bed offset caused by faulting. At present, comparable geohydrologic evidence for a barrier is lacking for model layers 2 (lower Patapsco) and 4 (lower Patuxent), although future investigations could reveal its presence.

Recharge

Little information is available on recharge rates to the lower Patapsco aquifer and Patuxent aquifers in the model area. The recharge areas of these aquifers are mainly located in a combined urbanized and wooded area between the Potomac River and the Fall Line in Virginia. Many variables control the amount of recharge entering the aquifers. Some of these variables include, (1) the amount of infiltration to the water table from precipitation versus runoff—highly urbanized areas tend to increase runoff and decrease infiltration, (2) vertical permeability of the unsaturated sediments, (3) the amount of water discharged to streams, and (4) ground-water withdrawals—in particular, consumptive use. A study by McFarland (1997) estimated recharge rates for Potomac Group aquifers outcropping in an area south of Richmond, Virginia. This area has both geohydrologic and land-use characteristics similar to those in the Coastal Plain area in northern Virginia. McFarland (1997) estimated that total recharge to the unconfined aquifer in the Fall Zone equaled 10 inches per year (in./yr) under steady-state conditions. Of that amount, 0.5 in./yr recharged the deep, confined aquifers in downgradient areas. Recharge estimates were based on results from a ground-water-flow model.

Recharge to model layers 2, 3, and 4 from precipitation enters the model through approximated outcrop areas of the lower Patapsco aquifer and Patuxent aquifers. These areas were assigned in the model as uniformly wide bands lying parallel to the northwestern side of the model (Fall Line) and located approximately within the area mapped as Potomac Group outcrop in Virginia (Cooke and Cloos, 1951; Mixon and others, 1989) (fig. 1). Initially, recharge was specified as a constant flux (approximately 0.5 in./yr); however, this resulted in excessive drawdown in the predictive scenario that simulated maximum yield in the upper Patuxent aquifer. Because additional recharge could not be induced by a decline in head along the boundary, drawdown accelerated as the outwardly migrating cone-of-depression reached the recharge area. To correct this problem, the recharge boundary was

converted to a head-dependent flux boundary. As described earlier, heads assigned to model layer 1 in the recharge areas of the upper and lower Patuxent and lower Patapsco aquifers approximated the water-table altitude. The amount of recharge entering model layers 2, 3, and 4 was controlled by the vertical head gradient and the vertical leakance between those layers and layer 1. Vertical leakance was adjusted during calibration of the steady-state, prepumping simulation such that recharge rates equaled 0.01, 0.01, and 0.05 in./yr for the lower Patapsco, upper Patuxent, and lower Patuxent aquifers, respectively. Recharge is greater in model layer 4 because less flow is captured by the Potomac River. Recharge rates under 1997 pumping conditions simulated in the model equaled 0.67, 0.05, and 0.05 in./yr for the lower Patapsco, upper Patuxent, and lower Patuxent aquifers, respectively. Under pumping conditions, the lower Patapsco aquifer (model layer 2) is also recharged from the Potomac River through its subcrop where it crosses the river and through paleochannels that have breached the overlying confining bed.

Hydraulic Parameters

Transmissivity and Storage Coefficient

Transmissivity arrays were developed for input into the ground-water-flow model. Values for the lower Patapsco and upper Patuxent aquifers were initially assigned to each model cell based on distributed values of transmissivity calculated by aquifer test (figs. 13 and 14). In the case of the lower Patuxent aquifer, where only one aquifer-test data point exists (CH Bc 80), the transmissivity array was developed by multiplying the horizontal hydraulic conductivity determined from that aquifer test by the aquifer thicknesses. Transmissivity values assigned to areas lacking aquifer-test data are highly generalized. The data arrays for each layer were adjusted during model calibration.

The calibrated transmissivity array in layer 2 (lower Patapsco aquifer) ranges from approximately 0 to 3,000 ft^2/d (figure 28). Transmissivity was greatest in the southeastern area of the Indian Head peninsula and in southern Prince George's County. As the aquifer thins toward the outcrop area (northwest) the transmissivity decreases. Transmissivity assigned to layer 3 (upper Patuxent aquifer) ranges from approximately 0 to 2,000 ft^2/d (fig. 29). Values are greatest in the area of the Chapman's Landing test site and decrease in all directions from that location. Transmissivity decreases sharply across the simulated flow boundary. The range of values for calibrated transmissivities in layers 2 and 3 fall within the range of aquifer transmissivities determined from aquifer tests (tabs. 2 and 3). The modeled transmissivity in layer 4 (lower Patuxent aquifer) ranges from 0 to 500 ft^2/d.

Storage coefficient assigned in the model was determined during calibration. In model layer 2, storage coefficient was 2×10^{-4} throughout most of the layer, except in the vicinity of La Plata where the value was 5×10^{-4}. In model layers 3 and 4, storage coefficient was 2×10^{-4} and 7×10^{-5}, respectively, throughout most of the layer. In the vicinity of the Chapman's Landing test site, storage coefficient was 6×10^{-4} and 9×10^{-5} for model layers 3 and 4, respectively.

Vertical Leakance

Leakance values used in the model for the confining beds overlying the following aquifers were: the lower Patapsco aquifer, 10^{-8} cubic feet per day per cubic foot (1/d), the upper Patuxent aquifer, 9×10^{-7} to 1×10^{-10} 1/d, and the lower Patuxent aquifer, 10^{-6} 1/d. These values are consistent with those used by Mack and Achmad (1986) in a flow-modeling study of Potomac Group aquifers in Anne Arundel County, approximately 20 mi north of the model area.

Leakage between model layers 2 and 3 (lower Patapsco and upper Patuxent aquifers) varies across the model area. Leakance was increased in the vicinity of Waldorf, in the southern part of the model area near the Potomac River, and in southern Prince George's County. These areas were chosen based on declining water levels in the upper Patuxent aquifer which correlate with increasing pumpage in the lower Patapsco aquifer. Leakage was also increased in the vicinity of the test well at the Mattawoman Waste-Water Treatment Plant to account for the lower water level measured in that well relative to water levels measured in other wells screened in the upper Patuxent aquifer within the study area.

Leakage was simulated between the upper and lower Patuxent aquifers based on results of a 5-day

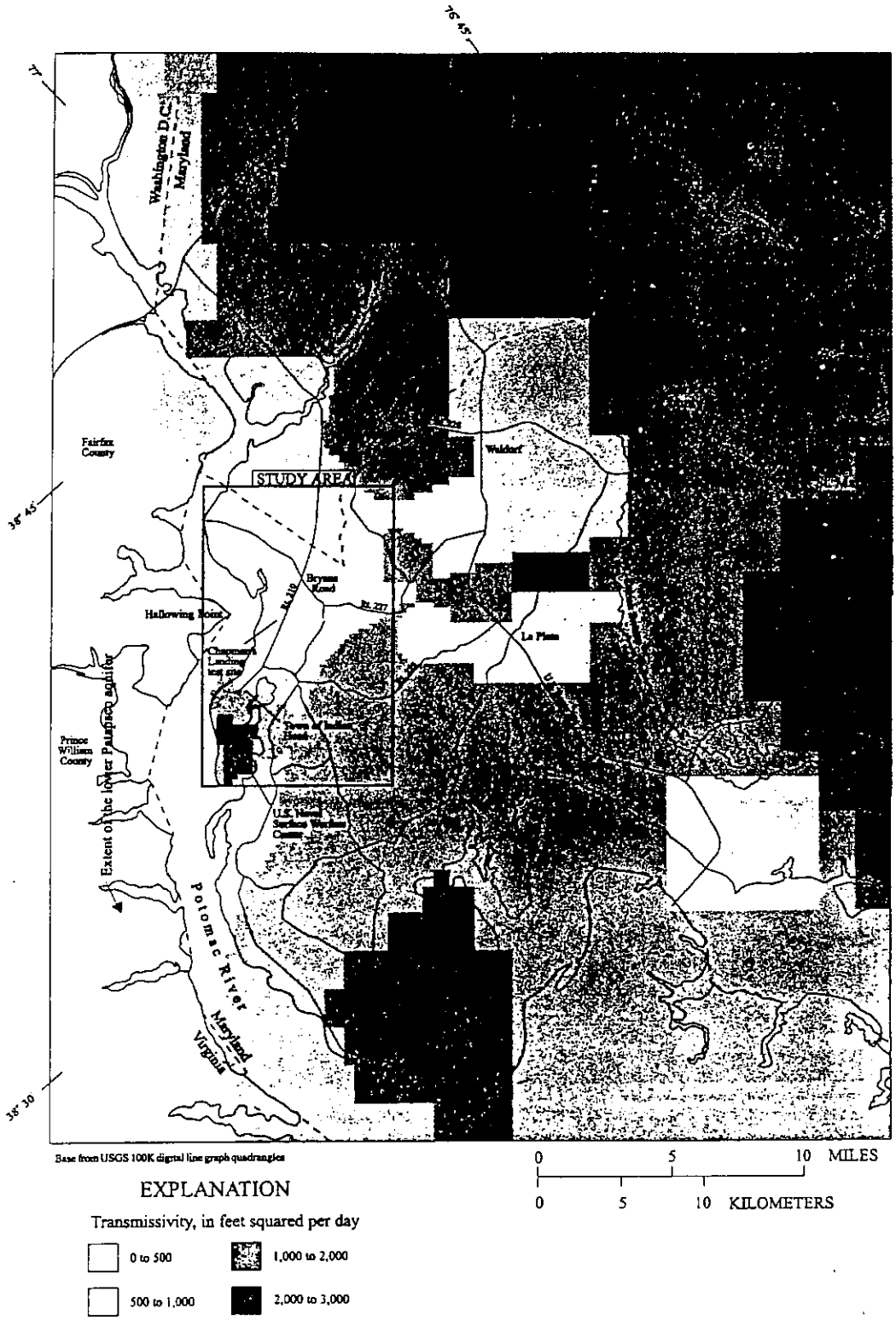


Figure 28. Transmissivity zones assigned to model layer 2.

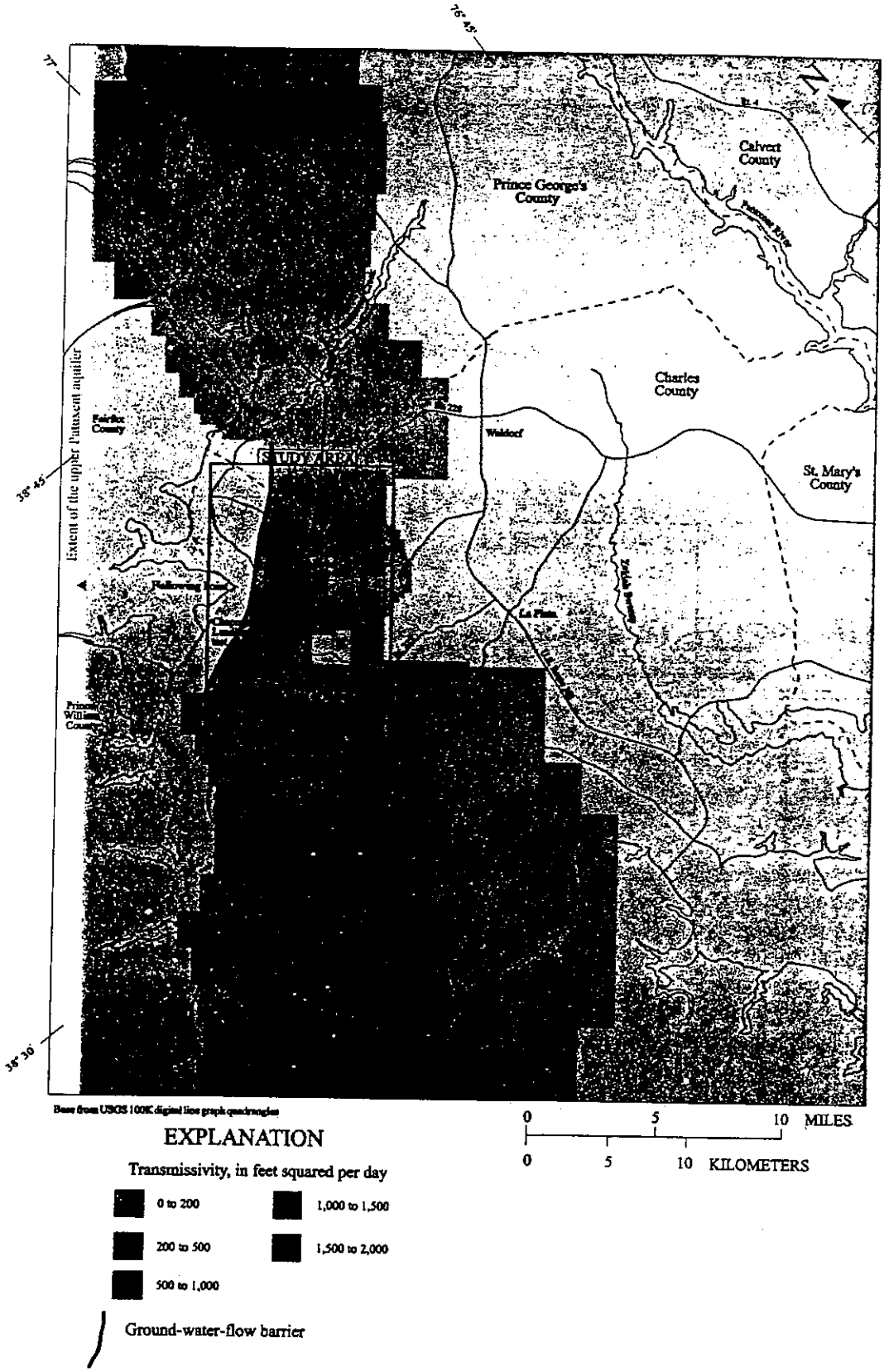


Figure 29. Transmissivity zones assigned to model layer 3.

aquifer test. The test showed a 1-foot decline in water levels in the lower Patuxent aquifer associated with pumping from the upper Patuxent aquifer. Leakance in the confining layer overlying the lower Patuxent aquifer was determined during calibration of the transient ground-water-flow model.

Pumpage

Individual ground-water withdrawals exceeding 10,000 gallons per day (gal/d) from the lower Patapsco aquifer along with estimates of domestic, self-supplied use was input to the model. Total simulated pumpage in model layer 2 (lower Patapsco aquifer) in 1997 in the model area was 5.7 Mgal/d. Total simulated pumpage in model layer 2 in the Indian Head-Bryans Road area was 1.8 Mgal/d in 1997. Simulated pumpage from domestic wells (included in the total) in layer 2 was estimated at 0.16 Mgal/d in the Indian Head-Bryans Road area, based on approximately 550 wells screened in the lower Patapsco aquifer. An average pumping rate of 300 gal/d was assumed and the number of domestic wells was estimated from screen depths of wells completed between 1970 and 1992 (Maryland Department of the Environment, per. commun., 1998).

The only known ground-water pumpage from the upper Patuxent aquifer in 1997 is located at South Hampton. The yearly average withdrawal rate at South Hampton of 0.094 Mgal/d from well CH Bc 78 was input to layer 3 of the model.

Steady-State Flow Simulation

Prior to simulating transient ground-water-flow, a steady-state, prepumping condition was simulated. This is a condition under which inflow is balanced by outflow such that heads and the volume of water in storage are constant. Head output from the steady-state, prepumping simulation is used for the initial-head condition in the transient simulation. Head conditions for the period prior to the start of pumping in the lower Patapsco aquifer (pre-1900) were imposed for the steady-state simulation. Water-level data for this period are lacking; therefore, the model was calibrated to a conceptualized pattern of ground-water flow and head distribution developed by two regional ground-water-flow models of the Potomac Group aquifers (Harsh and Laczniak, 1990; Fleck and Vroblesky, 1996). Transmissivity, horizontal hydraulic conductance and head along the general-head boundaries, vertical leakance, and recharge controlled by vertical leakance in the outcrop areas were adjusted during calibration.

Simulated prepumping, steady-state heads in model layer 2 (lower Patapsco aquifer) ranged from approximately 60 ft above sea level in the northern part of the model area near Washington, D.C. to sea level at the Potomac River near the Indian Head peninsula (fig. 30). The simulated prepumping, steady-state heads in model layer 3 (upper Patuxent aquifer) ranged from approximately 45 ft above sea level near Washington, D.C. to less than 10 ft above sea level along Potomac River tributaries in Prince William County, Virginia and in the south-southeastern part of the model area (fig. 30). Simulated prepumping, steady-state heads in model layer 4 (lower Patuxent aquifer) were similar to heads in layer 3.

Transient-Flow Simulation

Initial Conditions and Time Discretization

Heads from the calibrated prepumping, steady-state flow simulation were used for the starting heads for the transient-flow simulation (1900-97). The hydraulic parameter arrays and boundary conditions used in the calibrated prepumping, steady-state flow simulation were used initially in the transient simulation, then adjusted during model calibration. Recharge to model layers 2, 3, and 4, which is controlled by both vertical leakance and head gradients beneath the outcrop areas, equaled 0.01, 0.01, and 0.05 in./yr, respectively, at the start of the transient simulation.

Time was discretized into 129 stress periods. The length of the stress periods varied from 10 years to 1 day as shown in table 5. The stress periods were composed of either one or two time steps. The model solves a set of ground-water-flow equations and produces head output at the end of each time step. Stress-period duration was shortened after 1975 because yearly pumpage data was reported after that time. Also, more frequent water-level data are available to calibrate the model after 1975. One-day stress periods were simulated between August and October 1997 so that daily pumpage data in the upper

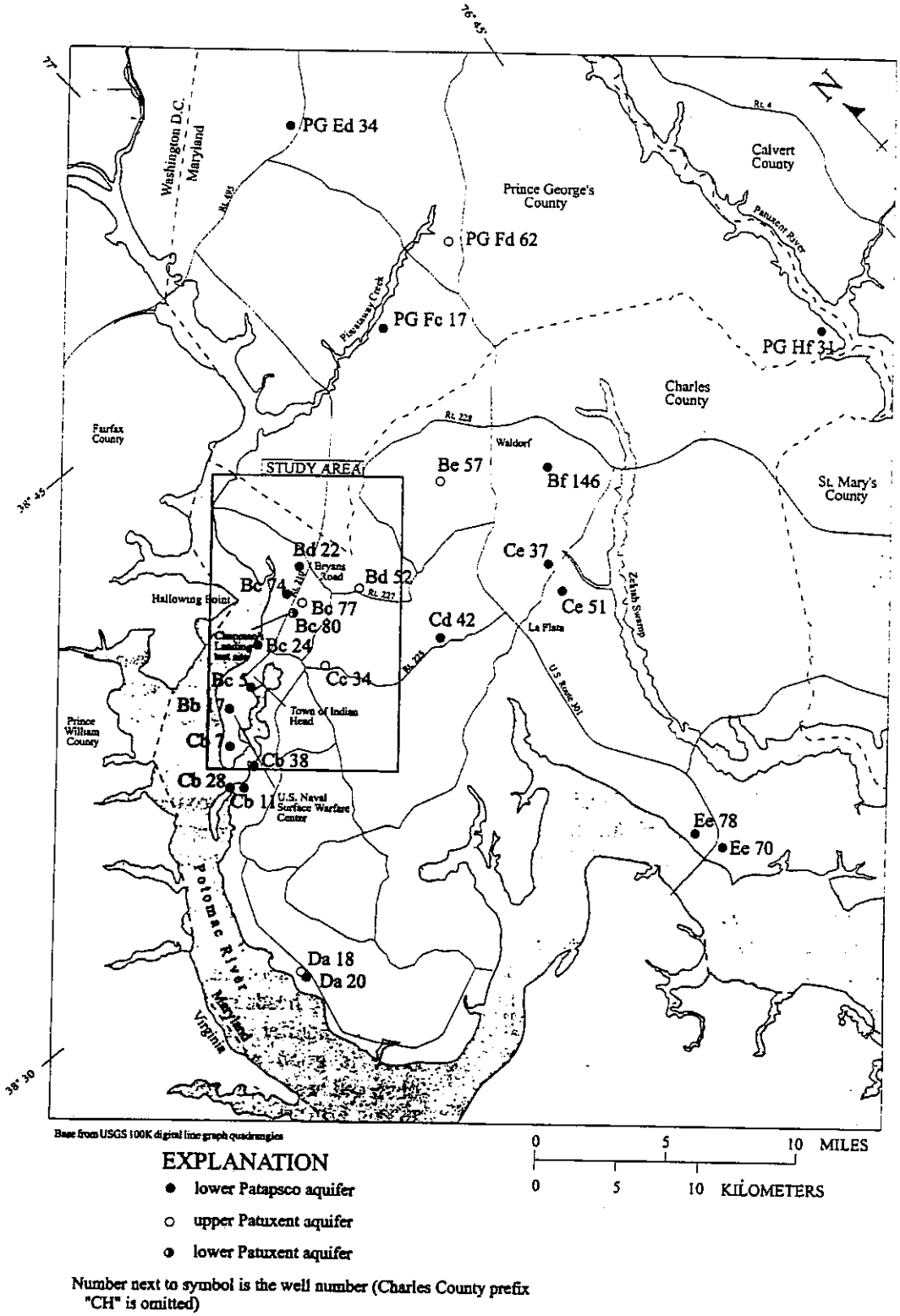


Figure 31. Location of wells used in model calibration.

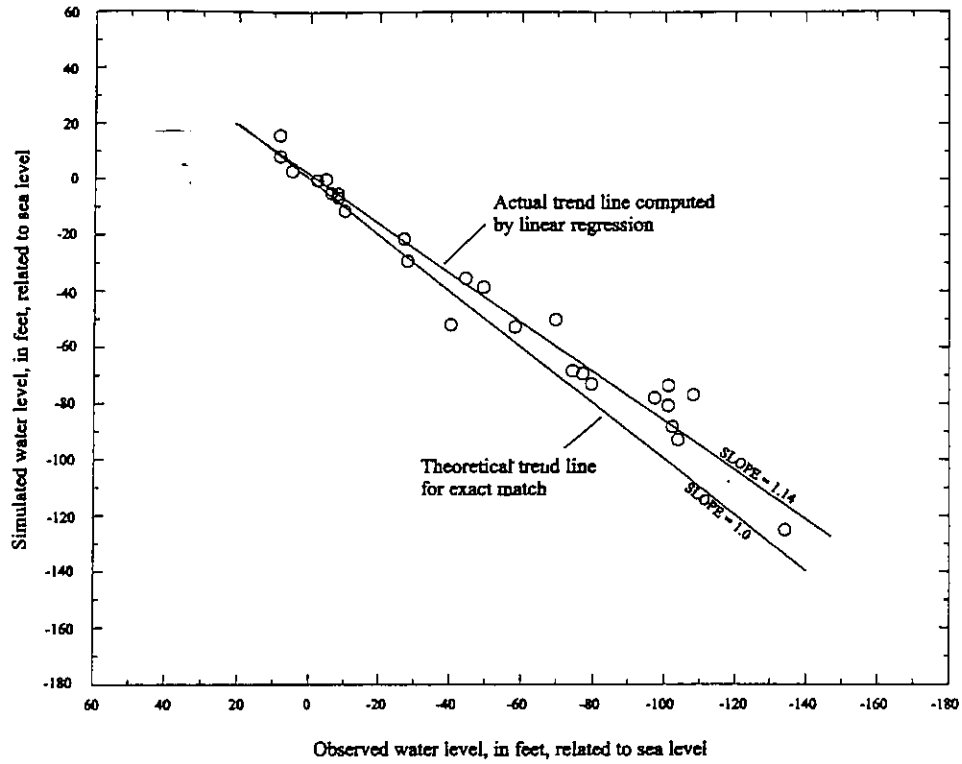


Figure 32. Relation between observed and simulated water levels in the lower Patapsco aquifer for December 1997.

Mass Balance

The mass balance was calculated at the end of the transient simulation (stress period 129 or December, 1997). Total inflow to the confined part of the lower Patapsco and upper and lower Patuxent aquifers in model layers 2, 3, and 4, respectively, equaled 8.38 x 10^5 cubic feet per day (ft^3/d). This inflow was divided as follows: general-head boundaries along the northeastern, southeastern, and southwestern sides of the model, 5.1 x 10^5 ft^3/d (or 61 percent); outcrop area and Potomac River, 2.85 x 10^5 ft^3/d (or 34 percent); storage, 3.48 x 10^4 ft^3/d (or 4.1 percent); and leakage from layer 1 (upper Patapsco aquifer), 8.1 x 10^3 ft^3/d (or 0.97 percent). Total outflow was balanced against total inflow. Total outflow from the confined part of the lower Patapsco and upper and lower Patuxent aquifers was divided as follows: wells (layers 2 and 3), 7.7 x 10^5 ft^3/d (or 91.8 percent); general-head boundaries along the northeastern, southeastern, and southwestern sides of the model, 5.5 x 10^4 ft^3/d (or 6.6 percent); outcrop area, 1.21 x 10^4 ft^3/d (or 1.4 percent); and, storage, 1.94 x 10^3 ft^3/d (or 0.2 percent).

Recharge entering model layer 2 from the Potomac River accounted for 12.3 percent of the total inflow to that layer. The majority of this recharge entered from the subcrop area of the lower Patapsco aquifer under Occoquan Bay and from an adjacent area of the Potomac River. The Patuxent aquifers were not recharged by the Potomac River.

Sensitivity Analysis

An analysis was conducted to determine the sensitivity of model performance to changes in the input parameters. It is particularly important to estimate accurately those parameters that can result in relatively large errors in simulated head, if incorrectly assigned. The following model parameters were evaluated by globally increasing and decreasing

(Text continued on p. 59.)

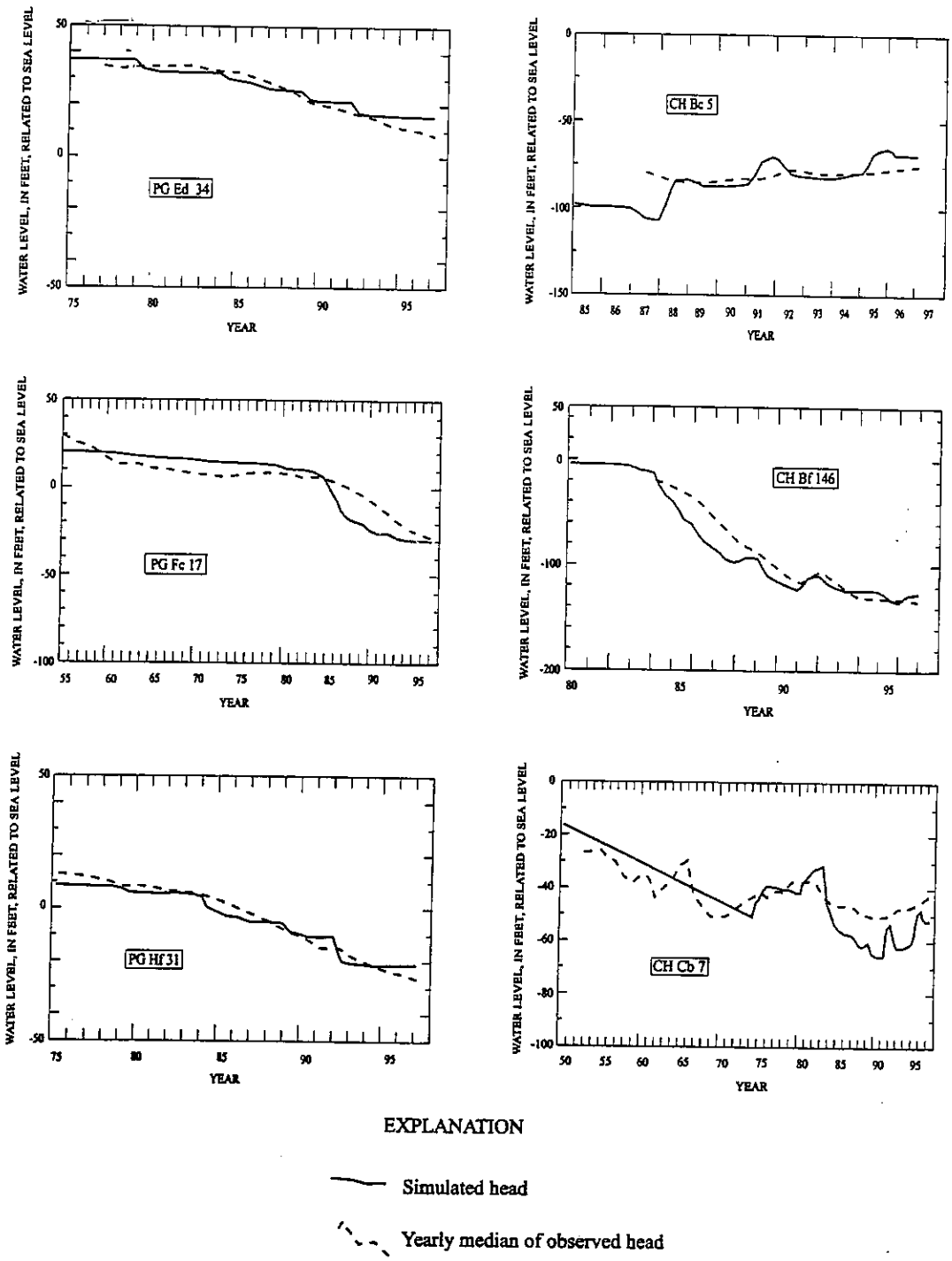


Figure 33. Measured and simulated heads in the lower Patapsco aquifer in Charles County and Prince George's County, 1950 to 1997.

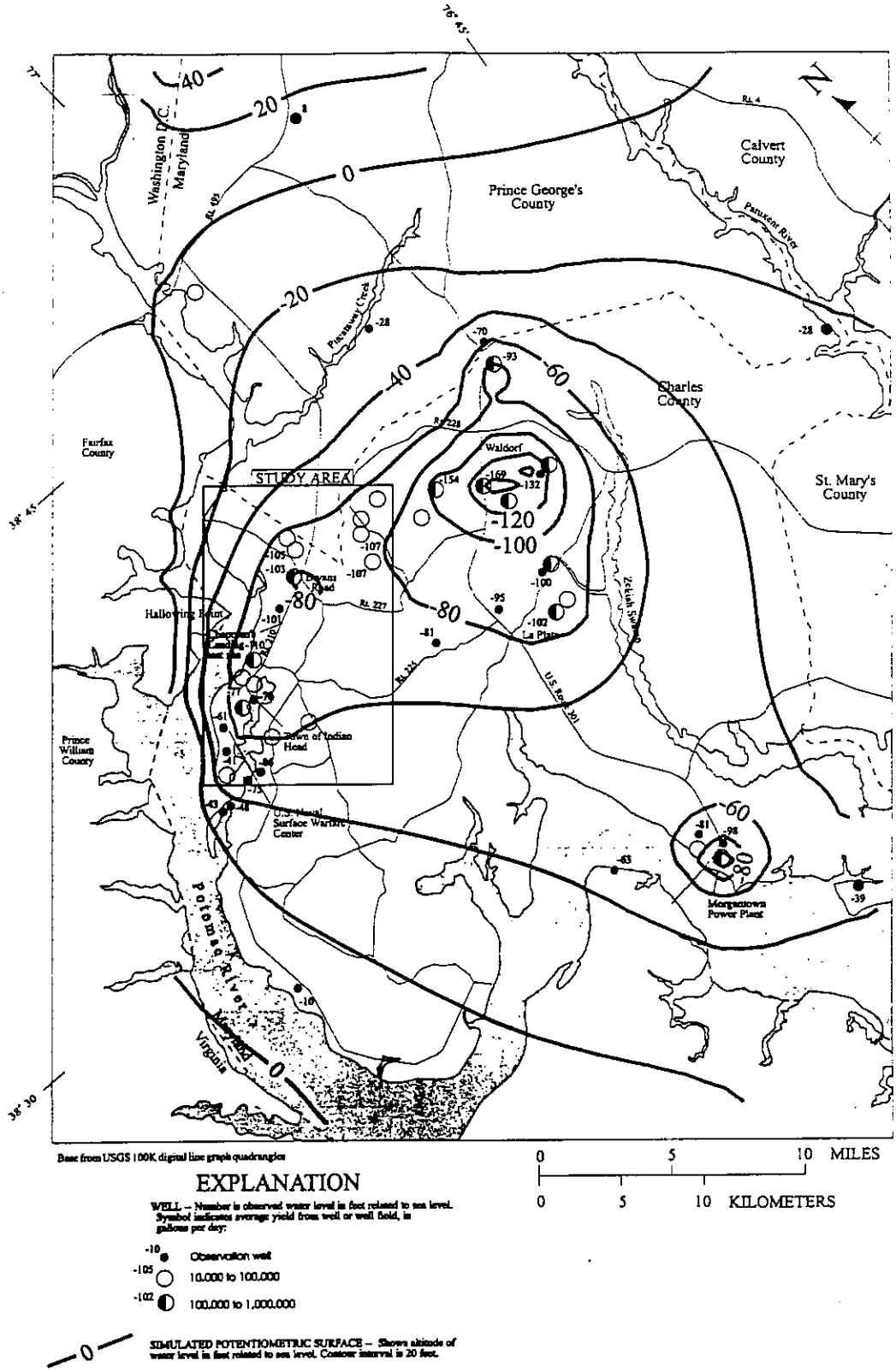


Figure 35. Simulated potentiometric surface and measured water levels in model layer 2 for 1997.

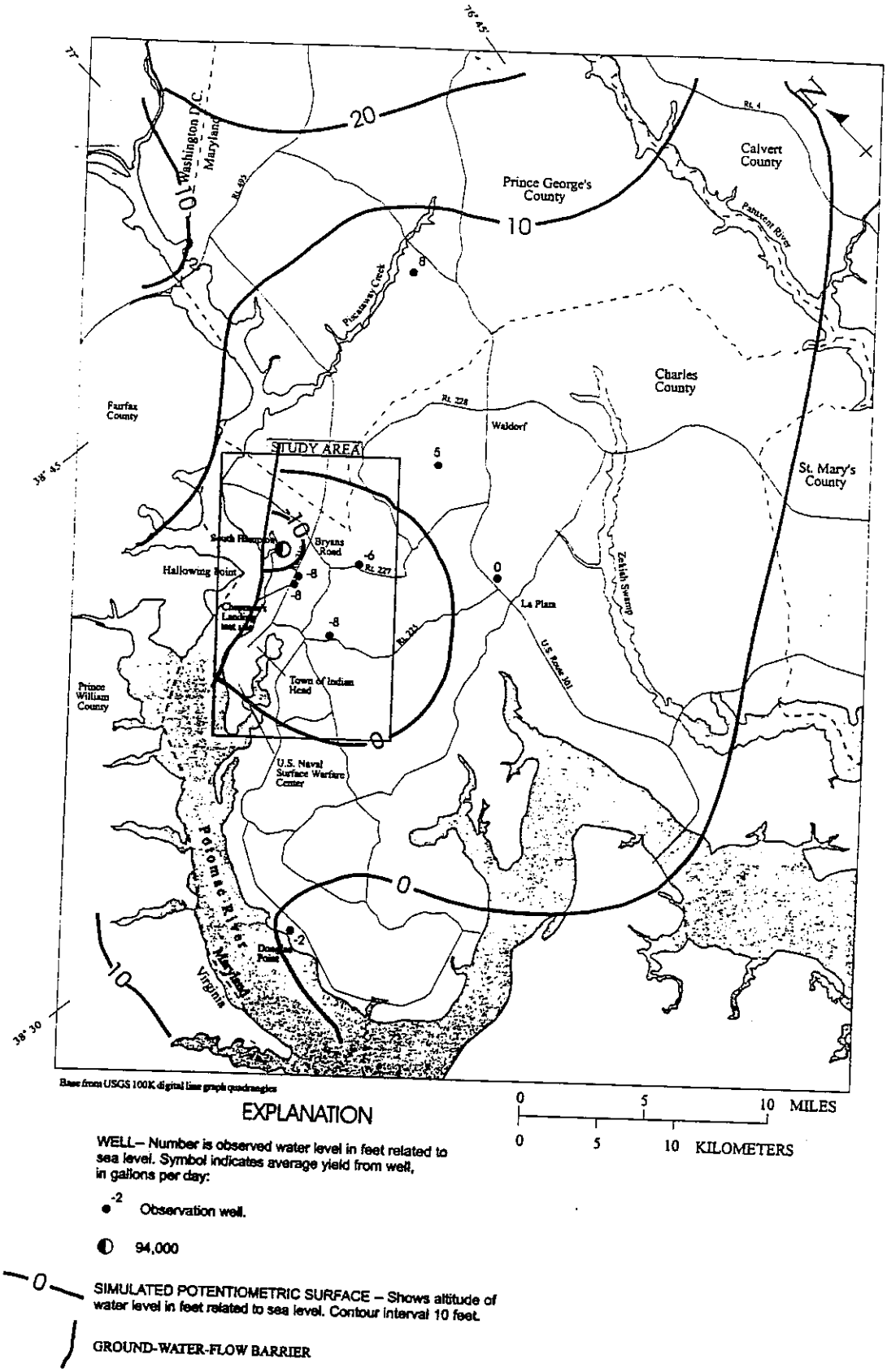


Figure 37. Simulated potentiometric surface and measured water levels in model layer 3 for 1997.

same model to predict future conditions, however, can only be verified by comparing observed conditions to simulated conditions at the end of the simulation period. Model performance can be evaluated and improved at intermediate steps as more data on water-level trends and pumpage become available. This is particularly important in the case of the upper Patuxent aquifer because no long-term pumpage has occurred in the model area to establish a cause-and-effect relation between pumping and water-level decline.

The observation-well network, established during this study, provides a basis to evaluate the accuracy of the future water-level conditions predicted by the model.

CONCLUSIONS

The findings discussed in this report address the following project objectives:

(1) Define the geohydrologic framework of the lower Patapsco aquifer and Patuxent aquifers in northwestern Charles County with an emphasis on the Indian Head-Bryans Road area: Based on geophysical logs, drill cuttings, and core samples from existing wells and from test wells drilled during the study, the lower Patapsco and upper Patuxent aquifers are separated by a confining bed (Arundel Clay) that ranges in thickness from 55 to 120 ft and chiefly consists of dense, red, purple, and brown clay. The upper Patuxent aquifer consists of layers of fine to coarse sand separated by layers of dense green clay. The transmissivity of the lower Patapsco and upper Patuxent aquifers ranges from 190 to 3,500 ft^2/d and 104 to 2,600 ft^2/d, respectively. These data indicate that the productivity of the upper Patuxent aquifer is low to moderate. In comparison, the lower Patapsco aquifer is a more transmissive aquifer, although constrained in the study area by less available drawdown. The lower Patuxent aquifer is less transmissive at the one site tested (80 ft^2d);

(2) Establish an observation-well network in the lower Patapsco aquifer and Patuxent aquifers: A network of 42 observation wells was established with 32 in the lower Patapsco aquifer, 9 in the upper Patuxent aquifer, and 1 in the lower Patuxent aquifer. The network should be monitored periodically in the future to determine the effect of pumping on water levels and to evaluate ground-water-flow model predictions;

(3) Assess the geohydrologic characteristics of the lower Patapsco aquifer and Patuxent aquifers and evaluate quantitatively: (a) the amount of drawdown in the lower Patapsco aquifer as a result of lower Patapsco pumpage outside the Indian Head-Bryans Road area: Water levels may decline by as much as 50 to 60 ft in the vicinity of Bryans Road between 1997 and 2020 and approximately 20 ft at the Town of Indian Head; *(b) the supply potential of the lower Patapsco and upper Patuxent aquifers within the Indian Head-Bryans Road area*: The lower Patapsco aquifer has reached its maximum supply capacity in the updip areas near the Potomac River. Further development of this aquifer, however, could be located downdip (southeast) of the Indian Head-Bryans Road area and include a reduction in pumpage in the updip areas. A total of 2.6 Mgal/d could be withdrawn from the lower Patapsco aquifer, if 0.5 Mgal/d is shifted to the southeast of the Indian Head-Bryans Road area. The upper Patuxent aquifer is capable of supplying approximately 3.4 Mgal/d before the drawdowns reach 80-percent management level. At this withdrawal rate, water levels as deep as 650 ft below sea level may occur in production wells; *(c) the potential for redirecting existing use of the lower Patapsco aquifer into the upper Patuxent aquifer*: The upper Patuxent aquifer has sufficient capacity to meet current demand in the Indian Head-Bryans Road area (approximately 2 Mgal/d) now being supplied by the lower Patapsco aquifer in the study area; however, this would reduce the amount of water available from the upper Patuxent aquifer for future development; and

(4) Determine the water quality of the Patuxent aquifers: Ground water from the upper and lower Patuxent aquifers is a sodium bicarbonate type with comparatively low concentrations of dissolved solids (214 to 378 mg/L). All reported levels for dissolved constituents are within the recommended limits set by the U.S. Environmental Protection Agency.

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Appendix A. Selected well records--Continued

Well number	State permit number	Owner or location	Driller	Com-ple-tion year	Altitude of land surface (ft)	Total depth drilled (ft)	Diameter (in.)		Screen position (ft below land surface)	Aquifer	Water level (ft below land surface)		Date measured (m-d-y)	Yield (gal/min) (date)	Hours pumped	Specific capacity (gal/min/ft)
							Casing	Screen			Static (date)	Pumping				
CH Ff 62	CH-81-1970	Swan Point	Sydnor Hydrodynamics, Inc.	1986	12	1010	18, 10, 6	6	698-723 798-808 819-824 838-848 856-866 873-878 914-944 954-959 965-980	Lppsc	27	93	11-20-86	525	24	8.0
PG Eb 1	--	WSSC, Forest Heights, Well 1	Layne-Atlantic Co.	1945	20	603	18, 10, 8	8	357-377 568-588	Uptxn & Lptxn	100	340	12-18-45	439	48	1.8
PG Eb 2	PG-00-0339	WSSC, Forest Heights Well 2	Layne-Atlantic Co.	1946	22	630	20, 10, 8	10, 8	277-282 347-352 521-526 550-560 600-605	Uptxn & Lptxn	102	224	9-10-46	540	24	4.4
PG Eb 20	PG-02-5527	WSSC, Fort Foote Village	Layne-Atlantic Co.	1956	151	828	6	6	192-212 352-372 557-577	Lppsc	135 153 110	190 -- 320?	10-3-56 10-11-56 10-24-56	50 300 230	2 2 2	.9 -- 1.1
PG Eb 22	PG-01-0418	Potomac Vista Corp.	Columbia Pump & Well Co.	1952	100	275	6	6	275-285	Lppsc	110	200	7-25-52	34	8	.4
PG Eb 23	PG-02-0466	Potomac Vista Corp.	Layne-Atlantic Co.	1955	115	331	6	6	295-300 315-320	Lppsc	124	200	9-8-55	150	5	2.0
PG Ec 41	PG-03-8527	WSSC, Southlawn	Layne-Atlantic Co.	1960	179	875	6	6	241-261 630-650	Lppsc, Ptxn, & Uptxn	150 147	225 200	6-24-60 6-24-60	320 275	6 6	4.3 5.2
PG Ec 46	PG-03-9072	WSSC, (Kerby Hill Pumping Station)	Layne-Atlantic Co.	1960	71	804	6	6	577-597	Uptxn	46	210	9-22-60	285	8	1.7
PG Ed 34	PG-01-0424	Morningside Village Water Co.	Washington Pump and Well Co.	1952	270	793	8	--	773-793	Lppsc	236	315	11-5-52	135	12	1.7
PG Fb 13	--	Ft. Washington	Sydnor Pump & Well Co.	1942	176	654	14, 10, 8	8	575-618	Lppsc	155	287	11-28-42	342	49	2.6

Appendix A. Selected well records--Continued

Well number	State permit number	Owner or location	Driller	Completion year	Altitude of land surface (ft)	Total depth drilled (ft)	Diameter (in.)		Screen position (ft below land surface)	Aquifer	Water level (ft below land surface)		Date measured (m-d-y)	Yield (gal/min) (date)	Hours pumped	Specific capacity (gal/min/ft)
							Casing	Screen			Static (date)	Pumping				
PG Fc 17	PG-12	Washington Gas Light Co., Thorne No. 2	Eakle & Holder Drilling Co.	1955	59	1728	6	--	712-716	Lppsc	28.62	--	10-27-55	--	--	--
PG Fc 31	PG-48904	Henry G. Ferguson Elem. School	Columbia Pump & Well Co. and Douglas & Dickinson, Inc.	1962	104	710	8	8, 2	677-681 689-699	Lppsc	97	120	10-12-62	120	12	5.2
PG Fd 59	PG-00-0004	Washington Gas Light Co. Moore No. 2	Eakle & Holder Drilling Co.	1955	172	1517	--	--	--	Uptxn?	--	--	12- -55	60	--	--
PG Fd 62	PG-10	Washington Gas Light Co., Robinson No. 2	Eakle & Holder Drilling Co.	1956	230	1812	--	--	1545-1580	Uptxn?	184	--	8-15-56	--	--	--
PG Hf 31	PG-73-0065	PEPCO, Chalk Point	Shannahan Artesian Well Co.	1973	10.02	2453	6, 4	4	1007-1034 1516-1541	Lppsc	6 above land surface	25	7-7-73	93	24	3.0
PG Hf 32	PG-73-0065	PEPCO, Chalk Point	Shannahan Artesian Well Co.	1973	10	1545	3, 2.5, 2	3	1025-1030 1525-1530	Lppsc	4 above land surface	45	5-30-73	15	4	.3
SM Df 84	SM-81-0119	Maryland Geological Survey Test well	A.C. Schultes & Sons, Inc.	1983	108.4	2679	6, 4	4	829-854 860-865 895-910	Uppsc[1]	115.7	161.4	1-4-83	193	24	4.2

[1]Screened interval called Mattaponi(?) aquifer in Hansen and Wilson (1984)

Appendix D (Part I). Appropriated ground-water use (1997) over 10,000 gallons per day in the lower Patapsco aquifer in the model area

[MGS = Maryland Geological Survey; USGS = U.S. Geological Survey; Mgal/d = million gallons per day; PEPCO = Potomac Electric Power Company]

Site number[1]	Well owner or name-Charles County	Ground-water appropriation permit number (GAP)	MGS/USGS well no.	Model cell (column, row, layer)	Average amount appropriated (Mgal/d)	Yearly average pumpage reported in 1997 (Mgal/d)
1	Indian Head Manor	CH54G003	CH Bd 16 CH Bd 17 CH Bd 18	38,28,2 38,28,2 38,28,2	0.014	0.024[2]
2	Charles County Bryans Road	CH55G003	CH Bc 76 CH Bd 22 CH Bd 29 CH Bd 50	32,34,2 35,33,2 33,32,2 35,34,2	.273	.097[2]
3	Potomac Heights	CH55G008	CH Bc 6 CH Bc 24 CH Bc 68	25,50,2 25,50,2 25,50,2	.225	.177[2] no pumpage reported from July to Dec.
4	Town of Indian Head	CH57G003	CH Bc 23 CH Bc 67[3] CH Bc 70 CH Bc 72	23,58,2 24,54,2 26,54,2 25,55,2	.338	.293[2]
5	Red Hill Estates	CH60G004	CH Cc 19 CH Cc 20 CH Cc 28 CH Cc 32	29,61,2 29,61,2 29,61,2 29,61,2	.014	.009 no pumpage reported from July to Dec.
6	Jenkins Lane	CH65G008	CH Bc 46 CH Bc 65	33,35,2 33,35,2	.014	.008[2]
7	Charles County. Strawberry Hill	CH66G005	CH Bd 33 CH Bd 35	32,27,2 32,27,2	.120	.075[2]
8	Charles County, Carmel Estates	CH66G108	CH Ce 58	61,36,2	.023	.011
9	PEPCO, Morgantown	CH67G011	CH Ee 68 CH Ee 69 CH Ee 71 CH Ee 72	68,85,2 68,85,2 68,85,2 68,85,2	.820	.575
10	Charles County, Brookwood	CH67G109	CH Be 66	58,22,2	.045	.017
11	Du-Mar Estates (Marbury)	CH68G002	CH Cc 25	29,65,2	.013	.005
12	Utilco, Inc. (Pomfret Estates)	CH68G004	CH Cd 30	57,39,2	.013	.009
13	Lackey High School	CH68G009	CH Cc 30	34,56,2	.010	.010
14	Charles County Vo-Tech	CH69G005	CH Cd 33	57,40,2	.015	.0035
15	Turkey Hill Water Co.	CH70G001[4]	CH Ce 59	61,33,2	.016	.009
16	Town of La Plata	CH70G003	CH Ce 35 CH Ce 43 CH Ce 51 CH Ce 55	63,46,2 63,34,2 64,42,2 62,38,2	.640	.570

Appendix D (Part I). Appropriated ground-water use (1997) over 10,000 gallons per day in the lower Patapsco aquifer in the model area—Continued

[MGS = Maryland Geological Survey; USGS = U.S. Geological Survey; Mgal/d = million gallons per day; PEPCO = Potomac Electric Power Company]

Site number[1]	Well owner or name-Charles County	Ground-water appropriation permit number (GAP)	MGS/USGS well no.	Model cell (column, row, layer)	Average amount appropriated (Mgal/d)	Yearly average pumpage reported in 1997 (Mgal/d)
17	U.S. Naval Surface Warfare Center (main base)	CH71G005	CH Bb 6 CH Bb 7 CH Bb 9 CH Bb 19 CH Bb 20 CH Bc 3 CH Cb 18 CH Cb 19 CH Cb 43 CH Cb 29	24,62,2 24,62,2 24,62,2 21,61,2 20,66,2 25,60,2 23,70,2 23,65,2 22,74,2 24,64,2	1.24	0.861[2]
18	U.S. Naval Surface Warfare Center (Stump Neck)	CH71G105	CH Cb 11 CH Cb 28	23,77,2 21,78,2	0.025	0.020
19	U.S. Naval Surface Warfare Center (industrial supply)	CH71G205	CH Cb 35[3]	21,72,2	.020	.066[2]
20	Charles County, Ellenwood	CH75G002	CH Ce 42	65,39,2	.035	.018
21	Chapel Point Subdivision	CH76G011	CH De 39 CH De 40 CH De 41	64,64,2 64,64,2 64,64,2	.024	.020
22	Charles County, Laurel Branch	CH77G036	CH Bd 47 CH Bd 48	48,20,2 48,20,2	.15	.122
23	Charles County, Eutaw Forest	CH78G015	CH Bd 38 CH Bd 44 CH Bd 46	48,23,2 48,23,2 48,23,2	.080	.061
24	Charles County, St. Paul	CH83G012	CH Bf 147	63,16,2	.60	.505
25	Charles County, St. Anne	CH83G014	CH Ee 91	67,83,2	.075	.043
26	Charles County, Smallwood West	CH83G112	CH Be 58	60,18,2	.600	.596
27	Charles County, White Oak Drive	CH83G212	CH Bf 150	62,9,2	.600	.559
28	Charles County, Billingsley Road	CH83G312	CH Be 64	62,18,2	.800	.439
29	Charles County, Cleveland Park	CH83G412	CH Be 67	63,20,2	.800	.265
30	Montrose Heights	CH88G003	CH Bc 74	32,40,2	.041	0
31	Charles County, Settle Woods	CH89G032	CH Bd 51	47,27,2	.300	.033
32	Duttons Addition	CH94G003	CH Bd 49	50,31,2	.008	.019 (estimated)

Appendix D (Part I). Appropriated ground-water use (1997) over 10,000 gallons per day in the lower Patapsco aquifer in the model area--Continued

[MGS = Maryland Geological Survey; USGS = U.S. Geological Survey; Mgal/d = million gallons per day; PEPCO = Potomac Electric Power Company]

Site number[1]	Well owner or name-Prince George's County	Ground-water appropriation permit number (GAP)	MGS/USGS well no.	Model cell (column, row, layer)	Average amount appropriated (Mgal/d)	Yearly average pumpage reported in 1997 (Mgal/d)
33	Potomac Vista Corporation	PG52G004	PG Eb 22 PG Eb 23	16,7,2 16,7,2	0.015	0.018

[1]Sites are located on figure 23
[2]In the Indian Head-Bryans Road area
[3]Screened in the upper Patuxent aquifer or sands in the Arundel Clay
[4]One well out of four which pump under this permit is screened in the lower Patapsco aquifer

Appendix D (Part II). Appropriated ground-water use (1997) over 10,000 gallons per day in the upper Patuxent aquifer in the model area

[MGS = Maryland Geological Survey; USGS = U.S. Geological Survey; Mgal/d = million gallons per day]

Site number[1]	Well owner or name-Charles County	Ground-water appropriation permit number (GAP)	MGS/USGS well no.	Model cell (column, row, layer)	Average amount appropriated (Mgal/d)	Yearly average pumpage reported in 1997 (Mgal/d)
34	Charles County, South Hampton	CH95G023	CH Bc 78	30,34,3	0.16	0.094[2]
35	Legend Properties, Inc.	CH93G029	CH Bc 75 CH Bc 77	32,42,3 34,41,3	0.39	0[2]

[1]Sites are located on figure 24
[2]In the Indian Head-Bryans Road area

Appendix E. Appropriated ground-water use over 10,000 gallons per day in the lower Patapsco and upper Patuxent aquifers in Charles County and southern Prince George's County for 1900-74

[Mgal/d = million gallons per day; Lppsc = lower Patapsco aquifer; Uptxn = upper Patuxent aquifer; PEPCO = Potomac Electric Power Company]

Owner	Ground-water Appropriation number (GAP)	Aquifer	Average daily pumpage for period (Mgal/d)						
			1900-09	1910-19	1920-29	1930-39	1940-49	1950-59	1960-74
Indian Head Manor	CH54G003	Lppsc	0		0	0	0	0	0.01
Charles County, Bryans Road	CH55G003	Lppsc	0		0	0	0	0.077	0.11
Potomac Heights	CH55G008	Lppsc	0		0	0.094	0.10	0.12	0.13
Town of Indian Head	CH57G003	Lppsc/ Uptxn[1]	0		0	0	0	0.015	0.026
Jenkins Lane	CH65G008	Lppsc	0		0	0	0	0.007	0.01
Charles County, Strawberry Hill	CH66G005	Lppsc	0		0	0	0	0	0.039
PEPCO, Morgantown	CH67G011	Lppsc	0		0	0	0	0	0.57
Lackey High School	CH68G009	Lppsc	0		0	0	0	0	0.012
Town of La Plata	CH70G003	Lppsc	0		0	0	0.089	0.12	0.15
U.S. Naval Surface Warfare Center	CH71G005	Lppsc	0.42	0.42	0.79	0.62	0.75	1.2	1.8
Town of Indian Head	CH71G007	Lppsc	0		0	0	0	0.091	0.20
Morningside Village and Gwynn Subdivision	PG94G006	Lppsc	0		0	0	0.044	0.10	0
Cedar Ridge	PG51G003	Uptxn	0		0	0	0	0	0.016
Calvert Manor Corporation	PG55G011	Lppsc	0		0	0	0	0.003	0.012
Forest Heights	PG74G017	Uptxn	0		0	0	0.16	0.32	0.31
Fort Foote	PG74G018	Lppsc	0		0	0	0	0.40	0.41

[1] Includes a well screened in the upper Patuxent aquifer or sands in the Arundel Clay.

Appendix F. Appropriated ground-water use over 10,000 gallons per day in the lower Patapsco and upper Patuxent aquifers in Charles County and southern Prince George's County for 1975-97.

[gal/d = gallons per day; Lppsc = lower Patapsco aquifer; Uptxn = upper Patuxent aquifer; PEPCO = Potomac Electric Power Company]

Owner	Ground-water appropriation number (GAP)	Aquifer	Average daily pumpage for year, 1,000 gallons per day																						
			75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97
Indian Head Manor	CH54G003	Lppsc	10.7	11.0	11.0	11.0	11.0	5.6	10.4	11.8	11.8	11.3	10.4	13.2	14.2	15.3	14.4	14.5	20.1	20.5	23.3	22.8	25.6	33.0	24.0
Charles County, Bryans Road	CH55G003	Lppsc	110	110	110	114	112	122	114	115	115	62.2	130	132	132	148	189	152	156	139	152	162	177	170	97
Potomac Heights	CH55G008	Lppsc	129	139	139	141	131	139	131	138	165	150	192	218	178	196	211	186	168	166	174	227	212	177	177
Town of Indian Head	CH57G003	Lppsc/ Uptxn[1]	24.6	24.7	24.7	24.7	21.9	53.1	58.3	15.6	33.5	51.5	47.2	34.4	30.4	33.4	35.5	31.6	109	141	137	257	292	314	293
Red Hill Estates	CH60G004	Lppsc	0	0	0	0	0	15.0	15.0	0	0	0.5	46.7	12.2	17	28.5	11.6	11.9	12.0	12.5	14.1	12.6	14.0	11.0	9.0
Jenkins Lane	CH65G008	Lppsc	9.6	9.6	11.5	9.9	9.3	9.2	9.0	9.3	9.8	10.0	10.4	10.2	9.8	9.8	9.8	9.8	10.9	11.0	10.8	9.6	11.1	10.0	8.0
Charles County, Strawberry Hill	CH66G005	Lppsc	48.2	51.2	51.2	62.2	59.2	61.3	63.1	93.2	103.2	98.3	104.0	52.3	118.5	90.0	73.1	71.4	72.7	70.6	72.8	69.4	67.0	61.0	75.0
PEPCO, Morgantown	CH67G011	Lppsc	818	820	785	702	767	762	661	607	620	694	607	620	516	670	728	682	571	576	666	644	542	650	575
Du-Mar Estates (Marbury)	CH68G002	Lppsc	6.3	8.8	9.6	9.6	12.0	10.2	9.8	19.5	10.7	10.8	12.6	12.0	16	17.6	17.6	15.5	12.8	11.9	14.6	10.9	10.2	9.0	5.0
Pomfret Estates	CH68G004	Lppsc/ Uptxn	0	0	0	0	0	0	0	0	0	0	13.0	8.2	8.2	8.4	8.6	8.4	8.2	10.3	11.3	11.6	8.8	9.0	9.0
Lackey High School	CH68G009	Lppsc	10.9	9.3	9.0	7.4	7.7	7.0	6.5	6.5	7.1	6.0	7.2	8.3	54.6	78.7	7.9	8.3	8.8	4.0	7.0	9.0	9.6	10.0	10.0
Charles County Vo-Tech	CH69G005	Lppsc	3.8	4.6	6.0	4.9	4.6	6.2	7.0	6.9	7.0	8.8	10.2	16.8	20.6	18.2	24.4	26.5	5.6	4.9	13.3	8.3	5.7	2.1	3.0
Town of La Plata	CH70G003	Lppsc	231	250	365	331	206	331	273	323	348	480	612	542	597	652	708	763	942	750	713	565	643	600	570
U.S. Naval Surface Warfare Center (Main base)	CH71G005	Lppsc	1,300	1,060	1,070	1,100	1,180	1,070	873	740	683	1,310	1,400	1,390	1,330	1,400	1,280	1,320	1,170	1,100	1,110	1,090	1,050	962	860
Town of Indian Head	CH71G007	Lppsc	186	261	209	211	213	208	160	216	19.7	178	182	188	204	227	239	266	203	188	192	97.8	0	0	0
U.S. Naval Surface Warfare Center (Stump Neck)	CH71G105	Lppsc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18.9	15.5	18.5	14.7	17.0	20.0

Appendix F. Appropriated ground-water use over 10,000 gallons per day in the lower Patapsco and upper Patuxent aquifers in Charles County and southern Prince George's County for 1975-97–Continued.

[gal/d = gallons per day; Lppsc = lower Patapsco aquifer; Uptxn = upper Patuxent aquifer; PEPCO = Potomac Electric Power Company]

Owner	Ground-water appropriation number (GAP)	Aquifer	Average daily pumpage for year, 1,000 gallons per day																						
			75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97
U.S. Naval Surface Warfare Center (industrial supply)	CH71G205	Uptxn[1]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	48.4	49.2	59.4	57.0	93.0	66.0
Chapel Point Subdivision	CH76G011		0	0	0	0	0	0	0	0	0	0	0	0	0	4.1	8.0	9.0	13.6	12.2	15.8	18.3	19.8	17.0	20.0
Charles County, Laurel Branch	CH77G036	Lppsc	0	0	0	0	0.2	8.9	3.5	6.3	18.8	32.4	47.9	65.5	81.3	77.0	67.6	66.6	73.4	71.4	92.5	101	110	107	122
Charles County, Eutaw Forest	CH78G015	Lppsc	0	0	0	0	0.06	3.3	11.5	15.3	27.6	32.2	53.3	69.0	70.0	76.6	67.3	70.0	70.0	61.9	65.6	64.3	63.4	57.0	61.0
Charles County, St. Paul	CH83G012	Lppsc	0	0	0	0	0	0	0	0	0	48.0	306	441	556	631	492	583	541	393	552	581	558	569	505
Charles County, St. Anne's	CH83G014	Lppsc	0	0	0	0	0	0	0	0	0	0	0	15.7	36.3	46.0	47.0	48.2	51.3	48.6	50.0	48.4	48.6	45.0	43.0
Charles County, Smallwood West	CH83G112	Lppsc	0	0	0	0	0	0	0	0	0	0	0	307	527	643	636	636	592	624	627	617	593	595	596
Charles County, White Oak Drive	CH83G212	Lppsc	0	0	0	0	0	0	0	0	0	0	0	266	621	531	610	509	516	494	508	576	503	462	559
Charles County, Billingsley Rd.	CH83G312	Lppsc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	106	527	728	577	665	672	642	641	439
Charles County, South Hampton	CH95G023	Uptxn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	94.0
Potomac Vista Corporation	PG52G004	Lppsc	0	0	0	11.2	10.7	14.8	11.6	12.3	5.4	10.8	15.0	18.0	17.1	18.3	16.2	14.3	15.9	17.5	24.7	17.4	18.0	18.0	18.0

[1] Includes a well screened in the upper Patuxent aquifer or sands in the Arundel Clay.

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CENTRACTS Report, Frost Associates

FROST ASSOCIATES

88 Founders Village, Clinton, CT 06413
(860) 669-5859 FAX (860) 669-5869

June 1, 1999

To: Ecology and Environment, Inc
1700 N. Moore Street
Arlington, VA 22006

Attn: Hussein Aldis

Fr: Bob Frost
Frost Associates
88 Founders Village
Clinton, CT 06413

Tel: (203) 767-1254
Fax: (203) 767-1971

Sub: Kenillworth Landfill
Washington, DC

CERCLIS:

Job:

Site Longitude: 76-57-20 76.955559
Site Latitude : 38-54-12 38.903332

The CENTRACTS report below identifies the population, households, and private water wells of each Block Group that lies within, or partially within, the 4, 3, 2, 1, .5, and .25, mile "rings" of the latitude and longitude coordinates above. A CENTRACTS report may have up to six radii of any length and 1500 block groups.

CENTRACTS uses the 1990 Block Group population and Block Group house count data found in the Census Bureau's 1990 STF-1A files. The sources of water supply data are from The Bureau's 1990 STF-3A files. The boundary line coordinates of the Block Groups were extracted from the Census Bureau's 1990 TIGER/Line Files.

CENTRACTS reports are created with programs written by Frost Associates, 88 Founders Village, Clinton Conn 06413. The code was written using Microsoft's Quick-Basic Ver. 4.5.

Latitude and Longitude coordinates identifying a site are entered in degrees and decimal degrees. One or more county files holding Block Group boundary lines are selected for use by CENTRACTS by determining whether the site coordinates fall within the minimum and maximum Lat\Lon coordinates of each county in the state.

Each Block Group line segment has Lat\Lon coordinates representing the "From" and "To" ends of that line. All coordinates from the selected county files are read and converted from degrees, decimal degrees to X\Y miles from the site location. Each line segment is then examined whether it lies within or partially within the maximum ring from the site.

The unique Block Group ID numbers of each line segment that lie within the maximum ring are retained. All Block Group boundary lines matching the Block Group numbers are then extracted from the respective county files to obtain all sides of the included Block Groups. Boundary records are then sorted in adjacent side order to determine the shape and area of each Block Group polygon.

A method to solve for the area of a polygon is to take one-half the sum of the products obtained by multiplying each X-coordinate by the difference between the adja-

cent Y-coordinates. For a polygon with coordinates at adjacent angles A, B, C, D, and E. The formula can be expressed:

Area = 1/2{Xa(Ye-Yb)+ Xb(Ya-Yb)+ Xc(Yb-Yd)+ Xd(Yc-Ye)+ Xe(Yd-Ya)}

For each ring, the selected Block Groups will be inside, outside, or intersected by the ring. When a polygon is intersected, the partial Block Group area within that ring is calculated using the method described below.

When a ring intersects a Block Group, the intersect points are solved and plotted at the points where the ring enters and exits the shape. The chord line, a line within the circle connecting the intersect points is determined. This chord line is used to calculate the segment area, the half moon shape between the chord line and the ring, and the sub-polygon created by the chord line and the Block Group boundaries that lie outside the ring.

The segment area is subtracted from the sub-polygon area to determine the area of the sub-polygon outside the ring. The area outside the ring is then subtracted from the area of the entire polygon to arrive at the inside area. This inside area is then divided by the tract's total area to determine the percentage of area within the ring. This process is repeated for each block group that is intersected by one of the rings. The total area, partial area, and percentage of partial area of those block groups within, or partially within a ring, are held in memory for the report.

On occasion, the algorithm described above is unable to determine the area of the partial area. Within the report program is a "Paint" routine which allows an enclosed shape to be highlighted. Another routine calculates the percentage of highlighted screen pixels to the pixels within the polygon. A manual entry is allowed. Both the "paint" method and manual entry method over ride the calculated method.

CENTRACTS lists, starting on page 4, all Block Groups in State, County, Census Tract, and Block Group ID order that lie within, or partially within, the maximum ring. Each Block Group is identified by a City or Town name and by the Block Group's State, County, Tract and Block Group ID number. Following is the Block Group's 1990 populu tion and house count extracted from the Census Bureau's 1990 STF-1A files.

The next four columns display water source data from the 1990 STF-3A files. The first column is "Units with Public system or private company source of water", followed by "Units with individual well, Drilled, source of water"; "Units with individual well, Dug, source of water" and "Units with Other source of water".

For each ring, CENTRACTS then shows the Block Groups that are within that ring, the Block Group's total area in square miles, the partial area of the Block Group within that ring, and the partial percentage within the ring. The areas of the included Block Group and the partial areas are then totaled.

The last section tallies the demographic data within each ring. The percentage of area for each Block Group is multiplied times the census data for that Block Group and totaled for all Block Group's within the ring. Ring totals are then determined by subtracting the three mile data from the four mile, the two mile from the three mile, one from the two, etc... Population on private wells is calculated using the formula: ((Drilled + Dug Wells) / Households) * Population

Kenillworth Landfill
Washington, DC

No.	City	Block Group ID	Blk Grp People	House Holds	Public Water	Drilled Wells	Dug Wells	Other
1	Washington	11001 0031 1	2278	879	853	0	0	0
2	Washington	11001 0031 2	631	234	227	0	0	0
3	Washington	11001 0032 2	905	396	403	0	0	0
4	Washington	11001 0032 3	2504	929	895	0	0	5
5	Washington	11001 0032 4	321	106	94	0	0	0
6	Washington	11001 0034 1	1657	200	250	0	0	0
7	Washington	11001 0034 2	12	8	12	0	0	0
8	Washington	11001 0034 3	1614	553	551	0	0	0
9	Washington	11001 0034 4	773	378	380	0	0	0
10	Washington	11001 0034 5	524	232	212	0	0	0
11	Washington	11001 0035 1	1485	629	601	0	0	0
12	Washington	11001 0035 2	737	407	401	0	0	0
13	Washington	11001 0036 1	4272	1925	1925	0	0	0
14	Washington	11001 0044 1	814	331	348	0	0	0
15	Washington	11001 0044 2	932	407	410	0	0	0
16	Washington	11001 0045 1	348	164	149	0	0	0
17	Washington	11001 0045 2	854	355	341	0	0	0
18	Washington	11001 0046 1	1270	501	487	0	0	0
19	Washington	11001 0046 2	1574	595	591	0	0	0
20	Washington	11001 0046 3	779	327	273	0	0	0
21	Washington	11001 0047 1	840	441	486	0	0	0
22	Washington	11001 0047 2	2610	755	744	0	0	0
23	Washington	11001 0047 3	375	181	194	0	0	0
24	Washington	11001 0047 4	186	146	151	0	0	0
25	Washington	11001 0047 5	544	354	374	0	0	0
26	Washington	11001 0050 1	690	380	343	0	0	0
27	Washington	11001 0050 2	3267	2243	2297	0	0	0
28	Washington	11001 0050 3	1630	601	596	0	0	0
29	Washington	11001 0050 4	865	477	465	0	0	0
30	Washington	11001 0051 1	453	283	327	0	0	0
31	Washington	11001 0051 2	542	323	289	0	0	0
32	Washington	11001 0058 1	784	294	284	0	0	0
33	Washington	11001 0058 2	3	0	0	0	0	0
34	Washington	11001 0058 5	0	0	0	0	0	0
35	Washington	11001 0059 1	1350	306	305	0	0	0
36	Washington	11001 0059 2	57	0	0	0	0	0
37	Washington	11001 0059 4	549	412	422	0	0	0
38	Washington	11001 0061 1	0	0	0	0	0	0
39	Washington	11001 0061 2	2058	1521	1512	0	0	0
40	Washington	11001 0066 1	863	508	518	0	0	0
41	Washington	11001 0066 2	391	247	238	0	0	0
42	Washington	11001 0066 3	537	354	360	0	0	0
43	Washington	11001 0069 1	775	423	450	0	0	0
44	Washington	11001 0069 2	702	328	305	0	0	0
45	Washington	11001 0069 3	601	320	318	0	0	0
46	Washington	11001 0071 1	1349	559	582	0	0	0
47	Washington	11001 0071 2	649	279	250	0	0	0
48	Washington	11001 0071 3	882	400	406	0	0	0
49	Washington	11001 0071 4	0	0	0	0	0	0
50	Washington	11001 0072 1	108	70	82	0	0	0
51	Washington	11001 0072 2	882	783	800	0	0	0
52	Washington	11001 0072 3	540	238	240	0	0	0
53	Washington	11001 0072 4	54	40	41	0	0	0
54	Washington	11001 0072 5	505	35	36	0	0	0
55	Washington	11001 0082 1	874	468	475	0	0	0
56	Washington	11001 0082 2	1821	1165	1179	0	4	0
57	Washington	11001 0086 1	147	53	49	0	0	0
58	Washington	11001 0086 2	5	0	0	0	0	0

59	Washington	11001	0086 3	5	0	0	0	0	0
60	Washington	11001	0023021	4417	532	532	0	0	0
61	Washington	11001	0033011	1074	403	411	0	0	0
62	Washington	11001	0033012	1114	421	409	0	0	0
63	Washington	11001	0033013	913	366	353	0	0	0
64	Washington	11001	0033021	1170	454	486	0	0	0
65	Washington	11001	0033022	821	370	355	0	0	0
66	Washington	11001	0048011	489	228	232	0	0	0
67	Washington	11001	0048012	955	504	490	0	0	0
68	Washington	11001	0048013	711	314	332	0	0	0
69	Washington	11001	0048021	1136	594	608	0	0	0
70	Washington	11001	0048022	1954	871	849	0	0	0
71	Washington	11001	0049011	1144	485	492	0	0	0
72	Washington	11001	0049012	624	247	238	0	0	0
73	Washington	11001	0049013	226	140	146	0	0	0
74	Washington	11001	0049021	1310	620	630	0	0	0
75	Washington	11001	0049022	264	189	175	0	0	0
76	Washington	11001	0060011	0	0	0	0	0	0
77	Washington	11001	0060012	0	0	0	0	0	0
78	Washington	11001	0060013	2073	1765	1758	0	0	0
79	Washington	11001	0060201	791	167	184	0	0	0
80	Washington	11001	0062011	14	68	62	0	0	0
81	Washington	11001	0062012	37	72	70	0	0	0
82	Washington	11001	0062023	23	2	0	0	0	0
83	Washington	11001	0063011	3723	2716	2644	0	7	15
84	Washington	11001	0063021	350	72	85	0	0	0
85	Washington	11001	0064101	2014	1022	1090	0	0	0
86	Washington	11001	0064102	502	223	206	0	0	0
87	Washington	11001	0064103	0	0	0	0	0	0
88	Washington	11001	0065101	666	466	456	0	0	0
89	Washington	11001	0065102	592	331	327	0	0	0
90	Washington	11001	0065103	367	207	200	0	0	0
91	Washington	11001	0065104	587	397	405	0	0	0
92	Washington	11001	0065105	184	155	161	0	0	0
93	Washington	11001	0067101	1090	505	514	0	0	0
94	Washington	11001	0067102	1010	614	625	0	0	0
95	Washington	11001	0067103	829	429	420	0	10	0
96	Washington	11001	0067104	551	314	293	0	0	0
97	Washington	11001	0068011	1615	677	678	0	0	0
98	Washington	11001	0068012	803	361	368	0	0	0
99	Washington	11001	0068021	933	385	381	0	0	0
100	Washington	11001	0068022	783	327	319	0	0	0
101	Washington	11001	0068023	638	256	259	0	0	0
102	Washington	11001	0068041	3182	13	14	0	0	0
103	Washington	11001	0070101	448	267	264	0	0	0
104	Washington	11001	0070102	783	216	216	0	0	0
105	Washington	11001	0070103	919	592	593	0	0	0
106	Washington	11001	0073011	7767	1987	1975	0	12	0
107	Washington	11001	0074011	88	37	36	0	0	0
108	Washington	11001	0074012	2595	1010	1027	0	0	0
109	Washington	11001	0074041	2120	750	730	0	0	0
110	Washington	11001	0074042	1994	860	864	0	0	0
111	Washington	11001	0074064	2403	1024	1025	0	0	0
112	Washington	11001	0074071	447	145	158	0	0	0
113	Washington	11001	0074072	280	95	79	0	0	0
114	Washington	11001	0074073	254	113	121	0	0	0
115	Washington	11001	0074075	2166	938	932	0	0	0
116	Washington	11001	0074081	3069	1229	1168	0	0	0
117	Washington	11001	0074091	939	435	441	0	0	0
118	Washington	11001	0074092	2042	1403	1405	0	0	0
119	Washington	11001	0074301	2449	1127	1168	0	0	12
120	Washington	11001	0075021	2158	722	727	0	0	0
121	Washington	11001	0075022	1447	621	618	0	0	0
122	Washington	11001	0075023	789	262	260	0	0	0

123	Washington	11001	0075032	2047	748	748	0	0	0
124	Washington	11001	0075033	611	219	214	0	0	0
125	Washington	11001	0075034	360	152	155	0	0	0
126	Washington	11001	0075041	2125	955	978	0	0	0
127	Washington	11001	0075042	430	207	193	0	0	0
128	Washington	11001	0075043	116	44	37	0	0	0
129	Washington	11001	0076011	618	314	305	0	0	0
130	Washington	11001	0076012	720	285	256	0	0	0
131	Washington	11001	0076013	705	280	303	0	0	0
132	Washington	11001	0076014	2179	974	1004	0	0	0
133	Washington	11001	0076015	1004	369	354	0	0	0
134	Washington	11001	0076031	1599	894	927	0	0	0
135	Washington	11001	0076032	535	197	169	0	0	0
136	Washington	11001	0076033	280	104	90	0	0	0
137	Washington	11001	0076034	1252	724	669	0	0	0
138	Washington	11001	0076035	803	380	355	0	0	0
139	Washington	11001	0076041	1203	636	700	0	0	0
140	Washington	11001	0076042	984	492	502	0	0	0
141	Washington	11001	0076043	376	179	171	0	0	0
142	Washington	11001	0076044	320	112	101	0	0	0
143	Washington	11001	0076045	321	123	116	0	0	0
144	Washington	11001	0076046	1083	471	512	0	0	0
145	Washington	11001	0076057	3878	1838	1838	0	0	0
146	Washington	11001	0077031	1046	460	444	0	0	0
147	Washington	11001	0077032	1138	559	567	0	0	0
148	Washington	11001	0077033	3480	1457	1465	0	0	0
149	Washington	11001	0077071	2376	979	1039	0	0	0
150	Washington	11001	0077072	713	238	222	0	0	0
151	Washington	11001	0077073	1109	427	383	0	0	0
152	Washington	11001	0077081	1338	703	712	0	0	0
153	Washington	11001	0077082	1553	736	742	0	0	0
154	Washington	11001	0077083	0	0	0	0	0	0
155	Washington	11001	0077093	526	239	213	0	0	0
156	Washington	11001	0077094	1069	516	545	0	0	0
157	Washington	11001	0077095	748	396	378	0	0	0
158	Washington	11001	0078031	545	247	253	0	0	0
159	Washington	11001	0078032	750	295	305	0	0	0
160	Washington	11001	0078033	719	269	256	0	0	0
161	Washington	11001	0078034	1558	743	757	0	0	0
162	Washington	11001	0078035	504	293	276	0	0	0
163	Washington	11001	0078041	521	102	107	0	0	0
164	Washington	11001	0078042	1906	633	586	0	0	0
165	Washington	11001	0078043	239	102	103	0	0	0
166	Washington	11001	0078044	542	234	238	0	0	0
167	Washington	11001	0078045	414	163	200	0	0	0
168	Washington	11001	0078071	551	253	246	0	0	0
169	Washington	11001	0078072	610	245	256	0	0	0
170	Washington	11001	0078073	142	51	62	0	0	0
171	Washington	11001	0078074	912	358	354	0	0	12
172	Washington	11001	0078081	562	291	296	0	0	0
173	Washington	11001	0078082	1365	486	476	0	0	0
174	Washington	11001	0078083	1070	406	374	0	0	0
175	Washington	11001	0078084	1261	396	411	0	0	0
176	Washington	11001	0078085	511	184	183	0	0	0
177	Washington	11001	0078093	1791	850	851	0	0	0
178	Washington	11001	0078094	769	305	272	0	0	0
179	Washington	11001	0078097	241	146	156	0	0	0
180	Washington	11001	0078601	849	376	381	0	0	0
181	Washington	11001	0078602	537	220	207	0	0	0
182	Washington	11001	0078605	544	279	308	0	0	0
183	Washington	11001	0078606	455	213	214	0	0	0
184	Washington	11001	0079011	604	284	313	0	0	0
185	Washington	11001	0079012	945	436	446	0	0	12
186	Washington	11001	0079013	1108	478	500	0	0	0

187	Washington	11001	0079014	1222	506	473	0	0	0
188	Washington	11001	0079031	841	384	350	0	0	0
189	Washington	11001	0079032	684	320	318	0	0	0
190	Washington	11001	0079033	490	239	235	0	0	0
191	Washington	11001	0080011	784	301	313	0	0	0
192	Washington	11001	0080012	1460	652	632	0	0	5
193	Washington	11001	0080013	707	324	295	0	0	0
194	Washington	11001	0080021	233	149	173	0	0	0
195	Washington	11001	0080022	1285	567	592	0	0	0
196	Washington	11001	0080023	562	252	250	0	0	0
197	Washington	11001	0080024	1501	736	721	0	0	0
198	Washington	11001	0081101	667	352	357	0	0	0
199	Washington	11001	0081102	1247	598	578	0	0	0
200	Washington	11001	0081103	822	455	432	0	0	13
201	Washington	11001	0083011	333	161	163	0	0	0
202	Washington	11001	0083012	1961	1040	1045	0	0	0
203	Washington	11001	0083013	52	36	35	0	0	0
204	Washington	11001	0083021	271	111	119	0	0	0
205	Washington	11001	0083022	1693	819	805	0	0	0
206	Washington	11001	0084023	1032	267	290	0	0	0
207	Washington	11001	0084024	1731	914	955	0	0	0
208	Washington	11001	0084101	277	108	93	0	0	0
209	Washington	11001	0084102	937	341	293	0	0	0
210	Washington	11001	0084103	500	217	207	0	9	0
211	Washington	11001	0085101	969	371	374	0	0	0
212	Washington	11001	0085102	963	268	276	0	0	0
213	Washington	11001	0085103	616	245	260	0	0	0
214	Washington	11001	0085104	358	159	147	0	0	0
215	Washington	11001	0085105	605	295	287	0	0	0
216	Washington	11001	0085106	155	56	50	0	0	0
217	Washington	11001	0087011	215	60	47	0	0	0
218	Washington	11001	0087014	1475	500	476	0	0	0
219	Washington	11001	0087015	1113	397	401	0	0	0
220	Washington	11001	0087021	460	197	213	0	0	0
221	Washington	11001	0087022	850	414	424	0	0	0
222	Washington	11001	0087023	785	337	348	0	0	0
223	Washington	11001	0088021	751	347	347	0	0	0
224	Washington	11001	0088022	1221	574	594	0	0	0
225	Washington	11001	0088023	1441	535	497	0	0	0
226	Washington	11001	0088024	1359	586	604	0	0	0
227	Washington	11001	0088031	187	0	0	0	0	0
228	Washington	11001	0088035	1011	512	508	0	0	0
229	Washington	11001	0088036	982	191	191	0	0	0
230	Washington	11001	0088037	4	1	1	0	0	0
231	Washington	11001	0088041	0	0	0	0	0	0
232	Washington	11001	0088042	664	355	332	0	0	0
233	Washington	11001	0088043	1326	606	627	0	0	0
234	Washington	11001	0088044	1104	577	583	0	0	0
235	Washington	11001	0089031	3357	1535	1535	0	0	0
236	Washington	11001	0089041	2950	1414	1378	0	0	0
237	Washington	11001	0089042	913	494	530	0	0	0
238	Washington	11001	0089051	0	0	0	0	0	0
239	Washington	11001	0090011	2182	1426	1424	0	0	0
240	Washington	11001	0090021	156	72	77	0	0	0
241	Washington	11001	0090022	724	239	228	0	0	0
242	Washington	11001	0090023	573	275	283	0	0	0
243	Washington	11001	0091021	856	377	373	0	0	0
244	Washington	11001	0091022	3991	1523	1527	0	0	0
245	Washington	11001	0091102	739	265	270	0	0	0
246	Washington	11001	0091104	960	271	247	0	0	0
247	Washington	11001	0091105	461	146	145	0	0	0
248	Washington	11001	0091106	1454	577	597	0	0	0
249	Washington	11001	0092034	723	265	263	0	0	0
250	Washington	11001	0092035	1155	370	351	0	0	0

251	Washington	11001	0092036	1336	657	706	0	0	0
252	Washington	11001	0092103	1390	602	600	0	0	0
253	Washington	11001	0092104	361	0	0	0	0	0
254	Washington	11001	0092402	2095	1172	1118	0	0	0
255	Washington	11001	0092404	334	179	207	0	0	0
256	Washington	11001	0093011	884	297	285	0	0	0
257	Washington	11001	0093012	378	168	148	0	0	0
258	Washington	11001	0093013	322	125	127	0	0	0
259	Washington	11001	0093014	738	242	261	0	0	0
260	Washington	11001	0093015	438	116	85	0	0	0
261	Washington	11001	0093016	822	304	289	0	0	0
262	Washington	11001	0093027	910	645	684	0	0	0
263	Washington	11001	0093028	726	311	329	0	0	0
264	Washington	11001	0094101	628	289	294	0	0	0
265	Washington	11001	0094102	621	226	223	0	0	0
266	Washington	11001	0094103	913	342	355	0	0	0
267	Washington	11001	0094104	858	359	364	0	0	0
268	Washington	11001	0094105	508	175	178	0	0	0
269	Washington	11001	0094106	1099	401	378	0	0	0
270	Washington	11001	0095011	1971	1009	1016	0	0	0
271	Washington	11001	0095012	2075	10	10	0	0	0
272	Washington	11001	0095013	1041	562	554	0	0	0
273	Washington	11001	0095014	782	450	451	0	0	0
274	Washington	11001	0095031	1631	636	662	0	0	0
275	Washington	11001	0095032	441	149	143	0	0	0
276	Washington	11001	0095033	432	141	136	0	0	0
277	Washington	11001	0095034	344	133	118	0	0	0
278	Washington	11001	0095035	372	154	154	0	0	0
279	Washington	11001	0095082	1534	580	556	0	0	0
280	Washington	11001	0095083	927	396	447	0	0	0
281	Washington	11001	0095084	620	360	330	0	0	0
282	Washington	11001	0095091	1198	446	465	0	0	0
283	Washington	11001	0095092	1188	468	456	0	0	0
284	Washington	11001	0095098	885	365	358	0	0	0
285	Washington	11001	0095403	309	106	107	0	0	0
286	Washington	11001	0095404	418	153	163	0	0	0
287	Washington	11001	0095405	401	199	195	0	0	0
288	Washington	11001	0095406	867	531	560	0	0	0
289	Washington	11001	0095407	1232	405	369	0	0	0
290	Washington	11001	0096011	814	609	596	0	0	7
291	Washington	11001	0096012	585	246	229	0	0	0
292	Washington	11001	0096023	2472	1275	1298	0	0	0
293	Washington	11001	0096031	1653	845	900	0	0	0
294	Washington	11001	0096032	773	297	306	0	0	0
295	Washington	11001	0096033	905	535	568	0	0	0
296	Washington	11001	0096044	1350	644	595	0	0	0
297	Washington	11001	0096045	914	390	334	0	8	0
298	Washington	11001	0098091	1541	0	0	0	0	0
299	Washington	11001	0098092	0	0	0	0	0	0
300	Washington	11001	0099011	8	0	0	0	0	0
301	Washington	11001	0099013	761	290	277	0	0	0
302	Washington	11001	0099014	625	269	280	0	0	0
303	Washington	11001	0099015	385	157	129	0	0	0
304	Washington	11001	0099016	859	345	342	0	0	0
305	Washington	11001	0099021	489	171	161	0	0	0
306	Washington	11001	0099022	2716	1039	1095	0	0	0
307	Washington	11001	0099023	70	24	16	0	0	0
308	Washington	11001	0099024	20	5	0	0	0	0
309	Washington	11001	0099031	2705	1080	1131	0	0	0
310	Washington	11001	0099035	432	170	196	0	0	0
311	Washington	11001	0099043	1052	305	273	0	0	11
312	Washington	11001	0099044	755	367	346	0	0	0
313	Washington	11001	0099045	250	136	126	0	0	0
314	Washington	11001	0099046	1266	567	542	0	0	0

315	Washington	11001	0099052	1053	411	411	0	0	0
316	Washington	11001	0099053	856	391	413	0	0	0
317	Washington	11001	0099054	731	301	334	0	0	8
318	Washington	11001	0099055	529	247	251	0	0	0
319	Washington	11001	0099061	1465	673	625	0	0	0
320	Washington	11001	0099062	488	251	232	0	0	0
321	Washington	11001	0099072	3097	1162	1162	0	0	0
	Totals:			317531	137149	136967	0	50	100

City	Census Tract ID		Tract People	House Count	Public Water	Drilled Wells	Dug Wells	Other Sources
Washington	11001 0031	1	2278	879	853	0	0	0
Washington	11001 0031	2	631	234	227	0	0	0
Washington	11001 0032	2	905	396	403	0	0	0
Washington	11001 0032	3	2504	929	895	0	0	5
Washington	11001 0032	4	321	106	94	0	0	0
Washington	11001 0034	1	1657	200	250	0	0	0
Washington	11001 0034	2	12	8	12	0	0	0
Washington	11001 0034	3	1614	553	551	0	0	0
Washington	11001 0034	4	773	378	380	0	0	0
Washington	11001 0034	5	524	232	212	0	0	0
Washington	11001 0035	1	1485	629	601	0	0	0
Washington	11001 0035	2	737	407	401	0	0	0
Washington	11001 0036	1	4272	1925	1925	0	0	0
Washington	11001 0044	1	814	331	348	0	0	0
Washington	11001 0044	2	932	407	410	0	0	0
Washington	11001 0045	1	348	164	149	0	0	0
Washington	11001 0045	2	854	355	341	0	0	0
Washington	11001 0046	1	1270	501	487	0	0	0
Washington	11001 0046	2	1574	595	591	0	0	0
Washington	11001 0046	3	779	327	273	0	0	0
Washington	11001 0047	1	840	441	486	0	0	0
Washington	11001 0047	2	2610	755	744	0	0	0
Washington	11001 0047	3	375	181	194	0	0	0
Washington	11001 0047	4	186	146	151	0	0	0
Washington	11001 0047	5	544	354	374	0	0	0
Washington	11001 0050	1	690	380	343	0	0	0
Washington	11001 0050	2	3267	2243	2297	0	0	0
Washington	11001 0050	3	1630	601	596	0	0	0
Washington	11001 0050	4	865	477	465	0	0	0
Washington	11001 0051	1	453	283	327	0	0	0
Washington	11001 0051	2	542	323	289	0	0	0
Washington	11001 0058	1	784	294	284	0	0	0
Washington	11001 0058	2	3	0	0	0	0	0
Washington	11001 0058	5	0	0	0	0	0	0
Washington	11001 0059	1	1350	306	305	0	0	0
Washington	11001 0059	2	57	0	0	0	0	0
Washington	11001 0059	4	549	412	422	0	0	0
Washington	11001 0061	1	0	0	0	0	0	0
Washington	11001 0061	2	2058	1521	1512	0	0	0
Washington	11001 0066	1	863	508	518	0	0	0
Washington	11001 0066	2	391	247	238	0	0	0
Washington	11001 0066	3	537	354	360	0	0	0
Washington	11001 0069	1	775	423	450	0	0	0
Washington	11001 0069	2	702	328	305	0	0	0
Washington	11001 0069	3	601	320	318	0	0	0
Washington	11001 0071	1	1349	559	582	0	0	0
Washington	11001 0071	2	649	279	250	0	0	0
Washington	11001 0071	3	882	400	406	0	0	0
Washington	11001 0071	4	0	0	0	0	0	0
Washington	11001 0072	1	108	70	82	0	0	0
Washington	11001 0072	2	882	783	800	0	0	0
Washington	11001 0072	3	540	238	240	0	0	0
Washington	11001 0072	4	54	40	41	0	0	0
Washington	11001 0072	5	505	35	36	0	0	0
Washington	11001 0082	1	874	468	475	0	0	0
Washington	11001 0082	2	1821	1165	1179	0	4	0
Washington	11001 0086	1	147	53	49	0	0	0
Washington	11001 0086	2	5	0	0	0	0	0
Washington	11001 0086	3	5	0	0	0	0	0

Washington	11001	0023021	4417	532	532	0	0	0
Washington	11001	0033011	1074	403	411	0	0	0
Washington	11001	0033012	1114	421	409	0	0	0
Washington	11001	0033013	913	366	353	0	0	0
Washington	11001	0033021	1170	454	486	0	0	0
Washington	11001	0033022	821	370	355	0	0	0
Washington	11001	0048011	489	228	232	0	0	0
Washington	11001	0048012	955	504	490	0	0	0
Washington	11001	0048013	711	314	332	0	0	0
Washington	11001	0048021	1136	594	608	0	0	0
Washington	11001	0048022	1954	871	849	0	0	0
Washington	11001	0049011	1144	485	492	0	0	0
Washington	11001	0049012	624	247	238	0	0	0
Washington	11001	0049013	226	140	146	0	0	0
Washington	11001	0049021	1310	620	630	0	0	0
Washington	11001	0049022	264	189	175	0	0	0
Washington	11001	0060011	0	0	0	0	0	0
Washington	11001	0060012	0	0	0	0	0	0
Washington	11001	0060013	2073	1765	1758	0	0	0
Washington	11001	0060201	791	167	184	0	0	0
Washington	11001	0062011	14	68	62	0	0	0
Washington	11001	0062012	37	72	70	0	0	0
Washington	11001	0062023	23	2	0	0	0	0
Washington	11001	0063011	3723	2716	2644	0	7	15
Washington	11001	0063021	350	72	85	0	0	0
Washington	11001	0064101	2014	1022	1090	0	0	0
Washington	11001	0064102	502	223	206	0	0	0
Washington	11001	0064103	0	0	0	0	0	0
Washington	11001	0065101	666	466	456	0	0	0
Washington	11001	0065102	592	331	327	0	0	0
Washington	11001	0065103	367	207	200	0	0	0
Washington	11001	0065104	587	397	405	0	0	0
Washington	11001	0065105	184	155	161	0	0	0
Washington	11001	0067101	1090	505	514	0	0	0
Washington	11001	0067102	1010	614	625	0	0	0
Washington	11001	0067103	829	429	420	0	10	0
Washington	11001	0067104	551	314	293	0	0	0
Washington	11001	0068011	1615	677	678	0	0	0
Washington	11001	0068012	803	361	368	0	0	0
Washington	11001	0068021	933	385	381	0	0	0
Washington	11001	0068022	783	327	319	0	0	0
Washington	11001	0068023	638	256	259	0	0	0
Washington	11001	0068041	3182	13	14	0	0	0
Washington	11001	0070101	448	267	264	0	0	0
Washington	11001	0070102	783	216	216	0	0	0
Washington	11001	0070103	919	592	593	0	0	0
Washington	11001	0073011	7767	1987	1975	0	12	0
Washington	11001	0074011	88	37	36	0	0	0
Washington	11001	0074012	2595	1010	1027	0	0	0
Washington	11001	0074041	2120	750	730	0	0	0
Washington	11001	0074042	1994	860	864	0	0	0
Washington	11001	0074064	2403	1024	1025	0	0	0
Washington	11001	0074071	447	145	158	0	0	0
Washington	11001	0074072	280	95	79	0	0	0
Washington	11001	0074073	254	113	121	0	0	0
Washington	11001	0074075	2166	938	932	0	0	0
Washington	11001	0074081	3069	1229	1168	0	0	0
Washington	11001	0074091	939	435	441	0	0	0
Washington	11001	0074092	2042	1403	1405	0	0	0
Washington	11001	0074301	2449	1127	1168	0	0	12
Washington	11001	0075021	2158	722	727	0	0	0
Washington	11001	0075022	1447	621	618	0	0	0
Washington	11001	0075023	789	262	260	0	0	0
Washington	11001	0075032	2047	748	748	0	0	0

Washington	11001	0075033	611	219	214	0	0	0
Washington	11001	0075034	360	152	155	0	0	0
Washington	11001	0075041	2125	955	978	0	0	0
Washington	11001	0075042	430	207	193	0	0	0
Washington	11001	0075043	116	44	37	0	0	0
Washington	11001	0076011	618	314	305	0	0	0
Washington	11001	0076012	720	285	256	0	0	0
Washington	11001	0076013	705	280	303	0	0	0
Washington	11001	0076014	2179	974	1004	0	0	0
Washington	11001	0076015	1004	369	354	0	0	0
Washington	11001	0076031	1599	894	927	0	0	0
Washington	11001	0076032	535	197	169	0	0	0
Washington	11001	0076033	280	104	90	0	0	0
Washington	11001	0076034	1252	724	669	0	0	0
Washington	11001	0076035	803	380	355	0	0	0
Washington	11001	0076041	1203	636	700	0	0	0
Washington	11001	0076042	984	492	502	0	0	0
Washington	11001	0076043	376	179	171	0	0	0
Washington	11001	0076044	320	112	101	0	0	0
Washington	11001	0076045	321	123	116	0	0	0
Washington	11001	0076046	1083	471	512	0	0	0
Washington	11001	0076057	3878	1838	1838	0	0	0
Washington	11001	0077031	1046	460	444	0	0	0
Washington	11001	0077032	1138	559	567	0	0	0
Washington	11001	0077033	3480	1457	1465	0	0	0
Washington	11001	0077071	2376	979	1039	0	0	0
Washington	11001	0077072	713	238	222	0	0	0
Washington	11001	0077073	1109	427	383	0	0	0
Washington	11001	0077081	1338	703	712	0	0	0
Washington	11001	0077082	1553	736	742	0	0	0
Washington	11001	0077083	0	0	0	0	0	0
Washington	11001	0077093	526	239	213	0	0	0
Washington	11001	0077094	1069	516	545	0	0	0
Washington	11001	0077095	748	396	378	0	0	0
Washington	11001	0078031	545	247	253	0	0	0
Washington	11001	0078032	750	295	305	0	0	0
Washington	11001	0078033	719	269	256	0	0	0
Washington	11001	0078034	1558	743	757	0	0	0
Washington	11001	0078035	504	293	276	0	0	0
Washington	11001	0078041	521	102	107	0	0	0
Washington	11001	0078042	1906	633	586	0	0	0
Washington	11001	0078043	239	102	103	0	0	0
Washington	11001	0078044	542	234	238	0	0	0
Washington	11001	0078045	414	163	200	0	0	0
Washington	11001	0078071	551	253	246	0	0	0
Washington	11001	0078072	610	245	256	0	0	0
Washington	11001	0078073	142	51	62	0	0	0
Washington	11001	0078074	912	358	354	0	0	12
Washington	11001	0078081	562	291	296	0	0	0
Washington	11001	0078082	1365	486	476	0	0	0
Washington	11001	0078083	1070	406	374	0	0	0
Washington	11001	0078084	1261	396	411	0	0	0
Washington	11001	0078085	511	184	183	0	0	0
Washington	11001	0078093	1791	850	851	0	0	0
Washington	11001	0078094	769	305	272	0	0	0
Washington	11001	0078097	241	146	156	0	0	0
Washington	11001	0078601	849	376	381	0	0	0
Washington	11001	0078602	537	220	207	0	0	0
Washington	11001	0078605	544	279	308	0	0	0
Washington	11001	0078606	455	213	214	0	0	0
Washington	11001	0079011	604	284	313	0	0	0
Washington	11001	0079012	945	436	446	0	0	12
Washington	11001	0079013	1108	478	500	0	0	0
Washington	11001	0079014	1222	506	473	0	0	0

Washington	11001	0079031	841	384	350	0	0	0
Washington	11001	0079032	684	320	318	0	0	0
Washington	11001	0079033	490	239	235	0	0	0
Washington	11001	0080011	784	301	313	0	0	0
Washington	11001	0080012	1460	652	632	0	0	5
Washington	11001	0080013	707	324	295	0	0	0
Washington	11001	0080021	233	149	173	0	0	0
Washington	11001	0080022	1285	567	592	0	0	0
Washington	11001	0080023	562	252	250	0	0	0
Washington	11001	0080024	1501	736	721	0	0	0
Washington	11001	0081101	667	352	357	0	0	0
Washington	11001	0081102	1247	598	578	0	0	0
Washington	11001	0081103	822	455	432	0	0	13
Washington	11001	0083011	333	161	163	0	0	0
Washington	11001	0083012	1961	1040	1045	0	0	0
Washington	11001	0083013	52	36	35	0	0	0
Washington	11001	0083021	271	111	119	0	0	0
Washington	11001	0083022	1693	819	805	0	0	0
Washington	11001	0084023	1032	267	290	0	0	0
Washington	11001	0084024	1731	914	955	0	0	0
Washington	11001	0084101	277	108	93	0	0	0
Washington	11001	0084102	937	341	293	0	0	0
Washington	11001	0084103	500	217	207	0	9	0
Washington	11001	0085101	969	371	374	0	0	0
Washington	11001	0085102	963	268	276	0	0	0
Washington	11001	0085103	616	245	260	0	0	0
Washington	11001	0085104	358	159	147	0	0	0
Washington	11001	0085105	605	295	287	0	0	0
Washington	11001	0085106	155	56	50	0	0	0
Washington	11001	0087011	215	60	47	0	0	0
Washington	11001	0087014	1475	500	476	0	0	0
Washington	11001	0087015	1113	397	401	0	0	0
Washington	11001	0087021	460	197	213	0	0	0
Washington	11001	0087022	850	414	424	0	0	0
Washington	11001	0087023	785	337	348	0	0	0
Washington	11001	0088021	751	347	347	0	0	0
Washington	11001	0088022	1221	574	594	0	0	0
Washington	11001	0088023	1441	535	497	0	0	0
Washington	11001	0088024	1359	586	604	0	0	0
Washington	11001	0088031	187	0	0	0	0	0
Washington	11001	0088035	1011	512	508	0	0	0
Washington	11001	0088036	982	191	191	0	0	0
Washington	11001	0088037	4	1	1	0	0	0
Washington	11001	0088041	0	0	0	0	0	0
Washington	11001	0088042	664	355	332	0	0	0
Washington	11001	0088043	1326	606	627	0	0	0
Washington	11001	0088044	1104	577	583	0	0	0
Washington	11001	0089031	3357	1535	1535	0	0	0
Washington	11001	0089041	2950	1414	1378	0	0	0
Washington	11001	0089042	913	494	530	0	0	0
Washington	11001	0089051	0	0	0	0	0	0
Washington	11001	0090011	2182	1426	1424	0	0	0
Washington	11001	0090021	156	72	77	0	0	0
Washington	11001	0090022	724	239	228	0	0	0
Washington	11001	0090023	573	275	283	0	0	0
Washington	11001	0091021	856	377	373	0	0	0
Washington	11001	0091022	3991	1523	1527	0	0	0
Washington	11001	0091102	739	265	270	0	0	0
Washington	11001	0091104	960	271	247	0	0	0
Washington	11001	0091105	461	146	145	0	0	0
Washington	11001	0091106	1454	577	597	0	0	0
Washington	11001	0092034	723	265	263	0	0	0
Washington	11001	0092035	1155	370	351	0	0	0
Washington	11001	0092036	1336	657	706	0	0	0

Washington	11001	0092103	1390	602	600	0	0	0
Washington	11001	0092104	361	0	0	0	0	0
Washington	11001	0092402	2095	1172	1118	0	0	0
Washington	11001	0092404	334	179	207	0	0	0
Washington	11001	0093011	884	297	285	0	0	0
Washington	11001	0093012	378	168	148	0	0	0
Washington	11001	0093013	322	125	127	0	0	0
Washington	11001	0093014	738	242	261	0	0	0
Washington	11001	0093015	438	116	85	0	0	0
Washington	11001	0093016	822	304	289	0	0	0
Washington	11001	0093027	910	645	684	0	0	0
Washington	11001	0093028	726	311	329	0	0	0
Washington	11001	0094101	628	289	294	0	0	0
Washington	11001	0094102	621	226	223	0	0	0
Washington	11001	0094103	913	342	355	0	0	0
Washington	11001	0094104	858	359	364	0	0	0
Washington	11001	0094105	508	175	178	0	0	0
Washington	11001	0094106	1099	401	378	0	0	0
Washington	11001	0095011	1971	1009	1016	0	0	0
Washington	11001	0095012	2075	10	10	0	0	0
Washington	11001	0095013	1041	562	554	0	0	0
Washington	11001	0095014	782	450	451	0	0	0
Washington	11001	0095031	1631	636	662	0	0	0
Washington	11001	0095032	441	149	143	0	0	0
Washington	11001	0095033	432	141	136	0	0	0
Washington	11001	0095034	344	133	118	0	0	0
Washington	11001	0095035	372	154	154	0	0	0
Washington	11001	0095082	1534	580	556	0	0	0
Washington	11001	0095083	927	396	447	0	0	0
Washington	11001	0095084	620	360	330	0	0	0
Washington	11001	0095091	1198	446	465	0	0	0
Washington	11001	0095092	1188	468	456	0	0	0
Washington	11001	0095098	885	365	358	0	0	0
Washington	11001	0095403	309	106	107	0	0	0
Washington	11001	0095404	418	153	163	0	0	0
Washington	11001	0095405	401	199	195	0	0	0
Washington	11001	0095406	867	531	560	0	0	0
Washington	11001	0095407	1232	405	369	0	0	0
Washington	11001	0096011	814	609	596	0	0	7
Washington	11001	0096012	585	246	229	0	0	0
Washington	11001	0096023	2472	1275	1298	0	0	0
Washington	11001	0096031	1653	845	900	0	0	0
Washington	11001	0096032	773	297	306	0	0	0
Washington	11001	0096033	905	535	568	0	0	0
Washington	11001	0096044	1350	644	595	0	0	0
Washington	11001	0096045	914	390	334	0	8	0
Washington	11001	0098091	1541	0	0	0	0	0
Washington	11001	0098092	0	0	0	0	0	0
Washington	11001	0099011	8	0	0	0	0	0
Washington	11001	0099013	761	290	277	0	0	0
Washington	11001	0099014	625	269	280	0	0	0
Washington	11001	0099015	385	157	129	0	0	0
Washington	11001	0099016	859	345	342	0	0	0
Washington	11001	0099021	489	171	161	0	0	0
Washington	11001	0099022	2716	1039	1095	0	0	0
Washington	11001	0099023	70	24	16	0	0	0
Washington	11001	0099024	20	5	0	0	0	0
Washington	11001	0099031	2705	1080	1131	0	0	0
Washington	11001	0099035	432	170	196	0	0	0
Washington	11001	0099043	1052	305	273	0	0	11
Washington	11001	0099044	755	367	346	0	0	0
Washington	11001	0099045	250	136	126	0	0	0
Washington	11001	0099046	1266	567	542	0	0	0
Washington	11001	0099052	1053	411	411	0	0	0

Washington	11001 0099053	856	391	413	0	0	0
Washington	11001 0099054	731	301	334	0	0	8
Washington	11001 0099055	529	247	251	0	0	0
Washington	11001 0099061	1465	673	625	0	0	0
Washington	11001 0099062	488	251	232	0	0	0
Washington	11001 0099072	3097	1162	1162	0	0	0
	Sub Totals:	317531	137149	136967	0	50	100

For Radius of 4 Mi., Circle Area = 50.265482

No.	City	Block Group ID	Total Area	Partial Area	% Within Radius
1	Washington	11001 311	0.098402	0.000736	0.75
2	Washington	11001 312	0.015780	0.003754	23.79
3	Washington	11001 322	0.039992	0.006956	17.39
4	Washington	11001 323	0.078595	0.057060	72.60
5	Washington	11001 324	0.015082	0.015082	100.00
6	Washington	11001 341	0.222157	0.222157	100.00
7	Washington	11001 342	0.059700	0.059700	100.00
8	Washington	11001 343	0.038287	0.038287	100.00
9	Washington	11001 344	0.033331	0.033331	100.00
10	Washington	11001 345	0.051255	0.051255	100.00
11	Washington	11001 351	0.046288	0.025038	54.09
12	Washington	11001 352	0.098467	0.092486	93.93
13	Washington	11001 361	0.118560	0.000163	0.14
14	Washington	11001 441	0.063508	0.011600	18.27
15	Washington	11001 442	0.050086	0.018520	36.98
16	Washington	11001 451	0.032130	0.032130	100.00
17	Washington	11001 452	0.052145	0.052145	100.00
18	Washington	11001 461	0.051636	0.051636	100.00
19	Washington	11001 462	0.078375	0.078375	100.00
20	Washington	11001 463	0.032856	0.032856	100.00
21	Washington	11001 471	0.024585	0.024585	100.00
22	Washington	11001 472	0.087457	0.087457	100.00
23	Washington	11001 473	0.036289	0.036289	100.00
24	Washington	11001 474	0.034735	0.034735	100.00
25	Washington	11001 475	0.066631	0.066631	100.00
26	Washington	11001 501	0.040298	0.039313	97.56
27	Washington	11001 502	0.052900	0.052900	100.00
28	Washington	11001 503	0.033669	0.011079	32.91
29	Washington	11001 504	0.038683	0.004107	10.62
30	Washington	11001 511	0.055526	0.055526	100.00
31	Washington	11001 512	0.069699	0.016331	23.43
32	Washington	11001 581	0.149905	0.149905	100.00
33	Washington	11001 582	0.105775	0.105775	100.00
34	Washington	11001 585	0.075087	0.039576	52.71
35	Washington	11001 591	0.060777	0.060777	100.00
36	Washington	11001 592	0.079153	0.079153	100.00
37	Washington	11001 594	0.106074	0.106074	100.00
38	Washington	11001 611	0.038168	0.038168	100.00
39	Washington	11001 612	0.162925	0.162925	100.00
40	Washington	11001 661	0.038357	0.038357	100.00
41	Washington	11001 662	0.040427	0.040427	100.00
42	Washington	11001 663	0.032249	0.032249	100.00
43	Washington	11001 691	0.041092	0.041092	100.00
44	Washington	11001 692	0.058043	0.058043	100.00
45	Washington	11001 693	0.049944	0.049944	100.00
46	Washington	11001 711	0.041719	0.041719	100.00
47	Washington	11001 712	0.043106	0.043106	100.00
48	Washington	11001 713	0.068621	0.068621	100.00
49	Washington	11001 714	0.141591	0.141591	100.00
50	Washington	11001 721	0.037760	0.037760	100.00
51	Washington	11001 722	0.051373	0.051373	100.00
52	Washington	11001 723	0.070562	0.070562	100.00
53	Washington	11001 724	0.068355	0.068355	100.00
54	Washington	11001 725	0.468254	0.468254	100.00
55	Washington	11001 821	0.032789	0.032789	100.00
56	Washington	11001 822	0.092064	0.092064	100.00

57	Washington	11001	861	0.026470	0.026470	100.00
58	Washington	11001	862	0.124640	0.124640	100.00
59	Washington	11001	863	0.116612	0.116612	100.00
60	Washington	11001	23021	0.784219	0.739746	94.33
61	Washington	11001	33011	0.095523	0.095523	100.00
62	Washington	11001	33012	0.039430	0.039430	100.00
63	Washington	11001	33013	0.032512	0.032512	100.00
64	Washington	11001	33021	0.040199	0.040199	100.00
65	Washington	11001	33022	0.034861	0.034861	100.00
66	Washington	11001	48011	0.032857	0.032857	100.00
67	Washington	11001	48012	0.034581	0.034581	100.00
68	Washington	11001	48013	0.049614	0.049614	100.00
69	Washington	11001	48021	0.052762	0.052762	100.00
70	Washington	11001	48022	0.053938	0.053938	100.00
71	Washington	11001	49011	0.035805	0.035805	100.00
72	Washington	11001	49012	0.034481	0.034481	100.00
73	Washington	11001	49013	0.034253	0.034253	100.00
74	Washington	11001	49021	0.054743	0.054743	100.00
75	Washington	11001	49022	0.046315	0.046315	100.00
76	Washington	11001	60011	0.024458	0.024458	100.00
77	Washington	11001	60012	0.071600	0.071600	100.00
78	Washington	11001	60013	0.125390	0.125390	100.00
79	Washington	11001	60201	0.062383	0.062383	100.00
80	Washington	11001	62011	0.115859	0.087370	75.41
81	Washington	11001	62012	0.200082	0.035886	17.94
82	Washington	11001	62023	0.788854	0.673244	85.34
83	Washington	11001	63011	0.153369	0.111724	72.85
84	Washington	11001	63021	0.275037	0.029670	10.79
85	Washington	11001	64101	0.076317	0.076317	100.00
86	Washington	11001	64102	0.060364	0.060364	100.00
87	Washington	11001	64103	0.158550	0.077731	49.03
88	Washington	11001	65101	0.048472	0.048472	100.00
89	Washington	11001	65102	0.032750	0.032750	100.00
90	Washington	11001	65103	0.042317	0.042317	100.00
91	Washington	11001	65104	0.045572	0.045572	100.00
92	Washington	11001	65105	0.009749	0.009749	100.00
93	Washington	11001	67101	0.056935	0.056935	100.00
94	Washington	11001	67102	0.043472	0.043472	100.00
95	Washington	11001	67103	0.035156	0.035156	100.00
96	Washington	11001	67104	0.026488	0.026488	100.00
97	Washington	11001	68011	0.057872	0.057872	100.00
98	Washington	11001	68012	0.034625	0.034625	100.00
99	Washington	11001	68021	0.039815	0.039815	100.00
100	Washington	11001	68022	0.033387	0.033387	100.00
101	Washington	11001	68023	0.032906	0.032906	100.00
102	Washington	11001	68041	0.751352	0.751352	100.00
103	Washington	11001	70101	0.048239	0.048239	100.00
104	Washington	11001	70102	0.041640	0.041640	100.00
105	Washington	11001	70103	0.063634	0.063634	100.00
106	Washington	11001	73011	3.726349	0.170666	4.58
107	Washington	11001	74011	0.348396	0.348396	100.00
108	Washington	11001	74012	0.181604	0.181604	100.00
109	Washington	11001	74041	0.131682	0.127533	96.85
110	Washington	11001	74042	0.183368	0.114859	62.64
111	Washington	11001	74064	0.111767	0.111767	100.00
112	Washington	11001	74071	0.049791	0.049791	100.00
113	Washington	11001	74072	0.018873	0.018873	100.00
114	Washington	11001	74073	0.057294	0.057294	100.00
115	Washington	11001	74075	0.101199	0.101199	100.00
116	Washington	11001	74081	0.146743	0.146743	100.00
117	Washington	11001	74091	0.027094	0.024312	89.73
118	Washington	11001	74092	0.126151	0.016071	12.74
119	Washington	11001	74301	0.127528	0.108203	84.85
120	Washington	11001	75021	0.092774	0.092774	100.00

121	Washington	11001 75022	0.082901	0.082901	100.00
122	Washington	11001 75023	0.049168	0.049168	100.00
123	Washington	11001 75032	0.083433	0.083433	100.00
124	Washington	11001 75033	0.041449	0.041449	100.00
125	Washington	11001 75034	0.045315	0.045315	100.00
126	Washington	11001 75041	0.274252	0.274252	100.00
127	Washington	11001 75042	0.018656	0.018656	100.00
128	Washington	11001 75043	0.004877	0.004877	100.00
129	Washington	11001 76011	0.045934	0.045934	100.00
130	Washington	11001 76012	0.060361	0.060361	100.00
131	Washington	11001 76013	0.033180	0.033180	100.00
132	Washington	11001 76014	0.075223	0.075223	100.00
133	Washington	11001 76015	0.246097	0.246097	100.00
134	Washington	11001 76031	0.078617	0.078617	100.00
135	Washington	11001 76032	0.088460	0.088460	100.00
136	Washington	11001 76033	0.054617	0.054617	100.00
137	Washington	11001 76034	0.107466	0.107466	100.00
138	Washington	11001 76035	0.120455	0.120455	100.00
139	Washington	11001 76041	0.061936	0.061936	100.00
140	Washington	11001 76042	0.041819	0.041819	100.00
141	Washington	11001 76043	0.107128	0.107128	100.00
142	Washington	11001 76044	0.107890	0.107890	100.00
143	Washington	11001 76045	0.037969	0.037969	100.00
144	Washington	11001 76046	0.152440	0.152440	100.00
145	Washington	11001 76057	0.167620	0.167620	100.00
146	Washington	11001 77031	0.136500	0.136500	100.00
147	Washington	11001 77032	0.117979	0.117979	100.00
148	Washington	11001 77033	0.126373	0.126373	100.00
149	Washington	11001 77071	0.138939	0.138939	100.00
150	Washington	11001 77072	0.080726	0.080726	100.00
151	Washington	11001 77073	0.091994	0.091994	100.00
152	Washington	11001 77081	0.052835	0.052835	100.00
153	Washington	11001 77082	0.090026	0.090026	100.00
154	Washington	11001 77083	0.191105	0.191105	100.00
155	Washington	11001 77093	0.243858	0.243858	100.00
156	Washington	11001 77094	0.058938	0.058938	100.00
157	Washington	11001 77095	0.054332	0.054332	100.00
158	Washington	11001 78031	0.056762	0.056762	100.00
159	Washington	11001 78032	0.048673	0.048673	100.00
160	Washington	11001 78033	0.066315	0.066315	100.00
161	Washington	11001 78034	0.079960	0.079960	100.00
162	Washington	11001 78035	0.143549	0.143549	100.00
163	Washington	11001 78041	0.050223	0.050223	100.00
164	Washington	11001 78042	0.130748	0.130748	100.00
165	Washington	11001 78043	0.034292	0.034292	100.00
166	Washington	11001 78044	0.048662	0.048662	100.00
167	Washington	11001 78045	0.046458	0.046458	100.00
168	Washington	11001 78071	0.029101	0.029101	100.00
169	Washington	11001 78072	0.061075	0.061075	100.00
170	Washington	11001 78073	0.044209	0.044209	100.00
171	Washington	11001 78074	0.061338	0.061338	100.00
172	Washington	11001 78081	0.052715	0.052715	100.00
173	Washington	11001 78082	0.088669	0.088669	100.00
174	Washington	11001 78083	0.100741	0.100741	100.00
175	Washington	11001 78084	0.075784	0.075784	100.00
176	Washington	11001 78085	0.039964	0.039964	100.00
177	Washington	11001 78093	0.097440	0.097440	100.00
178	Washington	11001 78094	0.055855	0.055855	100.00
179	Washington	11001 78097	0.042353	0.042353	100.00
180	Washington	11001 78601	0.050512	0.050512	100.00
181	Washington	11001 78602	0.062595	0.062595	100.00
182	Washington	11001 78605	0.053425	0.053425	100.00
183	Washington	11001 78606	0.100407	0.100407	100.00
184	Washington	11001 79011	0.035192	0.035192	100.00

185	Washington	11001	79012	0.034934	0.034934	100.00
186	Washington	11001	79013	0.035756	0.035756	100.00
187	Washington	11001	79014	0.046891	0.046891	100.00
188	Washington	11001	79031	0.034316	0.034316	100.00
189	Washington	11001	79032	0.031379	0.031379	100.00
190	Washington	11001	79033	0.023346	0.023346	100.00
191	Washington	11001	80011	0.033741	0.033741	100.00
192	Washington	11001	80012	0.058670	0.058670	100.00
193	Washington	11001	80013	0.028455	0.028455	100.00
194	Washington	11001	80021	0.059831	0.059831	100.00
195	Washington	11001	80022	0.038860	0.038860	100.00
196	Washington	11001	80023	0.034018	0.034018	100.00
197	Washington	11001	80024	0.080113	0.080113	100.00
198	Washington	11001	81101	0.029569	0.029569	100.00
199	Washington	11001	81102	0.045741	0.045741	100.00
200	Washington	11001	81103	0.035277	0.035277	100.00
201	Washington	11001	83011	0.017001	0.017001	100.00
202	Washington	11001	83012	0.086919	0.086919	100.00
203	Washington	11001	83013	0.006820	0.006820	100.00
204	Washington	11001	83021	0.016947	0.016947	100.00
205	Washington	11001	83022	0.083537	0.083537	100.00
206	Washington	11001	84023	0.036628	0.036628	100.00
207	Washington	11001	84024	0.064190	0.064190	100.00
208	Washington	11001	84101	0.013413	0.013413	100.00
209	Washington	11001	84102	0.042070	0.042070	100.00
210	Washington	11001	84103	0.028565	0.028565	100.00
211	Washington	11001	85101	0.030293	0.030293	100.00
212	Washington	11001	85102	0.044729	0.044729	100.00
213	Washington	11001	85103	0.026122	0.026122	100.00
214	Washington	11001	85104	0.037371	0.037371	100.00
215	Washington	11001	85105	0.033115	0.033115	100.00
216	Washington	11001	85106	0.024051	0.024051	100.00
217	Washington	11001	87011	0.005506	0.005506	100.00
218	Washington	11001	87014	0.100265	0.100265	100.00
219	Washington	11001	87015	0.037737	0.037737	100.00
220	Washington	11001	87021	0.055275	0.055275	100.00
221	Washington	11001	87022	0.032329	0.032329	100.00
222	Washington	11001	87023	0.091823	0.091823	100.00
223	Washington	11001	88021	0.026909	0.026909	100.00
224	Washington	11001	88022	0.050730	0.050730	100.00
225	Washington	11001	88023	0.064829	0.064829	100.00
226	Washington	11001	88024	0.035595	0.035595	100.00
227	Washington	11001	88031	0.051698	0.051698	100.00
228	Washington	11001	88035	0.082359	0.082359	100.00
229	Washington	11001	88036	0.230026	0.230026	100.00
230	Washington	11001	88037	0.061520	0.061520	100.00
231	Washington	11001	88041	0.189209	0.189209	100.00
232	Washington	11001	88042	0.024217	0.024217	100.00
233	Washington	11001	88043	0.035467	0.035467	100.00
234	Washington	11001	88044	0.053745	0.053745	100.00
235	Washington	11001	89031	0.112229	0.112229	100.00
236	Washington	11001	89041	0.112307	0.112307	100.00
237	Washington	11001	89042	0.051795	0.051795	100.00
238	Washington	11001	89051	1.264767	1.264767	100.00
239	Washington	11001	90011	0.557200	0.557200	100.00
240	Washington	11001	90021	0.059520	0.059520	100.00
241	Washington	11001	90022	0.366913	0.366913	100.00
242	Washington	11001	90023	0.190383	0.190383	100.00
243	Washington	11001	91021	0.093941	0.093941	100.00
244	Washington	11001	91022	0.602253	0.602253	100.00
245	Washington	11001	91102	0.115628	0.115628	100.00
246	Washington	11001	91104	0.128861	0.128861	100.00
247	Washington	11001	91105	0.107098	0.107098	100.00
248	Washington	11001	91106	0.158354	0.158354	100.00

249	Washington	11001	92034	0.025473	0.025473	100.00
250	Washington	11001	92035	0.140812	0.140812	100.00
251	Washington	11001	92036	0.056074	0.056074	100.00
252	Washington	11001	92103	0.162163	0.162163	100.00
253	Washington	11001	92104	0.070457	0.070457	100.00
254	Washington	11001	92402	0.092024	0.092024	100.00
255	Washington	11001	92404	0.020621	0.020621	100.00
256	Washington	11001	93011	0.090804	0.090804	100.00
257	Washington	11001	93012	0.064369	0.064369	100.00
258	Washington	11001	93013	0.049131	0.049131	100.00
259	Washington	11001	93014	0.077440	0.077440	100.00
260	Washington	11001	93015	0.063303	0.063303	100.00
261	Washington	11001	93016	0.079014	0.079014	100.00
262	Washington	11001	93027	0.074514	0.074514	100.00
263	Washington	11001	93028	0.075516	0.075516	100.00
264	Washington	11001	94101	0.153118	0.153118	100.00
265	Washington	11001	94102	0.088390	0.088390	100.00
266	Washington	11001	94103	0.093003	0.093003	100.00
267	Washington	11001	94104	0.086920	0.086920	100.00
268	Washington	11001	94105	0.070442	0.070442	100.00
269	Washington	11001	94106	0.096910	0.096910	100.00
270	Washington	11001	95011	0.181319	0.115362	63.62
271	Washington	11001	95012	0.242969	0.242969	100.00
272	Washington	11001	95013	0.060015	0.060015	100.00
273	Washington	11001	95014	0.049304	0.036307	73.64
274	Washington	11001	95031	0.243641	0.243641	100.00
275	Washington	11001	95032	0.069515	0.069515	100.00
276	Washington	11001	95033	0.127686	0.127686	100.00
277	Washington	11001	95034	0.051992	0.051992	100.00
278	Washington	11001	95035	0.034628	0.034628	100.00
279	Washington	11001	95082	0.095917	0.007020	7.32
280	Washington	11001	95083	0.092203	0.068002	73.75
281	Washington	11001	95084	0.190673	0.015644	8.20
282	Washington	11001	95091	0.064141	0.064141	100.00
283	Washington	11001	95092	0.079555	0.079555	100.00
284	Washington	11001	95098	0.092240	0.088074	95.48
285	Washington	11001	95403	0.033709	0.033709	100.00
286	Washington	11001	95404	0.045956	0.045956	100.00
287	Washington	11001	95405	0.055683	0.055683	100.00
288	Washington	11001	95406	0.078254	0.078254	100.00
289	Washington	11001	95407	0.157103	0.157103	100.00
290	Washington	11001	96011	0.238864	0.238864	100.00
291	Washington	11001	96012	0.535609	0.535609	100.00
292	Washington	11001	99072	0.179508	0.179508	100.00
293	Washington	11001	96031	0.096572	0.096572	100.00
294	Washington	11001	96032	0.074050	0.074050	100.00
295	Washington	11001	96033	0.067180	0.067180	100.00
296	Washington	11001	96044	0.126568	0.126568	100.00
297	Washington	11001	96045	0.074780	0.074780	100.00
298	Washington	11001	98091	0.274171	0.036618	13.36
299	Washington	11001	98092	0.291201	0.063291	21.73
300	Washington	11001	99011	0.359790	0.359790	100.00
301	Washington	11001	99013	0.173213	0.173213	100.00
302	Washington	11001	99014	0.091797	0.091797	100.00
303	Washington	11001	99015	0.053110	0.053110	100.00
304	Washington	11001	99016	0.094579	0.094579	100.00
305	Washington	11001	99021	0.063055	0.063055	100.00
306	Washington	11001	99022	0.141276	0.141276	100.00
307	Washington	11001	99023	0.075309	0.075309	100.00
308	Washington	11001	99024	0.232484	0.232484	100.00
309	Washington	11001	99031	0.102670	0.102670	100.00
310	Washington	11001	99035	0.039211	0.039211	100.00
311	Washington	11001	99043	0.033116	0.033116	100.00
312	Washington	11001	99044	0.024282	0.024282	100.00

313	Washington	11001 99045	0.019541	0.019541	100.00
314	Washington	11001 99046	0.082806	0.082806	100.00
315	Washington	11001 99052	0.051229	0.051229	100.00
316	Washington	11001 99053	0.043831	0.043831	100.00
317	Washington	11001 99054	0.045691	0.045691	100.00
318	Washington	11001 99055	0.023272	0.023272	100.00
319	Washington	11001 99061	0.057294	0.057294	100.00
320	Washington	11001 99062	0.031427	0.031427	100.00
321	Washington	11001 96023	0.417721	0.417721	100.00
	Totals:		34.395580	28.537361	

For Radius of 3 Mi., Circle Area = 28.274334

No.	City	Block Group ID	Total Area	Partial Area	% Within Radius
18	Washington	11001 461	0.051636	0.033507	64.89
21	Washington	11001 471	0.024585	0.012567	51.12
22	Washington	11001 472	0.087457	0.073968	84.58
23	Washington	11001 473	0.036289	0.000276	0.76
35	Washington	11001 591	0.060777	0.021639	35.60
40	Washington	11001 661	0.038357	0.038357	100.00
41	Washington	11001 662	0.040427	0.040427	100.00
42	Washington	11001 663	0.032249	0.032249	100.00
43	Washington	11001 691	0.041092	0.041092	100.00
44	Washington	11001 692	0.058043	0.058043	100.00
45	Washington	11001 693	0.049944	0.049944	100.00
46	Washington	11001 711	0.041719	0.041719	100.00
47	Washington	11001 712	0.043106	0.043106	100.00
48	Washington	11001 713	0.068621	0.068621	100.00
49	Washington	11001 714	0.141591	0.141591	100.00
50	Washington	11001 721	0.037760	0.037760	100.00
51	Washington	11001 722	0.051373	0.050141	97.60
52	Washington	11001 723	0.070562	0.016833	23.86
54	Washington	11001 725	0.468254	0.106537	22.75
55	Washington	11001 821	0.032789	0.032789	100.00
56	Washington	11001 822	0.092064	0.092064	100.00
57	Washington	11001 861	0.026470	0.026470	100.00
58	Washington	11001 862	0.124640	0.124640	100.00
59	Washington	11001 863	0.116612	0.116612	100.00
62	Washington	11001 33012	0.039430	0.000070	0.18
64	Washington	11001 33021	0.040199	0.005943	14.79
65	Washington	11001 33022	0.034861	0.015384	44.13
82	Washington	11001 62023	0.788854	0.211238	26.78
88	Washington	11001 65101	0.048472	0.048472	100.00
89	Washington	11001 65102	0.032750	0.032750	100.00
90	Washington	11001 65103	0.042317	0.014248	33.67
91	Washington	11001 65104	0.045572	0.024695	54.19
92	Washington	11001 65105	0.009749	0.009749	100.00
93	Washington	11001 67101	0.056935	0.056935	100.00
94	Washington	11001 67102	0.043472	0.043472	100.00
95	Washington	11001 67103	0.035156	0.035156	100.00
96	Washington	11001 67104	0.026488	0.026488	100.00
97	Washington	11001 68011	0.057872	0.057872	100.00
98	Washington	11001 68012	0.034625	0.034625	100.00
99	Washington	11001 68021	0.039815	0.039815	100.00
100	Washington	11001 68022	0.033387	0.033387	100.00
101	Washington	11001 68023	0.032906	0.032906	100.00
102	Washington	11001 68041	0.751352	0.751352	100.00
103	Washington	11001 70101	0.048239	0.048239	100.00
104	Washington	11001 70102	0.041640	0.041640	100.00

105	Washington	11001 70103	0.063634	0.063634	100.00
107	Washington	11001 74011	0.348396	0.022286	6.40
120	Washington	11001 75021	0.092774	0.014641	15.78
122	Washington	11001 75023	0.049168	0.001115	2.27
124	Washington	11001 75033	0.041449	0.006168	14.88
126	Washington	11001 75041	0.274252	0.060268	21.98
128	Washington	11001 75043	0.004877	0.004875	99.96
129	Washington	11001 76011	0.045934	0.045934	100.00
130	Washington	11001 76012	0.060361	0.060361	100.00
131	Washington	11001 76013	0.033180	0.033180	100.00
132	Washington	11001 76014	0.075223	0.075223	100.00
133	Washington	11001 76015	0.246097	0.243215	98.83
134	Washington	11001 76031	0.078617	0.078617	100.00
135	Washington	11001 76032	0.088460	0.085985	97.20
136	Washington	11001 76033	0.054617	0.000923	1.69
138	Washington	11001 76035	0.120455	0.041135	34.15
139	Washington	11001 76041	0.061936	0.061936	100.00
140	Washington	11001 76042	0.041819	0.041819	100.00
141	Washington	11001 76043	0.107128	0.107128	100.00
142	Washington	11001 76044	0.107890	0.107890	100.00
143	Washington	11001 76045	0.037969	0.037969	100.00
144	Washington	11001 76046	0.152440	0.147389	96.69
145	Washington	11001 76057	0.167620	0.167620	100.00
146	Washington	11001 77031	0.136500	0.136500	100.00
147	Washington	11001 77032	0.117979	0.117979	100.00
148	Washington	11001 77033	0.126373	0.126373	100.00
149	Washington	11001 77071	0.138939	0.138939	100.00
150	Washington	11001 77072	0.080726	0.080726	100.00
151	Washington	11001 77073	0.091994	0.091994	100.00
152	Washington	11001 77081	0.052835	0.052835	100.00
153	Washington	11001 77082	0.090026	0.090026	100.00
154	Washington	11001 77083	0.191105	0.191105	100.00
155	Washington	11001 77093	0.243858	0.243858	100.00
156	Washington	11001 77094	0.058938	0.058938	100.00
157	Washington	11001 77095	0.054332	0.054332	100.00
158	Washington	11001 78031	0.056762	0.056762	100.00
159	Washington	11001 78032	0.048673	0.048673	100.00
160	Washington	11001 78033	0.066315	0.066315	100.00
161	Washington	11001 78034	0.079960	0.079960	100.00
162	Washington	11001 78035	0.143549	0.143549	100.00
163	Washington	11001 78041	0.050223	0.050223	100.00
164	Washington	11001 78042	0.130748	0.130748	100.00
165	Washington	11001 78043	0.034292	0.034292	100.00
166	Washington	11001 78044	0.048662	0.048662	100.00
167	Washington	11001 78045	0.046458	0.046458	100.00
168	Washington	11001 78071	0.029101	0.029101	100.00
169	Washington	11001 78072	0.061075	0.061075	100.00
170	Washington	11001 78073	0.044209	0.044209	100.00
171	Washington	11001 78074	0.061338	0.061338	100.00
172	Washington	11001 78081	0.052715	0.052715	100.00
173	Washington	11001 78082	0.088669	0.088669	100.00
174	Washington	11001 78083	0.100741	0.100741	100.00
175	Washington	11001 78084	0.075784	0.075784	100.00
176	Washington	11001 78085	0.039964	0.039964	100.00
177	Washington	11001 78093	0.097440	0.097440	100.00
178	Washington	11001 78094	0.055855	0.055855	100.00
179	Washington	11001 78097	0.042353	0.042353	100.00
180	Washington	11001 78601	0.050512	0.050512	100.00
181	Washington	11001 78602	0.062595	0.062595	100.00
182	Washington	11001 78605	0.053425	0.053425	100.00
183	Washington	11001 78606	0.100407	0.100407	100.00
184	Washington	11001 79011	0.035192	0.035192	100.00
185	Washington	11001 79012	0.034934	0.034934	100.00
186	Washington	11001 79013	0.035756	0.035756	100.00

187	Washington	11001 79014	0.046891	0.046891	100.00
188	Washington	11001 79031	0.034316	0.034316	100.00
189	Washington	11001 79032	0.031379	0.031379	100.00
190	Washington	11001 79033	0.023346	0.023346	100.00
191	Washington	11001 80011	0.033741	0.033741	100.00
192	Washington	11001 80012	0.058670	0.058670	100.00
193	Washington	11001 80013	0.028455	0.028455	100.00
194	Washington	11001 80021	0.059831	0.059831	100.00
195	Washington	11001 80022	0.038860	0.038860	100.00
196	Washington	11001 80023	0.034018	0.034018	100.00
197	Washington	11001 80024	0.080113	0.080113	100.00
198	Washington	11001 81101	0.029569	0.029569	100.00
199	Washington	11001 81102	0.045741	0.045741	100.00
200	Washington	11001 81103	0.035277	0.035277	100.00
201	Washington	11001 83011	0.017001	0.017001	100.00
202	Washington	11001 83012	0.086919	0.086919	100.00
203	Washington	11001 83013	0.006820	0.006820	100.00
204	Washington	11001 83021	0.016947	0.016947	100.00
205	Washington	11001 83022	0.083537	0.083537	100.00
206	Washington	11001 84023	0.036628	0.036628	100.00
207	Washington	11001 84024	0.064190	0.064190	100.00
208	Washington	11001 84101	0.013413	0.013413	100.00
209	Washington	11001 84102	0.042070	0.042070	100.00
210	Washington	11001 84103	0.028565	0.028565	100.00
211	Washington	11001 85101	0.030293	0.030293	100.00
212	Washington	11001 85102	0.044729	0.044729	100.00
213	Washington	11001 85103	0.026122	0.026122	100.00
214	Washington	11001 85104	0.037371	0.037371	100.00
215	Washington	11001 85105	0.033115	0.033115	100.00
216	Washington	11001 85106	0.024051	0.024051	100.00
217	Washington	11001 87011	0.005506	0.005506	100.00
218	Washington	11001 87014	0.100265	0.100265	100.00
219	Washington	11001 87015	0.037737	0.037737	100.00
220	Washington	11001 87021	0.055275	0.055275	100.00
221	Washington	11001 87022	0.032329	0.032329	100.00
222	Washington	11001 87023	0.091823	0.091823	100.00
223	Washington	11001 88021	0.026909	0.026909	100.00
224	Washington	11001 88022	0.050730	0.050730	100.00
225	Washington	11001 88023	0.064829	0.064829	100.00
226	Washington	11001 88024	0.035595	0.035595	100.00
227	Washington	11001 88031	0.051698	0.051698	100.00
228	Washington	11001 88035	0.082359	0.082359	100.00
229	Washington	11001 88036	0.230026	0.230026	100.00
230	Washington	11001 88037	0.061520	0.061520	100.00
231	Washington	11001 88041	0.189209	0.189209	100.00
232	Washington	11001 88042	0.024217	0.024217	100.00
233	Washington	11001 88043	0.035467	0.035467	100.00
234	Washington	11001 88044	0.053745	0.053745	100.00
235	Washington	11001 89031	0.112229	0.112229	100.00
236	Washington	11001 89041	0.112307	0.112307	100.00
237	Washington	11001 89042	0.051795	0.051795	100.00
238	Washington	11001 89051	1.264767	1.264767	100.00
239	Washington	11001 90011	0.557200	0.557200	100.00
240	Washington	11001 90021	0.059520	0.059520	100.00
241	Washington	11001 90022	0.366913	0.366913	100.00
242	Washington	11001 90023	0.190383	0.190383	100.00
243	Washington	11001 91021	0.093941	0.093941	100.00
244	Washington	11001 91022	0.602253	0.602253	100.00
245	Washington	11001 91102	0.115628	0.115628	100.00
246	Washington	11001 91104	0.128861	0.128861	100.00
247	Washington	11001 91105	0.107098	0.107098	100.00
248	Washington	11001 91106	0.158354	0.158354	100.00
249	Washington	11001 92034	0.025473	0.025473	100.00
250	Washington	11001 92035	0.140812	0.051883	36.85

251	Washington	11001 92036	0.056074	0.055270	98.57
252	Washington	11001 92103	0.162163	0.152639	94.13
253	Washington	11001 92104	0.070457	0.026378	37.44
254	Washington	11001 92402	0.092024	0.092024	100.00
255	Washington	11001 92404	0.020621	0.020621	100.00
256	Washington	11001 93011	0.090804	0.090804	100.00
257	Washington	11001 93012	0.064369	0.064369	100.00
258	Washington	11001 93013	0.049131	0.049131	100.00
259	Washington	11001 93014	0.077440	0.077440	100.00
260	Washington	11001 93015	0.063303	0.063303	100.00
261	Washington	11001 93016	0.079014	0.079014	100.00
262	Washington	11001 93027	0.074514	0.074514	100.00
263	Washington	11001 93028	0.075516	0.075516	100.00
264	Washington	11001 94101	0.153118	0.129231	84.40
265	Washington	11001 94102	0.088390	0.088390	100.00
266	Washington	11001 94103	0.093003	0.093003	100.00
267	Washington	11001 94104	0.086920	0.086920	100.00
268	Washington	11001 94105	0.070442	0.070442	100.00
269	Washington	11001 94106	0.096910	0.096910	100.00
271	Washington	11001 95012	0.242969	0.004499	1.85
275	Washington	11001 95032	0.069515	0.018501	26.61
276	Washington	11001 95033	0.127686	0.127441	99.81
277	Washington	11001 95034	0.051992	0.042477	81.70
286	Washington	11001 95404	0.045956	0.030641	66.68
287	Washington	11001 95405	0.055683	0.015977	28.69
288	Washington	11001 95406	0.078254	0.010512	13.43
290	Washington	11001 96011	0.238864	0.238864	100.00
291	Washington	11001 96012	0.535609	0.535609	100.00
292	Washington	11001 99072	0.179508	0.179508	100.00
293	Washington	11001 96031	0.096572	0.096572	100.00
294	Washington	11001 96032	0.074050	0.074050	100.00
295	Washington	11001 96033	0.067180	0.067180	100.00
296	Washington	11001 96044	0.126568	0.126568	100.00
297	Washington	11001 96045	0.074780	0.074780	100.00
300	Washington	11001 99011	0.359790	0.359790	100.00
301	Washington	11001 99013	0.173213	0.173213	100.00
302	Washington	11001 99014	0.091797	0.091797	100.00
303	Washington	11001 99015	0.053110	0.053110	100.00
304	Washington	11001 99016	0.094579	0.094579	100.00
305	Washington	11001 99021	0.063055	0.063055	100.00
306	Washington	11001 99022	0.141276	0.141276	100.00
307	Washington	11001 99023	0.075309	0.075309	100.00
308	Washington	11001 99024	0.232484	0.232484	100.00
309	Washington	11001 99031	0.102670	0.102670	100.00
310	Washington	11001 99035	0.039211	0.039211	100.00
311	Washington	11001 99043	0.033116	0.033116	100.00
312	Washington	11001 99044	0.024282	0.024282	100.00
313	Washington	11001 99045	0.019541	0.019541	100.00
314	Washington	11001 99046	0.082806	0.082806	100.00
315	Washington	11001 99052	0.051229	0.051229	100.00
316	Washington	11001 99053	0.043831	0.043831	100.00
317	Washington	11001 99054	0.045691	0.045691	100.00
318	Washington	11001 99055	0.023272	0.023272	100.00
319	Washington	11001 99061	0.057294	0.057294	100.00
320	Washington	11001 99062	0.031427	0.031427	100.00
321	Washington	11001 96023	0.417721	0.417721	100.00
===	==========	==========	==========	==========	======
	Totals:		22.060966	19.371628	

For Radius of 2 Mi., Circle Area = 12.566371

	Block	Total	Partial	% Within

No.	City	Group ID	Area	Area	Radius
43	Washington	11001 691	0.041092	0.011245	27.36
93	Washington	11001 67101	0.056935	0.041159	72.29
97	Washington	11001 68011	0.057872	0.057872	100.00
98	Washington	11001 68012	0.034625	0.034625	100.00
99	Washington	11001 68021	0.039815	0.039275	98.64
100	Washington	11001 68022	0.033387	0.024036	71.99
101	Washington	11001 68023	0.032906	0.000250	0.76
102	Washington	11001 68041	0.751352	0.695723	92.60
146	Washington	11001 77031	0.136500	0.136500	100.00
147	Washington	11001 77032	0.117979	0.117979	100.00
148	Washington	11001 77033	0.126373	0.126373	100.00
149	Washington	11001 77071	0.138939	0.024746	17.81
150	Washington	11001 77072	0.080726	0.025258	31.29
151	Washington	11001 77073	0.091994	0.064166	69.75
152	Washington	11001 77081	0.052835	0.052835	100.00
153	Washington	11001 77082	0.090026	0.090026	100.00
154	Washington	11001 77083	0.191105	0.191105	100.00
155	Washington	11001 77093	0.243858	0.177130	72.64
156	Washington	11001 77094	0.058938	0.036304	61.60
157	Washington	11001 77095	0.054332	0.003734	6.87
158	Washington	11001 78031	0.056762	0.056762	100.00
159	Washington	11001 78032	0.048673	0.048673	100.00
160	Washington	11001 78033	0.066315	0.066315	100.00
161	Washington	11001 78034	0.079960	0.079960	100.00
162	Washington	11001 78035	0.143549	0.143549	100.00
163	Washington	11001 78041	0.050223	0.050223	100.00
164	Washington	11001 78042	0.130748	0.130748	100.00
165	Washington	11001 78043	0.034292	0.034292	100.00
166	Washington	11001 78044	0.048662	0.048662	100.00
167	Washington	11001 78045	0.046458	0.046458	100.00
169	Washington	11001 78072	0.061075	0.052636	86.18
170	Washington	11001 78073	0.044209	0.044209	100.00
171	Washington	11001 78074	0.061338	0.061338	100.00
174	Washington	11001 78083	0.100741	0.045820	45.48
175	Washington	11001 78084	0.075784	0.075784	100.00
176	Washington	11001 78085	0.039964	0.039964	100.00
177	Washington	11001 78093	0.097440	0.097440	100.00
178	Washington	11001 78094	0.055855	0.055855	100.00
179	Washington	11001 78097	0.042353	0.042353	100.00
180	Washington	11001 78601	0.050512	0.050512	100.00
181	Washington	11001 78602	0.062595	0.062595	100.00
182	Washington	11001 78605	0.053425	0.053425	100.00
183	Washington	11001 78606	0.100407	0.100407	100.00
184	Washington	11001 79011	0.035192	0.035192	100.00
185	Washington	11001 79012	0.034934	0.034934	100.00
186	Washington	11001 79013	0.035756	0.035756	100.00
187	Washington	11001 79014	0.046891	0.046891	100.00
188	Washington	11001 79031	0.034316	0.034316	100.00
189	Washington	11001 79032	0.031379	0.031379	100.00
190	Washington	11001 79033	0.023346	0.023346	100.00
191	Washington	11001 80011	0.033741	0.033741	100.00
192	Washington	11001 80012	0.058670	0.058670	100.00
193	Washington	11001 80013	0.028455	0.028455	100.00
194	Washington	11001 80021	0.059831	0.059831	100.00
195	Washington	11001 80022	0.038860	0.038860	100.00
196	Washington	11001 80023	0.034018	0.034018	100.00
197	Washington	11001 80024	0.080113	0.060675	75.74
198	Washington	11001 81101	0.029569	0.011070	37.44
199	Washington	11001 81102	0.045741	0.003670	8.02
206	Washington	11001 84023	0.036628	0.036628	100.00
207	Washington	11001 84024	0.064190	0.024193	37.69
209	Washington	11001 84102	0.042070	0.029818	70.88

210	Washington	11001 84103	0.028565	0.028565	100.00
223	Washington	11001 88021	0.026909	0.026909	100.00
224	Washington	11001 88022	0.050730	0.050730	100.00
225	Washington	11001 88023	0.064829	0.064772	99.91
226	Washington	11001 88024	0.035595	0.035595	100.00
227	Washington	11001 88031	0.051698	0.051698	100.00
228	Washington	11001 88035	0.082359	0.078375	95.16
229	Washington	11001 88036	0.230026	0.092700	40.30
231	Washington	11001 88041	0.189209	0.189209	100.00
232	Washington	11001 88042	0.024217	0.024217	100.00
233	Washington	11001 88043	0.035467	0.035467	100.00
234	Washington	11001 88044	0.053745	0.053745	100.00
235	Washington	11001 89031	0.112229	0.112229	100.00
236	Washington	11001 89041	0.112307	0.112307	100.00
237	Washington	11001 89042	0.051795	0.051795	100.00
238	Washington	11001 89051	1.264767	1.264767	100.00
239	Washington	11001 90011	0.557200	0.557200	100.00
240	Washington	11001 90021	0.059520	0.059520	100.00
241	Washington	11001 90022	0.366913	0.366913	100.00
242	Washington	11001 90023	0.190383	0.190383	100.00
243	Washington	11001 91021	0.093941	0.050012	53.24
244	Washington	11001 91022	0.602253	0.177320	29.44
245	Washington	11001 91102	0.115628	0.104322	90.22
246	Washington	11001 91104	0.128861	0.128861	100.00
247	Washington	11001 91105	0.107098	0.084477	78.88
248	Washington	11001 91106	0.158354	0.071915	45.41
290	Washington	11001 96011	0.238864	0.238864	100.00
291	Washington	11001 96012	0.535609	0.535609	100.00
292	Washington	11001 99072	0.179508	0.179508	100.00
293	Washington	11001 96031	0.096572	0.096572	100.00
294	Washington	11001 96032	0.074050	0.074050	100.00
295	Washington	11001 96033	0.067180	0.067180	100.00
296	Washington	11001 96044	0.126568	0.126568	100.00
297	Washington	11001 96045	0.074780	0.074780	100.00
300	Washington	11001 99011	0.359790	0.348730	96.93
301	Washington	11001 99013	0.173213	0.013301	7.68
302	Washington	11001 99014	0.091797	0.000003	0.00
303	Washington	11001 99015	0.053110	0.050625	95.32
304	Washington	11001 99016	0.094579	0.028767	30.42
308	Washington	11001 99024	0.232484	0.097630	41.99
309	Washington	11001 99031	0.102670	0.006440	6.27
310	Washington	11001 99035	0.039211	0.036168	92.24
311	Washington	11001 99043	0.033116	0.027911	84.28
312	Washington	11001 99044	0.024282	0.024282	100.00
313	Washington	11001 99045	0.019541	0.019541	100.00
314	Washington	11001 99046	0.082806	0.082806	100.00
316	Washington	11001 99053	0.043831	0.002193	5.00
317	Washington	11001 99054	0.045691	0.020844	45.62
318	Washington	11001 99055	0.023272	0.019833	85.22
319	Washington	11001 99061	0.057294	0.057294	100.00
320	Washington	11001 99062	0.031427	0.031427	100.00
321	Washington	11001 96023	0.417721	0.417721	100.00
	Totals:		12.890193	10.842415	

For Radius of 1 Mi., Circle Area = 3.141593

No.	City	Block Group ID	Total Area	Partial Area	% Within Radius
102	Washington	11001 68041	0.751352	0.160742	21.39
146	Washington	11001 77031	0.136500	0.000347	0.25

147	Washington	11001 77032	0.117979	0.007581	6.43
148	Washington	11001 77033	0.126373	0.002815	2.23
152	Washington	11001 77081	0.052835	0.016302	30.85
154	Washington	11001 77083	0.191105	0.007885	4.13
158	Washington	11001 78031	0.056762	0.053110	93.57
159	Washington	11001 78032	0.048673	0.006965	14.31
161	Washington	11001 78034	0.079960	0.055020	68.81
162	Washington	11001 78035	0.143549	0.143549	100.00
179	Washington	11001 78097	0.042353	0.041624	98.28
182	Washington	11001 78605	0.053425	0.000819	1.53
183	Washington	11001 78606	0.100407	0.048864	48.67
188	Washington	11001 79031	0.034316	0.013564	39.53
235	Washington	11001 89031	0.112229	0.012367	11.02
236	Washington	11001 89041	0.112307	0.065407	58.24
238	Washington	11001 89051	1.264767	1.160204	91.73
239	Washington	11001 90011	0.557200	0.010561	1.90
241	Washington	11001 90022	0.366913	0.012943	3.53
290	Washington	11001 96011	0.238864	0.090205	37.76
291	Washington	11001 96012	0.535609	0.452375	84.46
293	Washington	11001 96031	0.096572	0.036255	37.54
294	Washington	11001 96032	0.074050	0.073232	98.90
295	Washington	11001 96033	0.067180	0.067180	100.00
296	Washington	11001 96044	0.126568	0.125036	98.79
297	Washington	11001 96045	0.074780	0.074780	100.00
321	Washington	11001 96023	0.417721	0.417721	100.00
	Totals:		5.980350	3.157452	

For Radius of .5 Mi., Circle Area = 0.785398

No.	City	Block Group ID	Total Area	Partial Area	% Within Radius
238	Washington	11001 89051	1.264767	0.333482	26.37
291	Washington	11001 96012	0.535609	0.187278	34.97
297	Washington	11001 96045	0.074780	0.000977	1.31
321	Washington	11001 96023	0.417721	0.263662	63.12
	Totals:		2.292878	0.785398	

For Radius of .25 Mi., Circle Area = 0.196350

No.	City	Block Group ID	Total Area	Partial Area	% Within Radius
238	Washington	11001 89051	1.264767	0.011370	0.90
291	Washington	11001 96012	0.535609	0.034105	6.37
321	Washington	11001 96023	0.417721	0.150875	36.12
	Totals:		2.218097	0.196350	

Kenillworth Landfill
Washington, DC

```
=================  Site Data  ================

                   Population: 288195.81
                   Households: 125604.79
              Drilled Wells:       0.00
                  Dug Wells:      36.65
        Other Water Sources:      92.74

============ Partial (RING) data ===============

 ---- Within Ring: 4 Mile(s) and 3 Mile(s) ----

                   Population:  96263.27
                   Households:  41462.02
              Drilled Wells:       0.00
                  Dug Wells:       5.65
        Other Water Sources:      24.74

 ** Population On Private Wells:     13.12

 ---- Within Ring: 3 Mile(s) and 2 Mile(s) ----

                   Population:  96712.13
                   Households:  43200.17
              Drilled Wells:       0.00
                  Dug Wells:      14.00
        Other Water Sources:      19.08

 ** Population On Private Wells:     31.34

 ---- Within Ring: 2 Mile(s) and 1 Mile(s) ----

                   Population:  81015.16
                   Households:  34259.58
              Drilled Wells:       0.00
                  Dug Wells:       9.00
        Other Water Sources:      46.28

 ** Population On Private Wells:     21.28

 ---- Within Ring: 1 Mile(s) and .5 Mile(s) ----

                   Population:  12428.48
                   Households:   5787.15
              Drilled Wells:       0.00
                  Dug Wells:       7.90
        Other Water Sources:       2.64

 ** Population On Private Wells:     16.96
```

---- Within Ring: .5 Mile(s) and .25 Mile(s) ----

Population:	846.69
Households:	419.70
Drilled Wells:	0.00
Dug Wells:	0.10
Other Water Sources:	0.00

** Population On Private Wells: 0.21

---- Within Ring: .25 Mile(s) and 0 Mile(s) ----

Population:	930.10
Households:	476.17
Drilled Wells:	0.00
Dug Wells:	0.00
Other Water Sources:	0.00

** Population On Private Wells: 0.00

- **Site Soils** – The most significantly contaminated site soils/subsurface fills do not pose a threat to human health or the environment, either now or in the foreseeable future, as they are not directly accessible.
- **Site Sediments** – Insufficient data exist to conclude that sediment contaminants are directly related to the landfill site. They may, in whole or in part, be the result of unrelated sources.

- **Recently Applied Construction Debris/Excavation Material Fill** – If allowed to continue unchecked, the erosion will increase in severity and have a decidedly adverse impact on the air and surface water in the immediate site vicinity. Physical injury, to either trespassers or the general public, is a distinct possibility as long as access to the site remains uncontrolled. Blowing dust from the uncovered site may become a nuisance and possibly a health hazard under dry conditions.

Please call either Michael Washeleski or me at (703) 522-6065 or fax to (703) 558-7950 if you have any questions concerning our conclusions or recommendations. Mr. Washeleski is an engineer who has become familiar with the Kenilworth Park Landfill report, and may be helpful in responding to engineering concerns.

Sincerely,
For Ecology and Environment, Inc.

Hussein Aldis

Hussein Aldis
Project Manager

cc. N. Ahmad
R. J. King

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USGS Open File Reports

Vertical Maps
M(200) R29o no.93-655

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Title Potentiometric surface of the lower Patapsco Aquifer in southern Maryland, September 1991 /

Author Curtin, Stephen E.

Imprint Towson, Md. : The Survey ; Denver, Colo. : Books and Open-file Reports Section, [1993]

Description 1 map : photocopy ; 22 x 17 cm.

Map Scale Scale 1:250,000 (W 77020'--W 76000'/N 39015'--N 38000').

Subject Groundwater -- Maryland, Southern -- Maps.
Aquifers -- Maryland, Southern -- Maps.
Patapsco Aquifer -- Maps.

Series Open-file report (Geological Survey (U.S.)) ; 93-655.

Notes Blackline print.

Added Entry Andreasen, David C.
Mack, Frederick K.
Geological Survey (U.S.)
Maryland Geological Survey. Quadrangle atlas.
Maryland. Tidewater Administration.

Author (FA) by Stephen E. Curtin, David C. Andreasen, and Frederick K. Mack ; U.S. Department of the Interior, U.S. Geological Survey ; prepared in cooperation with Maryland Geological Survey and Maryland Tidewater Administration.

OCLC No. ocm29591699

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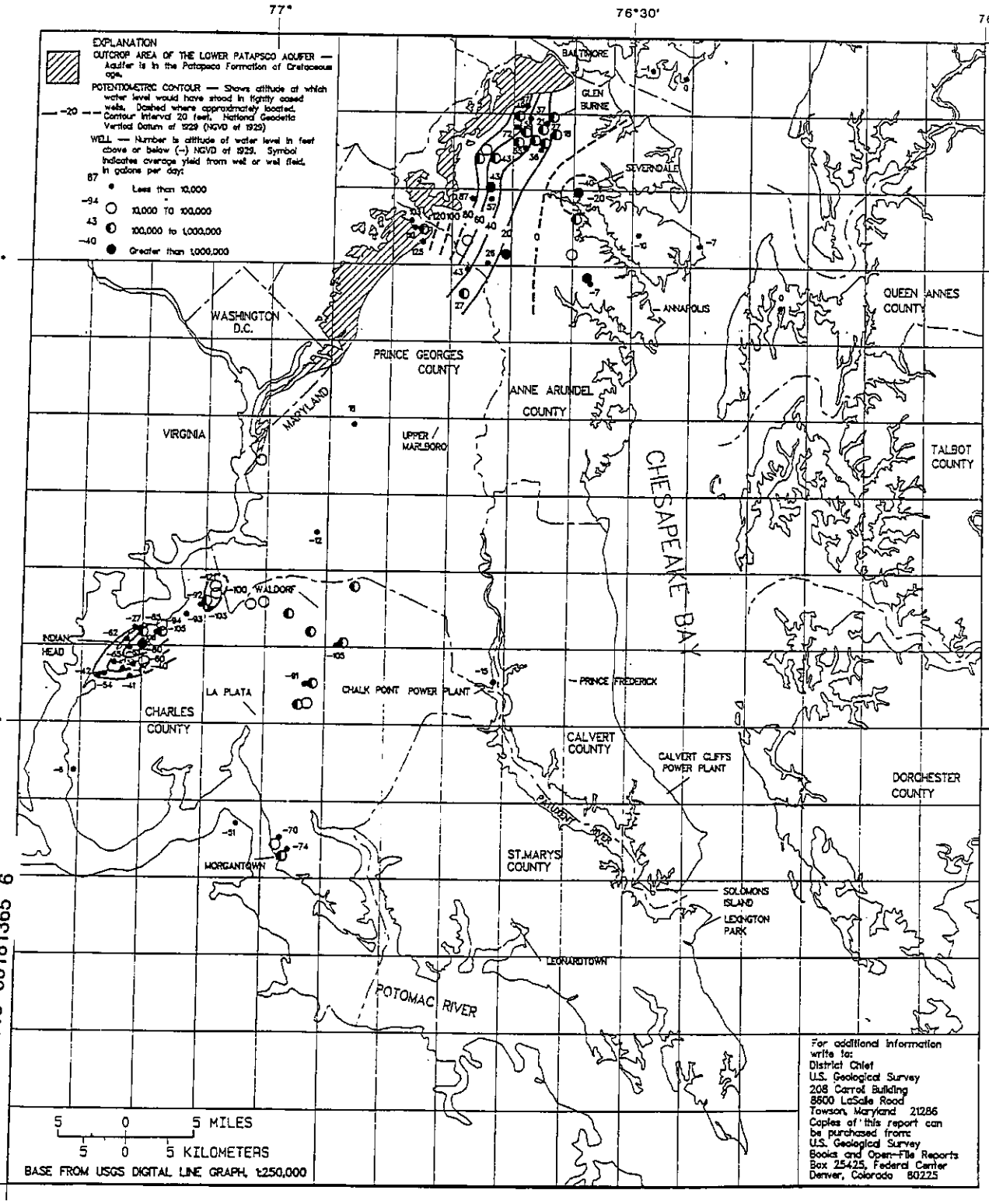
MARYLAND TIDEWATER ADMINISTRATION

OPEN-FILE REPORT
93-655



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POTENTIOMETRIC SURFACE OF THE LOWER PATAPSCO AQUIFER IN SOUTHERN MARYLAND, SEPTEMBER 1991

BY

Stephen E. Curtin, David C. Andreasen, and Frederick K. Mack

Vertical Maps
M(200) R29o no.94-393

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Title Potentiometric surface of the lower Patapsco Aquifer in southern Maryland, September 1993 /

Author Curtin, Stephen E.

Imprint Towson, Md. : The Survey ; Denver, Colo. : Books and Open-file Reports Section, [1994]

Description 1 map : photocopy ; 22 x 17 cm.

Map Scale Scale [ca. 1:650,000] (W 77020'--W 76000'/N 39015'--N 38000').

Subject Groundwater -- Maryland, Southern -- Maps.
Water table -- Maryland, Southern -- Maps.
Aquifers -- Maryland, Southern -- Maps.
Patapsco Aquifer -- Maps.

Series Open-file report (Geological Survey (U.S.)) ; 94-393.

Notes Blackline print.

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Mack, Frederick K.
Geological Survey (U.S.)
Maryland Geological Survey. Quadrangle atlas.
Maryland. Tidewater Administration.

Author (FA) by Stephen E. Curtin, Frederick K. Mack, and David C. Andreasen ; U.S. Department of the Interior, U.S. Geological Survey ; prepared in cooperation with Maryland Geological Survey and Maryland Tidewater Administration.

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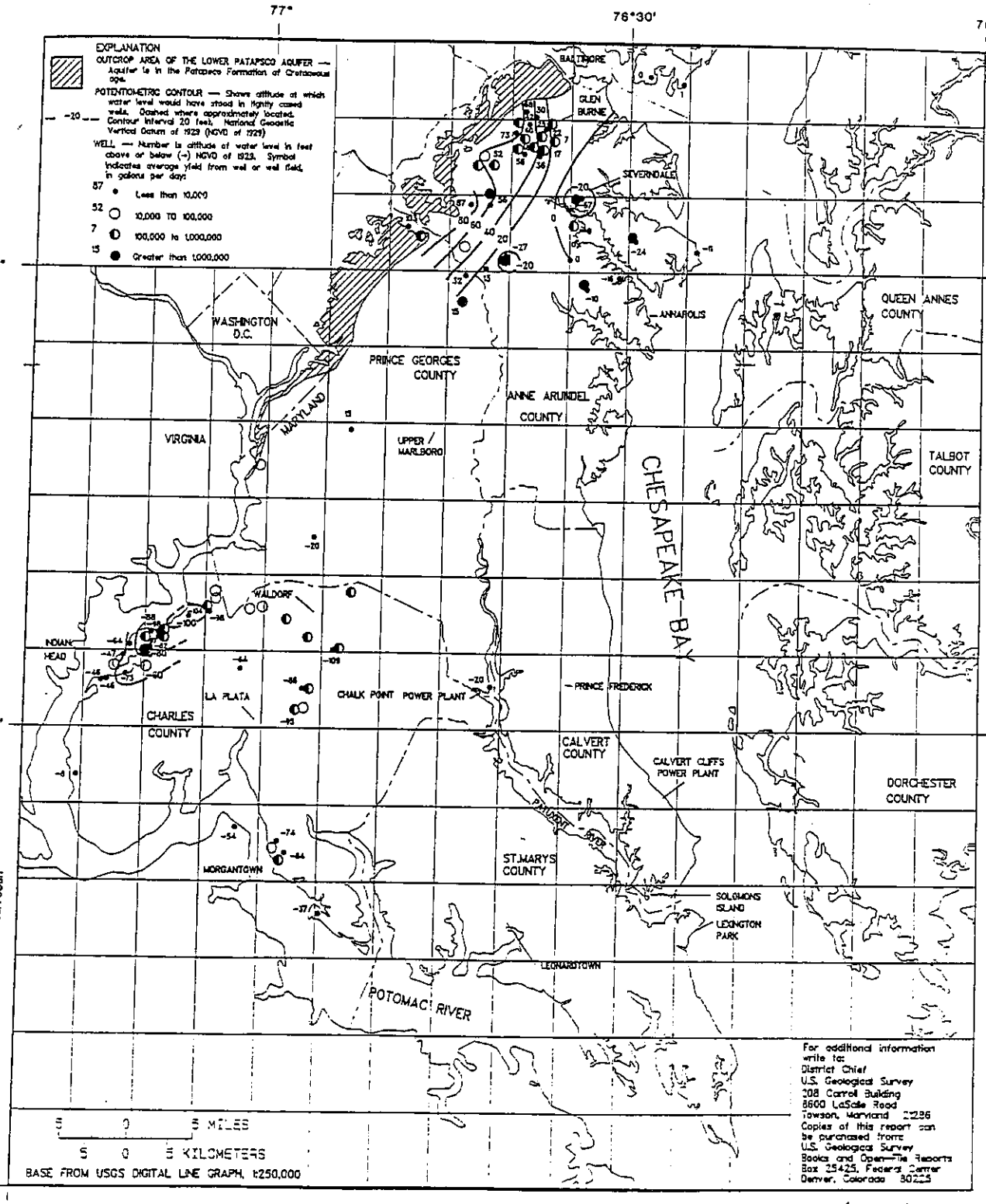

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POTENTIOMETRIC SURFACE OF THE LOWER PATAPSCO AQUIFER IN SOUTHERN MARYLAND, SEPTEMBER 1993

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Vertical Maps
M(200) R29o no.95-746

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Title Potentiometric surface of the lower Patapsco Aquifer in southern Maryland, September 1994 /

Author Curtin, Stephen E.

Imprint Towson, Md. : The Survey ; Denver, Colo. : Copies can be purchased from Open-file Reports Section, [1995]

Description 1 map : photocopy ; 20 x 17 cm., on sheet 28 x 22 cm.

Map Scale Scale [ca. 1:650,000] (W 77020'--W 76000'/N 39015'--N 38000').

Subject Groundwater -- Maryland, Southern -- Maps.
Water table -- Maryland, Southern -- Maps.
Aquifers -- Maryland, Southern -- Maps.
Patapsco Aquifer -- Maps.

Series U.S. Geological Survey open-file report ; 95-746.

Notes Blackline print.

Added Entry Andreasen, David C.
Mack, Frederick K.
Geological Survey (U.S.)
Maryland Geological Survey. Quadrangle atlas.
Maryland. Resource Assessment Administration.

Author (FA) by Stephen E. Curtin, Frederick K. Mack, and David C. Andreasen ; U.S. Department of the Interior, U.S. Geological Survey ; prepared in cooperation with Maryland Geological Survey and Resource Assessment Administration.

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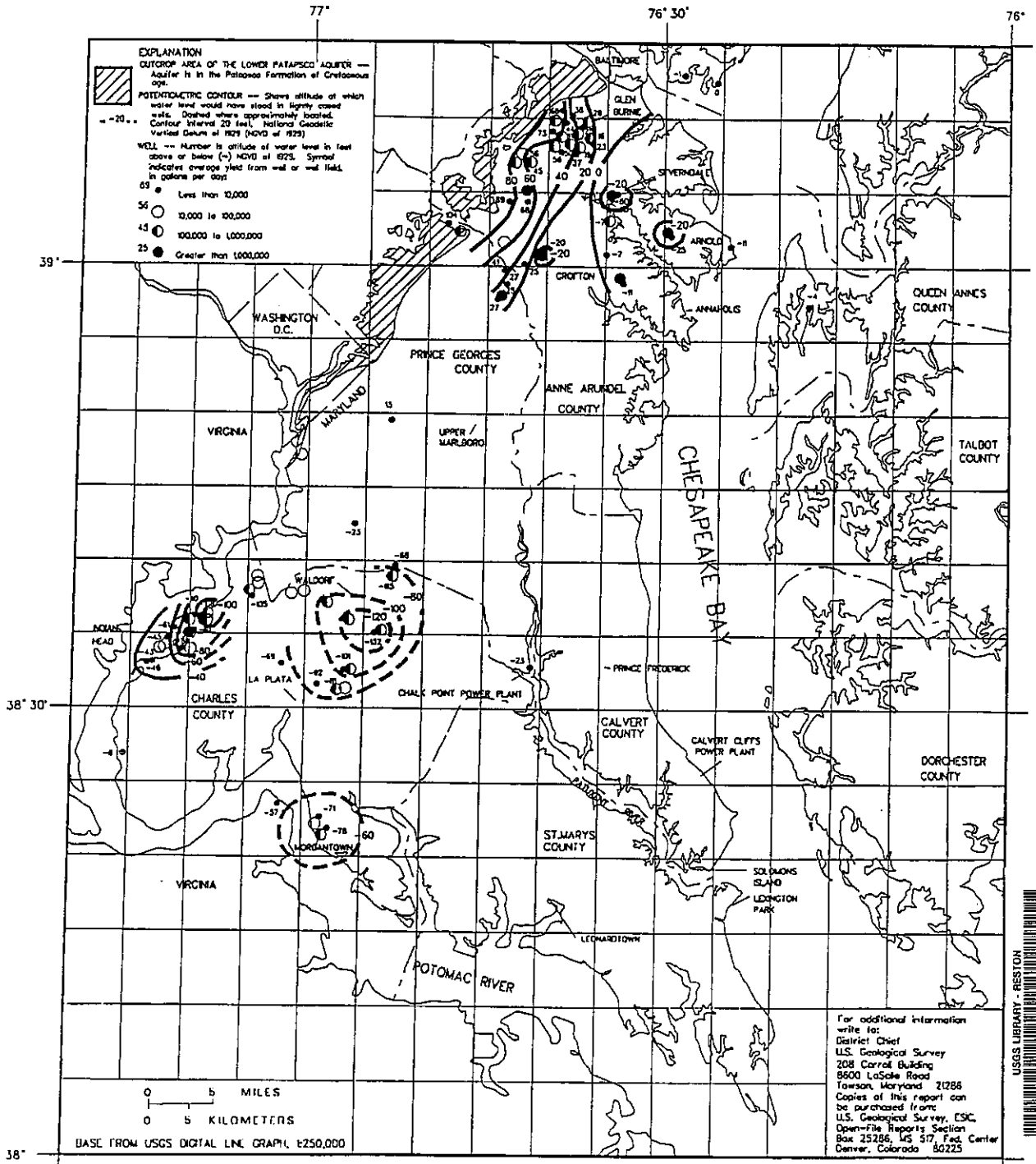

POTENTIOMETRIC SURFACE OF THE LOWER PATAPSCO AQUIFER IN SOUTHERN MARYLAND, SEPTEMBER 1994

BY

Stephen E. Curtin and David C. Andreasen

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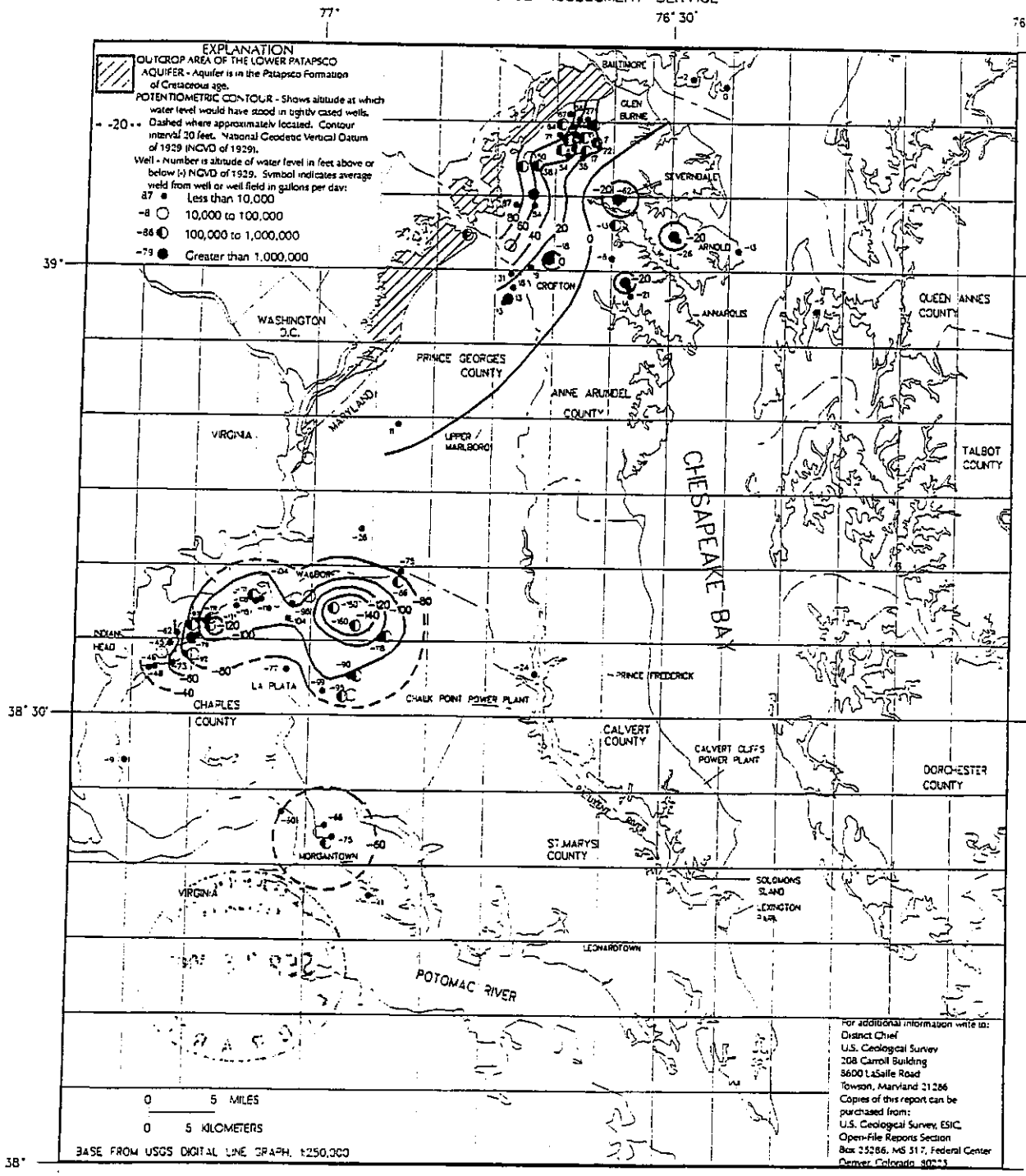

POTENTIOMETRIC SURFACE OF THE LOWER PATAPSCO AQUIFER IN SOUTHERN MARYLAND, SEPTEMBER 1995

BY

Stephen E. Curtin, David C. Andreasen, and Frederick K. Mack

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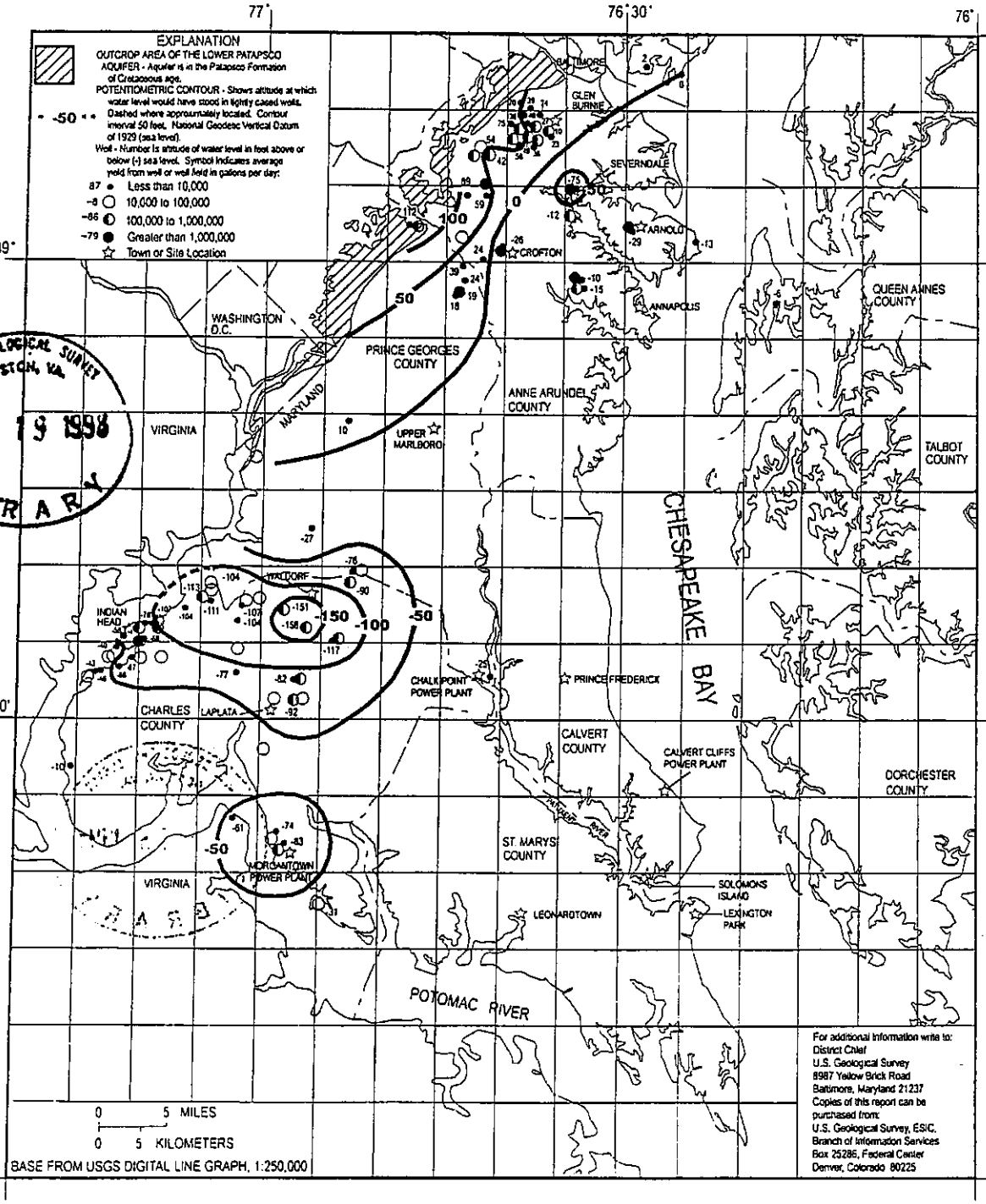

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POTENTIOMETRIC SURFACE OF THE LOWER PATAPSCO AQUIFER IN SOUTHERN MARYLAND

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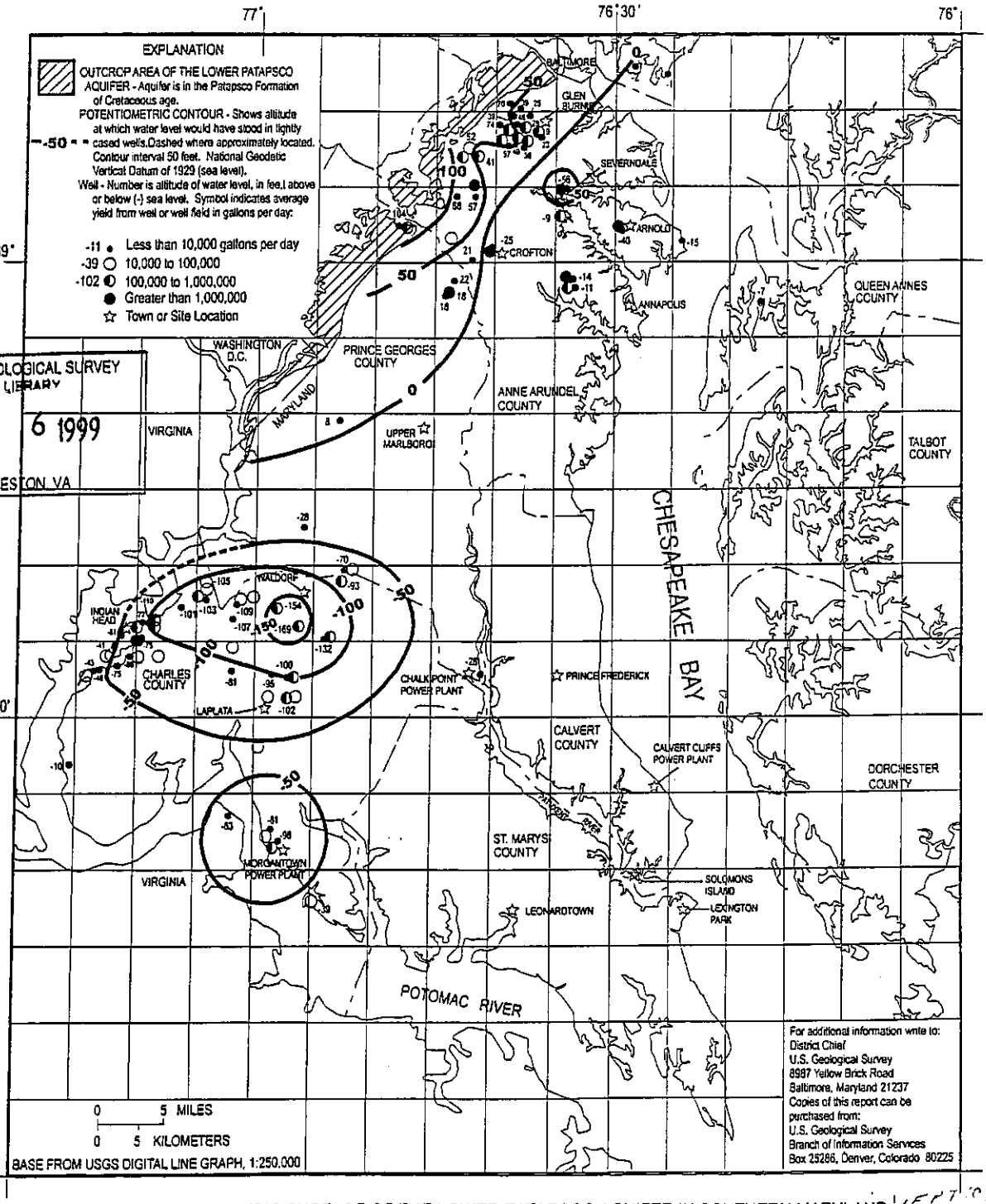

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SEPTEMBER 1997

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REGION 3

DISTRICT OF COLUMBIA ENVIRONMENTAL CHARACTERIZATION REPORT

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The following subsections describe some major topics that relate to risks to human health from environmental conditions in Washington, DC. These topics (drinking water, fish consumption, ambient air quality, lead, and contaminated soil) are considered to be among the means by which people can be exposed to pollutants; however, this list is by no means comprehensive. Described for each topic in the following subsections are the issues of concern, descriptions of DC's particular circumstances, monitoring programs to determine levels of contaminants, and the potential impacts to human health.

4.1 DRINKING WATER

4.1.1 Overview of Drinking Water Issues

The District's drinking water continues to be of concern, especially following several "boil water" advisories over the last few years. These advisories have been issued because of concerns over disease-causing bacteria/pathogens in drinking water. In addition, these incidents have highlighted the importance of continued improvements to the water treatment, disinfection, and distribution systems serving the DC area. Despite these problems, the drinking water in DC meets regulatory standards and is safe for use by most of the population (U.S. EPA, 1996a). However, individuals who have weakened immune systems should take precautions (consult their physicians and/or boil the water) with respect to use of drinking water (U.S. EPA, 1996a). Tapwater concerns also include chemical contaminants such as metals (especially lead) and trihalomethanes (THMs) that are present in drinking water at levels that may impact human health. The following sections describe the District's drinking water systems, levels of contaminants in drinking water, and the potential for risks to human health.

> "Last week the CDC and EPA announced that tapwater that is safe enough for healthy individuals could be dangerous for immuno-compromised persons. This echoes what advocates for people with AIDS and others have said for some time..."
>
> NY Times, June 22, 1995
> (Wald, 1995)

4.1.2 Drinking Water Supply (Treatment, Problems, and Improvements)

The Potomac River is the source for drinking water in the District. No wells (public or private) exist in DC for use of ground water as a source of drinking water (Baker Environmental, 1993). Bottled water is used as the primary source of drinking water by approximately 37% of the DC population (CDC, 1994). Water is removed from the Potomac River at Great Falls and Little Falls, and is treated at the Dalecarlia and McMillan treatment plants. These plants, operated by the

4.1.4 Potential Risks to Human Health from Drinking Water

Human health impacts from consumption of drinking water can be considered in both the long- and short-term perspectives. Longer-term risks are evident from the presence of lead and cancer-causing THMs. The shorter-term risks from bacteria, parasites, and other disease-causing organisms may be the most evident human health impacts, especially for susceptible portions of the population. For example, the effects of lead, especially on children, are of concern because of possible brain and nervous system effects. Furthermore, microbial parasites (such as *Cryptosporidium*) are dangerous and potentially fatal to persons with weakened immune systems (such as those with AIDS). Although *Cryptosporidium* has never been identified in DC's drinking water supply, the problems with turbidity in the drinking water continue to raise concerns about its potential presence during periods of high turbidity. This parasite sickened 400,000 and killed more than 100 people in Milwaukee, Wisconsin, in 1993 (CDC, 1994). The Centers for Disease Control (CDC, 1994) reported that the Milwaukee incident occurred when turbidity levels were much lower (peak of 1.7 NTU) than those observed in the DC drinking water during the boil water advisory (peak of 9.0 NTU). However, public health surveys conducted by the CDC (1994) in 1993 following the DC boil water advisory found no major increase in diarrhea or other related illnesses. Turbidity levels in samples analyzed for 1994, ranging from 0.07 to 0.60 NTU (USACE, 1996), were below concentrations when diseases (*Cryptosporidiosis*) have occurred (0.9 to 2.0 NTU), according to the Centers for Disease Control (CDC, 1994). An extra measure of monitoring to protect human health from *Cryptosporidium* was recently ordered by the EPA (U.S. EPA, 1996d). EPA ordered approximately 300 large metropolitan water systems, including DC's, to test for *Cryptosporidium* and other disease-causing microbial contaminants.

4.2 FISH CONSUMPTION

4.2.1 Overview of Fish Consumption Issues

Contaminated fish and shell fish are potential sources of human exposure to toxic chemicals (as are other foods - see Section 4.4.2). Pollutants are carried in the surface waters, but also may be stored and accumulated in the sediments of streams. Consequently, finfish and shellfish exposed to these pollutants may be consumed by humans. Human exposures to chemical contaminants through fish consumption depend on the amount of fish consumed and the concentration of contaminants in the fish tissue. In general, contamination is highest in catfish, eel, and carp caught from DC waters.

To evaluate risks to human health as a result of eating contaminated fish or shellfish, knowing fish consumption rates is important. Fish consumption rates may vary for specific subpopulations. Because many surface water bodies and, in particular, freshwater bodies are not

commercially fished, consumption of fish from water is basically limited to fish caught by recreational anglers. Although these anglers may represent a small fraction of the total population living in the vicinity of a contaminated body of water, they may be representative of the majority of risks posed by consumption of fish from the contaminated surface waters. Some recreational anglers may fish from contaminated sites for sport and not consume the fish, but other (subsistence) anglers may be obtaining a large portion of their diet from contaminated sites because they cannot afford to purchase other foods (U.S. EPA, 1992). Therefore, these anglers may be dependent on the fish from the local waters for food. Unfortunately, the fish species upon which they depend may be the species (eel, carp, catfish) that have the highest levels of contaminants (Velinsky and Cummins, 1994). Examples of such contaminants are PCBs and pesticides. Other compounds of concern are heavy metals such as mercury (from natural sources).

The results of various surveys have indicted a significant portion of the District residents consume the fish from DC waters (DCRA, 1994b). DC currently has fishing advisories in effect because of levels of elevated levels of PCBs and chlordane detected in fish. A public health advisory was issued in 1989 for the consumption of channel catfish, eel, and carp caught in the city stretches of the Potomac and Anacostia Rivers (DCRA, 1994b). The advisory limited the consumption of these specific fish to 1/2 pound per week.

In addition, a public health advisory that replaced the 1989 version, was issued in 1994 for all DC water as follows (DC, 1994):

- "DO NOT EAT: catfish, carp, or eel;
- MAY EAT: 1/2 pound per month of largemouth bass, OR 1/2 pound per week of sunfish or other fish;
- CHOOSE TO EAT: younger and smaller fish of legal size; and
- THE PRACTICE OF CATCH-AND-RELEASE IS ENCOURAGED."

The advisory recommendations do not apply to fish sold in markets, grocery stores, and restaurants because the sources for this fish is different. The advisory also recommended that the fish, if eaten, be prepared and cooked in a manner to reduce the fat content as follows:

- Always skin the fish and trim away the fat;
- Always cook fish so that the fat drains away from the meat (i.e., baking, grilling, broiling);
- AVOID pan frying or making soups and chowders; and
- For poaching and panfrying, discard the broth or oil.

4.2.2 Levels of Contaminants in Fish in DC Waters

Fish may be exposed to and uptake the chemicals from the water, sediment, or food; therefore, these chemicals may accumulate in the fish tissue. Certain chemicals accumulate in specific parts of the fish such as the fatty tissues, liver, and bone. If the fish that we eat are contaminated, we are also exposed to the chemicals, thereby, potentially impacting our health.

The District of Columbia Environmental Regulatory Administration, in concert with the Interstate Commission on the Potomac River Basin (ICPRB), monitored selected chemicals in fish tissue from the Anacostia and Potomac Rivers (Velinsky and Cummins, 1994). The objective of the study was to determine the concentration and distribution of 129 priority pollutants in fish from the DC waters (Velinsky and Cummins, 1994). According to Velinsky and Cummins, this study represents a part of DC's efforts to evaluate chemical contaminants as they relate to human health concerns and aquatic resources. Samples were collected in 1989, 1991, and 1992. Of the 129 chemicals monitored, 50 were detected in one or more of the species collected (Velinsky and Cummins, 1994). Examples of chemicals detected are PCBs, DDTs, arsenic, mercury, and selenium. Concentrations of many of the organics such as PCBs were greatest in the American eel and channel catfish. Results of the study indicated that detectable levels of many chemicals were present in the edible portions of certain species (Velinsky and Cummins, 1994). A brief overview of levels of contaminants in fish tissue found in Velinsky and Cummins (1994) are presented below.

<u>Trace Metals</u>

Arsenic, selenium, and mercury were the three metals detected in most samples analyzed for all sampling years. In 1991, the highest concentration of mercury and selenium were found in the largemouth bass composite sample from the upper Potomac River. A single composite sample of largemouth bass from the lower Anacostia River had the highest concentration of total arsenic. Chromium, lead, beryllium, and nickel were detected in at least one sample.

In 1992, levels were also detected for chromium in two composite samples, and other metals were detected once or were below the detection limit. The highest concentration of selenium was

found in common carp from the upper Anacostia River. The highest mercury concentration was found in a sample of largemouth bass from the lower Potomac River.

Volatile and Semivolatile Organics

Similar volatile and semivolatile organics were detected in the majority of samples collected in 1989, 1991, and 1992. Examples are benzene, 1,1,1-trichloroethane, and polycyclic aromatic hydrocarbons (PAHs). In most samples, the concentrations were low. The authors noted that there is a great amount of handling of samples in the laboratory and some of the chemicals detected are routinely used in the laboratory. Therefore, there is a possibility of some laboratory contamination.

Organochlorine Pesticides

Pesticides were detected in samples for years 1989, 1991, and 1992. Examples of pesticides detected are chlordane, DDT, and dieldrin. In 1991, the highest concentrations of total chlordane and DDT were found in channel catfish and American eel in the lower Anacostia River. In 1992, the highest concentration of total chlordane was found in the American eel from the upper Anacostia River. Other species with elevated levels were the largemouth bass and the common carp.

Polychlorinated Biphenyls (PCBs), Dioxins, and Furans

Total PCBs, dioxins, and furans and selected congeners were analyzed for the study (Velinsky and Cummins, 1994). Various congeners of dioxins and furans were detected, but at low levels (Velinsky and Cummins, 1994). PCBs were detected in most samples; in 1989, PCBs (total) were found in all samples of brown bullhead collected in the lower Potomac and the Anacostia Rivers. In 1991 and 1992, the highest concentrations of most chemicals were found in the American eel, channel catfish, and brown bullhead. The highest concentrations of PCBs were found in American eel samples from the lower Anacostia and the Potomac Rivers. In 1992, the highest concentrations of PCBs were found in samples of the American eel and largemouth bass from the Anacostia and upper Potomac Rivers.

4.2.3 Fish Consumption Patterns in the District of Columbia

Fishing licenses were sold to 12,916 anglers in DC in 1993; of these, 7,613 were DC residents (DCRA, 1994b). In 1994, DCRA conducted the "1994 Recreational Fishing Surveys" for both the shoreline and boat anglers. EPA summer interns from Virginia State University (VSU) also conducted a small creel survey in 1994 along the Anacostia riverbanks. All data presented in this section were obtained from the DCRA (1994c) survey and the VSU (1994) survey.

4.2.3.1 *DCRA Survey*

The DCRA (1994c) survey was designed to obtain data for use of the DC waters and for demographic information including gender, race, age, and residency. Additionally, the survey captured information on catch and harvest. The survey period was March through November, 1994.

Shoreline Angler Survey

According to survey results, shoreline anglers target their catch to a variety of species such as catfish, eel, carp, bass, and perch, and harvest over 86% of their catch. Six sites along the Potomac and Anacostia Rivers were surveyed:

- Fletcher's Boat House,
- Rock Creek/Roosevelt Island,
- Washington Ship Channel/Tidal Basin,
- Hains Point,
- Anacostia Park, and
- PEPCO/Roaches Run/Lady Bird Johnson Park.

Surveys were conducted 4 days per month (2 weekday and 2 weekend), from 7 a.m.-11 a.m.; 11 a.m.-3 p.m.; and 3 p.m.-7 p.m. A total of 110 anglers were interviewed (105 males; 5 females). Racial composition was the following:

- Black 85%
- White 7%
- Hispanic 4%
- Asian 2%
- Indian (East) 1%
- Armenian 1%

The anglers surveyed resided in DC (65%), Maryland (25%) and Virginia (10%). DC residents were stratified as follows: 39% from Northwest, 34% from Southeast, 25% from Northeast, and 1% from Southwest.

Most (78%) of the anglers eat the fish they catch; 8% give them away; 4% release them; and 10% release them and/or give them away. Carp, eel, and catfish caught in DC waters were eaten by 65% of the anglers. The favorite fishing spots were Hains Point, Anacostia Park, and Fletcher's Boathouse, respectively, and the typical shoreline angler was a Black male.

Boat Angler Survey

Boat anglers usually target bass as their fish of choice, and approximately 100% of the anglers release their catch. The boat angler survey was conducted through (postage paid) mailer questionnaires. The questionnaires were distributed to anglers along the Potomac and Anacostia Rivers access points, the C & O Canal boat launch, and to anglers in the open waters. The sample period was June to November. Questionnaires distributed in September and those distributed at the C & O canal were not returned; therefore, the estimates for the boat angler survey may not be entirely representative. The racial composition of the boat anglers was predominantly Caucasian, male, and most resided in Virginia (43%).

4.2.3.2 *Virginia State University (VSU) Survey*

In the study conducted by VSU (1994), of the anglers interviewed, 52% ate 1-3 fish weekly; 16% ate 4-6 fish weekly; 6% ate 7-9 fish weekly; and 6% ate 10 or more fish weekly. However, quantitative exposure cannot be determined because the weight of these fish was not reported. It should be noted that 78% of the survey subjects were unaware of the fish advisory and 58% fished for food. The specie most consumed was catfish (60%), followed by bass (14.0%), and carp (8.0%)/year. The annual household income for most (70%) of the anglers was $15,000 and under.

The VSU survey (1994) was conducted along the banks of the Anacostia River beginning at Buzzard Point and ending ~~at the railroad~~ bridge crossing at Anacostia Park. Racial composition of the anglers was African American (68%); Hispanic (8%); Native American (2.0%); Asian American (10%); and other (12%). The total number of anglers surveyed was not reported.

4.2.4 Potential Risks from Fish Consumption

Results of both surveys indicate that shoreline anglers target (prefer) carp, eel, and catfish -- the species to which the fishing advisories apply. Additionally, most (78%) eat their catch (DCRA, 1994c), and 78% (VSU, 1994) were not aware of a fish advisory. Levels of many chemicals (approximately 50) were detected in samples of fish from DC waters (Velinsky and Cummins, 1994). Velinsky and Cummins specifically investigated the concentration of chemicals in fish from the Potomac and Anacostia Rivers. Metals, pesticides, and PCBs were detected in the samples. Velinsky and Cummins (1994) have reported a high fat content for fish tissues from both rivers for the species preferred by the anglers (carp, eel, catfish). PCBs and pesticides tend to accumulate in fat of organisms. The anglers are exposed to pesticides, PCBs, and other organic and inorganic chemicals as a result of eating contaminated fish that they prefer and are, thus, potentially at risk.

Estimating quantitative risk is difficult, because data on the amount of fish consumed by the angler fishing in the DC waters were not available. In addition, fish consumption patterns differ by

race, age, gender, and whether the angler is a recreational sport angler or a subsistence angler. The consumption rate for subsistence anglers tends to be larger than for the recreational angler (EPA, 1995). EPA in its "Draft Exposure Factors Handbook" recommends a mean intake rate of 7 g/day and an upper percentile value of 25 g/day for recreational freshwater anglers for purposes of estimating exposure (U.S. EPA, 1996a). The recommended mean value for the subsistence population is 59 g/day, and the upper percentile value is 170 g/day (U.S. EPA, 1996a). The value for the subsistence population is based on the Native American population. It should be noted that the Exposure Factors Handbook is in draft format and these values could change prior to final publication. However, these values may be used with caveats to conservatively estimate exposure/risk for the shoreline angler population, because site-specific intake data are not available.

Velinsky and Cummins (1994) performed a risk assessment for PCBs, chlordane, and dieldrin. These chemicals were chosen because of the historical concern for their presence in fish tissue in the DC area. A summary of levels for these chemicals from 1989, 1991, and 1992 is presented in Table 4-2. Human health effects estimates were based on U.S. Food and Drug Administration (FDA) "action levels," toxic equivalents for PCBs and dioxins, and a risk model. Although FDA "action levels" are useful benchmarks for identifying concentrations of contaminants that may be at levels of concern, they are actually applicable only for seafood sold through interstate commerce, and are used to remove seafood from the marketplace (Velinsky and Cummins, 1994). For noncommercial fish, they provide guidance for regulatory actions but are not regulatory standards (Velinsky and Cummins, 1994). Therefore, these action levels cannot be used to quantify risk, but are useful for "screening" concentrations found in the samples. The risk assessment was provided in a report of Velinsky and Cummins as a screening tool to assess the potential health effects from levels of contamination in fish from the DC waters. Caveats for the assessment noted by the authors are best described in Velinsky and Cummins (1994).

Carcinogenic risks were estimated for PCBs, chlordane, and dieldrin. The estimates are based on cancer potency factors, reference doses, and fish ingestion rates reported by EPA and a risk model (Velinsky and Cummins, 1994). Two different fish ingestion rates were used: 6.5 grams of fish/day (for the general populace) and 140 grams fish/day (for the subsistence fishermen and the high end of the sport fishermen's potential consumption). Potential risks based on these variables are presented in Table 4-3. These data indicate that PCBs are at levels of concern for human consumption of fish in DC waters (Velinsky and Cummins, 1994). To better estimate the risks involved, site-specific consumption data are needed.

The 1994 Public Health Advisory for DC targeted specific groups of the population at highest risk for adverse effects from eating contaminated fish on a regular basis. They are:

Table 4-2. Levels of PCBs, dieldrin, and chlordane found in tissues of fish from DC waters

Contaminant	Sampling Years											
	1989				1991				1992			
	N	Min.	Max.	Med.	N	Min.	Max.	Med.	N	Min.	Max.	Med.
Dieldrin (ng/g)	3[a]	<0.5	6.9	<0.5	19	<0.5	42	4.0	14	<0.5	37	4.2
γChlordane (ng/g)	3	<7	78	47	19	<1.0	84	14	14	<1	90	10
αChlordane (ng/g)	3	20	340	71	19	2.0	150	37	14	2.0	200	26
PCBs (pg/g)	3	180	1300	330	19	80	2600	620	14	40	1200	470

[a] One species.
[b] All sample concentrations based on wet weight

Source: Velinsky and Cummins, 1994.

Table 4-3. Estimates of potential upper-bound carcinogenic risk from wild fish tissue samples collected in the District of Columbia.

	Chlordane[a]	Dieldrin	Total PCBs[b]
Ingestion Rate - 6.5 g fish/day			
Maximum	5.0×10^{-5}	6.2×10^{-5}	1.9×10^{-3}
Minimum	2.4×10^{-7}	7.4×10^{-7}	2.9×10^{-5}
Median	5.8×10^{-6}	5.9×10^{-6}	3.7×10^{-4}
Mean	9.0×10^{-6}	1.2×10^{-5}	4.8×10^{-4}
Standard Deviation	1.1×10^{-5}	1.5×10^{-5}	4.7×10^{-4}
Ingestion Rate - 140 g fish/day			
Maximum	1.1×10^{-3}	1.3×10^{-3}	3.9×10^{-2}
Minimum	5.2×10^{-6}	1.6×10^{-5}	6.2×10^{-4}
Median	1.2×10^{-4}	1.3×10^{-4}	8.0×10^{-3}
Mean	1.9×10^{-4}	2.6×10^{-4}	1.0×10^{-2}
Standard Deviation	2.3×10^{-4}	3.2×10^{-4}	9.9×10^{-3}

[a] 19 of 36 composite samples exceeded potential cancer risk of 10^{-4} at ingestion rate of 140 g/day.

[b] 27 of 36 composite samples exceeded potential cancer risk of 10^{-4} at ingestion rate of 6.5 g/day and all for 140 g/day.

Source: Velinsky and Cummins, 1994.

- Pregnant women;
- Women who are breastfeeding;
- Women who expect to bear children; and
- Children under 15 years old.

In summary, the above-mentioned population targeted by the advisory and the shoreline recreational and subsistence anglers are the populations believed to be at highest risk. Additionally, eel, carp, and catfish seem to pose the highest risk because (1) angler preference for eating, (2) their fat content, and (3) their uptake of PCBs, pesticides, and metals.

4.3 AMBIENT AIR QUALITY

4.3.1 Overview of Air Quality Issues

While descriptions of sources of air pollution (both point and nonpoint) were provided in Section 3, ambient air quality is an indicator to what levels of air pollutants residents might actually be exposed. The air quality in the District is generally good, with some improvement shown during the last few decades. The lack of heavy industry in the DC area partially accounts for the relatively clean air. Levels of pollutants are consistently below the National Ambient Air Quality Standards (NAAQS), which were established to be protective of human health and the environment. The air pollutants monitored include carbon monoxide, nitrogen dioxide, sulfur dioxide, ozone, particulate matter, and lead. While levels of these pollutants in ambient air are typically low in DC (and surrounding areas), certain weather conditions contribute to short episodes where ozone (summertime) and carbon monoxide (fall/winter) may be present at unhealthy levels in the DC area (DC ARMD, 1996). Furthermore, while the ambient (outdoor) air quality in DC is good, limited information about indoor air quality raises concerns about potential impacts to human health.

The following subsections describe the air quality monitoring efforts in DC (and the surrounding metropolitan area), levels of pollutants found in ambient air, the potential for indoor air quality to contribute to human risks, and the potential for poor air quality to affect susceptible populations (older persons, people with asthma, the infirm, etc.)

4.3.2 Ambient Air Quality Monitoring in the DC Area

Air quality is monitored in DC by DCRA's - Air Resource Management Division (DC ARMD), which currently operates a network of seven stations throughout the city. Table 4-4

Q

Fish Advisory, D.C.

Listing of Fish and Wildlife Advisories

Advisory Information

EPA Environmental Protection Agency

Back to Map | New Query

Page 1 of 1. The total number of records retrieved is 4.

AdvNum	Advisory	State	Advisory Extent	Issuer	Advisory Type	Advisory Size	Pollutant	Species	Species Size	Population	Status	Date Rescinde
71	All District of Columbia Waters	DC	Statewide: Applies also to the Potomac and Anacostia rivers and their tributaries including Rock Creek, within the boundaries of the District of Columbia.	State	Statewide	0	PCBs (Total)	carp		NCGP	Active	
71	All District of Columbia Waters	DC	Statewide: Applies also to the Potomac and Anacostia rivers and their tributaries including Rock Creek, within the boundaries of the District of Columbia.	State	Statewide	0	PCBs (Total)	catfish		NCGP	Active	
71	All District of Columbia Waters	DC	Statewide: Applies also to the Potomac and Anacostia rivers and their tributaries including Rock Creek, within the boundaries of the District of Columbia.	State	Statewide	0	PCBs (Total)	eel-American		NCGP	Active	

71	All District of Columbia Waters	DC	Statewide: Applies also to the Potomac and Anacostia rivers and their tributaries including Rock Creek, within the boundaries of the District of Columbia.	State	Statewide	0	PCBs (Total)	all other fish		RGP	Active	

Preliminary Assessment/ Site Investigation of Kenilworth Park Landfill N.E. Washington, D.C. Volume II Analytical Results First Round of Sampling

Contract No.: 1443CX0001-95-003
Task Order No.: 1443PX300099536

June 2000

Prepared for:

NATIONAL PARK SERVICE
National Capital Region
1100 Ohio Drive S.W.
Washington, D.C. 20242

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ecology and environment, inc.
International Specialists in the Environment

ANALYTICAL SERVICES CENTER
4493 Walden Avenue
Lancaster, New York 14086
Tel. (716) 685-8080, Fax: (716) 685-0852

Memorandum

To: Hussein Aldis – E & E, Arlington

From: Tony Bogolin - Project Manager TB

Date: June 9, 1999

Subject: YM-7000 – NPS - Kenilworth

RE: 9901.362

CC: Lab File

Attached is the laboratory report of the analysis conducted on samples received at the Analytical Services Center on May 7, 1999. Analysis was performed according to the procedures set forth in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, Update III, June 1997, USEPA.

The chain of custody form provided herein is integral to this report and must be included with the analytical results forms upon transferal to another data user.

All samples on which this report is based will be retained by E & E for a period of 30 days from the date of this report, unless otherwise instructed by the client. If additional storage of samples is requested by the client, a storage fee of $1.00 per sample container per month will be charged for each sample, with such charges accruing until destruction of the samples is authorized by the client.

TB/cam
Enclosure

001

recycled paper

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368 PLEASANTVIEW DRIVE, LANCASTER, NEW YORK 14086, TEL. 716/684-8060
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CHAIN-OF-CUSTODY RECORD

Page 1 of 2

Project No.: YM1730
Project Name: Kenilworth Park Landfill
Project Manager: Hussein Aldis
Samplers: (Signatures)
Field Team Leader: Hussein Aldis

STATION NUMBER	DATE	TIME	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE TYPE AIR	SAMPLE INFORMATION / EXPECTED COMPOUNDS (Concentration)*	STATION LOCATION	NUMBER OF CONTAINERS	8oz BNA, pest/PCB, TAL, TPHC	4oz TCL, VOA					REMARKS
1	5/6			✓		TCL, VOA	KL BH 5 S1	1		✓					Site is former municipal landfill
1	5/6			✓		BNA, pest/PCB, TAL, TPHC	KL BH 5 S1	1	✓						
1	5/6			✓		TCL, VOA	KL BH 5 S2	1		✓					
1	5/6			✓		BNA, pest/PCB TAL, TPHC	KL BH 5 S2	1	✓						
1	5/6			✓		TCL, VOA	KL BH 5 S3	1		✓					
1	5/6			✓		BNA, pest/PCB, TAL, TPHC	KL BH 5 S3	1	✓						
2	5/6			✓		PAHs, Lead	KL BH 6 S1	2	✓	✓					
2	5/6			✓		PAHs, Lead	KL BH 6 S2	2	✓	✓					
2	5/6			✓		—"—	KL BH 6 S3	2	✓	✓					
3	5/6			✓		—"—	KL BH 7 S1	2	✓	✓					
3	5/6			✓		—"—	KL BH 7 S2	1	✓	✓					} no VOA container rec'd 8 oz. jar rec'd - BB 5/7/99
3	5/6			✓		—"—	KL BH 7 S3	2	✓	✓					
4	5/6			✓		—"—	KL BH 8 S1	2	✓	✓					
4	5/6			✓		—"—	KL BH 8 S2	2	✓	✓					

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Ship Via:
Sylvie Gomis	5/6/99					FEDEX
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	BL/Airbill Number: 8097378761491 — Date: 5/6/99
Relinquished By: (Signature)	Date/Time: 5/7/99/1030	Received For Laboratory By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received For Laboratory By: (Signature)	

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files
*See CONCENTRATION RANGE on back of form.

234055

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International Specialists in the Environment

Page 2 of 2

CHAIN-OF-CUSTODY RECORD

Project No.: YM 1730
Project Name: Kenilworth Park Landfill
Project Manager: Hussein Aldis
Field Team Leader: Hussein Aldis
Samplers: (Signatures)

STATION NUMBER	DATE	TIME	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE TYPE AIR	SAMPLE INFORMATION / EXPECTED COMPOUNDS (Concentration)*	STATION LOCATION	NUMBER OF CONTAINERS	302 BNH, PEST/PCB, TAL, TPHC	402 TCL, VOA					REMARKS
5	5/6			✓		PAHs, Lead	KL BH9 S1	2	✓	✓					
5	5/6			✓		— " — " —	KL BH9 S2	2	✓	✓					
5	5/6			✓		— " — " —	KL BH9 S3	2	✓	✓					
6	5/6			✓		— " — " —	KL BH10 S1	2	✓	✓					
6	5/6			✓		— " — " —	KL BH10 S2	2	✓	✓					
6	5/6			✓		— " — " —	KL BH10 S2D	2	✓	✓					

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)
Relinquished By: (Signature)	Date/Time: 5-7-99/1030	Received For Laboratory By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received For Laboratory By: (Signature)

Ship Via: FEDEX
BL/Airbill Number: 809 73 78 76 149
Date: 5/6/99

234055

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files
*See CONCENTRATION RANGE on back of form.

V9
W38

Ecology and Environment, Inc. Analytical Services Center

Cooler Receipt Form

PACKAGE RECEIPT #: 3052 NUMBER OF COOLERS: 2 DATE RECEIVED: 5.7.99

E & E PROJECT #: _____ PROJECT OR SITE NAME: Kenilworth

A. Preliminary Examination Phase

CIRCLE ONE

1. Did coolers come with airbill or packing slip? _____ YES NO NA

   Enter carrier here and print airbill # below: *(Circle One)* FedEx Airborne Client Other

2. Did cooler(s) have custody seals? _____ YES NO NA

   If YES, how many and where? _____

3. Were custody seals unbroken and intact on receipt? _____ YES NO* NA

4. Were custody seals dated and signed? _____ YES NO NA

   If YES, enter date: _____ Name: _____

5. Sign here to acknowledge receipt of cooler (s): _____

   Date cooler(s) opened: 5 7.99 C-O-C numbers: _____

   Cooler(s) opened by (print): Mk Fitty Signature: _____

6. Were the C-O-C forms received? _____ YES NO* NA

7. Was the project identifiable from the C-O-C form? _____ YES NO* NA
   If YES, enter the project number and name in the heading above

Please record Temperature Blank or Cooler Temperature for Each Cooler. Range (2 - 6°C)*

AIRBILL #	TEMP. °C	AIRBILL #	TEMP. °C	AIRBILL #	TEMP. °C
407 [illegible] 6138 #1	3				
#2	4°				

Thermometer # 4 Correction Factor 0 * If No or Temperature Outside of Acceptable Range, a CAF must be filed. CAF # _____

B. Unpacking Phase

9. Was enough packing material used in cooler(s)? _____ YES NO NA
   Type of material: Vermiculite Bubble Wrap Other

10. If required, was enough ice used? _____ YES NO NA
    If YES, type of ice used: Wet Dry Blue Other

10. Was a temperature blank included inside cooler(s)? _____ YES NO NA
    If YES, indicate temperature blank temperature in table above. If NO, indicate cooler temperature in table above.

11. Were all containers sealed in separate plastic bags? _____ YES NO NA

12. Did all containers arrive unbroken and in good condition? _____ YES NO* NA

C. Login Phase

Samples Logged In By (print): MARK E. LUCAS Signature: Mark E. Lucas Date: 5/7/99

13. Were all container labels complete (e.g. date, time preserv)? _____ YES NO* NA

14. Were all C-O-C forms filled out properly in ink and signed? _____ YES NO* NA

15. Did the C-O-C form agree with containers received? _____ YES NO* NA

16. Were the correct containers used for the tests requested? _____ YES NO* NA

17. Were the correct preservatives listed on the sample labels? _____ YES NO* NA

18. Was a sufficient sample volume sent for the tests requested? _____ YES NO* NA

19. Were all volatile samples received without head space? _____ YES NO* NA

L:\Forms & Lists\Final\F_024.ene\Rev 0\Approval Date 4-1-98\Last printed 03/15/99 12:34 PM

JOB NUMBER : 9901.362

Ecology and Environment, Inc.
SAMPLE TRACKING REPORT

SAMPLE NUMBER	CLIENT SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED
8260B VOA TCL LIST -S				
33132.01	KLBH5 S1	05/06/99		05/12/99
33133.01	KLBH5 S2	05/06/99		05/12/99
33134.01	KLBH5 S3	05/06/99		05/13/99
33135.01	KLBH6 S1	05/06/99		05/13/99
33136.01	KLBH6 S2	05/06/99		05/13/99
33137.01	KLBH6 S3	05/06/99		05/13/99
33138.01	KLBH7 S1	05/06/99		05/13/99
33140.01	KLBH7 S3	05/06/99		05/13/99
33141.01	KLBH8 S1	05/06/99		05/13/99
33142.01	KLBH8 S2	05/06/99		05/13/99
33143.01	KLBH9 S1	05/06/99		05/13/99
33144.01	KLBH9 S2	05/06/99		05/13/99
33145.01	KLBH9 S3	05/06/99		05/13/99
33146.01	KLBH10 S1	05/06/99		05/14/99
33147.01	KLBH10 S2	05/06/99		05/14/99
33148.01	KLBH10 S2/D	05/06/99		05/14/99

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 81 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33132 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH5 S1

SAMPLE WEIGHT/VOL.(gm/ml): 5.08 DATE COLLECTED: 05/06/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/12/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		12
Bromomethane	ND		12
Vinyl chloride	ND		12
Chloroethane	ND		12
Methylene chloride	ND		6.1
Acetone	7.0	J	12
Carbon disulfide	ND		6.1
1,1-Dichloroethene	ND		6.1
1,1-Dichloroethane	ND		6.1
trans-1,2-Dichloroethene	ND		6.1
Chloroform	ND		6.1
1,2-Dichloroethane	ND		6.1
2-Butanone	ND		12
1,1,1-Trichloroethane	ND		6.1
Carbon tetrachloride	ND		6.1
Vinyl acetate	ND		12
Bromodichloromethane	ND		6.1
1,2-Dichloropropane	ND		6.1
cis-1,3-Dichloropropene	ND		6.1
Trichloroethene	1.5	J	6.1
Dibromochloromethane	ND		6.1
1,1,2-Trichloroethane	ND		6.1
Benzene	ND		6.1
trans-1,3,-Dichloropropene	ND		6.1
2-Chloroethylvinylether	ND		12
Bromoform	ND		6.1
4-Methyl-2-pentanone	ND		12
2-Hexanone	ND		12
Tetrachloroethene	ND		6.1
1,1,2,2-Tetrachloroethane	ND		6.1

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

006

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 81 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33132 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH5 S1

SAMPLE WEIGHT/VOL.(gm/ml): 5.08 DATE COLLECTED: 05/06/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/12/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Toluene	ND		6.1
Chlorobenzene	ND		6.1
Ethylbenzene	ND		6.1
Styrene	ND		6.1
Total Xylenes	ND		6.1

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 84 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33133 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH5 S2

SAMPLE WEIGHT/VOL.(gm/ml): 5.12 DATE COLLECTED: 05/06/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/12/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		12
Bromomethane	ND		12
Vinyl chloride	ND		12
Chloroethane	ND		12
Methylene chloride	ND		5.8
Acetone	ND		12
Carbon disulfide	ND		5.8
1,1-Dichloroethene	ND		5.8
1,1-Dichloroethane	ND		5.8
trans-1,2-Dichloroethene	ND		5.8
Chloroform	ND		5.8
1,2-Dichloroethane	ND		5.8
2-Butanone	ND		12
1,1,1-Trichloroethane	ND		5.8
Carbon tetrachloride	ND		5.8
Vinyl acetate	ND		12
Bromodichloromethane	ND		5.8
1,2-Dichloropropane	ND		5.8
cis-1,3-Dichloropropene	ND		5.8
Trichloroethene	1.4	J	5.8
Dibromochloromethane	ND		5.8
1,1,2-Trichloroethane	ND		5.8
Benzene	ND		5.8
trans-1,3,-Dichloropropene	ND		5.8
2-Chloroethylvinylether	ND		12
Bromoform	ND		5.8
4-Methyl-2-pentanone	ND		12
2-Hexanone	ND		12
Tetrachloroethene	ND		5.8
1,1,2,2-Tetrachloroethane	ND		5.8

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

0.9

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 84 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33133 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH5 S2

SAMPLE WEIGHT/VOL.(gm/ml): 5.12 DATE COLLECTED: 05/06/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/12/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Toluene	ND		5.8
Chlorobenzene	ND		5.8
Ethylbenzene	ND		5.8
Styrene	ND		5.8
Total Xylenes	ND		5.8

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 87 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33134 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH5 S3

SAMPLE WEIGHT/VOL.(gm/ml): 5.27 DATE COLLECTED: 05/06/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/13/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		11
Bromomethane	ND		11
Vinyl chloride	2.4	J	11
Chloroethane	ND		11
Methylene chloride	1.8	J	5.4
Acetone	9.2	J	11
Carbon disulfide	ND		5.4
1,1-Dichloroethene	ND		5.4
1,1-Dichloroethane	ND		5.4
trans-1,2-Dichloroethene	ND		5.4
Chloroform	ND		5.4
1,2-Dichloroethane	ND		5.4
2-Butanone	ND		11
1,1,1-Trichloroethane	ND		5.4
Carbon tetrachloride	ND		5.4
Vinyl acetate	ND		11
Bromodichloromethane	ND		5.4
1,2-Dichloropropane	ND		5.4
cis-1,3-Dichloropropene	ND		5.4
Trichloroethene	ND		5.4
Dibromochloromethane	ND		5.4
1,1,2-Trichloroethane	ND		5.4
Benzene	ND		5.4
trans-1,3,-Dichloropropene	ND		5.4
2-Chloroethylvinylether	ND		11
Bromoform	ND		5.4
4-Methyl-2-pentanone	ND		11
2-Hexanone	ND		11
Tetrachloroethene	ND		5.4
1,1,2,2-Tetrachloroethane	ND		5.4

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

010

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 87 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33134 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH5 S3

SAMPLE WEIGHT/VOL.(gm/ml): 5.27 DATE COLLECTED: 05/06/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/13/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Toluene	ND		5.4
Chlorobenzene	ND		5.4
Ethylbenzene	ND		5.4
Styrene	ND		5.4
Total Xylenes	ND		5.4

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

011

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 89 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33135 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH6 S1

SAMPLE WEIGHT/VOL.(gm/ml): 5.22 DATE COLLECTED: 05/06/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/13/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		11
Bromomethane	ND		11
Vinyl chloride	ND		11
Chloroethane	ND		11
Methylene chloride	ND		5.4
Acetone	ND		11
Carbon disulfide	ND		5.4
1,1-Dichloroethene	ND		5.4
1,1-Dichloroethane	ND		5.4
trans-1,2-Dichloroethene	ND		5.4
Chloroform	ND		5.4
1,2-Dichloroethane	ND		5.4
2-Butanone	ND		11
1,1,1-Trichloroethane	ND		5.4
Carbon tetrachloride	ND		5.4
Vinyl acetate	ND		11
Bromodichloromethane	ND		5.4
1,2-Dichloropropane	ND		5.4
cis-1,3-Dichloropropene	ND		5.4
Trichloroethene	ND		5.4
Dibromochloromethane	ND		5.4
1,1,2-Trichloroethane	ND		5.4
Benzene	ND		5.4
trans-1,3,-Dichloropropene	ND		5.4
2-Chloroethylvinylether	ND		11
Bromoform	ND		5.4
4-Methyl-2-pentanone	ND		11
2-Hexanone	ND		11
Tetrachloroethene	ND		5.4
1,1,2,2-Tetrachloroethane	ND		5.4

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

012

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 89 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33135 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH6 S1

SAMPLE WEIGHT/VOL.(gm/ml): 5.22 DATE COLLECTED: 05/06/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/13/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Toluene	ND		5.4
Chlorobenzene	ND		5.4
Ethylbenzene	ND		5.4
Styrene	ND		5.4
Total Xylenes	ND		5.4

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

013

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33136 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH6 S2

SAMPLE WEIGHT/VOL.(gm/ml): 5.07 DATE COLLECTED: 05/06/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/13/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		11
Bromomethane	ND		11
Vinyl chloride	ND		11
Chloroethane	ND		11
Methylene chloride	ND		5.7
Acetone	15		11
Carbon disulfide	ND		5.7
1,1-Dichloroethene	ND		5.7
1,1-Dichloroethane	ND		5.7
trans-1,2-Dichloroethene	ND		5.7
Chloroform	ND		5.7
1,2-Dichloroethane	ND		5.7
2-Butanone	ND		11
1,1,1-Trichloroethane	ND		5.7
Carbon tetrachloride	ND		5.7
Vinyl acetate	ND		11
Bromodichloromethane	ND		5.7
1,2-Dichloropropane	ND		5.7
cis-1,3-Dichloropropene	ND		5.7
Trichloroethene	ND		5.7
Dibromochloromethane	ND		5.7
1,1,2-Trichloroethane	ND		5.7
Benzene	ND		5.7
trans-1,3,-Dichloropropene	ND		5.7
2-Chloroethylvinylether	ND		11
Bromoform	ND		5.7
4-Methyl-2-pentanone	ND		11
2-Hexanone	ND		11
Tetrachloroethene	ND		5.7
1,1,2,2-Tetrachloroethane	ND		5.7

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

014

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33136 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH6 S2

SAMPLE WEIGHT/VOL.(gm/ml): 5.07 DATE COLLECTED: 05/06/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/13/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Toluene	ND		5.7
Chlorobenzene	ND		5.7
Ethylbenzene	ND		5.7
Styrene	ND		5.7
Total Xylenes	ND		5.7

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

015

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 55 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33137 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH6 S3

SAMPLE WEIGHT/VOL.(gm/ml): 1.09 DATE COLLECTED: 05/06/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/13/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		91
Bromomethane	ND		91
Vinyl chloride	ND		91
Chloroethane	ND		91
Methylene chloride	ND		45
Acetone	ND		91
Carbon disulfide	ND		45
1,1-Dichloroethene	ND		45
1,1-Dichloroethane	ND		45
trans-1,2-Dichloroethene	ND		45
Chloroform	ND		45
1,2-Dichloroethane	ND		45
2-Butanone	ND		91
1,1,1-Trichloroethane	ND		45
Carbon tetrachloride	ND		45
Vinyl acetate	ND		91
Bromodichloromethane	ND		45
1,2-Dichloropropane	ND		45
cis-1,3-Dichloropropene	ND		45
Trichloroethene	ND		45
Dibromochloromethane	ND		45
1,1,2-Trichloroethane	ND		45
Benzene	ND		45
trans-1,3,-Dichloropropene	ND		45
2-Chloroethylvinylether	ND		91
Bromoform	ND		45
4-Methyl-2-pentanone	ND		91
2-Hexanone	ND		91
Tetrachloroethene	ND		45
1,1,2,2-Tetrachloroethane	ND		45

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

016

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 55 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33137 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH6 S3

SAMPLE WEIGHT/VOL.(gm/ml): 1.09 DATE COLLECTED: 05/06/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/13/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Toluene	ND		45
Chlorobenzene	ND		45
Ethylbenzene	ND		45
Styrene	ND		45
Total Xylenes	ND		45

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

017

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 78 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33138 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH7 S1

SAMPLE WEIGHT/VOL.(gm/ml): 5.23 DATE COLLECTED: 05/06/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/13/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		12
Bromomethane	ND		12
Vinyl chloride	ND		12
Chloroethane	ND		12
Methylene chloride	ND		6.1
Acetone	ND		12
Carbon disulfide	ND		6.1
1,1-Dichloroethene	ND		6.1
1,1-Dichloroethane	ND		6.1
trans-1,2-Dichloroethene	ND		6.1
Chloroform	ND		6.1
1,2-Dichloroethane	ND		6.1
2-Butanone	ND		12
1,1,1-Trichloroethane	ND		6.1
Carbon tetrachloride	ND		6.1
Vinyl acetate	ND		12
Bromodichloromethane	ND		6.1
1,2-Dichloropropane	ND		6.1
cis-1,3-Dichloropropene	ND		6.1
Trichloroethene	ND		6.1
Dibromochloromethane	ND		6.1
1,1,2-Trichloroethane	ND		6.1
Benzene	ND		6.1
trans-1,3,-Dichloropropene	ND		6.1
2-Chloroethylvinylether	ND		12
Bromoform	ND		6.1
4-Methyl-2-pentanone	ND		12
2-Hexanone	ND		12
Tetrachloroethene	ND		6.1
1,1,2,2-Tetrachloroethane	ND		6.1

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

015

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 78 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33138 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH7 S1

SAMPLE WEIGHT/VOL.(gm/ml): 5.23 DATE COLLECTED: 05/06/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/13/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Toluene	ND		6.1
Chlorobenzene	ND		6.1
Ethylbenzene	ND		6.1
Styrene	ND		6.1
Total Xylenes	ND		6.1

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

019

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 76 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33140 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH7 S3

SAMPLE WEIGHT/VOL.(gm/ml): 5.23 DATE COLLECTED: 05/06/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/13/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		12
Bromomethane	ND		12
Vinyl chloride	3.2	J	12
Chloroethane	ND		12
Methylene chloride	1.4	J	6.3
Acetone	15		12
Carbon disulfide	3.5	J	6.3
1,1-Dichloroethene	ND		6.3
1,1-Dichloroethane	ND		6.3
trans-1,2-Dichloroethene	2.9	J	6.3
Chloroform	ND		6.3
1,2-Dichloroethane	ND		6.3
2-Butanone	ND		12
1,1,1-Trichloroethane	ND		6.3
Carbon tetrachloride	ND		6.3
Vinyl acetate	ND		12
Bromodichloromethane	ND		6.3
1,2-Dichloropropane	ND		6.3
cis-1,3-Dichloropropene	ND		6.3
Trichloroethene	ND		6.3
Dibromochloromethane	ND		6.3
1,1,2-Trichloroethane	ND		6.3
Benzene	ND		6.3
trans-1,3,-Dichloropropene	ND		6.3
2-Chloroethylvinylether	ND		12
Bromoform	ND		6.3
4-Methyl-2-pentanone	ND		12
2-Hexanone	ND		12
Tetrachloroethene	3.2	J	6.3
1,1,2,2-Tetrachloroethane	ND		6.3

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

020

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 76 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33140 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH7 S3

SAMPLE WEIGHT/VOL.(gm/ml): 5.23 DATE COLLECTED: 05/06/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/13/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Toluene	5.1	J	6.3
Chlorobenzene	1.6	J	6.3
Ethylbenzene	5.8	J	6.3
Styrene	ND		6.3
Total Xylenes	8.1		6.3

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

021

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 88 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33141 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH8 S1

SAMPLE WEIGHT/VOL.(gm/ml): 5.07 DATE COLLECTED: 05/06/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/13/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		11
Bromomethane	ND		11
Vinyl chloride	4.4	J	11
Chloroethane	ND		11
Methylene chloride	ND		5.6
Acetone	9.3	J	11
Carbon disulfide	1.2	J	5.6
1,1-Dichloroethene	ND		5.6
1,1-Dichloroethane	ND		5.6
trans-1,2-Dichloroethene	ND		5.6
Chloroform	ND		5.6
1,2-Dichloroethane	ND		5.6
2-Butanone	ND		11
1,1,1-Trichloroethane	ND		5.6
Carbon tetrachloride	ND		5.6
Vinyl acetate	ND		11
Bromodichloromethane	ND		5.6
1,2-Dichloropropane	ND		5.6
cis-1,3-Dichloropropene	ND		5.6
Trichloroethene	ND		5.6
Dibromochloromethane	ND		5.6
1,1,2-Trichloroethane	ND		5.6
Benzene	ND		5.6
trans-1,3,-Dichloropropene	ND		5.6
2-Chloroethylvinylether	ND		11
Bromoform	ND		5.6
4-Methyl-2-pentanone	ND		11
2-Hexanone	ND		11
Tetrachloroethene	ND		5.6
1,1,2,2-Tetrachloroethane	ND		5.6

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

022

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 88 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33141 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH8 S1

SAMPLE WEIGHT/VOL.(gm/ml): 5.07 DATE COLLECTED: 05/06/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/13/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Toluene	ND		5.6
Chlorobenzene	ND		5.6
Ethylbenzene	ND		5.6
Styrene	ND		5.6
Total Xylenes	ND		5.6

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

023

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33142 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH8 S2

SAMPLE WEIGHT/VOL.(gm/ml): 5.16 DATE COLLECTED: 05/06/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/13/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		11
Bromomethane	ND		11
Vinyl chloride	ND		11
Chloroethane	ND		11
Methylene chloride	ND		5.6
Acetone	19		11
Carbon disulfide	2.6	J	5.6
1,1-Dichloroethene	ND		5.6
1,1-Dichloroethane	ND		5.6
trans-1,2-Dichloroethene	ND		5.6
Chloroform	ND		5.6
1,2-Dichloroethane	ND		5.6
2-Butanone	ND		11
1,1,1-Trichloroethane	ND		5.6
Carbon tetrachloride	ND		5.6
Vinyl acetate	ND		11
Bromodichloromethane	ND		5.6
1,2-Dichloropropane	ND		5.6
cis-1,3-Dichloropropene	ND		5.6
Trichloroethene	ND		5.6
Dibromochloromethane	ND		5.6
1,1,2-Trichloroethane	ND		5.6
Benzene	ND		5.6
trans-1,3,-Dichloropropene	ND		5.6
2-Chloroethylvinylether	ND		11
Bromoform	ND		5.6
4-Methyl-2-pentanone	ND		11
2-Hexanone	ND		11
Tetrachloroethene	ND		5.6
1,1,2,2-Tetrachloroethane	1.5	J	5.6

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

T 024

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33142 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH8 S2

SAMPLE WEIGHT/VOL.(gm/ml): 5.16 DATE COLLECTED: 05/06/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/13/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Toluene	ND		5.6
Chlorobenzene	ND		5.6
Ethylbenzene	ND		5.6
Styrene	ND		5.6
Total Xylenes	ND		5.6

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

025

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 75 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33143 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH9 S1

SAMPLE WEIGHT/VOL.(gm/ml): 5.07 DATE COLLECTED: 05/06/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/13/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		13
Bromomethane	ND		13
Vinyl chloride	ND		13
Chloroethane	ND		13
Methylene chloride	ND		6.6
Acetone	ND		13
Carbon disulfide	ND		6.6
1,1-Dichloroethene	ND		6.6
1,1-Dichloroethane	ND		6.6
trans-1,2-Dichloroethene	ND		6.6
Chloroform	ND		6.6
1,2-Dichloroethane	ND		6.6
2-Butanone	ND		13
1,1,1-Trichloroethane	ND		6.6
Carbon tetrachloride	ND		6.6
Vinyl acetate	ND		13
Bromodichloromethane	ND		6.6
1,2-Dichloropropane	ND		6.6
cis-1,3-Dichloropropene	ND		6.6
Trichloroethene	ND		6.6
Dibromochloromethane	ND		6.6
1,1,2-Trichloroethane	ND		6.6
Benzene	ND		6.6
trans-1,3,-Dichloropropene	ND		6.6
2-Chloroethylvinylether	ND		13
Bromoform	ND		6.6
4-Methyl-2-pentanone	ND		13
2-Hexanone	ND		13
Tetrachloroethene	ND		6.6
1,1,2,2-Tetrachloroethane	ND		6.6

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

026

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 75 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33143 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH9 S1

SAMPLE WEIGHT/VOL.(gm/ml): 5.07 DATE COLLECTED: 05/06/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/13/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Toluene	ND		6.6
Chlorobenzene	ND		6.6
Ethylbenzene	ND		6.6
Styrene	ND		6.6
Total Xylenes	ND		6.6

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

027

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 82 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33144 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH9 S2

SAMPLE WEIGHT/VOL.(gm/ml): 5.08 DATE COLLECTED: 05/06/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/13/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		12
Bromomethane	ND		12
Vinyl chloride	ND		12
Chloroethane	ND		12
Methylene chloride	ND		6.0
Acetone	ND		12
Carbon disulfide	ND		6.0
1,1-Dichloroethene	ND		6.0
1,1-Dichloroethane	ND		6.0
trans-1,2-Dichloroethene	ND		6.0
Chloroform	ND		6.0
1,2-Dichloroethane	ND		6.0
2-Butanone	ND		12
1,1,1-Trichloroethane	ND		6.0
Carbon tetrachloride	ND		6.0
Vinyl acetate	ND		12
Bromodichloromethane	ND		6.0
1,2-Dichloropropane	ND		6.0
cis-1,3-Dichloropropene	ND		6.0
Trichloroethene	ND		6.0
Dibromochloromethane	ND		6.0
1,1,2-Trichloroethane	ND		6.0
Benzene	ND		6.0
trans-1,3,-Dichloropropene	ND		6.0
2-Chloroethylvinylether	ND		12
Bromoform	ND		6.0
4-Methyl-2-pentanone	ND		12
2-Hexanone	ND		12
Tetrachloroethene	ND		6.0
1,1,2,2-Tetrachloroethane	ND		6.0

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

028

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 82 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33144 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH9 S2

SAMPLE WEIGHT/VOL.(gm/ml): 5.08 DATE COLLECTED: 05/06/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/13/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Toluene	ND		6.0
Chlorobenzene	ND		6.0
Ethylbenzene	ND		6.0
Styrene	ND		6.0
Total Xylenes	ND		6.0

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

029

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 88 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33145 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH9 S3

SAMPLE WEIGHT/VOL.(gm/ml): 4.92 DATE COLLECTED: 05/06/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/13/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		12
Bromomethane	ND		12
Vinyl chloride	3.4	J	12
Chloroethane	ND		12
Methylene chloride	ND		5.8
Acetone	81		12
Carbon disulfide	3.4	J	5.8
1,1-Dichloroethene	ND		5.8
1,1-Dichloroethane	ND		5.8
trans-1,2-Dichloroethene	ND		5.8
Chloroform	ND		5.8
1,2-Dichloroethane	ND		5.8
2-Butanone	32		12
1,1,1-Trichloroethane	ND		5.8
Carbon tetrachloride	ND		5.8
Vinyl acetate	ND		12
Bromodichloromethane	ND		5.8
1,2-Dichloropropane	ND		5.8
cis-1,3-Dichloropropene	ND		5.8
Trichloroethene	ND		5.8
Dibromochloromethane	ND		5.8
1,1,2-Trichloroethane	ND		5.8
Benzene	ND		5.8
trans-1,3,-Dichloropropene	ND		5.8
2-Chloroethylvinylether	ND		12
Bromoform	ND		5.8
4-Methyl-2-pentanone	ND		12
2-Hexanone	ND		12
Tetrachloroethene	ND		5.8
1,1,2,2-Tetrachloroethane	ND		5.8

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

030

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 88 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33145 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH9 S3

SAMPLE WEIGHT/VOL.(gm/ml): 4.92 DATE COLLECTED: 05/06/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/13/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Toluene	ND		5.8
Chlorobenzene	ND		5.8
Ethylbenzene	ND		5.8
Styrene	ND		5.8
Total Xylenes	ND		5.8

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

031

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33146 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH10 S1

SAMPLE WEIGHT/VOL.(gm/ml): 5.11 DATE COLLECTED: 05/06/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/14/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		11
Bromomethane	ND		11
Vinyl chloride	ND		11
Chloroethane	ND		11
Methylene chloride	ND		5.7
Acetone	ND		11
Carbon disulfide	ND		5.7
1,1-Dichloroethene	ND		5.7
1,1-Dichloroethane	ND		5.7
trans-1,2-Dichloroethene	ND		5.7
Chloroform	ND		5.7
1,2-Dichloroethane	ND		5.7
2-Butanone	ND		11
1,1,1-Trichloroethane	ND		5.7
Carbon tetrachloride	ND		5.7
Vinyl acetate	ND		11
Bromodichloromethane	ND		5.7
1,2-Dichloropropane	ND		5.7
cis-1,3-Dichloropropene	ND		5.7
Trichloroethene	ND		5.7
Dibromochloromethane	ND		5.7
1,1,2-Trichloroethane	ND		5.7
Benzene	ND		5.7
trans-1,3,-Dichloropropene	ND		5.7
2-Chloroethylvinylether	ND		11
Bromoform	ND		5.7
4-Methyl-2-pentanone	ND		11
2-Hexanone	ND		11
Tetrachloroethene	ND		5.7
1,1,2,2-Tetrachloroethane	ND		5.7

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

032

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33146 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH10 S1

SAMPLE WEIGHT/VOL.(gm/ml): 5.11 DATE COLLECTED: 05/06/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/14/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Toluene	ND		5.7
Chlorobenzene	ND		5.7
Ethylbenzene	ND		5.7
Styrene	ND		5.7
Total Xylenes	ND		5.7

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

033

TEST CODE :SVOA0A1

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8260B VOA TCL LIST
SAMPLE ID LAB : EE-99-33147
SAMPLE ID CLIENT: KLBH10 S2

%SOLIDS : 86 %
UNITS : UG/KG
MATRIX : SOLID

SAMPLE WEIGHT/VOL.(gm/ml): 5.09
FINAL EXTRACT VOLUME:
INJECTION VOLUME :
DILUTION FACTOR : 1.0

DATE COLLECTED: 05/06/99
DATE RECEIVED : 05/07/99
DATE EXTRACTED: NA
DATE ANALYZED : 05/14/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		11
Bromomethane	ND		11
Vinyl chloride	ND		11
Chloroethane	ND		11
Methylene chloride	ND		5.7
Acetone	ND		11
Carbon disulfide	ND		5.7
1,1-Dichloroethene	ND		5.7
1,1-Dichloroethane	ND		5.7
trans-1,2-Dichloroethene	ND		5.7
Chloroform	ND		5.7
1,2-Dichloroethane	ND		5.7
2-Butanone	ND		11
1,1,1-Trichloroethane	ND		5.7
Carbon tetrachloride	ND		5.7
Vinyl acetate	ND		11
Bromodichloromethane	ND		5.7
1,2-Dichloropropane	ND		5.7
cis-1,3-Dichloropropene	ND		5.7
Trichloroethene	ND		5.7
Dibromochloromethane	ND		5.7
1,1,2-Trichloroethane	ND		5.7
Benzene	ND		5.7
trans-1,3,-Dichloropropene	ND		5.7
2-Chloroethylvinylether	ND		11
Bromoform	ND		5.7
4-Methyl-2-pentanone	ND		11
2-Hexanone	ND		11
Tetrachloroethene	ND		5.7
1,1,2,2-Tetrachloroethane	ND		5.7

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

ND = NOT DETECTED
B = ALSO PRESENT IN BLANK

034

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33147 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH10 S2

SAMPLE WEIGHT/VOL.(gm/ml): 5.09 DATE COLLECTED: 05/06/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/14/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Toluene	ND		5.7
Chlorobenzene	ND		5.7
Ethylbenzene	ND		5.7
Styrene	ND		5.7
Total Xylenes	ND		5.7

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

035

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 89 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33148 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH10 S2/D

SAMPLE WEIGHT/VOL.(gm/ml): 5.00 DATE COLLECTED: 05/06/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/14/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		11
Bromomethane	ND		11
Vinyl chloride	ND		11
Chloroethane	ND		11
Methylene chloride	ND		5.6
Acetone	ND		11
Carbon disulfide	ND		5.6
1,1-Dichloroethene	ND		5.6
1,1-Dichloroethane	ND		5.6
trans-1,2-Dichloroethene	ND		5.6
Chloroform	ND		5.6
1,2-Dichloroethane	ND		5.6
2-Butanone	ND		11
1,1,1-Trichloroethane	ND		5.6
Carbon tetrachloride	ND		5.6
Vinyl acetate	ND		11
Bromodichloromethane	ND		5.6
1,2-Dichloropropane	ND		5.6
cis-1,3-Dichloropropene	ND		5.6
Trichloroethene	ND		5.6
Dibromochloromethane	ND		5.6
1,1,2-Trichloroethane	ND		5.6
Benzene	ND		5.6
trans-1,3,-Dichloropropene	ND		5.6
2-Chloroethylvinylether	ND		11
Bromoform	ND		5.6
4-Methyl-2-pentanone	ND		11
2-Hexanone	ND		11
Tetrachloroethene	ND		5.6
1,1,2,2-Tetrachloroethane	ND		5.6

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

036

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 89 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33148 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH10 S2/D

SAMPLE WEIGHT/VOL.(gm/ml): 5.00 DATE COLLECTED: 05/06/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/14/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Toluene	ND		5.6
Chlorobenzene	ND		5.6
Ethylbenzene	ND		5.6
Styrene	ND		5.6
Total Xylenes	ND		5.6

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

037

GC/MS Spike Summary Form

VOA Data

Instrument ID : 7001D.i
Batch : 990512441r
Units: ng

Compound	Detection Limit	Amount Added	Limits	MS LCS 1331-76-1 D4214.d Amt Det	Rec
1,1-Dichloroethene	<25.00	250.00	70.0->131.0	231.30	92.5
Benzene	<25.00	250.00	82.0->120.0	234.57	93.8
Trichloroethene	<25.00	250.00	75.0->120.0	241.53	96.6
Toluene	<25.00	250.00	80.0->119.0	216.88	86.8
Chlorobenzene	<25.00	250.00	84.0->115.0	227.68	91.1

038

GC/MS Surrogate Summary Form

VOA Data

Instrument ID : 7001D.i
Batch : 990512441r
Units: ng

Surrogate:	Dibromofluorome		1,2-Dichloroeth		Toluene-d8		Bromofluorobenz	
Amount Added:	250.0		250.0		250.0		250.0	
Limits:	83.0--> 117.0		77.0--> 119.0		84.0--> 119.0		88.0--> 124.0	
Job/Sample Number	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec
D4214.d LCS 1331-76-1	257.00	103.0	255.00	102.0	230.00	92.0	232.00	93.0
D4215.d BLK 1331-76-1	251.00	100.0	248.00	99.4	234.00	93.7	232.00	92.9
D4226.d 9901.362 33132.01	253.00	101.0	252.00	101.0	226.00	90.2	234.00	93.4
D4227.d 9901.362 33133.01	259.00	104.0	244.00	97.6	229.00	91.5	229.00	91.5

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : METHOD BLANK MATRIX : SOLID
1331-76-1

SAMPLE WEIGHT/VOL.(gm/ml): 5.0 DATE COLLECTED: NA
FINAL EXTRACT VOLUME: DATE RECEIVED : NA
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/12/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		10
Bromomethane	ND		10
Vinyl chloride	ND		10
Chloroethane	ND		10
Methylene chloride	1.4	J	5.0
Acetone	ND		10
Carbon disulfide	ND		5.0
1,1-Dichloroethene	ND		5.0
1,1-Dichloroethane	ND		5.0
trans-1,2-Dichloroethene	ND		5.0
Chloroform	ND		5.0
1,2-Dichloroethane	ND		5.0
2-Butanone	ND		10
1,1,1-Trichloroethane	ND		5.0
Carbon tetrachloride	ND		5.0
Vinyl acetate	ND		10
Bromodichloromethane	ND		5.0
1,2-Dichloropropane	ND		5.0
cis-1,3-Dichloropropene	ND		5.0
Trichloroethene	ND		5.0
Dibromochloromethane	ND		5.0
1,1,2-Trichloroethane	ND		5.0
Benzene	ND		5.0
trans-1,3,-Dichloropropene	ND		5.0
2-Chloroethylvinylether	ND		10
Bromoform	ND		5.0
4-Methyl-2-pentanone	ND		10
2-Hexanone	ND		10
Tetrachloroethene	ND		5.0
1,1,2,2-Tetrachloroethane	ND		5.0

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

040

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : METHOD BLANK MATRIX : SOLID
1331-76-1

SAMPLE WEIGHT/VOL.(gm/ml): 5.0 DATE COLLECTED: NA
FINAL EXTRACT VOLUME: DATE RECEIVED : NA
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/12/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Toluene	ND		5.0
Chlorobenzene	ND		5.0
Ethylbenzene	ND		5.0
Styrene	ND		5.0
Total Xylenes	ND		5.0

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

041

GC/MS Spike Summary Form

VOA Data

Instrument ID : 7001D.i
Batch : 990512442r
Units: ng

Compound	Original 9901.362 33138.01 D4241.d	Amount Added	Limits	MS MS 9901.362 33138.01 D4242.d Amt Det	MS Rec	MSD MSD 9901.362 33138.0 D4243.d Amt Det	MSD Rec	%RPD
1,1-Dichloroethene	< 25.00	250.00	59.0->172.0	170.42	68.2	180.59	72.2	5.80
Benzene	< 25.00	250.00	66.0->142.0	170.62	68.2	184.21	73.7	7.66
Trichloroethene	< 25.00	250.00	62.0->137.0	171.90	68.8	181.83	72.7	5.61
Toluene	< 25.00	250.00	59.0->139.0	163.09	65.2	178.28	71.3	8.90
Chlorobenzene	< 25.00	250.00	60.0->133.0	165.05	66.0	180.90	72.4	9.16

042

GC/MS Spike Summary Form

VOA Data

Instrument ID : 7001D.i
Batch : 990512442r
Units: ng

Compound	Detection Limit	Amount Added	Limits	MS LCS 1331-78-1 D4234.d Amt Det	Rec
1,1-Dichloroethene	<25.00	250.00	70.0->131.0	216.70	86.7
Benzene	<25.00	250.00	82.0->120.0	214.13	85.7
Trichloroethene	<25.00	250.00	75.0->120.0	217.52	87.0
Toluene	<25.00	250.00	80.0->119.0	209.72	83.9
Chlorobenzene	<25.00	250.00	84.0->115.0	217.37	86.9

E 043

GC/MS Surrogate Summary Form

VOA Data

Instrument ID : 7001D.i
Batch : 990512442r
Units: ng

Surrogate:	Dibromofluorome		1,2-Dichloroeth		Toluene-d8		Bromofluorobenz	
Amount Added:	250.0		250.0		250.0		250.0	
Limits:	83.0--> 117.0		77.0--> 119.0		84.0--> 119.0		88.0--> 124.0	
Job/Sample Number	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec
D4234.d LCS 1331-78-1	246.00	98.3	241.00	96.6	234.00	93.8	236.00	94.5
D4236.d BLK 1331-78-2	246.00	98.2	239.00	95.6	235.00	93.9	235.00	94.0
D4237.d RA 9901.362 33134.01	253.00	101.0	242.00	96.7	235.00	94.2	241.00	96.5
D4238.d RA 9901.362 33135.01	254.00	101.0	247.00	98.9	235.00	93.9	235.00	94.0
D4239.d RA 9901.362 33136.01	254.00	102.0	241.00	96.4	234.00	93.6	232.00	93.0
D4240.d 9901.362 33137.01	256.00	102.0	247.00	98.6	240.00	96.0	234.00	93.8
D4241.d 9901.362 33138.01	257.00	103.0	246.00	98.6	234.00	93.7	233.00	93.2
D4242.d MS 9901.362 33138.01	255.00	102.0	252.00	101.0	232.00	93.0	237.00	94.8
D4243.d MSD 9901.362 33138.0	253.00	101.0	249.00	99.5	234.00	93.8	238.00	95.3
D4244.d 9901.362 33140.01	254.00	102.0	234.00	93.7	238.00	95.3	255.00	102.0

044

GC/MS Surrogate Summary Form

VOA Data

Instrument ID : 7001D.i
Batch : 990512442r
Units: ng

Surrogate:	Dibromofluorome		1,2-Dichloroeth		Toluene-d8		Bromofluorobenz	
Amount Added:	250.0		250.0		250.0		250.0	
Limits:	83.0--> 117.0		77.0--> 119.0		84.0--> 119.0		88.0--> 124.0	
Job/Sample Number	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec
D4245.d 9901.362 33141.01	250.00	99.8	243.00	97.4	234.00	93.7	239.00	95.7
D4246.d 9901.362 33142.01	253.00	101.0	247.00	98.7	232.00	93.0	236.00	94.3
D4247.d 9901.362 33143.01	258.00	103.0	264.00	106.0	238.00	95.2	236.00	94.2
D4248.d 9901.362 33144.01	257.00	103.0	247.00	98.6	235.00	93.9	234.00	93.5

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : METHOD BLANK MATRIX : SOLID
1331-78-2

SAMPLE WEIGHT/VOL.(gm/ml): 5.0 DATE COLLECTED: NA
FINAL EXTRACT VOLUME: DATE RECEIVED : NA
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/13/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		10
Bromomethane	ND		10
Vinyl chloride	ND		10
Chloroethane	ND		10
Methylene chloride	ND		5.0
Acetone	ND		10
Carbon disulfide	ND		5.0
1,1-Dichloroethene	ND		5.0
1,1-Dichloroethane	ND		5.0
trans-1,2-Dichloroethene	ND		5.0
Chloroform	ND		5.0
1,2-Dichloroethane	ND		5.0
2-Butanone	ND		10
1,1,1-Trichloroethane	ND		5.0
Carbon tetrachloride	ND		5.0
Vinyl acetate	ND		10
Bromodichloromethane	ND		5.0
1,2-Dichloropropane	ND		5.0
cis-1,3-Dichloropropene	ND		5.0
Trichloroethene	ND		5.0
Dibromochloromethane	ND		5.0
1,1,2-Trichloroethane	ND		5.0
Benzene	ND		5.0
trans-1,3,-Dichloropropene	ND		5.0
2-Chloroethylvinylether	ND		10
Bromoform	ND		5.0
4-Methyl-2-pentanone	ND		10
2-Hexanone	ND		10
Tetrachloroethene	ND		5.0
1,1,2,2-Tetrachloroethane	ND		5.0

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

046

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : METHOD BLANK MATRIX : SOLID
1131-78-2

SAMPLE WEIGHT/VOL.(gm/ml): 5.0 DATE COLLECTED: NA
FINAL EXTRACT VOLUME: DATE RECEIVED : NA
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/13/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Toluene	ND		5.0
Chlorobenzene	ND		5.0
Ethylbenzene	ND		5.0
Styrene	ND		5.0
Total Xylenes	ND		5.0

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

047

GC/MS Spike Summary Form

VOA Data

Instrument ID : 7001D.i
Batch : 990513441r
Units: ng

Compound	Detection Limit	Amount Added	Limits	MS LCS 1331-79-1 D4252.d Amt Det	Rec
1,1-Dichloroethene	<25.00	250.00	70.0->131.0	222.84	89.1
Benzene	<25.00	250.00	82.0->120.0	219.83	87.9
Trichloroethene	<25.00	250.00	75.0->120.0	226.33	90.5
Toluene	<25.00	250.00	80.0->119.0	212.65	85.1
Chlorobenzene	<25.00	250.00	84.0->115.0	223.82	89.5

048

GC/MS Surrogate Summary Form

VOA Data

Instrument ID : 7001D.i
Batch : 990513441r
Units: ng

Surrogate:	Dibromofluorome		1,2-Dichloroeth		Toluene-d8		Bromofluorobenz	
Amount Added:	250.0		250.0		250.0		250.0	
Limits:	83.0--> 117.0		77.0--> 119.0		84.0--> 119.0		88.0--> 124.0	
Job/Sample Number	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec
D4252.d LCS 1331-79-1	258.00	103.0	252.00	101.0	232.00	92.7	237.00	94.9
D4253.d BLK 1331-79-1	250.00	100.0	239.00	95.7	236.00	94.3	233.00	93.2
D4254.d 9901.362 33145.01	257.00	103.0	246.00	98.6	235.00	93.9	230.00	92.0

TEST CODE :SVOA0A1

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8260B VOA TCL LIST
SAMPLE ID LAB : METHOD BLANK
1331-79-1

UNITS : UG/KG
MATRIX : SOLID

SAMPLE WEIGHT/VOL.(gm/ml): 5.0
FINAL EXTRACT VOLUME:
INJECTION VOLUME :
DILUTION FACTOR : 1.0

DATE COLLECTED: NA
DATE RECEIVED : NA
DATE EXTRACTED: NA
DATE ANALYZED : 05/13/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		10
Bromomethane	ND		10
Vinyl chloride	ND		10
Chloroethane	ND		10
Methylene chloride	ND		5.0
Acetone	ND		10
Carbon disulfide	ND		5.0
1,1-Dichloroethene	ND		5.0
1,1-Dichloroethane	ND		5.0
trans-1,2-Dichloroethene	ND		5.0
Chloroform	ND		5.0
1,2-Dichloroethane	ND		5.0
2-Butanone	ND		10
1,1,1-Trichloroethane	ND		5.0
Carbon tetrachloride	ND		5.0
Vinyl acetate	ND		10
Bromodichloromethane	ND		5.0
1,2-Dichloropropane	ND		5.0
cis-1,3-Dichloropropene	ND		5.0
Trichloroethene	ND		5.0
Dibromochloromethane	ND		5.0
1,1,2-Trichloroethane	ND		5.0
Benzene	ND		5.0
trans-1,3,-Dichloropropene	ND		5.0
2-Chloroethylvinylether	ND		10
Bromoform	ND		5.0
4-Methyl-2-pentanone	ND		10
2-Hexanone	ND		10
Tetrachloroethene	ND		5.0
1,1,2,2-Tetrachloroethane	ND		5.0

QUALIFIERS: C = COMMENT
ND = NOT DETECTED
J = ESTIMATED VALUE
B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

050

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : METHOD BLANK MATRIX : SOLID
1331-79-1

SAMPLE WEIGHT/VOL.(gm/ml): 5.0 DATE COLLECTED: NA
FINAL EXTRACT VOLUME: DATE RECEIVED : NA
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/13/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Toluene	ND		5.0
Chlorobenzene	ND		5.0
Ethylbenzene	ND		5.0
Styrene	ND		5.0
Total Xylenes	ND		5.0

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

051

GC/MS Spike Summary Form

VOA Data

Instrument ID : 7001D.i
Batch : 990513442r
Units: ng

Compound	Detection Limit	Amount Added	Limits	MS LCS 1331-80-1 D4267.d Amt Det	Rec
1,1-Dichloroethene	<25.00	250.00	70.0->131.0	212.96	85.2
Benzene	<25.00	250.00	82.0->120.0	214.74	85.9
Trichloroethene	<25.00	250.00	75.0->120.0	218.56	87.4
Toluene	<25.00	250.00	80.0->119.0	208.23	83.3
Chlorobenzene	<25.00	250.00	84.0->115.0	219.64	87.9

052

GC/MS Surrogate Summary Form

VOA Data

Instrument ID : 7001D.i
Batch : 990513442r
Units: ng

Surrogate:	Dibromofluorome		1,2-Dichloroeth		Toluene-d8		Bromofluorobenz	
Amount Added:	250.0		250.0		250.0		250.0	
Limits:	83.0--> 117.0		77.0--> 119.0		84.0--> 119.0		88.0--> 124.0	
Job/Sample Number	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec
D4267.d LCS 1331-80-1	256.00	102.0	258.00	103.0	228.00	91.3	230.00	92.1
D4269.d BLK 1331-80-2	250.00	100.0	246.00	98.5	232.00	92.8	235.00	94.1
D4278.d 9901.362 33146.01	260.00	104.0	250.00	100.0	230.00	92.0	231.00	92.5
D4279.d 9901.362 33147.01	257.00	103.0	251.00	100.0	232.00	92.9	234.00	93.8
D4280.d 9901.362 33148.01	255.00	102.0	246.00	98.5	231.00	92.3	233.00	93.2

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : METHOD BLANK MATRIX : SOLID
1331-80-2

SAMPLE WEIGHT/VOL.(gm/ml): 5.0 DATE COLLECTED: NA
FINAL EXTRACT VOLUME: DATE RECEIVED : NA
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/13/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		10
Bromomethane	ND		10
Vinyl chloride	ND		10
Chloroethane	ND		10
Methylene chloride	ND		5.0
Acetone	ND		10
Carbon disulfide	ND		5.0
1,1-Dichloroethene	ND		5.0
1,1-Dichloroethane	ND		5.0
trans-1,2-Dichloroethene	ND		5.0
Chloroform	ND		5.0
1,2-Dichloroethane	ND		5.0
2-Butanone	ND		10
1,1,1-Trichloroethane	ND		5.0
Carbon tetrachloride	ND		5.0
Vinyl acetate	ND		10
Bromodichloromethane	ND		5.0
1,2-Dichloropropane	ND		5.0
cis-1,3-Dichloropropene	ND		5.0
Trichloroethene	ND		5.0
Dibromochloromethane	ND		5.0
1,1,2-Trichloroethane	ND		5.0
Benzene	ND		5.0
trans-1,3,-Dichloropropene	ND		5.0
2-Chloroethylvinylether	ND		10
Bromoform	ND		5.0
4-Methyl-2-pentanone	ND		10
2-Hexanone	ND		10
Tetrachloroethene	ND		5.0
1,1,2,2-Tetrachloroethane	ND		5.0

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

054

TEST CODE :SVOA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : METHOD BLANK MATRIX : SOLID
1331-80-2

SAMPLE WEIGHT/VOL.(gm/ml): 5.0 DATE COLLECTED: NA
FINAL EXTRACT VOLUME: DATE RECEIVED : NA
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/13/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Toluene	ND		5.0
Chlorobenzene	ND		5.0
Ethylbenzene	ND		5.0
Styrene	ND		5.0
Total Xylenes	ND		5.0

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

055

JOB NUMBER : 9901.362

Ecology and Environment, Inc.
SAMPLE TRACKING REPORT

SAMPLE NUMBER	CLIENT SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED
8270C BNA	-S			
33132.02	KLBH5 S1	05/06/99	05/10/99	05/12/99
33133.02	KLBH5 S2	05/06/99	05/10/99	05/12/99
33134.02	KLBH5 S3	05/06/99	05/10/99	05/14/99
33135.02	KLBH6 S1	05/06/99	05/10/99	05/13/99
33136.02	KLBH6 S2	05/06/99	05/10/99	05/13/99
33137.02	KLBH6 S3	05/06/99	05/10/99	05/13/99
33138.02	KLBH7 S1	05/06/99	05/10/99	05/12/99
33139.02	KLBH7 S2	05/06/99	05/10/99	05/17/99
33140.02	KLBH7 S3	05/06/99	05/10/99	05/13/99
33141.02	KLBH8 S1	05/06/99	05/10/99	05/13/99
33142.02	KLBH8 S2	05/06/99	05/10/99	05/14/99
33143.02	KLBH9 S1	05/06/99	05/10/99	05/12/99
33144.02	KLBH9 S2	05/06/99	05/10/99	05/12/99
33145.02	KLBH9 S3	05/06/99	05/10/99	05/13/99
33146.02	KLBH10 S1	05/06/99	05/10/99	05/13/99
33147.02	KLBH10 S2	05/06/99	05/10/99	05/12/99
33148.02	KLBH10 S2/D	05/06/99	05/10/99	05/12/99

056

TEST CODE :SBNA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 81 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33132 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH5 S1

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		410
bis(2-Chloroethyl)ether	ND		410
2-Chlorophenol	ND		410
1,3-Dichlorobenzene	ND		410
1,4-Dichlorobenzene	ND		410
Benzyl alcohol	ND		410
1,2-Dichlorobenzene	ND		410
2-Methylphenol	ND		410
2,2'-oxybis(1-Chloropropane)	ND		410
4-Methylphenol	ND		410
n-Nitroso-di-n-propylamine	ND		410
Hexachloroethane	ND		410
Nitrobenzene	ND		410
Isophorone	ND		410
2-Nitrophenol	ND		410
2,4-Dimethylphenol	ND		410
Benzoic acid	ND		1000
bis(2-Chloroethoxy)methane	ND		410
2,4-Dichlorophenol	ND		410
1,2,4-Trichlorobenzene	ND		410
Naphthalene	ND		410
4-Chloroaniline	ND		410
Hexachlorobutadiene	ND		410
4-Chloro-3-methylphenol	ND		410
2-Methylnaphthalene	ND		410
Hexachlorocyclopentadiene	ND		1000
2,4,6-Trichlorophenol	ND		410
2,4,5-Trichlorophenol	ND		1000
2-Chloronaphthalene	ND		410
2-Nitroaniline	ND		1000

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

057

TEST CODE :SBNA0A1

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8270C BNA
SAMPLE ID LAB : EE-99-33132
SAMPLE ID CLIENT: KLBH5 S1

%SOLIDS : 81 %
UNITS : UG/KG
MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		410
Acenaphthylene	ND		410
3-Nitroaniline	ND		1000
Acenaphthene	ND		410
2,4-Dinitrophenol	ND		1000
4-Nitrophenol	ND		1000
Dibenzofuran	ND		410
2,4-Dinitrotoluene	ND		410
2,6-Dinitrotoluene	ND		410
Diethylphthalate	ND		410
4-Chlorophenylphenylether	ND		410
Fluorene	ND		410
4-Nitroaniline	ND		1000
4,6-Dinitro-2-methylphenol	ND		1000
n-Nitrosodiphenylamine	ND		410
4-Bromophenylphenylether	ND		410
Hexachlorobenzene	ND		410
Pentachlorophenol	ND		1000
Phenanthrene	160	J	410
Anthracene	55	J	410
Fluoranthene	340	J	410
di-n-Butylphthalate	ND		410
Pyrene	280	J	410
Butylbenzylphthalate	ND		410
3,3'-Dichlorobenzidine	ND		810
Benzo(a)anthracene	150	J	410
bis(2-Ethylhexyl)phthalate	56	J	410
Chrysene	160	J	410
di-n-Octylphthalate	ND		410
Benzo(b)fluoranthene	160	J	410
Benzo(k)fluoranthene	140	J	410
Benzo(a)pyrene	160	J	410
Indeno(1,2,3-cd)pyrene	110	J	410
Dibenzo(a,h)anthracene	ND		410
Benzo(ghi)perylene	130	J	410

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

058

TEST CODE :SBNA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 84 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33133 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH5 S2

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		380
bis(2-Chloroethyl)ether	ND		380
2-Chlorophenol	ND		380
1,3-Dichlorobenzene	ND		380
1,4-Dichlorobenzene	ND		380
Benzyl alcohol	ND		380
1,2-Dichlorobenzene	ND		380
2-Methylphenol	ND		380
2,2'-oxybis(1-Chloropropane)	ND		380
4-Methylphenol	ND		380
n-Nitroso-di-n-propylamine	ND		380
Hexachloroethane	ND		380
Nitrobenzene	ND		380
Isophorone	ND		380
2-Nitrophenol	ND		380
2,4-Dimethylphenol	ND		380
Benzoic acid	ND		970
bis(2-Chloroethoxy)methane	ND		380
2,4-Dichlorophenol	ND		380
1,2,4-Trichlorobenzene	ND		380
Naphthalene	ND		380
4-Chloroaniline	ND		380
Hexachlorobutadiene	ND		380
4-Chloro-3-methylphenol	ND		380
2-Methylnaphthalene	ND		380
Hexachlorocyclopentadiene	ND		970
2,4,6-Trichlorophenol	ND		380
2,4,5-Trichlorophenol	ND		970
2-Chloronaphthalene	ND		380
2-Nitroaniline	ND		970

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

059

TEST CODE :SBNA0A1

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8270C BNA
SAMPLE ID LAB : EE-99-33133
SAMPLE ID CLIENT: KLBH5 S2

%SOLIDS : 84 %
UNITS : UG/KG
MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		380
Acenaphthylene	45	J	380
3-Nitroaniline	ND		970
Acenaphthene	ND		380
2,4-Dinitrophenol	ND		970
4-Nitrophenol	ND		970
Dibenzofuran	ND		380
2,4-Dinitrotoluene	ND		380
2,6-Dinitrotoluene	ND		380
Diethylphthalate	ND		380
4-Chlorophenylphenylether	ND		380
Fluorene	ND		380
4-Nitroaniline	ND		970
4,6-Dinitro-2-methylphenol	ND		970
n-Nitrosodiphenylamine	ND		380
4-Bromophenylphenylether	ND		380
Hexachlorobenzene	ND		380
Pentachlorophenol	ND		970
Phenanthrene	130	J	380
Anthracene	64	J	380
Fluoranthene	230	J	380
di-n-Butylphthalate	ND		380
Pyrene	200	J	380
Butylbenzylphthalate	ND		380
3,3'-Dichlorobenzidine	ND		770
Benzo(a)anthracene	130	J	380
bis(2-Ethylhexyl)phthalate	91	J	380
Chrysene	140	J	380
di-n-Octylphthalate	ND		380
Benzo(b)fluoranthene	110	J	380
Benzo(k)fluoranthene	120	J	380
Benzo(a)pyrene	110	J	380
Indeno(1,2,3-cd)pyrene	87	J	380
Dibenzo(a,h)anthracene	ND		380
Benzo(ghi)perylene	100	J	380

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

060

TEST CODE :SBNA0A1

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8270C BNA
SAMPLE ID LAB : EE-99-33134
SAMPLE ID CLIENT: KLBH5 S3

%SOLIDS : 87 %
UNITS : UG/KG
MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		380
bis(2-Chloroethyl)ether	ND		380
2-Chlorophenol	ND		380
1,3-Dichlorobenzene	ND		380
1,4-Dichlorobenzene	ND		380
Benzyl alcohol	ND		380
1,2-Dichlorobenzene	ND		380
2-Methylphenol	ND		380
2,2'-oxybis(1-Chloropropane)	ND		380
4-Methylphenol	320	J	380
n-Nitroso-di-n-propylamine	ND		380
Hexachloroethane	ND		380
Nitrobenzene	ND		380
Isophorone	ND		380
2-Nitrophenol	ND		380
2,4-Dimethylphenol	ND		380
Benzoic acid	140	J	940
bis(2-Chloroethoxy)methane	ND		380
2,4-Dichlorophenol	ND		380
1,2,4-Trichlorobenzene	ND		380
Naphthalene	100	J	380
4-Chloroaniline	ND		380
Hexachlorobutadiene	ND		380
4-Chloro-3-methylphenol	ND		380
2-Methylnaphthalene	43	J	380
Hexachlorocyclopentadiene	ND		940
2,4,6-Trichlorophenol	ND		380
2,4,5-Trichlorophenol	ND		940
2-Chloronaphthalene	ND		380
2-Nitroaniline	ND		940

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

ND = NOT DETECTED
B = ALSO PRESENT IN BLANK

061

TEST CODE :SBNA0A1

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8270C BNA
SAMPLE ID LAB : EE-99-33134
SAMPLE ID CLIENT: KLBH5 S3

%SOLIDS : 87 %
UNITS : UG/KG
MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		380
Acenaphthylene	ND		380
3-Nitroaniline	ND		940
Acenaphthene	ND		380
2,4-Dinitrophenol	ND		940
4-Nitrophenol	ND		940
Dibenzofuran	ND		380
2,4-Dinitrotoluene	ND		380
2,6-Dinitrotoluene	ND		380
Diethylphthalate	ND		380
4-Chlorophenylphenylether	ND		380
Fluorene	43	J	380
4-Nitroaniline	ND		940
4,6-Dinitro-2-methylphenol	ND		940
n-Nitrosodiphenylamine	ND		380
4-Bromophenylphenylether	ND		380
Hexachlorobenzene	ND		380
Pentachlorophenol	ND		940
Phenanthrene	440		380
Anthracene	100	J	380
Fluoranthene	560		380
di-n-Butylphthalate	76	J	380
Pyrene	290	J	380
Butylbenzylphthalate	78	J	380
3,3'-Dichlorobenzidine	ND		750
Benzo(a)anthracene	320	J	380
bis(2-Ethylhexyl)phthalate	1400		380
Chrysene	340	J	380
di-n-Octylphthalate	ND		380
Benzo(b)fluoranthene	280	J	380
Benzo(k)fluoranthene	300	J	380
Benzo(a)pyrene	310	J	380
Indeno(1,2,3-cd)pyrene	240	J	380
Dibenzo(a,h)anthracene	78	J	380
Benzo(ghi)perylene	180	J	380

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

062

TEST CODE :SBNA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 89 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33135 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH6 S1

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		370
bis(2-Chloroethyl)ether	ND		370
2-Chlorophenol	ND		370
1,3-Dichlorobenzene	ND		370
1,4-Dichlorobenzene	ND		370
Benzyl alcohol	ND		370
1,2-Dichlorobenzene	ND		370
2-Methylphenol	ND		370
2,2'-oxybis(1-Chloropropane)	ND		370
4-Methylphenol	ND		370
n-Nitroso-di-n-propylamine	ND		370
Hexachloroethane	ND		370
Nitrobenzene	ND		370
Isophorone	ND		370
2-Nitrophenol	ND		370
2,4-Dimethylphenol	ND		370
Benzoic acid	ND		930
bis(2-Chloroethoxy)methane	ND		370
2,4-Dichlorophenol	ND		370
1,2,4-Trichlorobenzene	ND		370
Naphthalene	ND		370
4-Chloroaniline	ND		370
Hexachlorobutadiene	ND		370
4-Chloro-3-methylphenol	ND		370
2-Methylnaphthalene	ND		370
Hexachlorocyclopentadiene	ND		930
2,4,6-Trichlorophenol	ND		370
2,4,5-Trichlorophenol	ND		930
2-Chloronaphthalene	ND		370
2-Nitroaniline	ND		930

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

063

TEST CODE :SBNA0A1

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8270C BNA
SAMPLE ID LAB : EE-99-33135
SAMPLE ID CLIENT: KLBH6 S1

%SOLIDS : 89 %
UNITS : UG/KG
MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		370
Acenaphthylene	ND		370
3-Nitroaniline	ND		930
Acenaphthene	ND		370
2,4-Dinitrophenol	ND		930
4-Nitrophenol	ND		930
Dibenzofuran	ND		370
2,4-Dinitrotoluene	ND		370
2,6-Dinitrotoluene	ND		370
Diethylphthalate	ND		370
4-Chlorophenylphenylether	ND		370
Fluorene	ND		370
4-Nitroaniline	ND		930
4,6-Dinitro-2-methylphenol	ND		930
n-Nitrosodiphenylamine	ND		370
4-Bromophenylphenylether	ND		370
Hexachlorobenzene	ND		370
Pentachlorophenol	ND		930
Phenanthrene	150	J	370
Anthracene	42	J	370
Fluoranthene	250	J	370
di-n-Butylphthalate	ND		370
Pyrene	210	J	370
Butylbenzylphthalate	ND		370
3,3'-Dichlorobenzidine	ND		740
Benzo(a)anthracene	110	J	370
bis(2-Ethylhexyl)phthalate	ND		370
Chrysene	120	J	370
di-n-Octylphthalate	ND		370
Benzo(b)fluoranthene	94	J	370
Benzo(k)fluoranthene	99	J	370
Benzo(a)pyrene	100	J	370
Indeno(1,2,3-cd)pyrene	83	J	370
Dibenzo(a,h)anthracene	ND		370
Benzo(ghi)perylene	100	J	370

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

064

TEST CODE :SBNA0A1

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8270C BNA
SAMPLE ID LAB : EE-99-33136
SAMPLE ID CLIENT: KLBH6 S2

%SOLIDS : 86 %
UNITS : UG/KG
MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		370
bis(2-Chloroethyl)ether	ND		370
2-Chlorophenol	ND		370
1,3-Dichlorobenzene	ND		370
1,4-Dichlorobenzene	ND		370
Benzyl alcohol	ND		370
1,2-Dichlorobenzene	ND		370
2-Methylphenol	ND		370
2,2'-oxybis(1-Chloropropane)	ND		370
4-Methylphenol	ND		370
n-Nitroso-di-n-propylamine	ND		370
Hexachloroethane	ND		370
Nitrobenzene	ND		370
Isophorone	ND		370
2-Nitrophenol	ND		370
2,4-Dimethylphenol	ND		370
Benzoic acid	ND		940
bis(2-Chloroethoxy)methane	ND		370
2,4-Dichlorophenol	ND		370
1,2,4-Trichlorobenzene	ND		370
Naphthalene	ND		370
4-Chloroaniline	ND		370
Hexachlorobutadiene	ND		370
4-Chloro-3-methylphenol	ND		370
2-Methylnaphthalene	ND		370
Hexachlorocyclopentadiene	ND		940
2,4,6-Trichlorophenol	ND		370
2,4,5-Trichlorophenol	ND		940
2-Chloronaphthalene	ND		370
2-Nitroaniline	ND		940

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

ND = NOT DETECTED
B = ALSO PRESENT IN BLANK

065

TEST CODE :SBNA0A1

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8270C BNA
SAMPLE ID LAB : EE-99-33136
SAMPLE ID CLIENT: KLBH6 S2

%SOLIDS : 86 %
UNITS : UG/KG
MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		370
Acenaphthylene	ND		370
3-Nitroaniline	ND		940
Acenaphthene	41	J	370
2,4-Dinitrophenol	ND		940
4-Nitrophenol	ND		940
Dibenzofuran	ND		370
2,4-Dinitrotoluene	ND		370
2,6-Dinitrotoluene	ND		370
Diethylphthalate	ND		370
4-Chlorophenylphenylether	ND		370
Fluorene	74	J	370
4-Nitroaniline	ND		940
4,6-Dinitro-2-methylphenol	ND		940
n-Nitrosodiphenylamine	ND		370
4-Bromophenylphenylether	ND		370
Hexachlorobenzene	ND		370
Pentachlorophenol	ND		940
Phenanthrene	450		370
Anthracene	140	J	370
Fluoranthene	460		370
di-n-Butylphthalate	ND		370
Pyrene	380	J	370
Butylbenzylphthalate	ND		370
3,3'-Dichlorobenzidine	ND		750
Benzo(a)anthracene	190	J	370
bis(2-Ethylhexyl)phthalate	ND		370
Chrysene	180	J	370
di-n-Octylphthalate	ND		370
Benzo(b)fluoranthene	120	J	370
Benzo(k)fluoranthene	140	J	370
Benzo(a)pyrene	170	J	370
Indeno(1,2,3-cd)pyrene	170	J	370
Dibenzo(a,h)anthracene	61	J	370
Benzo(ghi)perylene	170	J	370

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

066

TEST CODE :SBNA0A1

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8270C BNA
SAMPLE ID LAB : EE-99-33137
SAMPLE ID CLIENT: KLBH6 S3

%SOLIDS : 55 %
UNITS : UG/KG
MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		6000
bis(2-Chloroethyl)ether	ND		6000
2-Chlorophenol	ND		6000
1,3-Dichlorobenzene	ND		6000
1,4-Dichlorobenzene	1000	J	6000
Benzyl alcohol	ND		6000
1,2-Dichlorobenzene	ND		6000
2-Methylphenol	ND		6000
2,2'-oxybis(1-Chloropropane)	ND		6000
4-Methylphenol	810	J	6000
n-Nitroso-di-n-propylamine	ND		6000
Hexachloroethane	ND		6000
Nitrobenzene	ND		6000
Isophorone	ND		6000
2-Nitrophenol	ND		6000
2,4-Dimethylphenol	ND		6000
Benzoic acid	ND		15000
bis(2-Chloroethoxy)methane	ND		6000
2,4-Dichlorophenol	ND		6000
1,2,4-Trichlorobenzene	ND		6000
Naphthalene	9200		6000
4-Chloroaniline	ND		6000
Hexachlorobutadiene	ND		6000
4-Chloro-3-methylphenol	ND		6000
2-Methylnaphthalene	3800	J	6000
Hexachlorocyclopentadiene	ND		15000
2,4,6-Trichlorophenol	ND		6000
2,4,5-Trichlorophenol	ND		15000
2-Chloronaphthalene	ND		6000
2-Nitroaniline	ND		15000

QUALIFIERS: C = COMMENT
ND = NOT DETECTED
J = ESTIMATED VALUE
B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

067

TEST CODE :SBNA0A1

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8270C BNA
SAMPLE ID LAB : EE-99-33137
SAMPLE ID CLIENT: KLBH6 S3

%SOLIDS : 55 %
UNITS : UG/KG
MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		6000
Acenaphthylene	ND		6000
3-Nitroaniline	ND		15000
Acenaphthene	1600	J	6000
2,4-Dinitrophenol	ND		15000
4-Nitrophenol	ND		15000
Dibenzofuran	ND		6000
2,4-Dinitrotoluene	ND		6000
2,6-Dinitrotoluene	ND		6000
Diethylphthalate	ND		6000
4-Chlorophenylphenylether	ND		6000
Fluorene	1800	J	6000
4-Nitroaniline	ND		15000
4,6-Dinitro-2-methylphenol	ND		15000
n-Nitrosodiphenylamine	ND		6000
4-Bromophenylphenylether	ND		6000
Hexachlorobenzene	ND		6000
Pentachlorophenol	ND		15000
Phenanthrene	12000		6000
Anthracene	2600	J	6000
Fluoranthene	7700		6000
di-n-Butylphthalate	980	J	6000
Pyrene	8000		6000
Butylbenzylphthalate	15000		6000
3,3'-Dichlorobenzidine	ND		12000
Benzo(a)anthracene	3700	J	6000
bis(2-Ethylhexyl)phthalate	14000		6000
Chrysene	4200	J	6000
di-n-Octylphthalate	ND		6000
Benzo(b)fluoranthene	1900	J	6000
Benzo(k)fluoranthene	1800	J	6000
Benzo(a)pyrene	2900	J	6000
Indeno(1,2,3-cd)pyrene	3600	J	6000
Dibenzo(a,h)anthracene	1100	J	6000
Benzo(ghi)perylene	2700	J	6000

QUALIFIERS: C = COMMENT
ND = NOT DETECTED
J = ESTIMATED VALUE
B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

068

TEST CODE :SBNA0A1

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8270C BNA
SAMPLE ID LAB : EE-99-33138
SAMPLE ID CLIENT: KLBH7 S1

%SOLIDS : 78 %
UNITS : UG/KG
MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		420
bis(2-Chloroethyl)ether	ND		420
2-Chlorophenol	ND		420
1,3-Dichlorobenzene	ND		420
1,4-Dichlorobenzene	ND		420
Benzyl alcohol	ND		420
1,2-Dichlorobenzene	ND		420
2-Methylphenol	ND		420
2,2'-oxybis(1-Chloropropane)	ND		420
4-Methylphenol	ND		420
n-Nitroso-di-n-propylamine	ND		420
Hexachloroethane	ND		420
Nitrobenzene	ND		420
Isophorone	ND		420
2-Nitrophenol	ND		420
2,4-Dimethylphenol	ND		420
Benzoic acid	ND		1000
bis(2-Chloroethoxy)methane	ND		420
2,4-Dichlorophenol	ND		420
1,2,4-Trichlorobenzene	ND		420
Naphthalene	ND		420
4-Chloroaniline	ND		420
Hexachlorobutadiene	ND		420
4-Chloro-3-methylphenol	ND		420
2-Methylnaphthalene	ND		420
Hexachlorocyclopentadiene	ND		1000
2,4,6-Trichlorophenol	ND		420
2,4,5-Trichlorophenol	ND		1000
2-Chloronaphthalene	ND		420
2-Nitroaniline	ND		1000

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

ND = NOT DETECTED
B = ALSO PRESENT IN BLANK

069

TEST CODE :SBNA0A1

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8270C BNA
SAMPLE ID LAB : EE-99-33138
SAMPLE ID CLIENT: KLBH7 S1

%SOLIDS : 78 %
UNITS : UG/KG
MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		420
Acenaphthylene	ND		420
3-Nitroaniline	ND		1000
Acenaphthene	ND		420
2,4-Dinitrophenol	ND		1000
4-Nitrophenol	ND		1000
Dibenzofuran	ND		420
2,4-Dinitrotoluene	ND		420
2,6-Dinitrotoluene	ND		420
Diethylphthalate	ND		420
4-Chlorophenylphenylether	ND		420
Fluorene	ND		420
4-Nitroaniline	ND		1000
4,6-Dinitro-2-methylphenol	ND		1000
n-Nitrosodiphenylamine	ND		420
4-Bromophenylphenylether	ND		420
Hexachlorobenzene	ND		420
Pentachlorophenol	ND		1000
Phenanthrene	ND		420
Anthracene	ND		420
Fluoranthene	ND		420
di-n-Butylphthalate	ND		420
Pyrene	ND		420
Butylbenzylphthalate	ND		420
3,3'-Dichlorobenzidine	ND		840
Benzo(a)anthracene	ND		420
bis(2-Ethylhexyl)phthalate	ND		420
Chrysene	ND		420
di-n-Octylphthalate	ND		420
Benzo(b)fluoranthene	ND		420
Benzo(k)fluoranthene	ND		420
Benzo(a)pyrene	ND		420
Indeno(1,2,3-cd)pyrene	ND		420
Dibenzo(a,h)anthracene	ND		420
Benzo(ghi)perylene	ND		420

QUALIFIERS: C = COMMENT
ND = NOT DETECTED
J = ESTIMATED VALUE
B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

070

TEST CODE :SBNA0A1

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8270C BNA
SAMPLE ID LAB : EE-99-33139
SAMPLE ID CLIENT: KLBH7 S2

%SOLIDS : 77 %
UNITS : UG/KG
MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		430
bis(2-Chloroethyl)ether	ND		430
2-Chlorophenol	ND		430
1,3-Dichlorobenzene	ND		430
1,4-Dichlorobenzene	ND		430
Benzyl alcohol	ND		430
1,2-Dichlorobenzene	ND		430
2-Methylphenol	ND		430
2,2'-oxybis(1-Chloropropane)	ND		430
4-Methylphenol	ND		430
n-Nitroso-di-n-propylamine	ND		430
Hexachloroethane	ND		430
Nitrobenzene	ND		430
Isophorone	ND		430
2-Nitrophenol	ND		430
2,4-Dimethylphenol	ND		430
Benzoic acid	ND		1100
bis(2-Chloroethoxy)methane	ND		430
2,4-Dichlorophenol	ND		430
1,2,4-Trichlorobenzene	ND		430
Naphthalene	ND		430
4-Chloroaniline	81	J	430
Hexachlorobutadiene	ND		430
4-Chloro-3-methylphenol	ND		430
2-Methylnaphthalene	ND		430
Hexachlorocyclopentadiene	ND		1100
2,4,6-Trichlorophenol	ND		430
2,4,5-Trichlorophenol	ND		1100
2-Chloronaphthalene	ND		430
2-Nitroaniline	ND		1100

QUALIFIERS: C = COMMENT
ND = NOT DETECTED
J = ESTIMATED VALUE
B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

071

TEST CODE :SBNA0A1

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8270C BNA
SAMPLE ID LAB : EE-99-33139
SAMPLE ID CLIENT: KLBH7 S2

%SOLIDS : 77 %
UNITS : UG/KG
MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		430
Acenaphthylene	ND		430
3-Nitroaniline	ND		1100
Acenaphthene	ND		430
2,4-Dinitrophenol	ND		1100
4-Nitrophenol	ND		1100
Dibenzofuran	ND		430
2,4-Dinitrotoluene	ND		430
2,6-Dinitrotoluene	ND		430
Diethylphthalate	ND		430
4-Chlorophenylphenylether	ND		430
Fluorene	ND		430
4-Nitroaniline	ND		1100
4,6-Dinitro-2-methylphenol	ND		1100
n-Nitrosodiphenylamine	ND		430
4-Bromophenylphenylether	ND		430
Hexachlorobenzene	ND		430
Pentachlorophenol	ND		1100
Phenanthrene	ND		430
Anthracene	ND		430
Fluoranthene	75	J	430
di-n-Butylphthalate	ND		430
Pyrene	70	J	430
Butylbenzylphthalate	140	J	430
3,3'-Dichlorobenzidine	ND		860
Benzo(a)anthracene	45	J	430
bis(2-Ethylhexyl)phthalate	140	J	430
Chrysene	56		430
di-n-Octylphthalate	ND		430
Benzo(b)fluoranthene	47	J	430
Benzo(k)fluoranthene	ND		430
Benzo(a)pyrene	48	J	430
Indeno(1,2,3-cd)pyrene	90	J	430
Dibenzo(a,h)anthracene	ND		430
Benzo(ghi)perylene	58	J	430

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

072

TEST CODE :SBNA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 76 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33140 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH7 S3

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		4300
bis(2-Chloroethyl)ether	ND		4300
2-Chlorophenol	ND		4300
1,3-Dichlorobenzene	ND		4300
1,4-Dichlorobenzene	ND		4300
Benzyl alcohol	ND		4300
1,2-Dichlorobenzene	ND		4300
2-Methylphenol	ND		4300
2,2'-oxybis(1-Chloropropane)	ND		4300
4-Methylphenol	590	J	4300
n-Nitroso-di-n-propylamine	ND		4300
Hexachloroethane	ND		4300
Nitrobenzene	ND		4300
Isophorone	ND		4300
2-Nitrophenol	ND		4300
2,4-Dimethylphenol	ND		4300
Benzoic acid	ND		11000
bis(2-Chloroethoxy)methane	ND		4300
2,4-Dichlorophenol	ND		4300
1,2,4-Trichlorobenzene	ND		4300
Naphthalene	3800	J	4300
4-Chloroaniline	ND		4300
Hexachlorobutadiene	ND		4300
4-Chloro-3-methylphenol	ND		4300
2-Methylnaphthalene	1000	J	4300
Hexachlorocyclopentadiene	ND		11000
2,4,6-Trichlorophenol	ND		4300
2,4,5-Trichlorophenol	ND		11000
2-Chloronaphthalene	ND		4300
2-Nitroaniline	ND		11000

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

073

TEST CODE :SBNA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 76 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33140 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH7 S3

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		4300
Acenaphthylene	2000	J	4300
3-Nitroaniline	ND		11000
Acenaphthene	6600		4300
2,4-Dinitrophenol	ND		11000
4-Nitrophenol	ND		11000
Dibenzofuran	4800		4300
2,4-Dinitrotoluene	ND		4300
2,6-Dinitrotoluene	ND		4300
Diethylphthalate	ND		4300
4-Chlorophenylphenylether	ND		4300
Fluorene	8300		4300
4-Nitroaniline	ND		11000
4,6-Dinitro-2-methylphenol	ND		11000
n-Nitrosodiphenylamine	ND		4300
4-Bromophenylphenylether	ND		4300
Hexachlorobenzene	ND		4300
Pentachlorophenol	ND		11000
Phenanthrene	51000		13000
Anthracene	14000		4300
Fluoranthene	57000		13000
di-n-Butylphthalate	440	J	4300
Pyrene	24000		4300
Butylbenzylphthalate	2000	J	4300
3,3'-Dichlorobenzidine	ND		8700
Benzo(a)anthracene	21000		4300
bis(2-Ethylhexyl)phthalate	1500	J	4300
Chrysene	20000		4300
di-n-Octylphthalate	ND		4300
Benzo(b)fluoranthene	16000		4300
Benzo(k)fluoranthene	14000		4300
Benzo(a)pyrene	18000		4300
Indeno(1,2,3-cd)pyrene	17000		4300
Dibenzo(a,h)anthracene	3400	J	4300
Benzo(ghi)perylene	8300		4300

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

074

TEST CODE :SBNA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 88 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33141 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH8 S1

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		370
bis(2-Chloroethyl)ether	ND		370
2-Chlorophenol	ND		370
1,3-Dichlorobenzene	ND		370
1,4-Dichlorobenzene	ND		370
Benzyl alcohol	ND		370
1,2-Dichlorobenzene	ND		370
2-Methylphenol	ND		370
2,2'-oxybis(1-Chloropropane)	ND		370
4-Methylphenol	ND		370
n-Nitroso-di-n-propylamine	ND		370
Hexachloroethane	ND		370
Nitrobenzene	ND		370
Isophorone	ND		370
2-Nitrophenol	ND		370
2,4-Dimethylphenol	ND		370
Benzoic acid	ND		940
bis(2-Chloroethoxy)methane	ND		370
2,4-Dichlorophenol	ND		370
1,2,4-Trichlorobenzene	ND		370
Naphthalene	ND		370
4-Chloroaniline	ND		370
Hexachlorobutadiene	ND		370
4-Chloro-3-methylphenol	ND		370
2-Methylnaphthalene	ND		370
Hexachlorocyclopentadiene	ND		940
2,4,6-Trichlorophenol	ND		370
2,4,5-Trichlorophenol	ND		940
2-Chloronaphthalene	ND		370
2-Nitroaniline	ND		940

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

075

TEST CODE :SBNA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 88 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33141 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH8 S1

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		370
Acenaphthylene	77	J	370
3-Nitroaniline	ND		940
Acenaphthene	220	J	370
2,4-Dinitrophenol	ND		940
4-Nitrophenol	ND		940
Dibenzofuran	140	J	370
2,4-Dinitrotoluene	ND		370
2,6-Dinitrotoluene	ND		370
Diethylphthalate	ND		370
4-Chlorophenylphenylether	ND		370
Fluorene	310	J	370
4-Nitroaniline	ND		940
4,6-Dinitro-2-methylphenol	ND		940
n-Nitrosodiphenylamine	ND		370
4-Bromophenylphenylether	ND		370
Hexachlorobenzene	ND		370
Pentachlorophenol	ND		940
Phenanthrene	2000		370
Anthracene	650		370
Fluoranthene	3000		750
di-n-Butylphthalate	ND		370
Pyrene	940		370
Butylbenzylphthalate	51	J	370
3,3'-Dichlorobenzidine	ND		750
Benzo(a)anthracene	1200		370
bis(2-Ethylhexyl)phthalate	54	J	370
Chrysene	1200		370
di-n-Octylphthalate	ND		370
Benzo(b)fluoranthene	1000		370
Benzo(k)fluoranthene	880		370
Benzo(a)pyrene	1000		370
Indeno(1,2,3-cd)pyrene	590		370
Dibenzo(a,h)anthracene	170	J	370
Benzo(ghi)perylene	340	J	370

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

076

TEST CODE :SBNA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33142 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH8 S2

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		380
bis(2-Chloroethyl)ether	ND		380
2-Chlorophenol	ND		380
1,3-Dichlorobenzene	ND		380
1,4-Dichlorobenzene	ND		380
Benzyl alcohol	ND		380
1,2-Dichlorobenzene	ND		380
2-Methylphenol	ND		380
2,2'-oxybis(1-Chloropropane)	ND		380
4-Methylphenol	330	J	380
n-Nitroso-di-n-propylamine	ND		380
Hexachloroethane	ND		380
Nitrobenzene	ND		380
Isophorone	ND		380
2-Nitrophenol	ND		380
2,4-Dimethylphenol	ND		380
Benzoic acid	ND		950
bis(2-Chloroethoxy)methane	ND		380
2,4-Dichlorophenol	ND		380
1,2,4-Trichlorobenzene	ND		380
Naphthalene	82	J	380
4-Chloroaniline	ND		380
Hexachlorobutadiene	ND		380
4-Chloro-3-methylphenol	ND		380
2-Methylnaphthalene	160	J	380
Hexachlorocyclopentadiene	ND		950
2,4,6-Trichlorophenol	ND		380
2,4,5-Trichlorophenol	ND		950
2-Chloronaphthalene	ND		380
2-Nitroaniline	ND		950

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

077

TEST CODE :SBNA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33142 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH8 S2

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		380
Acenaphthylene	ND		380
3-Nitroaniline	ND		950
Acenaphthene	ND		380
2,4-Dinitrophenol	ND		950
4-Nitrophenol	ND		950
Dibenzofuran	ND		380
2,4-Dinitrotoluene	ND		380
2,6-Dinitrotoluene	ND		380
Diethylphthalate	ND		380
4-Chlorophenylphenylether	ND		380
Fluorene	51	J	380
4-Nitroaniline	ND		950
4,6-Dinitro-2-methylphenol	ND		950
n-Nitrosodiphenylamine	ND		380
4-Bromophenylphenylether	ND		380
Hexachlorobenzene	ND		380
Pentachlorophenol	ND		950
Phenanthrene	240	J	380
Anthracene	72	J	380
Fluoranthene	400		380
di-n-Butylphthalate	ND		380
Pyrene	250	J	380
Butylbenzylphthalate	ND		380
3,3'-Dichlorobenzidine	ND		750
Benzo(a)anthracene	200	J	380
bis(2-Ethylhexyl)phthalate	1100		380
Chrysene	230	J	380
di-n-Octylphthalate	ND		380
Benzo(b)fluoranthene	170	J	380
Benzo(k)fluoranthene	170	J	380
Benzo(a)pyrene	190	J	380
Indeno(1,2,3-cd)pyrene	230	J	380
Dibenzo(a,h)anthracene	68	J	380
Benzo(ghi)perylene	170	J	380

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

078

TEST CODE :SBNA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 75 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33143 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH9 S1

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		430
bis(2-Chloroethyl)ether	ND		430
2-Chlorophenol	ND		430
1,3-Dichlorobenzene	ND		430
1,4-Dichlorobenzene	ND		430
Benzyl alcohol	ND		430
1,2-Dichlorobenzene	ND		430
2-Methylphenol	ND		430
2,2'-oxybis(1-Chloropropane)	ND		430
4-Methylphenol	ND		430
n-Nitroso-di-n-propylamine	ND		430
Hexachloroethane	ND		430
Nitrobenzene	ND		430
Isophorone	ND		430
2-Nitrophenol	ND		430
2,4-Dimethylphenol	ND		430
Benzoic acid	ND		1100
bis(2-Chloroethoxy)methane	ND		430
2,4-Dichlorophenol	ND		430
1,2,4-Trichlorobenzene	ND		430
Naphthalene	ND		430
4-Chloroaniline	ND		430
Hexachlorobutadiene	ND		430
4-Chloro-3-methylphenol	ND		430
2-Methylnaphthalene	ND		430
Hexachlorocyclopentadiene	ND		1100
2,4,6-Trichlorophenol	ND		430
2,4,5-Trichlorophenol	ND		1100
2-Chloronaphthalene	ND		430
2-Nitroaniline	ND		1100

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

079

TEST CODE :SBNA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 75 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33143 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH9 S1

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		430
Acenaphthylene	ND		430
3-Nitroaniline	ND		1100
Acenaphthene	ND		430
2,4-Dinitrophenol	ND		1100
4-Nitrophenol	ND		1100
Dibenzofuran	ND		430
2,4-Dinitrotoluene	ND		430
2,6-Dinitrotoluene	ND		430
Diethylphthalate	ND		430
4-Chlorophenylphenylether	ND		430
Fluorene	ND		430
4-Nitroaniline	ND		1100
4,6-Dinitro-2-methylphenol	ND		1100
n-Nitrosodiphenylamine	ND		430
4-Bromophenylphenylether	ND		430
Hexachlorobenzene	ND		430
Pentachlorophenol	ND		1100
Phenanthrene	240	J	430
Anthracene	71	J	430
Fluoranthene	310	J	430
di-n-Butylphthalate	ND		430
Pyrene	270	J	430
Butylbenzylphthalate	ND		430
3,3'-Dichlorobenzidine	ND		860
Benzo(a)anthracene	150	J	430
bis(2-Ethylhexyl)phthalate	ND		430
Chrysene	150	J	430
di-n-Octylphthalate	ND		430
Benzo(b)fluoranthene	110	J	430
Benzo(k)fluoranthene	130	J	430
Benzo(a)pyrene	140	J	430
Indeno(1,2,3-cd)pyrene	120	J	430
Dibenzo(a,h)anthracene	ND		430
Benzo(ghi)perylene	140	J	430

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

080

TEST CODE :SBNA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 82 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33144 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH9 S2

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		400
bis(2-Chloroethyl)ether	ND		400
2-Chlorophenol	ND		400
1,3-Dichlorobenzene	ND		400
1,4-Dichlorobenzene	ND		400
Benzyl alcohol	ND		400
1,2-Dichlorobenzene	ND		400
2-Methylphenol	ND		400
2,2'-oxybis(1-Chloropropane)	ND		400
4-Methylphenol	ND		400
n-Nitroso-di-n-propylamine	ND		400
Hexachloroethane	ND		400
Nitrobenzene	ND		400
Isophorone	ND		400
2-Nitrophenol	ND		400
2,4-Dimethylphenol	ND		400
Benzoic acid	ND		1000
bis(2-Chloroethoxy)methane	ND		400
2,4-Dichlorophenol	ND		400
1,2,4-Trichlorobenzene	ND		400
Naphthalene	ND		400
4-Chloroaniline	ND		400
Hexachlorobutadiene	ND		400
4-Chloro-3-methylphenol	ND		400
2-Methylnaphthalene	ND		400
Hexachlorocyclopentadiene	ND		1000
2,4,6-Trichlorophenol	ND		400
2,4,5-Trichlorophenol	ND		1000
2-Chloronaphthalene	ND		400
2-Nitroaniline	ND		1000

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

081

TEST CODE :SBNA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 82 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33144 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH9 S2

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		400
Acenaphthylene	ND		400
3-Nitroaniline	ND		1000
Acenaphthene	ND		400
2,4-Dinitrophenol	ND		1000
4-Nitrophenol	ND		1000
Dibenzofuran	ND		400
2,4-Dinitrotoluene	ND		400
2,6-Dinitrotoluene	ND		400
Diethylphthalate	ND		400
4-Chlorophenylphenylether	ND		400
Fluorene	ND		400
4-Nitroaniline	ND		1000
4,6-Dinitro-2-methylphenol	ND		1000
n-Nitrosodiphenylamine	ND		400
4-Bromophenylphenylether	ND		400
Hexachlorobenzene	ND		400
Pentachlorophenol	ND		1000
Phenanthrene	ND		400
Anthracene	ND		400
Fluoranthene	ND		400
di-n-Butylphthalate	ND		400
Pyrene	ND		400
Butylbenzylphthalate	ND		400
3,3'-Dichlorobenzidine	ND		800
Benzo(a)anthracene	ND		400
bis(2-Ethylhexyl)phthalate	ND		400
Chrysene	ND		400
di-n-Octylphthalate	ND		400
Benzo(b)fluoranthene	ND		400
Benzo(k)fluoranthene	ND		400
Benzo(a)pyrene	ND		400
Indeno(1,2,3-cd)pyrene	ND		400
Dibenzo(a,h)anthracene	ND		400
Benzo(ghi)perylene	ND		400

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

082

TEST CODE :SBNA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 88 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33145 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH9 S3

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		370
bis(2-Chloroethyl)ether	ND		370
2-Chlorophenol	ND		370
1,3-Dichlorobenzene	ND		370
1,4-Dichlorobenzene	ND		370
Benzyl alcohol	ND		370
1,2-Dichlorobenzene	ND		370
2-Methylphenol	ND		370
2,2'-oxybis(1-Chloropropane)	ND		370
4-Methylphenol	51	J	370
n-Nitroso-di-n-propylamine	ND		370
Hexachloroethane	ND		370
Nitrobenzene	ND		370
Isophorone	ND		370
2-Nitrophenol	ND		370
2,4-Dimethylphenol	ND		370
Benzoic acid	ND		940
bis(2-Chloroethoxy)methane	ND		370
2,4-Dichlorophenol	ND		370
1,2,4-Trichlorobenzene	ND		370
Naphthalene	ND		370
4-Chloroaniline	ND		370
Hexachlorobutadiene	ND		370
4-Chloro-3-methylphenol	ND		370
2-Methylnaphthalene	ND		370
Hexachlorocyclopentadiene	ND		940
2,4,6-Trichlorophenol	ND		370
2,4,5-Trichlorophenol	ND		940
2-Chloronaphthalene	ND		370
2-Nitroaniline	ND		940

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

083

TEST CODE :SBNA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 88 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33145 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH9 S3

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		370
Acenaphthylene	ND		370
3-Nitroaniline	ND		940
Acenaphthene	54	J	370
2,4-Dinitrophenol	ND		940
4-Nitrophenol	ND		940
Dibenzofuran	43	J	370
2,4-Dinitrotoluene	ND		370
2,6-Dinitrotoluene	ND		370
Diethylphthalate	ND		370
4-Chlorophenylphenylether	ND		370
Fluorene	65	J	370
4-Nitroaniline	ND		940
4,6-Dinitro-2-methylphenol	ND		940
n-Nitrosodiphenylamine	ND		370
4-Bromophenylphenylether	ND		370
Hexachlorobenzene	ND		370
Pentachlorophenol	ND		940
Phenanthrene	580		370
Anthracene	180	J	370
Fluoranthene	880		370
di-n-Butylphthalate	ND		370
Pyrene	690		370
Butylbenzylphthalate	67	J	370
3,3'-Dichlorobenzidine	ND		740
Benzo(a)anthracene	500		370
bis(2-Ethylhexyl)phthalate	610	J	370
Chrysene	500		370
di-n-Octylphthalate	ND		370
Benzo(b)fluoranthene	450		370
Benzo(k)fluoranthene	410		370
Benzo(a)pyrene	570		370
Indeno(1,2,3-cd)pyrene	780		370
Dibenzo(a,h)anthracene	200	J	370
Benzo(ghi)perylene	650		370

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

084

TEST CODE :SBNA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33146 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH10 S1

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		3800
bis(2-Chloroethyl)ether	ND		3800
2-Chlorophenol	ND		3800
1,3-Dichlorobenzene	ND		3800
1,4-Dichlorobenzene	ND		3800
Benzyl alcohol	ND		3800
1,2-Dichlorobenzene	ND		3800
2-Methylphenol	ND		3800
2,2'-oxybis(1-Chloropropane)	ND		3800
4-Methylphenol	ND		3800
n-Nitroso-di-n-propylamine	ND		3800
Hexachloroethane	ND		3800
Nitrobenzene	ND		3800
Isophorone	ND		3800
2-Nitrophenol	ND		3800
2,4-Dimethylphenol	ND		3800
Benzoic acid	ND		9600
bis(2-Chloroethoxy)methane	ND		3800
2,4-Dichlorophenol	ND		3800
1,2,4-Trichlorobenzene	ND		3800
Naphthalene	ND		3800
4-Chloroaniline	ND		3800
Hexachlorobutadiene	ND		3800
4-Chloro-3-methylphenol	ND		3800
2-Methylnaphthalene	ND		3800
Hexachlorocyclopentadiene	ND		9600
2,4,6-Trichlorophenol	ND		3800
2,4,5-Trichlorophenol	ND		9600
2-Chloronaphthalene	ND		3800
2-Nitroaniline	ND		9600

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

085

TEST CODE :SBNA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33146 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH10 S1

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		3800
Acenaphthylene	750	J	3800
3-Nitroaniline	ND		9600
Acenaphthene	2200	J	3800
2,4-Dinitrophenol	ND		9600
4-Nitrophenol	ND		9600
Dibenzofuran	1600	J	3800
2,4-Dinitrotoluene	ND		3800
2,6-Dinitrotoluene	ND		3800
Diethylphthalate	ND		3800
4-Chlorophenylphenylether	ND		3800
Fluorene	2900	J	3800
4-Nitroaniline	ND		9600
4,6-Dinitro-2-methylphenol	ND		9600
n-Nitrosodiphenylamine	ND		3800
4-Bromophenylphenylether	ND		3800
Hexachlorobenzene	ND		3800
Pentachlorophenol	ND		9600
Phenanthrene	20000		3800
Anthracene	5900		3800
Fluoranthene	24000		7700
di-n-Butylphthalate	ND		3800
Pyrene	14000		3800
Butylbenzylphthalate	ND		3800
3,3'-Dichlorobenzidine	ND		7700
Benzo(a)anthracene	8800		3800
bis(2-Ethylhexyl)phthalate	ND		3800
Chrysene	8300		3800
di-n-Octylphthalate	ND		3800
Benzo(b)fluoranthene	5400		3800
Benzo(k)fluoranthene	5700		3800
Benzo(a)pyrene	7900		3800
Indeno(1,2,3-cd)pyrene	13000		3800
Dibenzo(a,h)anthracene	2500	J	3800
Benzo(ghi)perylene	7300		3800

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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086

TEST CODE :SBNA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33147 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH10 S2

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		380
bis(2-Chloroethyl)ether	ND		380
2-Chlorophenol	ND		380
1,3-Dichlorobenzene	ND		380
1,4-Dichlorobenzene	ND		380
Benzyl alcohol	ND		380
1,2-Dichlorobenzene	ND		380
2-Methylphenol	ND		380
2,2'-oxybis(1-Chloropropane)	ND		380
4-Methylphenol	ND		380
n-Nitroso-di-n-propylamine	ND		380
Hexachloroethane	ND		380
Nitrobenzene	ND		380
Isophorone	ND		380
2-Nitrophenol	ND		380
2,4-Dimethylphenol	ND		380
Benzoic acid	ND		960
bis(2-Chloroethoxy)methane	ND		380
2,4-Dichlorophenol	ND		380
1,2,4-Trichlorobenzene	ND		380
Naphthalene	ND		380
4-Chloroaniline	ND		380
Hexachlorobutadiene	ND		380
4-Chloro-3-methylphenol	ND		380
2-Methylnaphthalene	ND		380
Hexachlorocyclopentadiene	ND		960
2,4,6-Trichlorophenol	ND		380
2,4,5-Trichlorophenol	ND		960
2-Chloronaphthalene	ND		380
2-Nitroaniline	ND		960

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

087

TEST CODE :SBNA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33147 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH10 S2

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		380
Acenaphthylene	ND		380
3-Nitroaniline	ND		960
Acenaphthene	ND		380
2,4-Dinitrophenol	ND		960
4-Nitrophenol	ND		960
Dibenzofuran	ND		380
2,4-Dinitrotoluene	ND		380
2,6-Dinitrotoluene	ND		380
Diethylphthalate	ND		380
4-Chlorophenylphenylether	ND		380
Fluorene	ND		380
4-Nitroaniline	ND		960
4,6-Dinitro-2-methylphenol	ND		960
n-Nitrosodiphenylamine	ND		380
4-Bromophenylphenylether	ND		380
Hexachlorobenzene	ND		380
Pentachlorophenol	ND		960
Phenanthrene	42	J	380
Anthracene	ND		380
Fluoranthene	71	J	380
di-n-Butylphthalate	ND		380
Pyrene	57	J	380
Butylbenzylphthalate	ND		380
3,3'-Dichlorobenzidine	ND		770
Benzo(a)anthracene	ND		380
bis(2-Ethylhexyl)phthalate	ND		380
Chrysene	ND		380
di-n-Octylphthalate	ND		380
Benzo(b)fluoranthene	ND		380
Benzo(k)fluoranthene	ND		380
Benzo(a)pyrene	ND		380
Indeno(1,2,3-cd)pyrene	40	J	380
Dibenzo(a,h)anthracene	ND		380
Benzo(ghi)perylene	ND		380

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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088

TEST CODE :SBNA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 89 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33148 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH10 S2/D

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		370
bis(2-Chloroethyl)ether	ND		370
2-Chlorophenol	ND		370
1,3-Dichlorobenzene	ND		370
1,4-Dichlorobenzene	ND		370
Benzyl alcohol	ND		370
1,2-Dichlorobenzene	ND		370
2-Methylphenol	ND		370
2,2'-oxybis(1-Chloropropane)	ND		370
4-Methylphenol	ND		370
n-Nitroso-di-n-propylamine	ND		370
Hexachloroethane	ND		370
Nitrobenzene	ND		370
Isophorone	ND		370
2-Nitrophenol	ND		370
2,4-Dimethylphenol	ND		370
Benzoic acid	ND		930
bis(2-Chloroethoxy)methane	ND		370
2,4-Dichlorophenol	ND		370
1,2,4-Trichlorobenzene	ND		370
Naphthalene	ND		370
4-Chloroaniline	ND		370
Hexachlorobutadiene	ND		370
4-Chloro-3-methylphenol	ND		370
2-Methylnaphthalene	ND		370
Hexachlorocyclopentadiene	ND		930
2,4,6-Trichlorophenol	ND		370
2,4,5-Trichlorophenol	ND		930
2-Chloronaphthalene	ND		370
2-Nitroaniline	ND		930

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

089

TEST CODE :SBNA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 89 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33148 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH10 S2/D

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		370
Acenaphthylene	ND		370
3-Nitroaniline	ND		930
Acenaphthene	ND		370
2,4-Dinitrophenol	ND		930
4-Nitrophenol	ND		930
Dibenzofuran	ND		370
2,4-Dinitrotoluene	ND		370
2,6-Dinitrotoluene	ND		370
Diethylphthalate	ND		370
4-Chlorophenylphenylether	ND		370
Fluorene	ND		370
4-Nitroaniline	ND		930
4,6-Dinitro-2-methylphenol	ND		930
n-Nitrosodiphenylamine	ND		370
4-Bromophenylphenylether	ND		370
Hexachlorobenzene	ND		370
Pentachlorophenol	ND		930
Phenanthrene	ND		370
Anthracene	ND		370
Fluoranthene	52	J	370
di-n-Butylphthalate	ND		370
Pyrene	39	J	370
Butylbenzylphthalate	ND		370
3,3'-Dichlorobenzidine	ND		740
Benzo(a)anthracene	ND		370
bis(2-Ethylhexyl)phthalate	ND		370
Chrysene	ND		370
di-n-Octylphthalate	ND		370
Benzo(b)fluoranthene	ND		370
Benzo(k)fluoranthene	ND		370
Benzo(a)pyrene	ND		370
Indeno(1,2,3-cd)pyrene	ND		370
Dibenzo(a,h)anthracene	ND		370
Benzo(ghi)perylene	ND		370

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
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090

GC/MS Spike Summary Form

SV Data

Instrument ID : kim.i
Batch : 990512412r
Units: ng

Compound	Original 9901.362 33148.02 k1625.d	Amount Added	Limits	MS MSD9901.362 33148.02 k1626.d Amt Det	MS Rec	MSD MS 9901.362 33148.02 k1638.d Amt Det	MSD Rec	%RPD
Phenol	< 0.00	120.00	20.5->132.1	106.39	88.7	105.12	87.6	1.20
2-Chlorophenol	< 0.00	120.00	20.4->131.6	101.92	84.9	98.19	81.8	3.72
1,4-Dichlorobenzene	< 0.00	100.00	12.0-> 99.4	77.77	77.8	75.47	75.5	3.00
N-Nitrosodi-n-propylamine	< 0.00	100.00	30.0->106.0	101.51	101.5	104.74	104.7	3.13
1,2,4-Trichlorobenzene	< 0.00	100.00	17.4->105.6	77.51	77.5	74.41	74.4	4.08
4-chloro-3-methylphenol	< 0.00	120.00	33.2->113.1	98.39	82.0	98.47	82.1	0.09
Acenaphthene	< 0.00	100.00	30.7->108.8	80.59	80.6	77.39	77.4	4.05
4-Nitrophenol	< 0.00	120.00	10.0->115.0	86.88	72.4	94.48	78.7	8.38
2,4-Dinitrotoluene	< 0.00	100.00	33.2-> 95.1	76.87	76.9	77.71	77.7	1.08
Pentachlorophenol	< 0.00	120.00	34.3->116.5	96.00	80.0	88.36	73.6	8.28
Pyrene	2.08	100.00	31.4->125.7	69.16	67.1	56.61	54.5	20.64

091

GC/MS Spike Summary Form

SV Data

Instrument ID : kim.i
Batch : 990512411r
Units: ng

Compound	Detection Limit	Amount Added	Limits	MS LCS 1356-140-2 k1619.d Amt Det	Rec
Phenol	< 0.00	120.00	25.0->115.0	111.54	93.0
2-Chlorophenol	< 0.00	120.00	42.4->115.0	105.92	88.3
1,4-Dichlorobenzene	< 0.00	100.00	25.0->115.0	79.65	79.7
N-Nitrosodi-n-propylamine	< 0.00	100.00	34.0->105.0	101.89	101.9
1,2,4-Trichlorobenzene	< 0.00	100.00	50.9->100.6	77.41	77.4
4-chloro-3-methylphenol	< 0.00	120.00	43.6->113.7	105.16	87.6
Acenaphthene	< 0.00	100.00	45.3->109.3	80.91	80.9
4-Nitrophenol	< 0.00	120.00	10.0->115.0	88.36	73.6
2,4-Dinitrotoluene	< 0.00	100.00	44.8->112.3	82.52	82.5
Pentachlorophenol	< 0.00	120.00	37.8->110.8	87.14	72.6
Pyrene	< 0.00	100.00	42.7->110.6	69.70	69.7

092

GC/MS Surrogate Summary Form

SV Data

Instrument ID : kim.i
Batch : 990512411r
Units: ng

Surrogate:	2-Fluorophenol		Phenol-d5		Nitrobenzene-d5		2-Fluorobipheny		2,4,6-Tribromop		Terphenyl-d14	
Amount Added:	120.0		120.0		100.0		100.0		120.0		100.0	
Limits:	25.0--> 121.0		24.0--> 113.0		23.0--> 120.0		30.0--> 115.0		19.0--> 122.0		18.0--> 137.0	
Job/Sample Number	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec
k1618.d BLK 1356-140-1	120.00	100.0	120.00	100.0	78.60	78.6	73.80	73.8	99.20	82.6	70.30	70.3
k1619.d LCS 1356-140-2	122.00	101.0	120.00	100.0	79.10	79.1	73.90	73.9	96.30	80.2	70.70	70.7
k1634.d RA 9901.362 33132.02	85.70	71.4	84.60	70.5	56.10	56.1	51.10	51.1	65.10	54.3	46.80	46.8
k1635.d RA 9901.362 33133.02	102.00	85.5	104.00	86.9	64.90	64.9	57.60	57.6	73.10	61.0	55.00	55.0
k1660.d RA 9901.362 33134.02	100.00	83.7	91.80	76.5	72.20	72.2	68.20	68.2	70.60	58.8	33.20	33.2
k1636.d RA 9901.362 33135.02	126.00	105.0	124.00	104.0	78.30	78.3	72.40	72.4	93.10	77.6	66.80	66.8
k1637.d RA 9901.362 33136.02	114.00	95.3	116.00	96.8	77.30	77.3	73.00	73.0	85.30	71.1	64.80	64.8
k1647.d 9901.362 33137.02 10	108.00	90.2	103.00	86.0	70.70	70.7	67.80	67.8	73.20	61.0	53.40	53.4
k1621.d 9901.362 33138.02	116.00	96.6	114.00	94.9	75.40	75.4	71.40	71.4	81.90	68.2	62.00	62.0
k1692.d RA 9901.362 33139.02	123.00	102.0	118.00	98.5	82.80	82.8	79.20	79.2	93.00	77.5	66.60	66.6

GC/MS Surrogate Summary Form

SV Data

Instrument ID : kim.i
Batch : X
Units: ng

Surrogate:	2-Fluorophenol		Phenol-d5		Nitrobenzene-d5		2-Fluorobipheny		2,4,6-Tribromop		Terphenyl-d14	
Amount Added:	120.0		120.0		100.0		100.0		120.0		100.0	
Limits:	25.0--> 121.0		24.0--> 113.0		23.0--> 120.0		30.0--> 115.0		19.0--> 122.0		18.0--> 137.0	
Job/Sample Number	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec
k1651.d 9901.362 33140.02 10	99.70	83.1	90.30	75.2	68.60	68.6	68.80	68.8	60.60	50.5	35.00	35.0
k1653.d 9901.362 33141.02	92.60	77.1	82.30	68.6	72.80	72.8	71.40	71.4	57.70	48.1	26.60	26.6
k1659.d RA 9901.362 33142.02	94.00	78.3	89.90	74.9	69.30	69.3	63.40	63.4	63.10	52.6	40.60	40.6
k1623.d 9901.362 33143.02	112.00	93.2	109.00	90.7	73.60	73.6	69.70	69.7	77.90	64.9	62.20	62.2
k1622.d 9901.362 33144.02	118.00	98.1	116.00	96.4	77.30	77.3	73.30	73.3	90.60	75.5	70.10	70.1
k1657.d 9901.362 33145.02	95.00	79.2	93.00	77.5	64.30	64.3	60.90	60.9	71.10	59.3	50.80	50.8
k1648.d 9901.362 33146.02 10	116.00	96.9	102.00	85.5	75.50	75.5	79.10	79.1	59.10	49.2	51.80	51.8
k1624.d 9901.362 33147.02	120.00	99.9	119.00	99.4	78.10	78.1	74.20	74.2	90.70	75.6	67.80	67.8
k1625.d 9901.362 33148.02	108.00	90.2	108.00	90.4	71.60	71.6	66.80	66.8	85.70	71.4	60.70	60.7
k1638.d MS 9901.362 33148.02	112.00	93.1	112.00	93.1	79.60	79.6	70.50	70.5	76.10	63.4	54.00	54.0
k1626.d MSD9901.362 33148.02	118.00	98.2	112.00	93.4	78.10	78.1	74.10	74.1	88.30	73.6	64.60	64.6

TEST CODE :SBNA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : METHOD BLANK MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		330
bis(2-Chloroethyl)ether	ND		330
2-Chlorophenol	ND		330
1,3-Dichlorobenzene	ND		330
1,4-Dichlorobenzene	ND		330
Benzyl alcohol	ND		330
1,2-Dichlorobenzene	ND		330
2-Methylphenol	ND		330
2,2'-oxybis(1-Chloropropane)	ND		330
4-Methylphenol	ND		330
n-Nitroso-di-n-propylamine	ND		330
Hexachloroethane	ND		330
Nitrobenzene	ND		330
Isophorone	ND		330
2-Nitrophenol	ND		330
2,4-Dimethylphenol	ND		330
Benzoic acid	ND		830
bis(2-Chloroethoxy)methane	ND		330
2,4-Dichlorophenol	ND		330
1,2,4-Trichlorobenzene	ND		330
Naphthalene	ND		330
4-Chloroaniline	ND		330
Hexachlorobutadiene	ND		330
4-Chloro-3-methylphenol	ND		330
2-Methylnaphthalene	ND		330
Hexachlorocyclopentadiene	ND		830
2,4,6-Trichlorophenol	ND		330
2,4,5-Trichlorophenol	ND		830
2-Chloronaphthalene	ND		330
2-Nitroaniline	ND		830

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

095

TEST CODE :SBNA0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : METHOD BLANK MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		330
Acenaphthylene	ND		330
3-Nitroaniline	ND		830
Acenaphthene	ND		330
2,4-Dinitrophenol	ND		830
4-Nitrophenol	ND		830
Dibenzofuran	ND		330
2,4-Dinitrotoluene	ND		330
2,6-Dinitrotoluene	ND		330
Diethylphthalate	ND		330
4-Chlorophenylphenylether	ND		330
Fluorene	ND		330
4-Nitroaniline	ND		830
4,6-Dinitro-2-methylphenol	ND		830
n-Nitrosodiphenylamine	ND		330
4-Bromophenylphenylether	ND		330
Hexachlorobenzene	ND		330
Pentachlorophenol	ND		830
Phenanthrene	ND		330
Anthracene	ND		330
Fluoranthene	ND		330
di-n-Butylphthalate	ND		330
Pyrene	ND		330
Butylbenzylphthalate	ND		330
3,3'-Dichlorobenzidine	ND		660
Benzo(a)anthracene	ND		330
bis(2-Ethylhexyl)phthalate	ND		330
Chrysene	ND		330
di-n-Octylphthalate	ND		330
Benzo(b)fluoranthene	ND		330
Benzo(k)fluoranthene	ND		330
Benzo(a)pyrene	ND		330
Indeno(1,2,3-cd)pyrene	ND		330
Dibenzo(a,h)anthracene	ND		330
Benzo(ghi)perylene	ND		330

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

096

JOB NUMBER : 9901.362

Ecology and Environment, Inc.
SAMPLE TRACKING REPORT

SAMPLE NUMBER	CLIENT SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED
8081A PESTICIDES -S				
33132.02	KLBH5 S1	05/06/99	05/12/99	05/15/99
33133.02	KLBH5 S2	05/06/99	05/12/99	05/15/99
33134.02	KLBH5 S3	05/06/99	05/12/99	05/15/99
33135.02	KLBH6 S1	05/06/99	05/12/99	05/15/99
33136.02	KLBH6 S2	05/06/99	05/12/99	05/15/99
33137.02	KLBH6 S3	05/06/99	05/12/99	05/15/99
33138.02	KLBH7 S1	05/06/99	05/12/99	05/15/99
33139.02	KLBH7 S2	05/06/99	05/12/99	05/15/99
33140.02	KLBH7 S3	05/06/99	05/12/99	05/15/99
33141.02	KLBH8 S1	05/06/99	05/12/99	05/15/99
33142.02	KLBH8 S2	05/06/99	05/12/99	05/15/99
33143.02	KLBH9 S1	05/06/99	05/12/99	05/15/99
33144.02	KLBH9 S2	05/06/99	05/12/99	05/15/99
33145.02	KLBH9 S3	05/06/99	05/12/99	05/15/99
33146.02	KLBH10 S1	05/06/99	05/12/99	05/15/99
33147.02	KLBH10 S2	05/06/99	05/12/99	05/15/99
33148.02	KLBH10 S2/D	05/06/99	05/12/99	05/15/99

097

TEST CODE :SPEST 1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 81 %
TEST NAME : 8081A PESTICIDES UNITS : UG/KG
SAMPLE ID LAB : EE-99-33132 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH5 S1

PARAMETER	RESULTS	Q	QNT. LIMIT
gamma-Chlordane	ND		6.2
Aldrin	ND		6.2
alpha-BHC	ND		6.2
beta-BHC	ND		6.2
gamma-BHC (Lindane)	ND		6.2
delta-BHC	ND		6.2
alpha-Chlordane	ND		6.2
4,4'-DDD	ND		12
4,4'-DDE	ND		12
4,4'-DDT	ND		12
Dieldrin	ND		12
Endosulfan I	ND		12
Endosulfan II	ND		12
Endosulfan sulfate	ND		12
Endrin	ND		12
Endrin aldehyde	ND		12
Heptachlor	ND		6.2
Heptachlor epoxide	ND		6.2
Toxaphene	ND		310
Methoxychlor	ND		62

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

098

TEST CODE :SPEST 1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 84 %
TEST NAME : 8081A PESTICIDES UNITS : UG/KG
SAMPLE ID LAB : EE-99-33133 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH5 S2

PARAMETER	RESULTS	Q	QNT. LIMIT
gamma-Chlordane	ND		1.2
Aldrin	ND		1.2
alpha-BHC	ND		1.2
beta-BHC	ND		1.2
gamma-BHC (Lindane)	ND		1.2
delta-BHC	ND		1.2
alpha-Chlordane	ND		1.2
4,4'-DDD	ND		2.4
4,4'-DDE	ND		2.4
4,4'-DDT	ND		2.4
Dieldrin	ND		2.4
Endosulfan I	ND		2.4
Endosulfan II	ND		2.4
Endosulfan sulfate	ND		2.4
Endrin	ND		2.4
Endrin aldehyde	ND		2.4
Heptachlor	ND		1.2
Heptachlor epoxide	ND		1.2
Toxaphene	ND		60
Methoxychlor	ND		12

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

099

TEST CODE :SPEST 1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 87 %
TEST NAME : 8081A PESTICIDES UNITS : UG/KG
SAMPLE ID LAB : EE-99-33134 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH5 S3

PARAMETER	RESULTS	Q	QNT. LIMIT
gamma-Chlordane	ND		5.7
Aldrin	ND		5.7
alpha-BHC	ND		5.7
beta-BHC	ND		5.7
gamma-BHC (Lindane)	ND		5.7
delta-BHC	ND		5.7
alpha-Chlordane	ND		5.7
4,4'-DDD	19		11
4,4'-DDE	16		11
4,4'-DDT	12		11
Dieldrin	ND		11
Endosulfan I	ND		11
Endosulfan II	ND		11
Endosulfan sulfate	ND		11
Endrin	ND		11
Endrin aldehyde	ND		11
Heptachlor	ND		5.7
Heptachlor epoxide	ND		5.7
Toxaphene	ND		290
Methoxychlor	ND		57

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

100

TEST CODE :SPEST 1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 89 %
TEST NAME : 8081A PESTICIDES UNITS : UG/KG
SAMPLE ID LAB : EE-99-33135 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH6 S1

PARAMETER	RESULTS	Q	QNT. LIMIT
gamma-Chlordane	ND		22
Aldrin	ND		22
alpha-BHC	ND		22
beta-BHC	ND		22
gamma-BHC (Lindane)	ND		22
delta-BHC	ND		22
alpha-Chlordane	ND		22
4,4'-DDD	ND		45
4,4'-DDE	ND		45
4,4'-DDT	ND		45
Dieldrin	ND		45
Endosulfan I	ND		45
Endosulfan II	ND		45
Endosulfan sulfate	ND		45
Endrin	ND		45
Endrin aldehyde	ND		45
Heptachlor	ND		22
Heptachlor epoxide	ND		22
Toxaphene	ND		1100
Methoxychlor	ND		220

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

101

TEST CODE :SPEST 1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
TEST NAME : 8081A PESTICIDES UNITS : UG/KG
SAMPLE ID LAB : EE-99-33136 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH6 S2

PARAMETER	RESULTS	Q	QNT. LIMIT
gamma-Chlordane	ND		12
Aldrin	ND		12
alpha-BHC	ND		12
beta-BHC	ND		12
gamma-BHC (Lindane)	ND		12
delta-BHC	ND		12
alpha-Chlordane	ND		12
4,4'-DDD	ND		23
4,4'-DDE	ND		23
4,4'-DDT	ND		23
Dieldrin	ND		23
Endosulfan I	ND		23
Endosulfan II	ND		23
Endosulfan sulfate	ND		23
Endrin	ND		23
Endrin aldehyde	ND		23
Heptachlor	ND		12
Heptachlor epoxide	ND		12
Toxaphene	ND		580
Methoxychlor	ND		120

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

102

TEST CODE :SPEST 1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 55 %
TEST NAME : 8081A PESTICIDES UNITS : UG/KG
SAMPLE ID LAB : EE-99-33137 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH6 S3

PARAMETER	RESULTS	Q	QNT. LIMIT
gamma-Chlordane	ND		91
Aldrin	ND		91
alpha-BHC	ND		91
beta-BHC	ND		91
gamma-BHC (Lindane)	ND		91
delta-BHC	ND		91
alpha-Chlordane	ND		91
4,4'-DDD	ND		180
4,4'-DDE	ND		180
4,4'-DDT	ND		180
Dieldrin	ND		180
Endosulfan I	ND		180
Endosulfan II	ND		180
Endosulfan sulfate	ND		180
Endrin	ND		180
Endrin aldehyde	ND		180
Heptachlor	ND		91
Heptachlor epoxide	ND		91
Toxaphene	ND		4500
Methoxychlor	ND		910

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SPEST 1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 78 %
TEST NAME : 8081A PESTICIDES UNITS : UG/KG
SAMPLE ID LAB : EE-99-33138 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH7 S1

PARAMETER	RESULTS	Q	QNT. LIMIT
gamma-Chlordane	ND		1.3
Aldrin	ND		1.3
alpha-BHC	ND		1.3
beta-BHC	ND		1.3
gamma-BHC (Lindane)	ND		1.3
delta-BHC	ND		1.3
alpha-Chlordane	ND		1.3
4,4'-DDD	ND		2.6
4,4'-DDE	ND		2.6
4,4'-DDT	ND		2.6
Dieldrin	ND		2.6
Endosulfan I	ND		2.6
Endosulfan II	ND		2.6
Endosulfan sulfate	ND		2.6
Endrin	ND		2.6
Endrin aldehyde	ND		2.6
Heptachlor	ND		1.3
Heptachlor epoxide	ND		1.3
Toxaphene	ND		64
Methoxychlor	ND		13

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

104

TEST CODE :SPEST 1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 77 %
TEST NAME : 8081A PESTICIDES UNITS : UG/KG
SAMPLE ID LAB : EE-99-33139 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH7 S2

PARAMETER	RESULTS	Q	QNT. LIMIT
gamma-Chlordane	26		13
Aldrin	ND		13
alpha-BHC	ND		13
beta-BHC	ND		13
gamma-BHC (Lindane)	ND		13
delta-BHC	ND		13
alpha-Chlordane	35		13
4,4'-DDD	26		26
4,4'-DDE	ND		26
4,4'-DDT	ND		26
Dieldrin	39		26
Endosulfan I	ND		26
Endosulfan II	ND		26
Endosulfan sulfate	ND		26
Endrin	ND		26
Endrin aldehyde	ND		26
Heptachlor	ND		13
Heptachlor epoxide	ND		13
Toxaphene	ND		650
Methoxychlor	ND		130

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SPEST 1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 76 %
TEST NAME : 8081A PESTICIDES UNITS : UG/KG
SAMPLE ID LAB : EE-99-33140 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH7 S3

PARAMETER	RESULTS	Q	QNT. LIMIT
gamma-Chlordane	ND		66
Aldrin	ND		66
alpha-BHC	ND		66
beta-BHC	ND		66
gamma-BHC (Lindane)	ND		66
delta-BHC	ND		66
alpha-Chlordane	ND		66
4,4'-DDD	230		130
4,4'-DDE	ND		130
4,4'-DDT	ND		130
Dieldrin	ND		130
Endosulfan I	ND		130
Endosulfan II	ND		130
Endosulfan sulfate	ND		130
Endrin	ND		130
Endrin aldehyde	ND		130
Heptachlor	ND		66
Heptachlor epoxide	ND		66
Toxaphene	ND		3300
Methoxychlor	ND		660

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

106

TEST CODE :SPEST 1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 88 %
TEST NAME : 8081A PESTICIDES UNITS : UG/KG
SAMPLE ID LAB : EE-99-33141 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH8 S1

PARAMETER	RESULTS	Q	QNT. LIMIT
gamma-Chlordane	ND		23
Aldrin	ND		23
alpha-BHC	ND		23
beta-BHC	ND		23
gamma-BHC (Lindane)	ND		23
delta-BHC	ND		23
alpha-Chlordane	ND		23
4,4'-DDD	ND		45
4,4'-DDE	ND		45
4,4'-DDT	ND		45
Dieldrin	ND		45
Endosulfan I	ND		45
Endosulfan II	ND		45
Endosulfan sulfate	ND		45
Endrin	ND		45
Endrin aldehyde	ND		45
Heptachlor	ND		23
Heptachlor epoxide	ND		23
Toxaphene	ND		1100
Methoxychlor	ND		230

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

107

TEST CODE :SPEST 1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
TEST NAME : 8081A PESTICIDES UNITS : UG/KG
SAMPLE ID LAB : EE-99-33142 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH8 S2

PARAMETER	RESULTS	Q	QNT. LIMIT
gamma-Chlordane	ND		580
Aldrin	ND		580
alpha-BHC	ND		580
beta-BHC	ND		580
gamma-BHC (Lindane)	ND		580
delta-BHC	ND		580
alpha-Chlordane	ND		580
4,4'-DDD	ND		1200
4,4'-DDE	ND		1200
4,4'-DDT	ND		1200
Dieldrin	ND		1200
Endosulfan I	ND		1200
Endosulfan II	ND		1200
Endosulfan sulfate	ND		1200
Endrin	ND		1200
Endrin aldehyde	ND		1200
Heptachlor	ND		580
Heptachlor epoxide	ND		580
Toxaphene	ND		29000
Methoxychlor	ND		5800

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

108

TEST CODE :SPEST 1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 75 %
TEST NAME : 8081A PESTICIDES UNITS : UG/KG
SAMPLE ID LAB : EE-99-33143 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH9 S1

PARAMETER	RESULTS	Q	QNT. LIMIT
gamma-Chlordane	ND		1.3
Aldrin	ND		1.3
alpha-BHC	ND		1.3
beta-BHC	ND		1.3
gamma-BHC (Lindane)	ND		1.3
delta-BHC	ND		1.3
alpha-Chlordane	ND		1.3
4,4'-DDD	ND		2.7
4,4'-DDE	ND		2.7
4,4'-DDT	ND		2.7
Dieldrin	ND		2.7
Endosulfan I	ND		2.7
Endosulfan II	ND		2.7
Endosulfan sulfate	ND		2.7
Endrin	ND		2.7
Endrin aldehyde	ND		2.7
Heptachlor	ND		1.3
Heptachlor epoxide	ND		1.3
Toxaphene	ND		67
Methoxychlor	ND		13

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

109

TEST CODE :SPEST 1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 82 %
TEST NAME : 8081A PESTICIDES UNITS : UG/KG
SAMPLE ID LAB : EE-99-33144 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH9 S2

PARAMETER	RESULTS	Q	QNT. LIMIT
gamma-Chlordane	ND		1.2
Aldrin	ND		1.2
alpha-BHC	ND		1.2
beta-BHC	ND		1.2
gamma-BHC (Lindane)	ND		1.2
delta-BHC	ND		1.2
alpha-Chlordane	ND		1.2
4,4'-DDD	ND		2.4
4,4'-DDE	ND		2.4
4,4'-DDT	ND		2.4
Dieldrin	ND		2.4
Endosulfan I	ND		2.4
Endosulfan II	ND		2.4
Endosulfan sulfate	ND		2.4
Endrin	ND		2.4
Endrin aldehyde	ND		2.4
Heptachlor	ND		1.2
Heptachlor epoxide	ND		1.2
Toxaphene	ND		61
Methoxychlor	ND		12

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

110

TEST CODE :SPEST 1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 88 %
TEST NAME : 8081A PESTICIDES UNITS : UG/KG
SAMPLE ID LAB : EE-99-33145 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH9 S3

PARAMETER	RESULTS	Q	QNT. LIMIT
gamma-Chlordane	ND		11
Aldrin	ND		11
alpha-BHC	ND		11
beta-BHC	ND		11
gamma-BHC (Lindane)	ND		11
delta-BHC	ND		11
alpha-Chlordane	ND		11
4,4'-DDD	27		23
4,4'-DDE	ND		23
4,4'-DDT	ND		23
Dieldrin	ND		23
Endosulfan I	ND		23
Endosulfan II	ND		23
Endosulfan sulfate	ND		23
Endrin	ND		23
Endrin aldehyde	ND		23
Heptachlor	ND		11
Heptachlor epoxide	ND		11
Toxaphene	ND		570
Methoxychlor	ND		110

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

111

TEST CODE :SPEST 1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
TEST NAME : 8081A PESTICIDES UNITS : UG/KG
SAMPLE ID LAB : EE-99-33146 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH10 S1

PARAMETER	RESULTS	Q	QNT. LIMIT
gamma-Chlordane	11		5.8
Aldrin	ND		5.8
alpha-BHC	ND		5.8
beta-BHC	ND		5.8
gamma-BHC (Lindane)	ND		5.8
delta-BHC	ND		5.8
alpha-Chlordane	8.5		5.8
4,4'-DDD	ND		12
4,4'-DDE	ND		12
4,4'-DDT	ND		12
Dieldrin	ND		12
Endosulfan I	ND		12
Endosulfan II	ND		12
Endosulfan sulfate	ND		12
Endrin	ND		12
Endrin aldehyde	ND		12
Heptachlor	ND		5.8
Heptachlor epoxide	ND		5.8
Toxaphene	ND		290
Methoxychlor	ND		58

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

112

TEST CODE :SPEST 1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
TEST NAME : 8081A PESTICIDES UNITS : UG/KG
SAMPLE ID LAB : EE-99-33147 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH10 S2

PARAMETER	RESULTS	Q	QNT. LIMIT
gamma-Chlordane	ND		1.2
Aldrin	ND		1.2
alpha-BHC	ND		1.2
beta-BHC	ND		1.2
gamma-BHC (Lindane)	ND		1.2
delta-BHC	ND		1.2
alpha-Chlordane	ND		1.2
4,4'-DDD	ND		2.3
4,4'-DDE	2.8		2.3
4,4'-DDT	ND		2.3
Dieldrin	ND		2.3
Endosulfan I	ND		2.3
Endosulfan II	ND		2.3
Endosulfan sulfate	ND		2.3
Endrin	ND		2.3
Endrin aldehyde	ND		2.3
Heptachlor	ND		1.2
Heptachlor epoxide	ND		1.2
Toxaphene	ND		58
Methoxychlor	ND		12

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

113

TEST CODE :SPEST 1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 89 %
TEST NAME : 8081A PESTICIDES UNITS : UG/KG
SAMPLE ID LAB : EE-99-33148 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH10 S2/D

PARAMETER	RESULTS	Q	QNT. LIMIT
gamma-Chlordane	6.2		5.6
Aldrin	ND		5.6
alpha-BHC	ND		5.6
beta-BHC	ND		5.6
gamma-BHC (Lindane)	ND		5.6
delta-BHC	ND		5.6
alpha-Chlordane	6.0		5.6
4,4'-DDD	ND		11
4,4'-DDE	ND		11
4,4'-DDT	12		11
Dieldrin	ND		11
Endosulfan I	ND		11
Endosulfan II	ND		11
Endosulfan sulfate	ND		11
Endrin	ND		11
Endrin aldehyde	ND		11
Heptachlor	ND		5.6
Heptachlor epoxide	ND		5.6
Toxaphene	ND		280
Methoxychlor	ND		56

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

114

3

SOIL PESTICIDE MS/MSD RECOVERY
(GC.14-8081, GC.72-8081A)

Lab Name: E & E INC Contract:

Prep Batch: 990512331P Job No.: 9901.362

Sample No.: 33145 Instrument: V34004 B Run Date: 5/15/99

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONC. (ug/Kg)	MS CONC. (ug/Kg)	MS % REC	QC LIMITS REC.
gamma-BHC	3.30	0.00	D	D	73 - 134
Heptachlor	3.30	0.00	D	D	69 - 141
Aldrin	3.30	0.00	D	D	45 - 148
Dieldrin	3.30	0.00	D	D	60 - 146
Endrin	3.30	0.00	D	D	63 - 140
4,4'-DDT	3.30	0.00	D	D	48 - 150

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONC. (ug/Kg)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC
gamma-BHC	3.32	D	D		30	73 - 134
Heptachlor	3.32	D	D		30	69 - 141
Aldrin	3.32	D	D		30	45 - 148
Dieldrin	3.32	D	D		34	60 - 146
Endrin	3.32	D	D		32	63 - 140
4,4'-DDT	3.32	D	D		36	48 - 150

* Values outside of QC limits
D - Diluted out

RPD: 0 out of 6 outside limits
Spike Recovery: 0 out of 12 outside limits

COMMENTS: **SAMPLE, MS, & MSD DILUTED 10X DUE TO MATRIX AND POSITIVES.**

FORM III PEST-2

QC Limits Generated from
E&E QA Chart Program 11/2/98

115

3

SOIL PESTICIDE LCS RECOVERY
(GC.14-8081, GC.72-8081A)

Lab Name: E & E INC Contract:

Prep Batch: 990512331P Job No.: 9901.362

Sample No.: SLCS1366-164-3 Instrument: V34004 B Run Date: 5/14/99

COMPOUND	SPIKE ADDED (ug/Kg)	LCS CONC. (ug/Kg)	LCS % REC	QC LIMITS REC.
gamma-BHC	3.32	3.07	92.6	73 - 134
Heptachlor	3.32	2.91	87.8	69 - 141
Aldrin	3.32	2.97	89.4	45 - 148
Dieldrin	3.32	3.49	105.3	60 - 146
Endrin	3.32	3.63	109.5	63 - 140
4,4'-DDT	3.32	3.34	100.8	48 - 150

* Values outside of QC limits

Spike Recovery: 0 out of 6 outside limits

COMMENTS:

FORM III PEST-2

QC Limits Generated from
E&E QA Chart Program 11/2/98

116

3

SOIL PESTICIDE LCS RECOVERY
(GC.14-8081, GC.72-8081A)

Lab Name: E & E INC Contract:

Prep Batch: 990512331P Job No.: 9901.362

Sample No.: SLCS1366-164-3 Instrument: V34004 B Run Date: 5/14/99

COMPOUND	SPIKE ADDED (ug/Kg)	LCS CONC. (ug/Kg)	LCS % REC	QC LIMITS REC.
gamma-BHC	3.32	3.07	92.6	73 - 134
Heptachlor	3.32	2.91	87.8	69 - 141
Aldrin	3.32	2.97	89.4	45 - 148
Dieldrin	3.32	3.49	105.3	60 - 146
Endrin	3.32	3.63	109.5	63 - 140
4,4'-DDT	3.32	3.41	102.9	48 - 150

* Values outside of QC limits

Spike Recovery: 0 out of 6 outside limits

COMMENTS:

FORM III PEST-2

QC Limits Generated from
E&E QA Chart Program 11/2/98

117

PEST SOIL 8081 Surrogate Recovery

Job No. 9901,362 Prep Batch No. 9905123 31P

File Name	Sample Name	Time of Injection	Date of Injection	Amt Exp. (UG/KG)	TCMX Amt Rec (UG/KG)	% Rec.
V4B_990514311R_009.rst	1366-164-1	10:29:39 PM PM	05/14/99	6.49	6.24	96.1
V4B_990514311R_010.rst	1366-164-2	11:09:25 PM PM	05/14/99	6.63	6.35	95.7
V4B_990514311R_011.rst	1366-164-3	11:49:10 PM PM	05/14/99	6.59	6.41	97.3
V4B_990514311R_012.rst	33132 5X	12:28:55 AM AM	05/15/99	6.54	6.32	96.6
V4B_990514311R_013.rst	33133 1X	01:08:40 AM AM	05/15/99	6.51	6.29	96.6
V4B_990514311R_014.rst	33134 5X	01:48:24 AM AM	05/15/99	6.57	6.78	103.1
V4B_990514311R_015.rst	33135 20X	02:28:12 AM AM	05/15/99	6.47	6.90	106.6
V4B_990514311R_016.rst	33136 10X	03:08:01 AM AM	05/15/99	6.62	7.54	113.8
V4B_990514311R_017.rst	33137 50X	03:47:50 AM AM	05/15/99	6.54	6.03	92.3
V4B_990514311R_018.rst	33138 1X	04:27:38 AM AM	05/15/99	6.59	6.32	95.9
V4B_990514311R_023.rst	33139 10X	07:46:33 AM AM	05/15/99	6.53	6.80	104.2
V4B_990514311R_024.rst	33140 50X	08:26:19 AM AM	05/15/99	6.53	6.75	103.5
V4B_990514311R_025.rst	33141 20X	09:06:05 AM AM	05/15/99	6.51	6.62	101.7
V4B_990514311R_026.rst	33142 500X	09:45:51 AM AM	05/15/99	6.66	-----	-----
V4B_990514311R_027.rst	33143 1X	10:25:36 AM AM	05/15/99	6.61	6.26	94.6
V4B_990514311R_028.rst	33144 1X	11:05:19 AM AM	05/15/99	6.58	6.01	91.4
V4B_990514311R_029.rst	33145 10X	11:45:02 AM AM	05/15/99	6.62	7.42	112.0
V4B_990514311R_030.rst	33146 5X	12:24:45 PM PM	05/15/99	6.61	6.14	92.9
V4B_990514311R_031.rst	33147 1X	01:04:34 PM PM	05/15/99	6.61	5.01	75.8
V4B_990514311R_032.rst	33148 5X	01:44:21 PM PM	05/15/99	6.57	6.42	97.7
V4B_990514311R_037.rst	33142MS PCB 500X	05:03:13 PM PM	05/15/99	6.53	-----	-----
V4B_990514311R_038.rst	33142MSD PCB 500X	05:42:58 PM PM	05/15/99	6.57	-----	-----
V4B_990514311R_039.rst	33145MS 10X PEST	06:22:43 PM PM	05/15/99	6.59	6.88	104.3
V4B_990514311R_040.rst	33145MSD 10X PEST	07:02:28 PM PM	05/15/99	6.64	7.15	107.7
Averages				6.57	6.51	99.0
%RSD				0.77	8.40	8.3

File Name	Sample Name	Time of Injection	Date of Injection	Amt Exp. (UG/KG)	DCB Amt Rec (UG/KG)	% Rec.
V4B_990514311R_009.rst	1366-164-1	10:29:39 PM PM	05/14/99	6.49	5.96	91.8
V4B_990514311R_010.rst	1366-164-2	11:09:25 PM PM	05/14/99	6.63	6.48	97.7
V4B_990514311R_011.rst	1366-164-3	11:49:10 PM PM	05/14/99	6.59	6.10	92.6
V4B_990514311R_012.rst	33132 5X	12:28:55 AM AM	05/15/99	6.54	9.26	141.5 *
V4B_990514311R_013.rst	33133 1X	01:08:40 AM AM	05/15/99	6.51	9.45	145.1 *
V4B_990514311R_014.rst	33134 5X	01:48:24 AM AM	05/15/99	6.57	8.90	135.4 *
V4B_990514311R_015.rst	33135 20X	02:28:12 AM AM	05/15/99	6.47	16.31	252.0 *
V4B_990514311R_016.rst	33136 10X	03:08:01 AM AM	05/15/99	6.62	7.74	116.8
V4B_990514311R_017.rst	33137 50X	03:47:50 AM AM	05/15/99	6.54	13.54	207.1 *
V4B_990514311R_018.rst	33138 1X	04:27:38 AM AM	05/15/99	6.59	5.78	87.6
V4B_990514311R_023.rst	33139 10X	07:46:33 AM AM	05/15/99	6.53	7.58	116.1
V4B_990514311R_024.rst	33140 50X	08:26:19 AM AM	05/15/99	6.53	71.07	1e+03 *
V4B_990514311R_025.rst	33141 20X	09:06:05 AM AM	05/15/99	6.51	10.63	163.2 *
V4B_990514311R_026.rst	33142 500X	09:45:51 AM AM	05/15/99	6.66	-----	-----
V4B_990514311R_027.rst	33143 1X	10:25:36 AM AM	05/15/99	6.61	5.80	87.6
V4B_990514311R_028.rst	33144 1X	11:05:19 AM AM	05/15/99	6.58	5.54	84.2
V4B_990514311R_029.rst	33145 10X	11:45:02 AM AM	05/15/99	6.62	10.10	152.4 *
V4B_990514311R_030.rst	33146 5X	12:24:45 PM PM	05/15/99	6.61	12.93	195.6 *
V4B_990514311R_031.rst	33147 1X	01:04:34 PM PM	05/15/99	6.61	5.19	78.6

* Surrogate recovery elevated due to matrix interferences.

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File Name	Sample Name	Time of Injection	Date of Injection	Amt Exp. (UG/KG)	DCB Amt Rec (UG/KG)	% Rec.
V4B_990514311R_032.rst	33148 5X	01:44:21 PM PM	05/15/99	6.57	12.09	184.0*
V4B_990514311R_037.rst	33142MS PCB 500X	05:03:13 PM PM	05/15/99	6.53	-----	-----
V4B_990514311R_038.rst	33142MSD PCB 500X	05:42:58 PM PM	05/15/99	6.57	-----	-----
V4B_990514311R_039.rst	33145MS 10X PEST	06:22:43 PM PM	05/15/99	6.59	12.54	190.2*
V4B_990514311R_040.rst	33145MSD 10X PEST	07:02:28 PM PM	05/15/99	6.64	10.41	156.8*
Averages				6.57	12.07	184.1
%RSD				0.77	114.96	115.6

* Surrogate recovery elevated due to matrix interferences.

==========

E&E QA Limits TCMX (70-132) * Out of Limits
UPDATED 11/98 DCBP (31-138)

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ASCII file created successfully - Stored in: E:\V34004\MAY\05-14\SPEST.csv

119

TEST CODE :SPEST 1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
TEST NAME : 8081A PESTICIDES UNITS : UG/KG
SAMPLE ID LAB : METHOD BLANK (1366-164-1) MATRIX : SOLID
DATE OF ANALYSIS: 05/14/99
ASSOCIATED SAMPLES: 33132, 33133, 33134, 33135, 33136, 33137, 33138, 33139, 33140, 33141, 33142, 33143, 33144, 33145, 33145 MS, 33145 MSD, 33146, 33147 AND 33148

PARAMETER	RESULTS	Q	QNT. LIMIT
gamma-Chlordane	ND		1.0
Aldrin	ND		1.0
alpha-BHC	ND		1.0
beta-BHC	ND		1.0
gamma-BHC (Lindane)	ND		1.0
delta-BHC	ND		1.0
alpha-Chlordane	ND		1.0
4,4'-DDD	ND		2.0
4,4'-DDE	ND		2.0
4,4'-DDT	ND		2.0
Dieldrin	ND		2.0
Endosulfan I	ND		2.0
Endosulfan II	ND		2.0
Endosulfan sulfate	ND		2.0
Endrin	ND		2.0
Endrin aldehyde	ND		2.0
Heptachlor	ND		1.0
Heptachlor epoxide	ND		1.0
Toxaphene	ND		50
Methoxychlor	ND		10

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

120

JOB NUMBER : 9901.362

Ecology and Environment, Inc.
SAMPLE TRACKING REPORT

SAMPLE NUMBER	CLIENT SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED
8082 PCB	-S			
33132.02	KLBH5 S1	05/06/99	05/12/99	05/15/99
33133.02	KLBH5 S2	05/06/99	05/12/99	05/15/99
33134.02	KLBH5 S3	05/06/99	05/12/99	05/15/99
33135.02	KLBH6 S1	05/06/99	05/12/99	05/15/99
33136.02	KLBH6 S2	05/06/99	05/12/99	05/15/99
33137.02	KLBH6 S3	05/06/99	05/12/99	05/15/99
33138.02	KLBH7 S1	05/06/99	05/12/99	05/15/99
33139.02	KLBH7 S2	05/06/99	05/12/99	05/15/99
33140.02	KLBH7 S3	05/06/99	05/12/99	05/15/99
33141.02	KLBH8 S1	05/06/99	05/12/99	05/15/99
33142.02	KLBH8 S2	05/06/99	05/12/99	05/15/99
33143.02	KLBH9 S1	05/06/99	05/12/99	05/15/99
33144.02	KLBH9 S2	05/06/99	05/12/99	05/15/99
33145.02	KLBH9 S3	05/06/99	05/12/99	05/15/99
33146.02	KLBH10 S1	05/06/99	05/12/99	05/15/99
33147.02	KLBH10 S2	05/06/99	05/12/99	05/15/99
33148.02	KLBH10 S2/D	05/06/99	05/12/99	05/15/99

121

TEST CODE :SPCB0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 81 %
TEST NAME : 8082 PCB UNITS : UG/KG
SAMPLE ID LAB : EE-99-33132 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH5 S1

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND		200
PCB-1254	ND		200
PCB-1221	ND		200
PCB-1232	ND		200
PCB-1248	ND		200
PCB-1260	ND		200
PCB-1016	ND		200

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

122

TEST CODE :SPCB0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 84 %
TEST NAME : 8082 PCB UNITS : UG/KG
SAMPLE ID LAB : EE-99-33133 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH5 S2

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND		39
PCB-1254	ND		39
PCB-1221	ND		39
PCB-1232	ND		39
PCB-1248	ND		39
PCB-1260	ND		39
PCB-1016	ND		39

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

123

TEST CODE :SPCB0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 87 %
TEST NAME : 8082 PCB UNITS : UG/KG
SAMPLE ID LAB : EE-99-33134 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH5 S3

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND		190
PCB-1254	ND		190
PCB-1221	ND		190
PCB-1232	ND		190
PCB-1248	ND		190
PCB-1260	ND		190
PCB-1016	ND		190

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

124

TEST CODE :SPCB0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 89 %
TEST NAME : 8082 PCB UNITS : UG/KG
SAMPLE ID LAB : EE-99-33135 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH6 S1

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND		740
PCB-1254	ND		740
PCB-1221	ND		740
PCB-1232	ND		740
PCB-1248	ND		740
PCB-1260	ND		740
PCB-1016	ND		740

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

125

TEST CODE :SPCB0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
TEST NAME : 8082 PCB UNITS : UG/KG
SAMPLE ID LAB : EE-99-33136 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH6 S2

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND		380
PCB-1254	ND		380
PCB-1221	ND		380
PCB-1232	ND		380
PCB-1248	ND		380
PCB-1260	ND		380
PCB-1016	ND		380

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

126

TEST CODE :SPCB0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 55 %
TEST NAME : 8082 PCB UNITS : UG/KG
SAMPLE ID LAB : EE-99-33137 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH6 S3

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND		3000
PCB-1254	3400		3000
PCB-1221	ND		3000
PCB-1232	ND		3000
PCB-1248	ND		3000
PCB-1260	ND		3000
PCB-1016	ND		3000

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

127

TEST CODE :SPCB0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 78 %
TEST NAME : 8082 PCB UNITS : UG/KG
SAMPLE ID LAB : EE-99-33138 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH7 S1

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND		42
PCB-1254	ND		42
PCB-1221	ND		42
PCB-1232	ND		42
PCB-1248	ND		42
PCB-1260	ND		42
PCB-1016	ND		42

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

128

TEST CODE :SPCB0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 77 %
TEST NAME : 8082 PCB UNITS : UG/KG
SAMPLE ID LAB : EE-99-33139 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH7 S2

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND		430
PCB-1254	660		430
PCB-1221	ND		430
PCB-1232	ND		430
PCB-1248	ND		430
PCB-1260	ND		430
PCB-1016	ND		430

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

129

TEST CODE :SPCB0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 76 %
TEST NAME : 8082 PCB UNITS : UG/KG
SAMPLE ID LAB : EE-99-33140 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH7 S3

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND		2200
PCB-1254	ND		2200
PCB-1221	ND		2200
PCB-1232	ND		2200
PCB-1248	ND		2200
PCB-1260	ND		2200
PCB-1016	ND		2200

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

130

TEST CODE :SPCB0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 88 %
TEST NAME : 8082 PCB UNITS : UG/KG
SAMPLE ID LAB : EE-99-33141 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH8 S1

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND		750
PCB-1254	ND		750
PCB-1221	ND		750
PCB-1232	ND		750
PCB-1248	ND		750
PCB-1260	ND		750
PCB-1016	ND		750

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

131

TEST CODE :SPCB0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
TEST NAME : 8082 PCB UNITS : UG/KG
SAMPLE ID LAB : EE-99-33142 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH8 S2

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND		19000
PCB-1254	93000		19000
PCB-1221	ND		19000
PCB-1232	ND		19000
PCB-1248	ND		19000
PCB-1260	ND		19000
PCB-1016	ND		19000

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

132

TEST CODE :SPCB0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 75 %
TEST NAME : 8082 PCB UNITS : UG/KG
SAMPLE ID LAB : EE-99-33143 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH9 S1

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND		44
PCB-1254	ND		44
PCB-1221	ND		44
PCB-1232	ND		44
PCB-1248	ND		44
PCB-1260	ND		44
PCB-1016	ND		44

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

133

TEST CODE :SPCB0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 82 %
TEST NAME : 8082 PCB UNITS : UG/KG
SAMPLE ID LAB : EE-99-33144 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH9 S2

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND		40
PCB-1254	ND		40
PCB-1221	ND		40
PCB-1232	ND		40
PCB-1248	ND		40
PCB-1260	ND		40
PCB-1016	ND		40

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

134

TEST CODE :SPCB0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 88 %
TEST NAME : 8082 PCB UNITS : UG/KG
SAMPLE ID LAB : EE-99-33145 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH9 S3

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	2700		750
PCB-1254	ND		750
PCB-1221	ND		750
PCB-1232	ND		750
PCB-1248	ND		750
PCB-1260	ND		750
PCB-1016	ND		750

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

135

TEST CODE :SPCB0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
TEST NAME : 8082 PCB UNITS : UG/KG
SAMPLE ID LAB : EE-99-33146 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH10 S1

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND		190
PCB-1254	ND		190
PCB-1221	ND		190
PCB-1232	ND		190
PCB-1248	ND		190
PCB-1260	ND		190
PCB-1016	ND		190

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

136

TEST CODE :SPCB0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
TEST NAME : 8082 PCB UNITS : UG/KG
SAMPLE ID LAB : EE-99-33147 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH10 S2

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND		38
PCB-1254	ND		38
PCB-1221	ND		38
PCB-1232	ND		38
PCB-1248	ND		38
PCB-1260	ND		38
PCB-1016	ND		38

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

137

TEST CODE :SPCB0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 89 %
TEST NAME : 8082 PCB UNITS : UG/KG
SAMPLE ID LAB : EE-99-33148 MATRIX : SOLID
SAMPLE ID CLIENT: KLBH10 S2/D

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND		37
PCB-1254	ND		37
PCB-1221	ND		37
PCB-1232	ND		37
PCB-1248	ND		37
PCB-1260	ND		37
PCB-1016	ND		37

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

137A

3

SOIL PCB MS/MSD RECOVERY
SW8082

Lab Name: E & E INC. Job No.: 9901.362

Prep Batch No.: 99512331P Instrument V34004 B

Sample No.: 33142 Run Date 5/15/99

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONC. (ug/Kg)	MS CONC. (ug/Kg)	MS % REC	QC LIMITS REC.
Aroclor 1016	163	0	140	85.8	57 - 138
Aroclor 1260	163	0	140	85.8	40 - 160

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONC. (ug/Kg)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC
Aroclor 1016	164	166	101.0	16.3 *	16	57 - 138
Aroclor 1260	164	143	87.0	1.4	21	40 - 160

* Values outside of QC limits
D = Diluted out

RPD: 1 out of 2 outside limits
Spike Recovery: 0 out of 4 outside limits

COMMENTS: **SAMPLE, MS, & MSD RUN AT A 500X DILUTION.**

FORM III PCB-2

QC Limits Generated from
E&E QA Chart Program 9/14/98

138

SOIL PCB LCS RECOVERY
SW8082

Lab Name: E & E INC. Job No.: 9901.362/386

Prep Batch No.: 990512331P Instrument V34004 B

Sample No.: SLCS1366-164-2 Run Date 5/14/99

COMPOUND	SPIKE ADDED (ug/Kg)	LCS CONC. (ug/Kg)	LCS % REC	QC LIMITS REC.
Aroclor 1016	166	146	87.9	50 - 150
Aroclor 1260	166	152	91.4	50 - 150

* Values outside of QC limits

Spike Recovery: 0 out of 2 outside limits

COMMENTS:

QC Limits Generated from
E&E QA Chart Program 9/14/98

139

PCB
QUALITY CONTROL FOR ACCURACY
PERCENT RECOVERY OF SURROGATE SPIKES
SOIL MATRIX

UG/KG E & E Job No: 9901.362

	Tetrachloro-m-xylene				Decachlorobiphenyl			
Sample Identification	Amount Added	Amount Determined	Percent Recovery	Q	Amount Added	Amount Determined	Percent Recovery	Q
1366-164-1	6.49	6.07	93.5%		6.49	5.99	92.3%	
1366-164-2	6.63	6.35	95.8%		6.63	6.48	97.7%	
33132 5X	6.54	6.15	94.0%		6.54	9.34	142.8%	*
33133 1X	6.51	6.12	94.0%		6.51	9.53	146.4%	*
33134 5X	6.57	6.60	100.5%		6.57	8.95	136.2%	*
33135 20X	6.47	D	D		6.47	D	D	
33136 10X	6.62	7.33	110.7%		6.62	6.73	101.7%	
33137 50X	6.54	D	D		6.54	D	D	
33138 1X	6.59	6.16	93.5%		6.59	5.83	88.5%	
33139 10X	6.53	6.80	104.1%		6.53	7.58	116.1%	*
33140 50X	6.53	D	D		6.53	D	D	
33141 20X	6.51	D	D		6.51	D	D	
33142 500X	6.66	D	D		6.66	D	D	
33143 1X	6.61	6.04	91.4%		6.61	5.85	88.5%	
33144 1X	6.58	5.85	88.9%		6.58	5.59	85.0%	
33145 10X	6.62	6.24	94.3%		6.62	10.18	153.8%	*
33146 5X	6.61	5.98	90.5%		6.61	13.04	197.3%	*
33147 1X	6.61	5.60	84.7%		6.61	6.14	92.9%	
33148 5X	6.57	6.25	95.1%		6.57	12.19	185.5%	*
33142MS PCB 500X	6.53	D	D		6.53	D	D	
33142MSD PCB 500X	6.57	D	D		6.57	D	D	

Q - Column used to flag recovery
* - Value is outside E & E, INC. QC limits.
D - Value is Diluted Out

QC LIMITS

Tetrachloro-m-xylene	39-125
Decachlorobiphenyl	48-112

LCS/LCSD = LABORATORY CONTROL SAMPLE/DUP
MS/MSD = MATRIX SPIKE/MATRIX SPIKE DUPLICATE

6/1/99

140

TEST CODE :SPCB0A1 JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
TEST NAME : 8082 PCB UNITS : UG/KG
SAMPLE ID LAB : METHOD BLANK (1366-164-1) MATRIX : SOLID
DATE OF ANALYSIS: 05/14/99
ASSOCIATED SAMPLES: 33132, 33133, 33134, 33135, 33136, 33137, 33138, 33139, 33140, 33141, 33142, 33142 MS, 33142 MSD, 33143, 33144, 33145, 33146, 33147 AND 33148

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND		33
PCB-1254	ND		33
PCB-1221	ND		33
PCB-1232	ND		33
PCB-1248	ND		33
PCB-1260	ND		33
PCB-1016	ND		33

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

141

JOB NUMBER : 9901.362

Ecology and Environment, Inc.
SAMPLE TRACKING REPORT

SAMPLE NUMBER	CLIENT SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED
MERCURY	(CVAP)-S			
33132.02	KLBH5 S1	05/06/99		05/21/99
33133.02	KLBH5 S2	05/06/99		05/21/99
33134.02	KLBH5 S3	05/06/99		05/21/99
33135.02	KLBH6 S1	05/06/99		05/21/99
33136.02	KLBH6 S2	05/06/99		05/21/99
33137.02	KLBH6 S3	05/06/99		05/21/99
33138.02	KLBH7 S1	05/06/99		05/21/99
33139.02	KLBH7 S2	05/06/99		05/21/99
33140.02	KLBH7 S3	05/06/99		05/21/99
33141.02	KLBH8 S1	05/06/99		05/21/99
33142.02	KLBH8 S2	05/06/99		05/21/99
33143.02	KLBH9 S1	05/06/99		05/21/99
33144.02	KLBH9 S2	05/06/99		05/21/99
33145.02	KLBH9 S3	05/06/99		05/21/99
33146.02	KLBH10 S1	05/06/99		05/21/99
33147.02	KLBH10 S2	05/06/99		05/21/99
33148.02	KLBH10 S2/D	05/06/99		05/21/99
TAL METALS 1	(ICP)-S			
33132.02	KLBH5 S1	05/06/99	05/24/99	06/01/99
33133.02	KLBH5 S2	05/06/99	05/24/99	06/01/99
33134.02	KLBH5 S3	05/06/99	05/24/99	06/01/99
33135.02	KLBH6 S1	05/06/99	05/24/99	06/01/99
33136.02	KLBH6 S2	05/06/99	05/24/99	06/01/99
33137.02	KLBH6 S3	05/06/99	05/24/99	06/01/99
33138.02	KLBH7 S1	05/06/99	05/24/99	06/01/99
33139.02	KLBH7 S2	05/06/99	05/24/99	06/01/99
33140.02	KLBH7 S3	05/06/99	05/24/99	06/01/99
33141.02	KLBH8 S1	05/06/99	05/24/99	06/01/99
33142.02	KLBH8 S2	05/06/99	05/24/99	06/01/99
33143.02	KLBH9 S1	05/06/99	05/24/99	06/01/99
33144.02	KLBH9 S2	05/06/99	05/24/99	06/01/99
33145.02	KLBH9 S3	05/06/99	05/24/99	06/01/99
33146.02	KLBH10 S1	05/06/99	05/24/99	06/01/99
33147.02	KLBH10 S2	05/06/99	05/24/99	06/01/99
33148.02	KLBH10 S2/D	05/06/99	05/24/99	06/01/99
TAL METALS 2	(ICP)-S			
33132.02	KLBH5 S1	05/06/99	05/24/99	06/01/99
33133.02	KLBH5 S2	05/06/99	05/24/99	06/01/99
33134.02	KLBH5 S3	05/06/99	05/24/99	06/01/99
33135.02	KLBH6 S1	05/06/99	05/24/99	06/01/99
33136.02	KLBH6 S2	05/06/99	05/24/99	06/01/99
33137.02	KLBH6 S3	05/06/99	05/24/99	06/01/99
33138.02	KLBH7 S1	05/06/99	05/24/99	06/01/99
33139.02	KLBH7 S2	05/06/99	05/24/99	06/01/99
33140.02	KLBH7 S3	05/06/99	05/24/99	06/01/99
33141.02	KLBH8 S1	05/06/99	05/24/99	06/01/99

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JOB NUMBER : 9901.362

Ecology and Environment, Inc.
SAMPLE TRACKING REPORT

SAMPLE NUMBER	CLIENT SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED
TAL METALS 2 (ICP)-S				
33142.02	KLBH8 S2	05/06/99	05/24/99	06/01/99
33143.02	KLBH9 S1	05/06/99	05/24/99	06/01/99
33144.02	KLBH9 S2	05/06/99	05/24/99	06/01/99
33145.02	KLBH9 S3	05/06/99	05/24/99	06/01/99
33146.02	KLBH10 S1	05/06/99	05/24/99	06/01/99
33147.02	KLBH10 S2	05/06/99	05/24/99	06/01/99
33148.02	KLBH10 S2/D	05/06/99	05/24/99	06/01/99

143

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 81 %
SAMPLE ID LAB : EE-99-33132 MATRIX: SOLID
SAMPLE ID CLIENT: KLBH5 S1

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Arsenic	6.7		1.2	MG/KG
Lead	18		0.62	MG/KG
Selenium	ND		1.2	MG/KG
Thallium	ND		1.2	MG/KG
Aluminum	6100		12	MG/KG
Antimony	2.3		1.2	MG/KG
Barium	120		2.5	MG/KG
Beryllium	1.6		0.62	MG/KG
Cadmium	0.82		0.62	MG/KG
Calcium	8000		62	MG/KG
Chromium Total	52		1.2	MG/KG
Cobalt	10		2.5	MG/KG
Copper	84		2.5	MG/KG
Iron	25000		6.2	MG/KG
Magnesium	3400		62	MG/KG
Manganese	480		1.2	MG/KG
Nickel	27		2.5	MG/KG
Potassium	1200		120	MG/KG
Silver	ND		1.2	MG/KG
Sodium	260		120	MG/KG
Vanadium	43		2.5	MG/KG
Zinc	66		1.2	MG/KG
Mercury	ND		0.04	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE
NA = NOT APPLICABLE

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JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 84 %
SAMPLE ID LAB : EE-99-33133 MATRIX: SOLID
SAMPLE ID CLIENT: KLBH5 S2

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Arsenic	4.3		1.2	MG/KG
Lead	38		0.60	MG/KG
Selenium	ND		1.2	MG/KG
Thallium	ND		1.2	MG/KG
Aluminum	7700		12	MG/KG
Antimony	1.8		1.2	MG/KG
Barium	57		2.4	MG/KG
Beryllium	ND		0.60	MG/KG
Cadmium	0.74		0.60	MG/KG
Calcium	3400		60	MG/KG
Chromium Total	14		1.2	MG/KG
Cobalt	4.3		2.4	MG/KG
Copper	28		2.4	MG/KG
Iron	21000		6.0	MG/KG
Magnesium	1800		60	MG/KG
Manganese	250		1.2	MG/KG
Nickel	11		2.4	MG/KG
Potassium	720		120	MG/KG
Silver	ND		1.2	MG/KG
Sodium	ND		120	MG/KG
Vanadium	33		2.4	MG/KG
Zinc	54		1.2	MG/KG
Mercury	0.03		0.03	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE
NA = NOT APPLICABLE

145

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 87 %
SAMPLE ID LAB : EE-99-33134 MATRIX: SOLID
SAMPLE ID CLIENT: KLBH5 S3

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Arsenic	14		1.1	MG/KG
Lead	1900		0.57	MG/KG
Selenium	ND		1.1	MG/KG
Thallium	ND		1.1	MG/KG
Aluminum	9400		11	MG/KG
Antimony	22		1.1	MG/KG
Barium	770		2.3	MG/KG
Beryllium	ND		0.57	MG/KG
Cadmium	14		0.57	MG/KG
Calcium	26000		57	MG/KG
Chromium Total	63		1.1	MG/KG
Cobalt	ND		2.3	MG/KG
Copper	340		2.3	MG/KG
Iron	100000		5.7	MG/KG
Magnesium	2900		57	MG/KG
Manganese	1200		1.1	MG/KG
Nickel	58		2.3	MG/KG
Potassium	1200		110	MG/KG
Silver	11		1.1	MG/KG
Sodium	1700		110	MG/KG
Vanadium	52		2.3	MG/KG
Zinc	2500		1.1	MG/KG
Mercury	0.22		0.03	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE
NA = NOT APPLICABLE

146

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 89 %
SAMPLE ID LAB : EE-99-33135 MATRIX: SOLID
SAMPLE ID CLIENT: KLBH6 S1

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Arsenic	4.2		1.1	MG/KG
Lead	350		0.56	MG/KG
Selenium	ND		1.1	MG/KG
Thallium	ND		1.1	MG/KG
Aluminum	6700		11	MG/KG
Antimony	1.7		1.1	MG/KG
Barium	50		2.2	MG/KG
Beryllium	0.57		0.56	MG/KG
Cadmium	0.62		0.56	MG/KG
Calcium	17000		56	MG/KG
Chromium Total	28		1.1	MG/KG
Cobalt	5.2		2.2	MG/KG
Copper	24		2.2	MG/KG
Iron	13000		5.6	MG/KG
Magnesium	5100		56	MG/KG
Manganese	210		1.1	MG/KG
Nickel	20		2.2	MG/KG
Potassium	1800		110	MG/KG
Silver	ND		1.1	MG/KG
Sodium	ND		110	MG/KG
Vanadium	32		2.2	MG/KG
Zinc	63		1.1	MG/KG
Mercury	0.04		0.03	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE
NA = NOT APPLICABLE

147

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
SAMPLE ID LAB : EE-99-33136 MATRIX: SOLID
SAMPLE ID CLIENT: KLBH6 S2

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Arsenic	7.6		1.2	MG/KG
Lead	44		0.58	MG/KG
Selenium	ND		1.2	MG/KG
Thallium	ND		1.2	MG/KG
Aluminum	5300		12	MG/KG
Antimony	2.2		1.2	MG/KG
Barium	72		2.3	MG/KG
Beryllium	ND		0.58	MG/KG
Cadmium	0.89		0.58	MG/KG
Calcium	7000		58	MG/KG
Chromium Total	24		1.2	MG/KG
Cobalt	5.8		2.3	MG/KG
Copper	36		2.3	MG/KG
Iron	20000		5.8	MG/KG
Magnesium	2400		58	MG/KG
Manganese	310		1.2	MG/KG
Nickel	9.8		2.3	MG/KG
Potassium	510		120	MG/KG
Silver	3.0		1.2	MG/KG
Sodium	200		120	MG/KG
Vanadium	40		2.3	MG/KG
Zinc	80		1.2	MG/KG
Mercury	0.20		0.03	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE
NA = NOT APPLICABLE

149

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 55 %
SAMPLE ID LAB : EE-99-33137 MATRIX: SOLID
SAMPLE ID CLIENT: KLBH6 S3

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Arsenic	5.5		1.8	MG/KG
Lead	440		0.91	MG/KG
Selenium	ND		1.8	MG/KG
Thallium	ND		1.8	MG/KG
Aluminum	4300		18	MG/KG
Antimony	6.0		1.8	MG/KG
Barium	870		3.6	MG/KG
Beryllium	ND		0.91	MG/KG
Cadmium	4.1		0.91	MG/KG
Calcium	28000		91	MG/KG
Chromium Total	65		1.8	MG/KG
Cobalt	ND		3.6	MG/KG
Copper	86		3.6	MG/KG
Iron	48000		9.1	MG/KG
Magnesium	2200		91	MG/KG
Manganese	380		1.8	MG/KG
Nickel	33		3.6	MG/KG
Potassium	660		180	MG/KG
Silver	ND		1.8	MG/KG
Sodium	420		180	MG/KG
Vanadium	21		3.6	MG/KG
Zinc	630		1.8	MG/KG
Mercury	4.9		0.06	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE
NA = NOT APPLICABLE

149

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 78 %
SAMPLE ID LAB : EE-99-33138 MATRIX: SOLID
SAMPLE ID CLIENT: KLBH7 S1

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Arsenic	ND		1.3	MG/KG
Lead	2.8		0.64	MG/KG
Selenium	ND		1.3	MG/KG
Thallium	ND		1.3	MG/KG
Aluminum	4800		13	MG/KG
Antimony	3.5		1.3	MG/KG
Barium	30		2.6	MG/KG
Beryllium	1.9		0.64	MG/KG
Cadmium	2.7		0.64	MG/KG
Calcium	4000		64	MG/KG
Chromium Total	40		1.3	MG/KG
Cobalt	ND		2.6	MG/KG
Copper	30		2.6	MG/KG
Iron	74000		6.4	MG/KG
Magnesium	840		64	MG/KG
Manganese	500		1.3	MG/KG
Nickel	ND		2.6	MG/KG
Potassium	750		130	MG/KG
Silver	ND		1.3	MG/KG
Sodium	160		130	MG/KG
Vanadium	130		2.6	MG/KG
Zinc	38		1.3	MG/KG
Mercury	ND		0.04	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE
NA = NOT APPLICABLE

150

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 77 %
SAMPLE ID LAB : EE-99-33139 MATRIX: SOLID
SAMPLE ID CLIENT: KLBH7 S2

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Arsenic	3.6		1.3	MG/KG
Lead	25		0.65	MG/KG
Selenium	ND		1.3	MG/KG
Thallium	ND		1.3	MG/KG
Aluminum	4000		13	MG/KG
Antimony	ND		1.3	MG/KG
Barium	48		2.6	MG/KG
Beryllium	ND		0.65	MG/KG
Cadmium	ND		0.65	MG/KG
Calcium	2500		65	MG/KG
Chromium Total	18		1.3	MG/KG
Cobalt	5.7		2.6	MG/KG
Copper	140		2.6	MG/KG
Iron	14000		6.5	MG/KG
Magnesium	1000		65	MG/KG
Manganese	250		1.3	MG/KG
Nickel	8.7		2.6	MG/KG
Potassium	580		130	MG/KG
Silver	2.3		1.3	MG/KG
Sodium	ND		130	MG/KG
Vanadium	22		2.6	MG/KG
Zinc	75		1.3	MG/KG
Mercury	0.23		0.04	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE
NA = NOT APPLICABLE

151

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 76 %
SAMPLE ID LAB : EE-99-33140 MATRIX: SOLID
SAMPLE ID CLIENT: KLBH7 S3

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Arsenic	13		1.3	MG/KG
Lead	940		0.66	MG/KG
Selenium	ND		1.3	MG/KG
Thallium	ND		1.3	MG/KG
Aluminum	6900		13	MG/KG
Antimony	19		1.3	MG/KG
Barium	1300		2.6	MG/KG
Beryllium	ND		0.66	MG/KG
Cadmium	4.9		0.66	MG/KG
Calcium	18000		66	MG/KG
Chromium Total	84		1.3	MG/KG
Cobalt	ND		2.6	MG/KG
Copper	180		2.6	MG/KG
Iron	75000		6.6	MG/KG
Magnesium	3100		66	MG/KG
Manganese	490		1.3	MG/KG
Nickel	29		2.6	MG/KG
Potassium	990		130	MG/KG
Silver	3.9		1.3	MG/KG
Sodium	510		130	MG/KG
Vanadium	42		2.6	MG/KG
Zinc	790		1.3	MG/KG
Mercury	0.43		0.04	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE
NA = NOT APPLICABLE

152

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 88 %
SAMPLE ID LAB : EE-99-33141 MATRIX: SOLID
SAMPLE ID CLIENT: KLBH8 S1

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Arsenic	8.6		1.1	MG/KG
Lead	1200		0.57	MG/KG
Selenium	ND		1.1	MG/KG
Thallium	ND		1.1	MG/KG
Aluminum	6300		11	MG/KG
Antimony	20		1.1	MG/KG
Barium	890		2.3	MG/KG
Beryllium	ND		0.57	MG/KG
Cadmium	11		0.57	MG/KG
Calcium	20000		57	MG/KG
Chromium Total	51		1.1	MG/KG
Cobalt	ND		2.3	MG/KG
Copper	540		2.3	MG/KG
Iron	130000		5.7	MG/KG
Magnesium	2400		57	MG/KG
Manganese	600		1.1	MG/KG
Nickel	36		2.3	MG/KG
Potassium	910		110	MG/KG
Silver	9.2		1.1	MG/KG
Sodium	2700		110	MG/KG
Vanadium	54		2.3	MG/KG
Zinc	1300		1.1	MG/KG
Mercury	0.31		0.03	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE
NA = NOT APPLICABLE

153

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
SAMPLE ID LAB : EE-99-33142 MATRIX: SOLID
SAMPLE ID CLIENT: KLBH8 S2

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Arsenic	6.1		1.2	MG/KG
Lead	680		0.58	MG/KG
Selenium	ND		1.2	MG/KG
Thallium	ND		1.2	MG/KG
Aluminum	8600		12	MG/KG
Antimony	15		1.2	MG/KG
Barium	300		2.3	MG/KG
Beryllium	ND		0.58	MG/KG
Cadmium	7.2		0.58	MG/KG
Calcium	62000		58	MG/KG
Chromium Total	34		1.2	MG/KG
Cobalt	ND		2.3	MG/KG
Copper	260		2.3	MG/KG
Iron	66000		5.8	MG/KG
Magnesium	4200		58	MG/KG
Manganese	1200		1.2	MG/KG
Nickel	25		2.3	MG/KG
Potassium	1300		120	MG/KG
Silver	9.9		1.2	MG/KG
Sodium	1900		120	MG/KG
Vanadium	53		2.3	MG/KG
Zinc	2600		1.2	MG/KG
Mercury	0.27		0.03	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE
NA = NOT APPLICABLE

154

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 75 %
SAMPLE ID LAB : EE-99-33143 MATRIX: SOLID
SAMPLE ID CLIENT: KLBH9 S1

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Arsenic	1.7		1.3	MG/KG
Lead	13		0.67	MG/KG
Selenium	ND		1.3	MG/KG
Thallium	ND		1.3	MG/KG
Aluminum	4100		13	MG/KG
Antimony	ND		1.3	MG/KG
Barium	39		2.7	MG/KG
Beryllium	1.2		0.67	MG/KG
Cadmium	ND		0.67	MG/KG
Calcium	2600		67	MG/KG
Chromium Total	9.7		1.3	MG/KG
Cobalt	5.8		2.7	MG/KG
Copper	26		2.7	MG/KG
Iron	13000		6.7	MG/KG
Magnesium	1500		67	MG/KG
Manganese	140		1.3	MG/KG
Nickel	13		2.7	MG/KG
Potassium	1000		130	MG/KG
Silver	ND		1.3	MG/KG
Sodium	ND		130	MG/KG
Vanadium	28		2.7	MG/KG
Zinc	31		1.3	MG/KG
Mercury	0.05		0.04	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE
NA = NOT APPLICABLE

155

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 82 %
SAMPLE ID LAB : EE-99-33144 MATRIX: SOLID
SAMPLE ID CLIENT: KLBH9 S2

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Arsenic	5.5		1.2	MG/KG
Lead	9.5		0.61	MG/KG
Selenium	ND		1.2	MG/KG
Thallium	ND		1.2	MG/KG
Aluminum	7200		12	MG/KG
Antimony	1.6		1.2	MG/KG
Barium	94		2.4	MG/KG
Beryllium	0.75		0.61	MG/KG
Cadmium	0.70		0.61	MG/KG
Calcium	2300		61	MG/KG
Chromium Total	14		1.2	MG/KG
Cobalt	4.1		2.4	MG/KG
Copper	19		2.4	MG/KG
Iron	26000		6.1	MG/KG
Magnesium	1400		61	MG/KG
Manganese	210		1.2	MG/KG
Nickel	12		2.4	MG/KG
Potassium	610		120	MG/KG
Silver	ND		1.2	MG/KG
Sodium	ND		120	MG/KG
Vanadium	27		2.4	MG/KG
Zinc	51		1.2	MG/KG
Mercury	ND		0.04	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE
NA = NOT APPLICABLE

156

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 88 %
SAMPLE ID LAB : EE-99-33145 MATRIX: SOLID
SAMPLE ID CLIENT: KLBH9 S3

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Arsenic	10		1.1	MG/KG
Lead	970		0.57	MG/KG
Selenium	ND		1.1	MG/KG
Thallium	ND		1.1	MG/KG
Aluminum	21000		11	MG/KG
Antimony	20		1.1	MG/KG
Barium	460		2.3	MG/KG
Beryllium	ND		0.57	MG/KG
Cadmium	14		0.57	MG/KG
Calcium	25000		57	MG/KG
Chromium Total	43		1.1	MG/KG
Cobalt	ND		2.3	MG/KG
Copper	450		2.3	MG/KG
Iron	110000		5.7	MG/KG
Magnesium	2700		57	MG/KG
Manganese	650		1.1	MG/KG
Nickel	26		2.3	MG/KG
Potassium	400		110	MG/KG
Silver	9.7		1.1	MG/KG
Sodium	400		110	MG/KG
Vanadium	58		2.3	MG/KG
Zinc	2100		1.1	MG/KG
Mercury	0.50		0.03	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE
NA = NOT APPLICABLE

157

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
SAMPLE ID LAB : EE-99-33146 MATRIX: SOLID
SAMPLE ID CLIENT: KLBH10 S1

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Arsenic	2.5		1.2	MG/KG
Lead	63		0.58	MG/KG
Selenium	ND		1.2	MG/KG
Thallium	ND		1.2	MG/KG
Aluminum	3500		12	MG/KG
Antimony	ND		1.2	MG/KG
Barium	70		2.3	MG/KG
Beryllium	ND		0.58	MG/KG
Cadmium	ND		0.58	MG/KG
Calcium	7600		58	MG/KG
Chromium Total	17		1.2	MG/KG
Cobalt	7.0		2.3	MG/KG
Copper	15		2.3	MG/KG
Iron	10000		5.8	MG/KG
Magnesium	300		58	MG/KG
Manganese	120		1.2	MG/KG
Nickel	76		2.3	MG/KG
Potassium	560		120	MG/KG
Silver	ND		1.2	MG/KG
Sodium	190		120	MG/KG
Vanadium	16		2.3	MG/KG
Zinc	65		1.2	MG/KG
Mercury	ND		0.03	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE
NA = NOT APPLICABLE

158

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
SAMPLE ID LAB : EE-99-33147 MATRIX: SOLID
SAMPLE ID CLIENT: KLBH10 S2

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Arsenic	4.0		1.2	MG/KG
Lead	32		0.58	MG/KG
Selenium	ND		1.2	MG/KG
Thallium	ND		1.2	MG/KG
Aluminum	3600		12	MG/KG
Antimony	ND		1.2	MG/KG
Barium	43		2.3	MG/KG
Beryllium	ND		0.58	MG/KG
Cadmium	ND		0.58	MG/KG
Calcium	2300		58	MG/KG
Chromium Total	15		1.2	MG/KG
Cobalt	3.9		2.3	MG/KG
Copper	12		2.3	MG/KG
Iron	9500		5.8	MG/KG
Magnesium	1400		58	MG/KG
Manganese	130		1.2	MG/KG
Nickel	13		2.3	MG/KG
Potassium	470		120	MG/KG
Silver	ND		1.2	MG/KG
Sodium	ND		120	MG/KG
Vanadium	18		2.3	MG/KG
Zinc	44		1.2	MG/KG
Mercury	0.10		0.03	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE
NA = NOT APPLICABLE

159

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 89 %
SAMPLE ID LAB : EE-99-33148 MATRIX: SOLID
SAMPLE ID CLIENT: KLBH10 S2/D

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Arsenic	8.9		1.1	MG/KG
Lead	56		0.56	MG/KG
Selenium	ND		1.1	MG/KG
Thallium	ND		1.1	MG/KG
Aluminum	7000		11	MG/KG
Antimony	1.4		1.1	MG/KG
Barium	77		2.2	MG/KG
Beryllium	0.58		0.56	MG/KG
Cadmium	ND		0.56	MG/KG
Calcium	2200		56	MG/KG
Chromium Total	14		1.1	MG/KG
Cobalt	9.6		2.2	MG/KG
Copper	21		2.2	MG/KG
Iron	17000		5.6	MG/KG
Magnesium	1300		56	MG/KG
Manganese	320		1.1	MG/KG
Nickel	21		2.2	MG/KG
Potassium	620		110	MG/KG
Silver	ND		1.1	MG/KG
Sodium	ND		110	MG/KG
Vanadium	26		2.2	MG/KG
Zinc	86		1.1	MG/KG
Mercury	0.07		0.03	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE
NA = NOT APPLICABLE

160

QUALITY CONTROL FOR ACCURACY AND PRECISION;
PERCENT RECOVERY AND RELATIVE PERCENT DIFFERENCE (RPD)
OF SOLID MATRIX SPIKE (MS) AND MATRIX SPIKE DUPLICATE (MSD)

Sample # 33148

9901.362

(mg/Kg)

Analyte	Original Value	Amount Added MS	Amount Added MSD	Amount Determined MS	Amount Determined MSD	Percent Recovery MS	Percent Recovery MSD	RPD	Percent Recovery Limits
Silver (Ag)	ND	5	5	5	6	108.7H	115.1H	5.7	68.9 - 108.0
Aluminum (Al)	6280.1	200	200	6505	7820	112.6	769.9	18.4	45.7 - 109.3
Arsenic (As)	7.9423	200	200	196	194	94.2	92.8	1.5	78.0 - 108.5
Barium (Ba)	68.175	200	200	238	249	84.9	90.2	4.4	75.7 - 109.4
Beryllium (Be)	0.5121	5	5	5	5	93.3	93.9	0.5	73.5 - 116.7
Cadmium (Cd)	ND	5	5	5	5	104.2	103.7	0.5	63.2 - 113.7
Cobalt (Co)	8.5727	50	50	52	52	87.7	87.2	0.5	76.6 - 113.8
Chromium (Cr)	12.669	20	20	29	31	81.3	92.5	7.5	57.3 - 125.6
Copper (Cu)	19.09	25	25	42	44	90.6	97.8	4.2	54.3 - 135.3
Iron (Fe)	14820	100	100	15570	18960	4X	4X	19.6	70.0 - 130.0
Manganese (Mn)	287.15	50	50	323	425	71.9	276.6	27.3	70.0 - 130.0
Nickel (Ni)	18.72	50	50	57	58	76.8	78.2	1.2	69.6 - 115.9
Lead (Pb)	50.323	50	50	89	92	77.5	84.1	3.6	48.1 - 129.5
Antimony (Sb)	1.2746	50	50	34	34	65.2	65.6	0.6	2.5 - 142.2
Selenium (Se)	ND	200	200	172	170	85.8	85.2	0.6	73.9 - 109.3
Thallium (Tl)	ND	200	200	189	186	94.7	92.9	1.9	71.5 - 107.3
Vanadium (V)	22.882	50	50	67	70	87.7	93.8	4.5	76.5 - 115.4
Zinc (Zn)	76.197	50	50	101	129	50.0L	104.9	23.9	57.2 - 132.1

ALL RECOVERIES ARE WITHIN E&E ASC QC LIMITS UNLESS FLAGGED.
H FLAGS INDICATE RECOVERIES HIGHER THAN E&E ASC QC LIMITS.
L FLAGS INDICATE RECOVERIES LOWER THAN E&E ASC QC LIMITS.

ND = NOT DETECTED

4X = RECOVERY NOT DETERMINED BECAUSE SAMPLE AMOUNT IS FOUR OR MORE TIMES GREATER THAN SPIKE AMOUNT

LABORATORY CONTROL SAMPLE - SOIL
PERCENT RECOVERY

Ref # 839-042-1

9901.362

(mg/Kg)

Analyte	True Value	Amount Determined	Percent Recovery	Percent Recovery Limits		
Silver (Ag)	50	53	105.8	80.0	-	120.0
Aluminum (Al)	1000	996	99.6	80.0	-	120.0
Arsenic (As)	1000	1014	101.4	80.0	-	120.0
Barium (Ba)	1000	1047	104.7	80.0	-	120.0
Beryllium (Be)	1000	993	99.3	80.0	-	120.0
Calcium (Ca)	10000	10340	103.4	80.0	-	120.0
Cadmium (Cd)	1000	1029	102.9	80.0	-	120.0
Cobalt (Co)	1000	1020	102.0	80.0	-	120.0
Chromium (Cr)	1000	1019	101.9	80.0	-	120.0
Copper (Cu)	1000	1036	103.6	80.0	-	120.0
Iron (Fe)	1000	1052	105.2	80.0	-	120.0
Potassium (K)	10000	10190	101.9	80.0	-	120.0
Magnesium (Mg)	10000	10410	104.1	80.0	-	120.0
Manganese (Mn)	1000	1020	102.0	80.0	-	120.0
Sodium (Na)	10000	10380	103.8	80.0	-	120.0
Nickel (Ni)	1000	1042	104.2	80.0	-	120.0
Lead (Pb)	1000	1018	101.8	80.0	-	120.0
Antimony (Sb)	1000	1005	100.5	80.0	-	120.0
Selenium (Se)	1000	975	97.5	80.0	-	120.0
Thallium (Tl)	1000	1012	101.2	80.0	-	120.0
Vanadium (V)	1000	1039	103.9	80.0	-	120.0
Zinc (Zn)	1000	1043	104.3	80.0	-	120.0

ALL RECOVERIES ARE WITHIN E&E ASC QC LIMITS UNLESS FLAGGED.

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Optima LCSS

QUALITY CONTROL FOR PRECISION;
RESULTS OF ANALYSIS OF DUPLICATE
ANALYSIS OF SOIL SAMPLES

Sample # 33148

9901.362

(mg / Kg as received)

Analyte	Sample Result	Duplicate Result	RPD	Limits
Mercury (Hg)	0.07	ND	NC	30.3

ALL RECOVERIES ARE WITHIN E&E ASC QC LIMITS UNLESS FLAGGED.
H FLAGS INDICATE RECOVERIES HIGHER THAN E&E ASC QC LIMITS.

ND = NOT DETECTED
NC = NOT CACULABLE

163

Mercury DUP Soil

QUALITY CONTROL FOR ACCURACY:
PERCENT RECOVERY FOR SPIKED SOLID SAMPLES

Sample # 33148

9901.362

(ug/kg as received)

Analyte	Original Value	Amount Added	Amount Determined	Percent Recovery	Percent Recovery Limits
Mercury (Hg) by CVAA	0.07	0.33	0.45	115.2H	80.0 - 108.8

ALL RECOVERIES ARE WITHIN E&E ASC QC LIMITS UNLESS FLAGGED.
H FLAGS INDICATE RECOVERIES HIGHER THAN E&E ASC QC LIMITS.
L FLAGS INDICATE RECOVERIES LOWER THAN E&E ASC QC LIMITS.

ND = NOT DETECTED

NC = NOT CALCUABLE

4X = RECOVERY NOT DETERMINED BECAUSE SAMPLE AMOUNT IS FOUR OR MORE TIMES GREATER THAN SPIKE AMOUNT

164

Mercury MS Soil

LABORATORY CONTROL SAMPLE - SOIL
PERCENT RECOVERY

5/21/99

9901.362

(mg / Kg)

Analyte	True Value LCSS Book Ref 1021-151-1	Amount Determined	Percent Recovery	Percent Recovery Limits
Mercury (Hg) by CVAA	1.00	0.97	97.0	80.0 - 120.0

ALL RECOVERIES ARE WITHIN E&E ASC QC LIMITS UNLESS FLAGGED.

165

Mercury LCSS

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
LAB SAMPLE ID : METHOD BLANK MATRIX: SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Arsenic	ND		1.0	MG/KG
Lead	ND		0.50	MG/KG
Selenium	ND		1.0	MG/KG
Thallium	ND		1.0	MG/KG
Aluminum	ND		10	MG/KG
Antimony	ND		1.0	MG/KG
Barium	ND		2.0	MG/KG
Beryllium	ND		0.50	MG/KG
Cadmium	ND		0.50	MG/KG
Calcium	ND		50	MG/KG
Chromium Total	ND		1.0	MG/KG
Cobalt	ND		2.0	MG/KG
Copper	ND		2.0	MG/KG
Iron	ND		5.0	MG/KG
Magnesium	ND		50	MG/KG
Manganese	ND		1.0	MG/KG
Nickel	ND		2.0	MG/KG
Potassium	ND		100	MG/KG
Silver	ND		1.0	MG/KG
Sodium	ND		100	MG/KG
Vanadium	ND		2.0	MG/KG
Zinc	ND		1.0	MG/KG
Mercury	ND		0.033	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE
NA = NOT APPLICABLE

166

JOB NUMBER : 9901.362

Ecology and Environment, Inc.
SAMPLE TRACKING REPORT

SAMPLE NUMBER	CLIENT SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED
CYANIDE TOTAL -S				
33132.02	KLBH5 S1	05/06/99		05/18/99
33133.02	KLBH5 S2	05/06/99		05/18/99
33134.02	KLBH5 S3	05/06/99		05/18/99
33135.02	KLBH6 S1	05/06/99		05/18/99
33136.02	KLBH6 S2	05/06/99		05/18/99
33137.02	KLBH6 S3	05/06/99		05/18/99
33138.02	KLBH7 S1	05/06/99		05/18/99
33139.02	KLBH7 S2	05/06/99		05/18/99
33140.02	KLBH7 S3	05/06/99		05/18/99
33141.02	KLBH8 S1	05/06/99		05/18/99
33142.02	KLBH8 S2	05/06/99		05/18/99
33143.02	KLBH9 S1	05/06/99		05/18/99
33144.02	KLBH9 S2	05/06/99		05/18/99
33145.02	KLBH9 S3	05/06/99		05/18/99
33146.02	KLBH10 S1	05/06/99		05/19/99
33147.02	KLBH10 S2	05/06/99		05/19/99
33148.02	KLBH10 S2/D	05/06/99		05/19/99
SOLIDS TOTAL -S				
33132.02	KLBH5 S1	05/06/99		05/11/99
33133.02	KLBH5 S2	05/06/99		05/11/99
33134.02	KLBH5 S3	05/06/99		05/11/99
33135.02	KLBH6 S1	05/06/99		05/11/99
33136.02	KLBH6 S2	05/06/99		05/11/99
33137.02	KLBH6 S3	05/06/99		05/11/99
33138.02	KLBH7 S1	05/06/99		05/11/99
33139.02	KLBH7 S2	05/06/99		05/11/99
33140.02	KLBH7 S3	05/06/99		05/11/99
33141.02	KLBH8 S1	05/06/99		05/11/99
33142.02	KLBH8 S2	05/06/99		05/11/99
33143.02	KLBH9 S1	05/06/99		05/11/99
33144.02	KLBH9 S2	05/06/99		05/11/99
33145.02	KLBH9 S3	05/06/99		05/11/99
33146.02	KLBH10 S1	05/06/99		05/11/99
33147.02	KLBH10 S2	05/06/99		05/11/99
33148.02	KLBH10 S2/D	05/06/99		05/11/99
TRPH -S				
33132.02	KLBH5 S1	05/06/99		05/24/99
33133.02	KLBH5 S2	05/06/99		05/24/99
33134.02	KLBH5 S3	05/06/99		05/24/99
33135.02	KLBH6 S1	05/06/99		05/24/99
33136.02	KLBH6 S2	05/06/99		05/24/99
33137.02	KLBH6 S3	05/06/99		05/24/99
33138.02	KLBH7 S1	05/06/99		05/24/99
33139.02	KLBH7 S2	05/06/99		05/24/99
33140.02	KLBH7 S3	05/06/99		05/24/99
33141.02	KLBH8 S1	05/06/99		05/24/99

167

JOB NUMBER : 9901.362

Ecology and Environment, Inc.
SAMPLE TRACKING REPORT

SAMPLE NUMBER	CLIENT SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED
TRPH	-S			
33142.02	KLBH8 S2	05/06/99		05/24/99
33143.02	KLBH9 S1	05/06/99		05/24/99
33144.02	KLBH9 S2	05/06/99		05/25/99
33145.02	KLBH9 S3	05/06/99		05/25/99
33146.02	KLBH10 S1	05/06/99		05/25/99
33147.02	KLBH10 S2	05/06/99		05/25/99
33148.02	KLBH10 S2/D	05/06/99		05/25/99

168

TEST CODE :STS 1

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
TEST NAME : SOLIDS TOTAL UNITS : %
PARAMETER : Solids-Total

SAMPLE ID	RESULTS	Q
EE-99-33132 KLBH5 S1	81	
EE-99-33133 KLBH5 S2	84	
EE-99-33134 KLBH5 S3	87	
EE-99-33135 KLBH6 S1	89	
EE-99-33136 KLBH6 S2	86	
EE-99-33137 KLBH6 S3	55	
EE-99-33138 KLBH7 S1	78	
EE-99-33139 KLBH7 S2	77	
EE-99-33140 KLBH7 S3	76	
EE-99-33141 KLBH8 S1	88	
EE-99-33142 KLBH8 S2	86	
EE-99-33143 KLBH9 S1	75	
EE-99-33144 KLBH9 S2	83	

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

169

TEST CODE :STS 1

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
TEST NAME : SOLIDS TOTAL
PARAMETER : Solids-Total

UNITS : %

SAMPLE ID	RESULTS	Q
EE-99-33145 KLBH9 S3	88	
EE-99-33146 KLBH10 S1	86	
EE-99-33147 KLBH10 S2	86	
EE-99-33148 KLBH10 S2/D	89	

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
ND = NOT DETECTED

170

QUALITY CONTROL FOR PRECISION
RESULTS OF ANALYSIS OF DUPLICATE
ANALYSES OF SOLID SAMPLES

9901.362

(%)

Parameter	E & E Laboratory No. 99-	Sample Result	Duplicate Result	Relative Percent Difference (RPD)
Solids-Total	33139	76.6	80.4	4.84

171

TEST CODE :SCNT 1

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH

RESULTS IN DRY WEIGHT
UNITS : MG/KG

TEST NAME : CYANIDE TOTAL
PARAMETER : Cyanide Total

SAMPLE ID	RESULTS	Q	QNT. LIMIT
EE-99-33132 KLBH5 S1	ND		0.62
EE-99-33133 KLBH5 S2	ND		0.60
EE-99-33134 KLBH5 S3	ND		0.57
EE-99-33135 KLBH6 S1	ND		0.56
EE-99-33136 KLBH6 S2	ND		0.58
EE-99-33137 KLBH6 S3	ND		0.91
EE-99-33138 KLBH7 S1	ND		0.64
EE-99-33139 KLBH7 S2	ND		0.65
EE-99-33140 KLBH7 S3	ND		0.66
EE-99-33141 KLBH8 S1	ND		0.57
EE-99-33142 KLBH8 S2	0.77		0.58
EE-99-33143 KLBH9 S1	ND		0.67
EE-99-33144 KLBH9 S2	ND		0.61

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
NA = NOT APPLICABLE

ND = NOT DETECTED

172

TEST CODE :SCNT 1

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH

RESULTS IN DRY WEIGHT
UNITS : MG/KG

TEST NAME : CYANIDE TOTAL
PARAMETER : Cyanide Total

SAMPLE ID	RESULTS	Q	QNT. LIMIT
EE-99-33145 KLBH9 S3	0.58		0.57
EE-99-33146 KLBH10 S1	ND		0.58
EE-99-33147 KLBH10 S2	ND		0.58
EE-99-33148 KLBH10 S2/D	ND		0.56
METHOD BLANK(5/18/99)	ND		0.50
METHOD BLANK(5/19/99)	ND		0.50

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
NA = NOT APPLICABLE
ND = NOT DETECTED

173

QUALITY CONTROL FOR ACCURACY: PERCENT RECOVERY
FOR SPIKED SOLID SAMPLES

9901.362

(mg/kg as received)

Parameter	E & E Laboratory No. 99-	Sample Result	Spiked Sample Result	Spike Amount	Percent Recovery
CYANIDE TOTAL	33133	ND	2.82	2.87	98.3

ND = NOT DETECTED

174

QUALITY CONTROL FOR ACCURACY: PERCENT RECOVERY
FOR SPIKED SOLID SAMPLES

9901.362

(mg/kg as received)

Parameter	E & E Laboratory No. 99-	Sample Result	Spiked Sample Result	Spike Amount	Percent Recovery
CYANIDE TOTAL	BATCH QC	ND	1.25	2.76	45.3 *

ND = NOT DETECTED

175

POST VERIFICATION SPIKE (Batch QC)

9901.362

(mg/L)

ANALYTE	SAMPLE RESULT	SPIKED SAMPLE RESULT	SPIKE AMOUNT	PERCENT RECOVERY
CYANIDE TOTAL	ND	0.015	0.020	75.0

ND = NOT DETECTED

176

QUALITY CONTROL FOR PRECISION
RESULTS OF ANALYSIS OF DUPLICATE
ANALYSES OF SOLID SAMPLES

9901.362

(mg/kg as received)

Parameter	E & E Laboratory No. 99-	Sample Result	Duplicate Result	Relative Percent Difference (RPD)
CYANIDE TOTAL	33132	ND	ND	NC

ND = NOT DETECTED

NC = NOT CALCULABLE

QUALITY CONTROL FOR PRECISION
RESULTS OF ANALYSIS OF DUPLICATE
ANALYSES OF SOLID SAMPLES

9901.362

(mg/kg as received)

Parameter	E & E Laboratory No. 99-	Sample Result	Duplicate Result	Relative Percent Difference (RPD)
CYANIDE TOTAL	BATCH QC	ND	ND	NC

ND = NOT DETECTED

NC = NOT CALCULABLE

178

LABORATORY CONTROL SAMPLE (1372-22)

9901.362

(mg/L)

ANALYTE	FOUND VALUE	TRUE VALUE	PERCENT RECOVERY
CYANIDE TOTAL	0.276	0.290	95.2

THIS RECOVERY IS WITHIN QC TARGETS.

179

LABORATORY CONTROL SAMPLE (1372-24)

9901.362

(mg/L)

ANALYTE	FOUND VALUE	TRUE VALUE	PERCENT RECOVERY
CYANIDE TOTAL	0.267	0.296	90.2

THIS RECOVERY IS WITHIN QC TARGETS.

180

TEST CODE :SPETHY1

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH

RESULTS IN DRY WEIGHT
UNITS : MG/KG

TEST NAME : TRPH
PARAMETER : Petroleum Hydrocarbons

SAMPLE ID	RESULTS	Q	QNT. LIMIT
EE-99-33132 KLBH5 S1	310		25
EE-99-33133 KLBH5 S2	120		24
EE-99-33134 KLBH5 S3	280		23
EE-99-33135 KLBH6 S1	630		22
EE-99-33136 KLBH6 S2	54		23
EE-99-33137 KLBH6 S3	2300		36
EE-99-33138 KLBH7 S1	62		26
EE-99-33139 KLBH7 S2	140		26
EE-99-33140 KLBH7 S3	620		26
EE-99-33141 KLBH8 S1	480		23
EE-99-33142 KLBH8 S2	260		23
EE-99-33143 KLBH9 S1	85		27
EE-99-33144 KLBH9 S2	ND		24

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
NA = NOT APPLICABLE
ND = NOT DETECTED

101

TEST CODE :SPETHY1

JOB NUMBER :9901.362
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH

RESULTS IN DRY WEIGHT
UNITS : MG/KG

TEST NAME : TRPH
PARAMETER : Petroleum Hydrocarbons

SAMPLE ID	RESULTS	Q	QNT. LIMIT
EE-99-33145 KLBH9 S3	1300		23
EE-99-33146 KLBH10 S1	1600		23
EE-99-33147 KLBH10 S2	95		23
EE-99-33148 KLBH10 S2/D	28		22
METHOD BLANK(5/24/99)	ND		20
METHOD BLANK(5/25/99)	ND		20

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
NA = NOT APPLICABLE
ND = NOT DETECTED

182

QUALITY CONTROL FOR PRECISION
RESULTS OF ANALYSIS OF DUPLICATE
ANALYSES OF SOLID SAMPLES

9901.362

(mg/kg as received)

Parameter	E & E Laboratory No. 99-	Sample Result	Duplicate Result	Relative Percent Difference (RPD)
TRPH	BATCH QC	437	85.3	135

183

QUALITY CONTROL FOR PRECISION
RESULTS OF ANALYSIS OF DUPLICATE
ANALYSES OF SOLID SAMPLES

9901.362

(mg/kg as received)

Parameter	E & E Laboratory No. 99-	Sample Result	Duplicate Result	Relative Percent Difference (RPD)
TRPH	BATCH QC	238	382	46.5

184

QUALITY CONTROL FOR ACCURACY: PERCENT RECOVERY
FOR SPIKED SOLID SAMPLES

9901.362

(mg/kg as received)

Parameter	E & E Laboratory No. 99-	Sample Result	Spiked Sample Result	Spike Amount	Percent Recovery
TRPH	BATCH QC	437	306	143	0

183

QUALITY CONTROL FOR ACCURACY: PERCENT RECOVERY
FOR SPIKED SOLID SAMPLES

9901.362

(mg/kg as received)

Parameter	E & E Laboratory No. 99-	Sample Result	Spiked Sample Result	Spike Amount	Percent Recovery
TRPH	BATCH QC	276	275	109	0

186

LABORATORY CONTROL SAMPLE (1286-54)

9901.362

(mg/Kg)

ANALYTE	FOUND VALUE	TRUE VALUE	PERCENT RECOVERY
TRPH	178	160	111

THIS RECOVERY IS WITHIN QC TARGETS.

10.

LABORATORY CONTROL SAMPLE (1279-35)

9901.362

(mg/Kg)

ANALYTE	FOUND VALUE	TRUE VALUE	PERCENT RECOVERY
TRPH	149	160	93.1

THIS RECOVERY IS WITHIN QC TARGETS.

18c

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International Specialists in the Environment

ANALYTICAL SERVICES CENTER
4493 Walden Avenue
Lancaster, New York 14086
Tel. (716) 685-8080, Fax: (716) 685-0852

Memorandum

To: Hussein Aldis – E & E, Arlington

From: Tony Bogolin - Project Manager

Date: June 7, 1999

Subject: YM-7000 – NPS - Kenilworth

RE: 9901.361

CC: Lab File

Attached is the laboratory report of the analysis conducted on thirteen samples received at the Analytical Services Center on May 7, 1999. Analysis was performed according to the procedures set forth in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, Update III, June 1997, USEPA.

Sample "KL-BH3 S1" had low recovery for the volatile surrogate dibromofluoromethane. The sample was reanalyzed with similar results. Both sets of data re reported. Due to the dilution required because of high levels of target compounds present in sample "KL-BH2 S3" the surrogates were diluted out of the BNA and pesticide analyses.

TRPH recovery and duplicate RPD's for sample "KL-BH3 S1" were affected by the heterogeneous matrix of the sample.

The chain of custody form provided herein is integral to this report and must be included with the analytical results forms upon transferal to another data user.

All samples on which this report is based will be retained by E & E for a period of 30 days from the date of this report, unless otherwise instructed by the client. If additional storage of samples is requested by the client, a storage fee of $1.00 per sample container per month will be charged for each sample, with such charges accruing until destruction of the samples is authorized by the client.

01

recycled paper

ecology and environment, inc.

368 PLEASANTVIEW DRIVE, LANCASTER, NEW YORK 14086, TEL. 716/684-8060
International Specialists in the Environment

CHAIN-OF-CUSTODY RECORD

Project No.: YM7030
Project Name: KENILWORTH LANDFILL
Project Manager: HUSSEIN ALDIS
Samplers: (Signatures) Hussein Aldis
Field Team Leader: HUSSEIN ALDIS

STATION NUMBER	DATE	TIME	SAMPLE TYPE COMP	GRAB	AIR	SAMPLE INFORMATION EXPECTED COMPOUNDS (Concentration)*	STATION LOCATION	NUMBER OF CONTAINERS	SVOC Pest/PCBs	TRL TPHC	VOAs				REMARKS
MW-7	05/05	10.45		✓		PAHs Lead Medium	KL-MW 7 S2	1	8oz						GRAB SAMPLE OFF PACKERS
MW-7	05/05	10.45		✓		" " "	KL-MW-7 S2		BA	4oz					" " "
BH1	05/05	11 55				" " "	KL-BH1 S1		X	X					10-12 feet bgs
BH1	05/05	12.15				" " "	KL-BH1 - S2		X	X					20-22 feet bgs
BH1	05/05	12.35				" " "	KL-BH1 - S3		X	X					30-32 feet bgs
BH2	05/05	1410				" " "	KL-BH2 - S1		X	X					10-12 feet bgs
BH2	05/05	1425				" " "	KL-BH2 - S2		X	X					20-22 feet bgs
BH2	05/05	1445				" " "	KL-BH2 - S3		X	X					30-32 feet bgs
BH3	05/05	1525				" " "	KL-BH3 - S1		X	X					10-12 feet bgs
BH3	05/05	1540				" " "	KL-BH3 - S2		X						No VOA 20-22 feet bgs Small sample
BH3	05/05	1604				" " "	KL-BH3 - S3		X	X					30-32 feet bgs
BH4	05/05	1645				" " "	KL-BH4 - S1		X	X					10-12 feet bgs
BH4	05/05	1700				" " "	KL-BH4 - S2		X	X					20-22 feet bgs
BH4	05/05	1720				" " "	KL-BH4 - S3		X	X					30-32 feet bgs

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Ship Via:
	05/05/99					FED EX
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	BL/Airbill Number: 809737876138
Relinquished By: (Signature)	Date/Time: 5.7.99/1030	Received For Laboratory By: (Signature)	Relinquished By: (Signature)	Date/Time:	Received For Laboratory By: (Signature)	Date: 5/5/99

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files
*See CONCENTRATION RANGE on back of form.

234055

Ecology and Environment, Inc. Analytical Services Center

Cooler Receipt Form

PACKAGE RECEIPT #: 3052 NUMBER OF COOLERS: 2 DATE RECEIVED: 5.7.99

E & E PROJECT #: _____ PROJECT OR SITE NAME: Kenilworth

A. Preliminary Examination Phase

CIRCLE ONE

1. Did coolers come with airbill or packing slip? _____ YES NO NA

   Enter carrier here and print airbill # below: *(Circle One)* FedEx Airborne Client Other

2. Did cooler(s) have custody seals? _____ YES NO NA

   If YES, how many and where? _____

3. Were custody seals unbroken and intact on receipt? _____ YES NO* NA

4. Were custody seals dated and signed? _____ YES NO NA

   If YES, enter date: _____ Name: _____

5. Sign here to acknowledge receipt of cooler (s): _____

   Date cooler(s) opened: 5.7.99 C-O-C numbers: _____

   Cooler(s) opened by (print): Mr. Fitty Signature: _____

6. Were the C-O-C forms received? _____ YES NO* NA

7. Was the project identifiable from the C-O-C form? _____ YES NO* NA
   If YES, enter the project number and name in the heading above

Please record Temperature Blank or Cooler Temperature for Each Cooler. Range (2 - 6°C)*

AIRBILL #	TEMP. °C	AIRBILL #	TEMP. °C	AIRBILL #	TEMP. °C
407 [illegible] 38 #1	3°				
#2	4°				

Thermometer # 8 Correction Factor 0 * If No or Temperature Outside of Acceptable Range, a CAF must be filed. CAF # _____

B. Unpacking Phase

9. Was enough packing material used in cooler(s)? _____ YES NO NA
   Type of material: Vermiculite Bubble Wrap Other

10. If required, was enough ice used? _____ YES NO NA
    If YES, type of ice used: Wet Dry Blue Other

10. Was a temperature blank included inside cooler(s)? _____ YES NO NA
    If YES, indicate temperature blank temperature in table above. If NO, indicate cooler temperature in table above.

11. Were all containers sealed in separate plastic bags? _____ YES NO NA

12. Did all containers arrive unbroken and in good condition? _____ YES NO* NA

C. Login Phase

Samples Logged In By (print): MARK E. LUCAS Signature: Mark E. Lucas Date: 5/7/99

13. Were all container labels complete (e.g. date, time, preserv.)? _____ YES NO* NA

14. Were all C-O-C forms filled out properly in ink and signed? _____ YES NO* NA

15. Did the C-O-C form agree with containers received? _____ YES NO* NA

16. Were the correct containers used for the tests requested? _____ YES NO* NA

17. Were the correct preservatives listed on the sample labels? _____ YES NO* NA

18. Was a sufficient sample volume sent for the tests requested? _____ YES NO* NA

19. Were all volatile samples received without head space? _____ YES NO* NA

L:\Forms & Lists\Final\F_024.ene\Rev 0\Approval Date 4-1-98\Last printed 03/15/99 12:34 PM

03

JOB NUMBER : 9901.361

Ecology and Environment, Inc.
SAMPLE TRACKING REPORT

SAMPLE NUMBER	CLIENT SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED
8260B VOA TCL LIST -S				
33119.01	KL-MW-7 S2	05/05/99		05/12/99
33120.01	KL-BH1 S1	05/05/99		05/12/99
33121.01	KL-BH1 S2	05/05/99		05/12/99
33122.01	KL-BH1 S3	05/05/99		05/12/99
33123.01	KL-BH2 S1	05/05/99		05/12/99
33124.01	KL-BH2 S2	05/05/99		05/12/99
33125.01	KL-BH2 S3	05/05/99		05/12/99
33126.01	KL-BH3 S1	05/05/99		05/12/99
33126.01RA	KL-BH3 S1	05/05/99		05/12/99
33128.01	KL-BH3 S3	05/05/99		05/12/99
33129.01	KL-BH4 S1	05/05/99		05/12/99
33130.01	KL-BH4 S2	05/05/99		05/12/99
33131.01	KL-BH4 S3	05/05/99		05/12/99

04

TEST CODE :SVOA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 78 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33119 MATRIX : SOLID
SAMPLE ID CLIENT: KL-MW-7 S2

SAMPLE WEIGHT/VOL.(gm/ml): 5.01 DATE COLLECTED: 05/05/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/12/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		13
Bromomethane	ND		13
Vinyl chloride	ND		13
Chloroethane	ND		13
Methylene chloride	ND		6.4
Acetone	25		13
Carbon disulfide	3.6	J	6.4
1,1-Dichloroethene	ND		6.4
1,1-Dichloroethane	ND		6.4
trans-1,2-Dichloroethene	ND		6.4
Chloroform	ND		6.4
1,2-Dichloroethane	ND		6.4
2-Butanone	32		13
1,1,1-Trichloroethane	ND		6.4
Carbon tetrachloride	ND		6.4
Vinyl acetate	ND		13
Bromodichloromethane	ND		6.4
1,2-Dichloropropane	ND		6.4
cis-1,3-Dichloropropene	ND		6.4
Trichloroethene	ND		6.4
Dibromochloromethane	ND		6.4
1,1,2-Trichloroethane	ND		6.4
Benzene	1.5	J	6.4
trans-1,3,-Dichloropropene	ND		6.4
2-Chloroethylvinylether	ND		13
Bromoform	ND		6.4
4-Methyl-2-pentanone	ND		13
2-Hexanone	1.6	J	13
Tetrachloroethene	ND		6.4
1,1,2,2-Tetrachloroethane	ND		6.4

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

05

TEST CODE :SVOA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 78 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33119 MATRIX : SOLID
SAMPLE ID CLIENT: KL-MW-7 S2

SAMPLE WEIGHT/VOL.(gm/ml): 5.01 DATE COLLECTED: 05/05/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/12/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Toluene	1.8	J	6.4
Chlorobenzene	ND		6.4
Ethylbenzene	1.7	J	6.4
Styrene	ND		6.4
Total Xylenes	4.9	J	6.4

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

06

TEST CODE :SVOA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 90 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33120 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH1 S1

SAMPLE WEIGHT/VOL.(gm/ml): 5.17 DATE COLLECTED: 05/05/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/12/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		11
Bromomethane	ND		11
Vinyl chloride	ND		11
Chloroethane	ND		11
Methylene chloride	ND		5.4
Acetone	8.4	J	11
Carbon disulfide	ND		5.4
1,1-Dichloroethene	ND		5.4
1,1-Dichloroethane	ND		5.4
trans-1,2-Dichloroethene	ND		5.4
Chloroform	ND		5.4
1,2-Dichloroethane	ND		5.4
2-Butanone	30		11
1,1,1-Trichloroethane	ND		5.4
Carbon tetrachloride	ND		5.4
Vinyl acetate	ND		11
Bromodichloromethane	ND		5.4
1,2-Dichloropropane	ND		5.4
cis-1,3-Dichloropropene	ND		5.4
Trichloroethene	ND		5.4
Dibromochloromethane	ND		5.4
1,1,2-Trichloroethane	ND		5.4
Benzene	ND		5.4
trans-1,3,-Dichloropropene	ND		5.4
2-Chloroethylvinylether	ND		11
Bromoform	ND		5.4
4-Methyl-2-pentanone	ND		11
2-Hexanone	ND		11
Tetrachloroethene	ND		5.4
1,1,2,2-Tetrachloroethane	ND		5.4

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

07

TEST CODE :SVOA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 90 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33120 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH1 S1

SAMPLE WEIGHT/VOL.(gm/ml): 5.17 DATE COLLECTED: 05/05/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/12/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Toluene	ND		5.4
Chlorobenzene	ND		5.4
Ethylbenzene	ND		5.4
Styrene	ND		5.4
Total Xylenes	ND		5.4

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

08

TEST CODE :SVOA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 82 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33121 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH1 S2

SAMPLE WEIGHT/VOL.(gm/ml): 5.16 DATE COLLECTED: 05/05/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/12/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		12
Bromomethane	ND		12
Vinyl chloride	ND		12
Chloroethane	ND		12
Methylene chloride	ND		5.9
Acetone	11	J	12
Carbon disulfide	ND		5.9
1,1-Dichloroethene	ND		5.9
1,1-Dichloroethane	ND		5.9
trans-1,2-Dichloroethene	ND		5.9
Chloroform	ND		5.9
1,2-Dichloroethane	ND		5.9
2-Butanone	33		12
1,1,1-Trichloroethane	ND		5.9
Carbon tetrachloride	ND		5.9
Vinyl acetate	ND		12
Bromodichloromethane	ND		5.9
1,2-Dichloropropane	ND		5.9
cis-1,3-Dichloropropene	ND		5.9
Trichloroethene	ND		5.9
Dibromochloromethane	ND		5.9
1,1,2-Trichloroethane	ND		5.9
Benzene	ND		5.9
trans-1,3,-Dichloropropene	ND		5.9
2-Chloroethylvinylether	ND		12
Bromoform	ND		5.9
4-Methyl-2-pentanone	ND		12
2-Hexanone	ND		12
Tetrachloroethene	ND		5.9
1,1,2,2-Tetrachloroethane	ND		5.9

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

09

TEST CODE :SVOA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 82 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33121 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH1 S2

SAMPLE WEIGHT/VOL.(gm/ml): 5.16 DATE COLLECTED: 05/05/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/12/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Toluene	ND		5.9
Chlorobenzene	ND		5.9
Ethylbenzene	ND		5.9
Styrene	ND		5.9
Total Xylenes	ND		5.9

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

10

TEST CODE :SVOA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33122 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH1 S3

SAMPLE WEIGHT/VOL.(gm/ml): 5.21 DATE COLLECTED: 05/05/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/12/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		11
Bromomethane	ND		11
Vinyl chloride	ND		11
Chloroethane	ND		11
Methylene chloride	ND		5.6
Acetone	26		11
Carbon disulfide	ND		5.6
1,1-Dichloroethene	ND		5.6
1,1-Dichloroethane	ND		5.6
trans-1,2-Dichloroethene	ND		5.6
Chloroform	ND		5.6
1,2-Dichloroethane	ND		5.6
2-Butanone	13		11
1,1,1-Trichloroethane	ND		5.6
Carbon tetrachloride	ND		5.6
Vinyl acetate	ND		11
Bromodichloromethane	ND		5.6
1,2-Dichloropropane	ND		5.6
cis-1,3-Dichloropropene	ND		5.6
Trichloroethene	2.8	J	5.6
Dibromochloromethane	ND		5.6
1,1,2-Trichloroethane	ND		5.6
Benzene	ND		5.6
trans-1,3,-Dichloropropene	ND		5.6
2-Chloroethylvinylether	ND		11
Bromoform	ND		5.6
4-Methyl-2-pentanone	ND		11
2-Hexanone	ND		11
Tetrachloroethene	ND		5.6
1,1,2,2-Tetrachloroethane	ND		5.6

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

11

TEST CODE :SVOA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33122 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH1 S3

SAMPLE WEIGHT/VOL.(gm/ml): 5.21 DATE COLLECTED: 05/05/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/12/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Toluene	ND		5.6
Chlorobenzene	ND		5.6
Ethylbenzene	ND		5.6
Styrene	ND		5.6
Total Xylenes	ND		5.6

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

12

TEST CODE :SVOA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 83 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33123 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH2 S1

SAMPLE WEIGHT/VOL.(gm/ml): 5.16 DATE COLLECTED: 05/05/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/12/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		12
Bromomethane	ND		12
Vinyl chloride	ND		12
Chloroethane	ND		12
Methylene chloride	ND		5.8
Acetone	9.0	J	12
Carbon disulfide	ND		5.8
1,1-Dichloroethene	ND		5.8
1,1-Dichloroethane	ND		5.8
trans-1,2-Dichloroethene	ND		5.8
Chloroform	ND		5.8
1,2-Dichloroethane	ND		5.8
2-Butanone	31		12
1,1,1-Trichloroethane	ND		5.8
Carbon tetrachloride	ND		5.8
Vinyl acetate	ND		12
Bromodichloromethane	ND		5.8
1,2-Dichloropropane	ND		5.8
cis-1,3-Dichloropropene	ND		5.8
Trichloroethene	ND		5.8
Dibromochloromethane	ND		5.8
1,1,2-Trichloroethane	ND		5.8
Benzene	ND		5.8
trans-1,3,-Dichloropropene	ND		5.8
2-Chloroethylvinylether	ND		12
Bromoform	ND		5.8
4-Methyl-2-pentanone	ND		12
2-Hexanone	ND		12
Tetrachloroethene	ND		5.8
1,1,2,2-Tetrachloroethane	ND		5.8

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

13

TEST CODE :SVOA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 83 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33123 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH2 S1

SAMPLE WEIGHT/VOL.(gm/ml): 5.16 DATE COLLECTED: 05/05/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/12/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Toluene	ND		5.8
Chlorobenzene	ND		5.8
Ethylbenzene	ND		5.8
Styrene	ND		5.8
Total Xylenes	ND		5.8

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SVOA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33124 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH2 S2

SAMPLE WEIGHT/VOL.(gm/ml): 4.97 DATE COLLECTED: 05/05/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/12/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		12
Bromomethane	ND		12
Vinyl chloride	ND		12
Chloroethane	ND		12
Methylene chloride	ND		5.8
Acetone	11	J	12
Carbon disulfide	1.9	J	5.8
1,1-Dichloroethene	ND		5.8
1,1-Dichloroethane	ND		5.8
trans-1,2-Dichloroethene	ND		5.8
Chloroform	ND		5.8
1,2-Dichloroethane	ND		5.8
2-Butanone	32		12
1,1,1-Trichloroethane	ND		5.8
Carbon tetrachloride	ND		5.8
Vinyl acetate	ND		12
Bromodichloromethane	ND		5.8
1,2-Dichloropropane	ND		5.8
cis-1,3-Dichloropropene	ND		5.8
Trichloroethene	ND		5.8
Dibromochloromethane	ND		5.8
1,1,2-Trichloroethane	ND		5.8
Benzene	ND		5.8
trans-1,3,-Dichloropropene	ND		5.8
2-Chloroethylvinylether	ND		12
Bromoform	ND		5.8
4-Methyl-2-pentanone	ND		12
2-Hexanone	3.9	J	12
Tetrachloroethene	ND		5.8
1,1,2,2-Tetrachloroethane	ND		5.8

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

15

TEST CODE :SVOA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33124 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH2 S2

SAMPLE WEIGHT/VOL.(gm/ml): 4.97 DATE COLLECTED: 05/05/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/12/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Toluene	ND		5.8
Chlorobenzene	ND		5.8
Ethylbenzene	ND		5.8
Styrene	ND		5.8
Total Xylenes	ND		5.8

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

16

TEST CODE :SVOA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 75 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33125 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH2 S3

SAMPLE WEIGHT/VOL.(gm/ml): 5.02 DATE COLLECTED: 05/05/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/12/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		13
Bromomethane	ND		13
Vinyl chloride	ND		13
Chloroethane	ND		13
Methylene chloride	ND		6.6
Acetone	16		13
Carbon disulfide	ND		6.6
1,1-Dichloroethene	ND		6.6
1,1-Dichloroethane	ND		6.6
trans-1,2-Dichloroethene	ND		6.6
Chloroform	ND		6.6
1,2-Dichloroethane	ND		6.6
2-Butanone	ND		13
1,1,1-Trichloroethane	ND		6.6
Carbon tetrachloride	ND		6.6
Vinyl acetate	ND		13
Bromodichloromethane	ND		6.6
1,2-Dichloropropane	ND		6.6
cis-1,3-Dichloropropene	ND		6.6
Trichloroethene	ND		6.6
Dibromochloromethane	ND		6.6
1,1,2-Trichloroethane	ND		6.6
Benzene	ND		6.6
trans-1,3,-Dichloropropene	ND		6.6
2-Chloroethylvinylether	ND		13
Bromoform	ND		6.6
4-Methyl-2-pentanone	ND		13
2-Hexanone	ND		13
Tetrachloroethene	ND		6.6
1,1,2,2-Tetrachloroethane	ND		6.6

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

17

TEST CODE :SVOA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 75 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33125 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH2 S3

SAMPLE WEIGHT/VOL.(gm/ml): 5.02 DATE COLLECTED: 05/05/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/12/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Toluene	ND		6.6
Chlorobenzene	ND		6.6
Ethylbenzene	ND		6.6
Styrene	ND		6.6
Total Xylenes	ND		6.6

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

18

TEST CODE :SVOA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 89 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33126 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH3 S1

SAMPLE WEIGHT/VOL.(gm/ml): 5.06 DATE COLLECTED: 05/05/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/12/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		11
Bromomethane	ND		11
Vinyl chloride	ND		11
Chloroethane	ND		11
Methylene chloride	ND		5.6
Acetone	16		11
Carbon disulfide	ND		5.6
1,1-Dichloroethene	ND		5.6
1,1-Dichloroethane	ND		5.6
trans-1,2-Dichloroethene	ND		5.6
Chloroform	ND		5.6
1,2-Dichloroethane	ND		5.6
2-Butanone	ND		11
1,1,1-Trichloroethane	ND		5.6
Carbon tetrachloride	ND		5.6
Vinyl acetate	ND		11
Bromodichloromethane	ND		5.6
1,2-Dichloropropane	ND		5.6
cis-1,3-Dichloropropene	ND		5.6
Trichloroethene	ND		5.6
Dibromochloromethane	ND		5.6
1,1,2-Trichloroethane	ND		5.6
Benzene	ND		5.6
trans-1,3,-Dichloropropene	ND		5.6
2-Chloroethylvinylether	ND		11
Bromoform	ND		5.6
4-Methyl-2-pentanone	ND		11
2-Hexanone	ND		11
Tetrachloroethene	ND		5.6
1,1,2,2-Tetrachloroethane	ND		5.6

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

19

TEST CODE :SVOA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 89 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33126 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH3 S1

SAMPLE WEIGHT/VOL.(gm/ml): 5.06 DATE COLLECTED: 05/05/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/12/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Toluene	ND		5.6
Chlorobenzene	ND		5.6
Ethylbenzene	ND		5.6
Styrene	ND		5.6
Total Xylenes	ND		5.6

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

20

TEST CODE :SVOA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 89 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33126RA MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH3 S1

SAMPLE WEIGHT/VOL.(gm/ml): 5.03 DATE COLLECTED: 05/05/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/12/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		11
Bromomethane	ND		11
Vinyl chloride	ND		11
Chloroethane	ND		11
Methylene chloride	ND		5.6
Acetone	16		11
Carbon disulfide	ND		5.6
1,1-Dichloroethene	ND		5.6
1,1-Dichloroethane	ND		5.6
trans-1,2-Dichloroethene	ND		5.6
Chloroform	ND		5.6
1,2-Dichloroethane	ND		5.6
2-Butanone	ND		11
1,1,1-Trichloroethane	ND		5.6
Carbon tetrachloride	ND		5.6
Vinyl acetate	ND		11
Bromodichloromethane	ND		5.6
1,2-Dichloropropane	ND		5.6
cis-1,3-Dichloropropene	ND		5.6
Trichloroethene	1.4	J	5.6
Dibromochloromethane	ND		5.6
1,1,2-Trichloroethane	ND		5.6
Benzene	ND		5.6
trans-1,3,-Dichloropropene	ND		5.6
2-Chloroethylvinylether	ND		11
Bromoform	ND		5.6
4-Methyl-2-pentanone	ND		11
2-Hexanone	ND		11
Tetrachloroethene	ND		5.6
1,1,2,2-Tetrachloroethane	ND		5.6

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

21

TEST CODE :SVOA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 89 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33126RA MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH3 S1

SAMPLE WEIGHT/VOL.(gm/ml): 5.03 DATE COLLECTED: 05/05/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/12/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Toluene	ND		5.6
Chlorobenzene	ND		5.6
Ethylbenzene	ND		5.6
Styrene	ND		5.6
Total Xylenes	ND		5.6

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

22

TEST CODE :SVOA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 77 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33128 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH3 S3

SAMPLE WEIGHT/VOL.(gm/ml): 5.10 DATE COLLECTED: 05/05/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/12/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		13
Bromomethane	ND		13
Vinyl chloride	ND		13
Chloroethane	ND		13
Methylene chloride	ND		6.4
Acetone	18		13
Carbon disulfide	ND		6.4
1,1-Dichloroethene	ND		6.4
1,1-Dichloroethane	ND		6.4
trans-1,2-Dichloroethene	ND		6.4
Chloroform	ND		6.4
1,2-Dichloroethane	ND		6.4
2-Butanone	ND		13
1,1,1-Trichloroethane	ND		6.4
Carbon tetrachloride	ND		6.4
Vinyl acetate	ND		13
Bromodichloromethane	ND		6.4
1,2-Dichloropropane	ND		6.4
cis-1,3-Dichloropropene	ND		6.4
Trichloroethene	ND		6.4
Dibromochloromethane	ND		6.4
1,1,2-Trichloroethane	ND		6.4
Benzene	ND		6.4
trans-1,3,-Dichloropropene	ND		6.4
2-Chloroethylvinylether	ND		13
Bromoform	ND		6.4
4-Methyl-2-pentanone	ND		13
2-Hexanone	ND		13
Tetrachloroethene	ND		6.4
1,1,2,2-Tetrachloroethane	ND		6.4

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

23

TEST CODE :SVOA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 77 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33128 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH3 S3

SAMPLE WEIGHT/VOL.(gm/ml): 5.10 DATE COLLECTED: 05/05/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/12/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Toluene	ND		6.4
Chlorobenzene	ND		6.4
Ethylbenzene	ND		6.4
Styrene	ND		6.4
Total Xylenes	ND		6.4

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

24

TEST CODE :SVOA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 85 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33129 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH4 S1

SAMPLE WEIGHT/VOL.(gm/ml): 5.28 DATE COLLECTED: 05/05/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/12/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		11
Bromomethane	ND		11
Vinyl chloride	ND		11
Chloroethane	ND		11
Methylene chloride	ND		5.6
Acetone	ND		11
Carbon disulfide	ND		5.6
1,1-Dichloroethene	ND		5.6
1,1-Dichloroethane	ND		5.6
trans-1,2-Dichloroethene	ND		5.6
Chloroform	ND		5.6
1,2-Dichloroethane	ND		5.6
2-Butanone	ND		11
1,1,1-Trichloroethane	ND		5.6
Carbon tetrachloride	ND		5.6
Vinyl acetate	ND		11
Bromodichloromethane	ND		5.6
1,2-Dichloropropane	ND		5.6
cis-1,3-Dichloropropene	ND		5.6
Trichloroethene	ND		5.6
Dibromochloromethane	ND		5.6
1,1,2-Trichloroethane	ND		5.6
Benzene	ND		5.6
trans-1,3,-Dichloropropene	ND		5.6
2-Chloroethylvinylether	ND		11
Bromoform	ND		5.6
4-Methyl-2-pentanone	ND		11
2-Hexanone	ND		11
Tetrachloroethene	ND		5.6
1,1,2,2-Tetrachloroethane	ND		5.6

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

25

TEST CODE :SVOA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 85 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33129 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH4 S1

SAMPLE WEIGHT/VOL.(gm/ml): 5.28 DATE COLLECTED: 05/05/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/12/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Toluene	ND		5.6
Chlorobenzene	ND		5.6
Ethylbenzene	ND		5.6
Styrene	ND		5.6
Total Xylenes	ND		5.6

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

26

TEST CODE :SVOA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 90 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33130 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH4 S2

SAMPLE WEIGHT/VOL.(gm/ml): 5.03 DATE COLLECTED: 05/05/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/12/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		11
Bromomethane	ND		11
Vinyl chloride	ND		11
Chloroethane	ND		11
Methylene chloride	ND		5.5
Acetone	76		11
Carbon disulfide	ND		5.5
1,1-Dichloroethene	ND		5.5
1,1-Dichloroethane	ND		5.5
trans-1,2-Dichloroethene	ND		5.5
Chloroform	ND		5.5
1,2-Dichloroethane	ND		5.5
2-Butanone	ND		11
1,1,1-Trichloroethane	ND		5.5
Carbon tetrachloride	ND		5.5
Vinyl acetate	ND		11
Bromodichloromethane	ND		5.5
1,2-Dichloropropane	ND		5.5
cis-1,3-Dichloropropene	ND		5.5
Trichloroethene	ND		5.5
Dibromochloromethane	ND		5.5
1,1,2-Trichloroethane	ND		5.5
Benzene	ND		5.5
trans-1,3,-Dichloropropene	ND		5.5
2-Chloroethylvinylether	ND		11
Bromoform	ND		5.5
4-Methyl-2-pentanone	ND		11
2-Hexanone	ND		11
Tetrachloroethene	ND		5.5
1,1,2,2-Tetrachloroethane	ND		5.5

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

27

TEST CODE :SVOA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 90 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33130 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH4 S2

SAMPLE WEIGHT/VOL.(gm/ml): 5.03 DATE COLLECTED: 05/05/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/12/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Toluene	ND		5.5
Chlorobenzene	ND		5.5
Ethylbenzene	ND		5.5
Styrene	ND		5.5
Total Xylenes	ND		5.5

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

28

TEST CODE :SVOA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 94 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33131 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH4 S3

SAMPLE WEIGHT/VOL.(gm/ml): 5.14 DATE COLLECTED: 05/05/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/12/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		10
Bromomethane	ND		10
Vinyl chloride	ND		10
Chloroethane	17		10
Methylene chloride	ND		5.2
Acetone	20		10
Carbon disulfide	ND		5.2
1,1-Dichloroethene	ND		5.2
1,1-Dichloroethane	ND		5.2
trans-1,2-Dichloroethene	ND		5.2
Chloroform	ND		5.2
1,2-Dichloroethane	ND		5.2
2-Butanone	9.2	J	10
1,1,1-Trichloroethane	ND		5.2
Carbon tetrachloride	ND		5.2
Vinyl acetate	ND		10
Bromodichloromethane	ND		5.2
1,2-Dichloropropane	ND		5.2
cis-1,3-Dichloropropene	ND		5.2
Trichloroethene	ND		5.2
Dibromochloromethane	ND		5.2
1,1,2-Trichloroethane	ND		5.2
Benzene	ND		5.2
trans-1,3,-Dichloropropene	ND		5.2
2-Chloroethylvinylether	ND		10
Bromoform	ND		5.2
4-Methyl-2-pentanone	ND		10
2-Hexanone	ND		10
Tetrachloroethene	ND		5.2
1,1,2,2-Tetrachloroethane	ND		5.2

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

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TEST CODE :SVOA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 94 %
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : EE-99-33131 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH4 S3

SAMPLE WEIGHT/VOL.(gm/ml): 5.14 DATE COLLECTED: 05/05/99
FINAL EXTRACT VOLUME: DATE RECEIVED : 05/07/99
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/12/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Toluene	ND		5.2
Chlorobenzene	ND		5.2
Ethylbenzene	ND		5.2
Styrene	ND		5.2
Total Xylenes	ND		5.2

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

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GC/MS Spike Summary Form

VOA Data

Instrument ID : 7001D.i
Batch : 990511442r
Units: ng

Compound	Original 9901.318 32861.01 D4198.d	Amount Added	Limits	MS MS 9901.318 32861.01 D4199.d Amt Det	MS Rec	MSD MSD 9901.318 32861.0 D4200.d Amt Det	MSD Rec	%RPD
1,1-Dichloroethene	< 25.00	250.00	59.0->172.0	178.97	71.6	176.43	70.6	1.43
Benzene	< 25.00	250.00	66.0->142.0	179.19	71.7	179.27	71.7	0.04
Trichloroethene	< 25.00	250.00	62.0->137.0	178.43	71.4	172.35	68.9	3.47
Toluene	< 25.00	250.00	59.0->139.0	166.02	66.4	161.61	64.6	2.69
Chlorobenzene	< 25.00	250.00	60.0->133.0	164.97	66.0	162.10	64.8	1.75

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GC/MS Spike Summary Form

VOA Data

Instrument ID : 7001D.i
Batch : 990511442r
Units: ng

Compound	Detection Limit	Amount Added	Limits	MS LCS 1331-75-1 D4195.d Amt Det	Rec
1,1-Dichloroethene	<25.00	250.00	70.0->131.0	242.91	97.2
Benzene	<25.00	250.00	82.0->120.0	245.15	98.1
Trichloroethene	<25.00	250.00	75.0->120.0	239.80	95.9
Toluene	<25.00	250.00	80.0->119.0	236.08	94.4
Chlorobenzene	<25.00	250.00	84.0->115.0	242.79	97.1

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GC/MS Surrogate Summary Form

VOA Data

Instrument ID : 7001D.i
Batch : 990511442r
Units: ng

Surrogate:	Dibromofluorome		1,2-Dichloroeth		Toluene-d8		Bromofluorobenz	
Amount Added:	250.0		250.0		250.0		250.0	
Limits:	83.0--> 117.0		77.0--> 119.0		84.0--> 119.0		88.0--> 124.0	
Job/Sample Number	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec
D4197.d BLK 1331-75-2	246.00	98.3	234.00	93.7	234.00	93.6	234.00	93.8
D4195.d LCS 1331-75-1	242.00	96.9	241.00	96.3	231.00	92.4	246.00	98.2
D4205.d 9901.361 33120.01	248.00	99.3	242.00	97.0	231.00	92.3	240.00	95.8
D4206.d 9901.361 33121.01	252.00	101.0	248.00	99.0	231.00	92.4	239.00	95.5
D4207.d 9901.361 33123.01	257.00	103.0	250.00	100.0	235.00	93.9	242.00	96.9
D4208.d 9901.361 33124.01	250.00	100.0	249.00	99.7	233.00	93.3	241.00	96.4
D4209.d 9901.361 33119.01	253.00	101.0	255.00	102.0	236.00	94.3	247.00	98.8

TEST CODE :SVOA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : METHOD BLANK MATRIX : SOLID
1331-75-2

SAMPLE WEIGHT/VOL.(gm/ml): 5.0 DATE COLLECTED: NA
FINAL EXTRACT VOLUME: DATE RECEIVED : NA
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/11/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		10
Bromomethane	ND		10
Vinyl chloride	ND		10
Chloroethane	ND		10
Methylene chloride	ND		5.0
Acetone	ND		10
Carbon disulfide	ND		5.0
1,1-Dichloroethene	ND		5.0
1,1-Dichloroethane	ND		5.0
trans-1,2-Dichloroethene	ND		5.0
Chloroform	ND		5.0
1,2-Dichloroethane	ND		5.0
2-Butanone	ND		10
1,1,1-Trichloroethane	ND		5.0
Carbon tetrachloride	ND		5.0
Vinyl acetate	ND		10
Bromodichloromethane	ND		5.0
1,2-Dichloropropane	ND		5.0
cis-1,3-Dichloropropene	ND		5.0
Trichloroethene	ND		5.0
Dibromochloromethane	ND		5.0
1,1,2-Trichloroethane	ND		5.0
Benzene	ND		5.0
trans-1,3,-Dichloropropene	ND		5.0
2-Chloroethylvinylether	ND		10
Bromoform	ND		5.0
4-Methyl-2-pentanone	ND		10
2-Hexanone	ND		10
Tetrachloroethene	ND		5.0
1,1,2,2-Tetrachloroethane	ND		5.0

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

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TEST CODE :SVOA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : METHOD BLANK MATRIX : SOLID
1331-75-2

SAMPLE WEIGHT/VOL.(gm/ml): 5.0 DATE COLLECTED: NA
FINAL EXTRACT VOLUME: DATE RECEIVED : NA
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/11/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Toluene	ND		5.0
Chlorobenzene	ND		5.0
Ethylbenzene	ND		5.0
Styrene	ND		5.0
Total Xylenes	ND		5.0

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

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GC/MS Spike Summary Form

VOA Data

Instrument ID : 7001D.i
Batch : 990512441r
Units: ng

Compound	Original 9901.361 33125.01 D4216.d	Amount Added	Limits	MS MS 9901.361 33125.01 D4222.d Amt Det	MS Rec	MSD MSD9901.361 33125.01 D4223.d Amt Det	MSD Rec	%RPD
1,1-Dichloroethene	< 25.00	250.00	59.0->172.0	183.30	73.3	202.17	80.9	9.79
Benzene	< 25.00	250.00	66.0->142.0	190.70	76.3	213.35	85.3	11.21
Trichloroethene	< 25.00	250.00	62.0->137.0	195.69	78.3	209.15	83.7	6.65
Toluene	< 25.00	250.00	59.0->139.0	176.95	70.8	191.61	76.6	7.95
Chlorobenzene	< 25.00	250.00	60.0->133.0	165.69	66.3	175.59	70.2	5.80

GC/MS Spike Summary Form

VOA Data

Instrument ID : 7001D.i
Batch : 990512441r
Units: ng

Compound	Detection Limit	Amount Added	Limits	MS LCS 1331-76-1 D4214.d Amt Det	Rec
1,1-Dichloroethene	<25.00	250.00	70.0->131.0	231.30	92.5
Benzene	<25.00	250.00	82.0->120.0	234.57	93.8
Trichloroethene	<25.00	250.00	75.0->120.0	241.53	96.6
Toluene	<25.00	250.00	80.0->119.0	216.88	86.8
Chlorobenzene	<25.00	250.00	84.0->115.0	227.68	91.1

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GC/MS Surrogate Summary Form

VOA Data

Instrument ID : 7001D.i
Batch : 990512441r
Units: ng

Surrogate:	Dibromofluorome		1,2-Dichloroeth		Toluene-d8		Bromofluorobenz	
Amount Added:	250.0		250.0		250.0		250.0	
Limits:	83.0--> 117.0		77.0--> 119.0		84.0--> 119.0		88.0--> 124.0	
Job/Sample Number	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec
D4215.d BLK 1331-76-1	251.00	100.0	248.00	99.4	234.00	93.7	232.00	92.9
D4214.d LCS 1331-76-1	257.00	103.0	255.00	102.0	230.00	92.0	232.00	93.0
D4216.d 9901.361 33125.01	262.00	105.0	254.00	101.0	234.00	93.6	238.00	95.1
D4217.d 9901.361 33126.01	162.00	64.8 L	252.00	101.0	231.00	92.3	234.00	93.7
D4218.d 9901.361 33128.01	258.00	103.0	247.00	98.7	230.00	91.9	241.00	96.6
D4219.d 9901.361 33129.01	258.00	103.0	245.00	98.1	230.00	92.1	235.00	94.1
D4220.d 9901.361 33130.01	255.00	102.0	252.00	101.0	232.00	92.8	241.00	96.3
D4221.d 9901.361 33131.01	256.00	102.0	261.00	104.0	231.00	92.4	252.00	101.0
D4222.d MS 9901.361 33125.01	243.00	97.1	219.00	87.5	242.00	96.9	245.00	98.1
D4223.d MSD9901.361 33125.01	252.00	101.0	216.00	86.5	242.00	96.8	239.00	95.7
D4224.d ~~RA~~ 9901.361 33122.01	259.00	104.0	250.00	99.9	232.00	92.8	227.00	90.9

GC/MS Surrogate Summary Form

VOA Data

Instrument ID : 7001D.i
Batch : 990512441r
Units: ng

Surrogate:	Dibromofluorome		1,2-Dichloroeth		Toluene-d8		Bromofluorobenz	
Amount Added:	250.0		250.0		250.0		250.0	
Limits:	83.0--> 117.0		77.0--> 119.0		84.0--> 119.0		88.0--> 124.0	
Job/Sample Number	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec
D4225.d RA 9901.361 33126.01	174.00	69.8 L	254.00	101.0	229.00	91.8	231.00	92.2

TEST CODE :SVOA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : METHOD BLANK MATRIX : SOLID
1331-76-1

SAMPLE WEIGHT/VOL.(gm/ml): 5.0 DATE COLLECTED: NA
FINAL EXTRACT VOLUME: DATE RECEIVED : NA
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/12/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Chloromethane	ND		10
Bromomethane	ND		10
Vinyl chloride	ND		10
Chloroethane	ND		10
Methylene chloride	1.4	J	5.0
Acetone	ND		10
Carbon disulfide	ND		5.0
1,1-Dichloroethene	ND		5.0
1,1-Dichloroethane	ND		5.0
trans-1,2-Dichloroethene	ND		5.0
Chloroform	ND		5.0
1,2-Dichloroethane	ND		5.0
2-Butanone	ND		10
1,1,1-Trichloroethane	ND		5.0
Carbon tetrachloride	ND		5.0
Vinyl acetate	ND		10
Bromodichloromethane	ND		5.0
1,2-Dichloropropane	ND		5.0
cis-1,3-Dichloropropene	ND		5.0
Trichloroethene	ND		5.0
Dibromochloromethane	ND		5.0
1,1,2-Trichloroethane	ND		5.0
Benzene	ND		5.0
trans-1,3,-Dichloropropene	ND		5.0
2-Chloroethylvinylether	ND		10
Bromoform	ND		5.0
4-Methyl-2-pentanone	ND		10
2-Hexanone	ND		10
Tetrachloroethene	ND		5.0
1,1,2,2-Tetrachloroethane	ND		5.0

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

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TEST CODE :SVOA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8260B VOA TCL LIST UNITS : UG/KG
SAMPLE ID LAB : METHOD BLANK MATRIX : SOLID
1331-76-1

SAMPLE WEIGHT/VOL.(gm/ml): 5.0 DATE COLLECTED: NA
FINAL EXTRACT VOLUME: DATE RECEIVED : NA
INJECTION VOLUME : DATE EXTRACTED: NA
DILUTION FACTOR : 1.0 DATE ANALYZED : 05/12/99

PARAMETER	RESULTS	Q	QNT. LIMIT
Toluene	ND		5.0
Chlorobenzene	ND		5.0
Ethylbenzene	ND		5.0
Styrene	ND		5.0
Total Xylenes	ND		5.0

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

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JOB NUMBER : 9901.361

Ecology and Environment, Inc.
SAMPLE TRACKING REPORT

SAMPLE NUMBER	CLIENT SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED
8270C BNA	-S			
33119.02	KL-MW-7 S2	05/05/99	05/07/99	05/10/99
33120.02	KL-BH1 S1	05/05/99	05/07/99	05/10/99
33121.02	KL-BH1 S2	05/05/99	05/07/99	05/10/99
33122.02	KL-BH1 S3	05/05/99	05/07/99	05/10/99
33123.02	KL-BH2 S1	05/05/99	05/07/99	05/10/99
33124.02	KL-BH2 S2	05/05/99	05/07/99	05/10/99
33125.02	KL-BH2 S3	05/05/99	05/07/99	05/11/99
33126.02	KL-BH3 S1	05/05/99	05/07/99	05/10/99
33127.02	KL-BH3 S2	05/05/99	05/07/99	05/11/99
33128.02	KL-BH3 S3	05/05/99	05/07/99	05/11/99
33129.02	KL-BH4 S1	05/05/99	05/07/99	05/10/99
33130.02	KL-BH4 S2	05/05/99	05/07/99	05/11/99
33131.02	KL-BH4 S3	05/05/99	05/07/99	05/10/99

TEST CODE :SBNA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 78 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33119 MATRIX : SOLID
SAMPLE ID CLIENT: KL-MW-7 S2

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	65	J	410
bis(2-Chloroethyl)ether	ND		410
2-Chlorophenol	ND		410
1,3-Dichlorobenzene	ND		410
1,4-Dichlorobenzene	210	J	410
Benzyl alcohol	ND		410
1,2-Dichlorobenzene	ND		410
2-Methylphenol	ND		410
2,2'-oxybis(1-Chloropropane)	ND		410
4-Methylphenol	540		410
n-Nitroso-di-n-propylamine	ND		410
Hexachloroethane	ND		410
Nitrobenzene	ND		410
Isophorone	ND		410
2-Nitrophenol	ND		410
2,4-Dimethylphenol	ND		410
Benzoic acid	320	J	1000
bis(2-Chloroethoxy)methane	ND		410
2,4-Dichlorophenol	ND		410
1,2,4-Trichlorobenzene	ND		410
Naphthalene	210	J	410
4-Chloroaniline	ND		410
Hexachlorobutadiene	ND		410
4-Chloro-3-methylphenol	ND		410
2-Methylnaphthalene	120	J	410
Hexachlorocyclopentadiene	ND		1000
2,4,6-Trichlorophenol	ND		410
2,4,5-Trichlorophenol	ND		1000
2-Chloronaphthalene	ND		410
2-Nitroaniline	ND		1000

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

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TEST CODE :SBNA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 78 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33119 MATRIX : SOLID
SAMPLE ID CLIENT: KL-MW-7 S2

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		410
Acenaphthylene	ND		410
3-Nitroaniline	ND		1000
Acenaphthene	ND		410
2,4-Dinitrophenol	ND		1000
4-Nitrophenol	ND		1000
Dibenzofuran	ND		410
2,4-Dinitrotoluene	ND		410
2,6-Dinitrotoluene	ND		410
Diethylphthalate	ND		410
4-Chlorophenylphenylether	ND		410
Fluorene	49	J	410
4-Nitroaniline	ND		1000
4,6-Dinitro-2-methylphenol	ND		1000
n-Nitrosodiphenylamine	ND		410
4-Bromophenylphenylether	ND		410
Hexachlorobenzene	ND		410
Pentachlorophenol	130	J	1000
Phenanthrene	340	J	410
Anthracene	120	J	410
Fluoranthene	440		410
di-n-Butylphthalate	110	J	410
Pyrene	200	J	410
Butylbenzylphthalate	310	J	410
3,3'-Dichlorobenzidine	ND		830
Benzo(a)anthracene	190	J	410
bis(2-Ethylhexyl)phthalate	1200		410
Chrysene	210	J	410
di-n-Octylphthalate	170	J	410
Benzo(b)fluoranthene	180	J	410
Benzo(k)fluoranthene	150	J	410
Benzo(a)pyrene	170	J	410
Indeno(1,2,3-cd)pyrene	65	J	410
Dibenzo(a,h)anthracene	ND		410
Benzo(ghi)perylene	59	J	410

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 90 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33120 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH1 S1

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		360
bis(2-Chloroethyl)ether	ND		360
2-Chlorophenol	ND		360
1,3-Dichlorobenzene	ND		360
1,4-Dichlorobenzene	ND		360
Benzyl alcohol	ND		360
1,2-Dichlorobenzene	ND		360
2-Methylphenol	ND		360
2,2'-oxybis(1-Chloropropane)	ND		360
4-Methylphenol	ND		360
n-Nitroso-di-n-propylamine	ND		360
Hexachloroethane	ND		360
Nitrobenzene	ND		360
Isophorone	ND		360
2-Nitrophenol	ND		360
2,4-Dimethylphenol	ND		360
Benzoic acid	ND		900
bis(2-Chloroethoxy)methane	ND		360
2,4-Dichlorophenol	ND		360
1,2,4-Trichlorobenzene	ND		360
Naphthalene	ND		360
4-Chloroaniline	ND		360
Hexachlorobutadiene	ND		360
4-Chloro-3-methylphenol	ND		360
2-Methylnaphthalene	ND		360
Hexachlorocyclopentadiene	ND		900
2,4,6-Trichlorophenol	ND		360
2,4,5-Trichlorophenol	ND		900
2-Chloronaphthalene	ND		360
2-Nitroaniline	ND		900

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

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TEST CODE :SBNA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 90 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33120 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH1 S1

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		360
Acenaphthylene	47	J	360
3-Nitroaniline	ND		900
Acenaphthene	ND		360
2,4-Dinitrophenol	ND		900
4-Nitrophenol	ND		900
Dibenzofuran	ND		360
2,4-Dinitrotoluene	ND		360
2,6-Dinitrotoluene	ND		360
Diethylphthalate	ND		360
4-Chlorophenylphenylether	ND		360
Fluorene	ND		360
4-Nitroaniline	ND		900
4,6-Dinitro-2-methylphenol	ND		900
n-Nitrosodiphenylamine	ND		360
4-Bromophenylphenylether	ND		360
Hexachlorobenzene	ND		360
Pentachlorophenol	ND		900
Phenanthrene	200	J	360
Anthracene	65	J	360
Fluoranthene	260	J	360
di-n-Butylphthalate	ND		360
Pyrene	170	J	360
Butylbenzylphthalate	ND		360
3,3'-Dichlorobenzidine	ND		720
Benzo(a)anthracene	140	J	360
bis(2-Ethylhexyl)phthalate	62	J	360
Chrysene	140	J	360
di-n-Octylphthalate	ND		360
Benzo(b)fluoranthene	96	J	360
Benzo(k)fluoranthene	120	J	360
Benzo(a)pyrene	130	J	360
Indeno(1,2,3-cd)pyrene	120	J	360
Dibenzo(a,h)anthracene	ND		370
Benzo(ghi)perylene	64	J	360

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

46

TEST CODE :SBNA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 82 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33121 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH1 S2

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		400
bis(2-Chloroethyl)ether	ND		400
2-Chlorophenol	ND		400
1,3-Dichlorobenzene	ND		400
1,4-Dichlorobenzene	ND		400
Benzyl alcohol	ND		400
1,2-Dichlorobenzene	ND		400
2-Methylphenol	ND		400
2,2'-oxybis(1-Chloropropane)	ND		400
4-Methylphenol	ND		400
n-Nitroso-di-n-propylamine	ND		400
Hexachloroethane	ND		400
Nitrobenzene	ND		400
Isophorone	ND		400
2-Nitrophenol	ND		400
2,4-Dimethylphenol	ND		400
Benzoic acid	ND		1000
bis(2-Chloroethoxy)methane	ND		400
2,4-Dichlorophenol	ND		400
1,2,4-Trichlorobenzene	ND		400
Naphthalene	42	J	400
4-Chloroaniline	ND		400
Hexachlorobutadiene	ND		400
4-Chloro-3-methylphenol	ND		400
2-Methylnaphthalene	ND		400
Hexachlorocyclopentadiene	ND		1000
2,4,6-Trichlorophenol	ND		400
2,4,5-Trichlorophenol	ND		1000
2-Chloronaphthalene	ND		400
2-Nitroaniline	ND		1000

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

47

TEST CODE :SBNA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 82 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33121 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH1 S2

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		400
Acenaphthylene	56	J	400
3-Nitroaniline	ND		1000
Acenaphthene	57	J	400
2,4-Dinitrophenol	ND		1000
4-Nitrophenol	ND		1000
Dibenzofuran	ND		400
2,4-Dinitrotoluene	ND		400
2,6-Dinitrotoluene	ND		400
Diethylphthalate	ND		400
4-Chlorophenylphenylether	ND		400
Fluorene	41	J	400
4-Nitroaniline	ND		1000
4,6-Dinitro-2-methylphenol	ND		1000
n-Nitrosodiphenylamine	ND		400
4-Bromophenylphenylether	ND		400
Hexachlorobenzene	ND		400
Pentachlorophenol	ND		1000
Phenanthrene	320	J	400
Anthracene	99	J	400
Fluoranthene	420		400
di-n-Butylphthalate	52	J	400
Pyrene	350	J	400
Butylbenzylphthalate	110	J	400
3,3'-Dichlorobenzidine	ND		800
Benzo(a)anthracene	200	J	400
bis(2-Ethylhexyl)phthalate	5100		1600
Chrysene	220	J	400
di-n-Octylphthalate	230	J	400
Benzo(b)fluoranthene	140	J	400
Benzo(k)fluoranthene	150	J	400
Benzo(a)pyrene	190	J	400
Indeno(1,2,3-cd)pyrene	260	J	400
Dibenzo(a,h)anthracene	63	J	400
Benzo(ghi)perylene	160	J	400

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

48

TEST CODE :SBNA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33122 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH1 S3

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		380
bis(2-Chloroethyl)ether	ND		380
2-Chlorophenol	ND		380
1,3-Dichlorobenzene	ND		380
1,4-Dichlorobenzene	ND		380
Benzyl alcohol	ND		380
1,2-Dichlorobenzene	ND		380
2-Methylphenol	ND		380
2,2'-oxybis(1-Chloropropane)	ND		380
4-Methylphenol	ND		380
n-Nitroso-di-n-propylamine	ND		380
Hexachloroethane	ND		380
Nitrobenzene	ND		380
Isophorone	ND		380
2-Nitrophenol	ND		380
2,4-Dimethylphenol	ND		380
Benzoic acid	ND		960
bis(2-Chloroethoxy)methane	ND		380
2,4-Dichlorophenol	ND		380
1,2,4-Trichlorobenzene	ND		380
Naphthalene	ND		380
4-Chloroaniline	ND		380
Hexachlorobutadiene	ND		380
4-Chloro-3-methylphenol	ND		380
2-Methylnaphthalene	ND		380
Hexachlorocyclopentadiene	ND		960
2,4,6-Trichlorophenol	ND		380
2,4,5-Trichlorophenol	ND		960
2-Chloronaphthalene	ND		380
2-Nitroaniline	ND		960

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33122 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH1 S3

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		380
Acenaphthylene	ND		380
3-Nitroaniline	ND		960
Acenaphthene	ND		380
2,4-Dinitrophenol	ND		960
4-Nitrophenol	ND		960
Dibenzofuran	ND		380
2,4-Dinitrotoluene	ND		380
2,6-Dinitrotoluene	ND		380
Diethylphthalate	ND		380
4-Chlorophenylphenylether	ND		380
Fluorene	ND		380
4-Nitroaniline	ND		960
4,6-Dinitro-2-methylphenol	ND		960
n-Nitrosodiphenylamine	ND		380
4-Bromophenylphenylether	ND		380
Hexachlorobenzene	ND		380
Pentachlorophenol	ND		960
Phenanthrene	ND		380
Anthracene	ND		380
Fluoranthene	ND		380
di-n-Butylphthalate	ND		380
Pyrene	ND		380
Butylbenzylphthalate	ND		380
3,3'-Dichlorobenzidine	ND		770
Benzo(a)anthracene	ND		380
bis(2-Ethylhexyl)phthalate	63	J	380
Chrysene	ND		380
di-n-Octylphthalate	ND		380
Benzo(b)fluoranthene	ND		380
Benzo(k)fluoranthene	ND		380
Benzo(a)pyrene	ND		380
Indeno(1,2,3-cd)pyrene	ND		380
Dibenzo(a,h)anthracene	ND		380
Benzo(ghi)perylene	ND		380

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

50

TEST CODE :SBNA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 83 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33123 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH2 S1

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		390
bis(2-Chloroethyl)ether	ND		390
2-Chlorophenol	ND		390
1,3-Dichlorobenzene	ND		390
1,4-Dichlorobenzene	ND		390
Benzyl alcohol	ND		390
1,2-Dichlorobenzene	ND		390
2-Methylphenol	ND		390
2,2'-oxybis(1-Chloropropane)	ND		390
4-Methylphenol	ND		390
n-Nitroso-di-n-propylamine	ND		390
Hexachloroethane	ND		390
Nitrobenzene	ND		390
Isophorone	ND		390
2-Nitrophenol	ND		390
2,4-Dimethylphenol	ND		390
Benzoic acid	ND		980
bis(2-Chloroethoxy)methane	ND		390
2,4-Dichlorophenol	ND		390
1,2,4-Trichlorobenzene	ND		390
Naphthalene	ND		390
4-Chloroaniline	ND		390
Hexachlorobutadiene	ND		390
4-Chloro-3-methylphenol	ND		390
2-Methylnaphthalene	ND		390
Hexachlorocyclopentadiene	ND		980
2,4,6-Trichlorophenol	ND		390
2,4,5-Trichlorophenol	ND		980
2-Chloronaphthalene	ND		390
2-Nitroaniline	ND		980

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

51

TEST CODE :SBNA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 83 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33123 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH2 S1

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		390
Acenaphthylene	ND		390
3-Nitroaniline	ND		980
Acenaphthene	ND		390
2,4-Dinitrophenol	ND		980
4-Nitrophenol	ND		980
Dibenzofuran	ND		390
2,4-Dinitrotoluene	ND		390
2,6-Dinitrotoluene	ND		390
Diethylphthalate	ND		390
4-Chlorophenylphenylether	ND		390
Fluorene	ND		390
4-Nitroaniline	ND		980
4,6-Dinitro-2-methylphenol	ND		980
n-Nitrosodiphenylamine	ND		390
4-Bromophenylphenylether	ND		390
Hexachlorobenzene	ND		390
Pentachlorophenol	ND		980
Phenanthrene	110	J	390
Anthracene	ND		390
Fluoranthene	240	J	390
di-n-Butylphthalate	ND		390
Pyrene	130	J	390
Butylbenzylphthalate	69	J	390
3,3'-Dichlorobenzidine	ND		780
Benzo(a)anthracene	130	J	390
bis(2-Ethylhexyl)phthalate	52	J	390
Chrysene	140	J	390
di-n-Octylphthalate	ND		390
Benzo(b)fluoranthene	120	J	390
Benzo(k)fluoranthene	120	J	390
Benzo(a)pyrene	130	J	390
Indeno(1,2,3-cd)pyrene	92	J	390
Dibenzo(a,h)anthracene	ND		390
Benzo(ghi)perylene	57	J	390

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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X = EXCEEDS CALIBRATION LIMIT
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A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

52

TEST CODE :SBNA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33124 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH2 S2

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		370
bis(2-Chloroethyl)ether	ND		370
2-Chlorophenol	ND		370
1,3-Dichlorobenzene	ND		370
1,4-Dichlorobenzene	ND		370
Benzyl alcohol	ND		370
1,2-Dichlorobenzene	ND		370
2-Methylphenol	ND		370
2,2'-oxybis(1-Chloropropane)	ND		370
4-Methylphenol	ND		370
n-Nitroso-di-n-propylamine	ND		370
Hexachloroethane	ND		370
Nitrobenzene	ND		370
Isophorone	ND		370
2-Nitrophenol	ND		370
2,4-Dimethylphenol	ND		370
Benzoic acid	ND		940
bis(2-Chloroethoxy)methane	ND		370
2,4-Dichlorophenol	ND		370
1,2,4-Trichlorobenzene	ND		370
Naphthalene	ND		370
4-Chloroaniline	ND		370
Hexachlorobutadiene	ND		370
4-Chloro-3-methylphenol	ND		370
2-Methylnaphthalene	ND		370
Hexachlorocyclopentadiene	ND		940
2,4,6-Trichlorophenol	ND		370
2,4,5-Trichlorophenol	ND		940
2-Chloronaphthalene	ND		370
2-Nitroaniline	ND		940

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

53

TEST CODE :SBNA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33124 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH2 S2

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		370
Acenaphthylene	ND		370
3-Nitroaniline	ND		940
Acenaphthene	ND		370
2,4-Dinitrophenol	ND		940
4-Nitrophenol	ND		940
Dibenzofuran	ND		370
2,4-Dinitrotoluene	ND		370
2,6-Dinitrotoluene	ND		370
Diethylphthalate	ND		370
4-Chlorophenylphenylether	ND		370
Fluorene	ND		370
4-Nitroaniline	ND		940
4,6-Dinitro-2-methylphenol	ND		940
n-Nitrosodiphenylamine	ND		370
4-Bromophenylphenylether	ND		370
Hexachlorobenzene	ND		370
Pentachlorophenol	ND		940
Phenanthrene	38	J	370
Anthracene	ND		370
Fluoranthene	41	J	370
di-n-Butylphthalate	ND		370
Pyrene	ND		370
Butylbenzylphthalate	ND		370
3,3'-Dichlorobenzidine	ND		750
Benzo(a)anthracene	ND		370
bis(2-Ethylhexyl)phthalate	81	J	370
Chrysene	ND		370
di-n-Octylphthalate	ND		370
Benzo(b)fluoranthene	ND		370
Benzo(k)fluoranthene	ND		370
Benzo(a)pyrene	ND		370
Indeno(1,2,3-cd)pyrene	ND		370
Dibenzo(a,h)anthracene	ND		370
Benzo(ghi)perylene	ND		370

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

54

TEST CODE :SBNA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 75 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33125 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH2 S3

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		180000
bis(2-Chloroethyl)ether	ND		180000
2-Chlorophenol	ND		180000
1,3-Dichlorobenzene	ND		180000
1,4-Dichlorobenzene	ND		180000
Benzyl alcohol	ND		180000
1,2-Dichlorobenzene	ND		180000
2-Methylphenol	ND		180000
2,2'-oxybis(1-Chloropropane)	ND		180000
4-Methylphenol	ND		180000
n-Nitroso-di-n-propylamine	ND		180000
Hexachloroethane	ND		180000
Nitrobenzene	ND		180000
Isophorone	ND		180000
2-Nitrophenol	ND		180000
2,4-Dimethylphenol	ND		180000
Benzoic acid	ND		440000
bis(2-Chloroethoxy)methane	ND		180000
2,4-Dichlorophenol	ND		180000
1,2,4-Trichlorobenzene	ND		180000
Naphthalene	250000		180000
4-Chloroaniline	ND		180000
Hexachlorobutadiene	ND		180000
4-Chloro-3-methylphenol	ND		180000
2-Methylnaphthalene	65000	J	180000
Hexachlorocyclopentadiene	ND		440000
2,4,6-Trichlorophenol	ND		180000
2,4,5-Trichlorophenol	ND		440000
2-Chloronaphthalene	ND		180000
2-Nitroaniline	ND		440000

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

56

TEST CODE :SBNA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 75 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33125 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH2 S3

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		180000
Acenaphthylene	37000	J	180000
3-Nitroaniline	ND		440000
Acenaphthene	280000		180000
2,4-Dinitrophenol	ND		440000
4-Nitrophenol	ND		440000
Dibenzofuran	190000		180000
2,4-Dinitrotoluene	ND		180000
2,6-Dinitrotoluene	ND		180000
Diethylphthalate	ND		180000
4-Chlorophenylphenylether	ND		180000
Fluorene	370000		180000
4-Nitroaniline	ND		440000
4,6-Dinitro-2-methylphenol	ND		440000
n-Nitrosodiphenylamine	ND		180000
4-Bromophenylphenylether	ND		180000
Hexachlorobenzene	ND		180000
Pentachlorophenol	ND		440000
Phenanthrene	1900000		530000
Anthracene	550000		180000
Fluoranthene	2000000		530000
di-n-Butylphthalate	ND		180000
Pyrene	500000		530000
Butylbenzylphthalate	ND		180000
3,3'-Dichlorobenzidine	ND		350000
Benzo(a)anthracene	870000		180000
bis(2-Ethylhexyl)phthalate	ND		180000
Chrysene	870000		180000
di-n-Octylphthalate	ND		180000
Benzo(b)fluoranthene	600000		180000
Benzo(k)fluoranthene	600000		180000
Benzo(a)pyrene	760000		180000
Indeno(1,2,3-cd)pyrene	970000		180000
Dibenzo(a,h)anthracene	260000		180000
Benzo(ghi)perylene	770000		180000

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 89 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33126 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH3 S1

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		360
bis(2-Chloroethyl)ether	ND		360
2-Chlorophenol	ND		360
1,3-Dichlorobenzene	ND		360
1,4-Dichlorobenzene	ND		360
Benzyl alcohol	ND		360
1,2-Dichlorobenzene	ND		360
2-Methylphenol	ND		360
2,2'-oxybis(1-Chloropropane)	ND		360
4-Methylphenol	ND		360
n-Nitroso-di-n-propylamine	ND		360
Hexachloroethane	ND		360
Nitrobenzene	ND		360
Isophorone	ND		360
2-Nitrophenol	ND		360
2,4-Dimethylphenol	ND		360
Benzoic acid	ND		910
bis(2-Chloroethoxy)methane	ND		360
2,4-Dichlorophenol	ND		360
1,2,4-Trichlorobenzene	ND		360
Naphthalene	ND		360
4-Chloroaniline	ND		360
Hexachlorobutadiene	ND		360
4-Chloro-3-methylphenol	ND		360
2-Methylnaphthalene	ND		360
Hexachlorocyclopentadiene	ND		910
2,4,6-Trichlorophenol	ND		360
2,4,5-Trichlorophenol	ND		910
2-Chloronaphthalene	ND		360
2-Nitroaniline	ND		910

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

57

TEST CODE :SBNA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 89 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33126 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH3 S1

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		360
Acenaphthylene	ND		360
3-Nitroaniline	ND		910
Acenaphthene	ND		360
2,4-Dinitrophenol	ND		910
4-Nitrophenol	ND		910
Dibenzofuran	ND		360
2,4-Dinitrotoluene	ND		360
2,6-Dinitrotoluene	ND		360
Diethylphthalate	ND		360
4-Chlorophenylphenylether	ND		360
Fluorene	ND		360
4-Nitroaniline	ND		910
4,6-Dinitro-2-methylphenol	ND		910
n-Nitrosodiphenylamine	ND		360
4-Bromophenylphenylether	ND		360
Hexachlorobenzene	ND		360
Pentachlorophenol	ND		910
Phenanthrene	ND		360
Anthracene	ND		360
Fluoranthene	ND		360
di-n-Butylphthalate	ND		360
Pyrene	ND		360
Butylbenzylphthalate	ND		360
3,3'-Dichlorobenzidine	ND		720
Benzo(a)anthracene	ND		360
bis(2-Ethylhexyl)phthalate	ND		360
Chrysene	ND		360
di-n-Octylphthalate	ND		360
Benzo(b)fluoranthene	ND		360
Benzo(k)fluoranthene	ND		360
Benzo(a)pyrene	ND		360
Indeno(1,2,3-cd)pyrene	ND		360
Dibenzo(a,h)anthracene	ND		360
Benzo(ghi)perylene	ND		360

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

58

TEST CODE :SBNA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 82 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33127 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH3 S2

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		400
bis(2-Chloroethyl)ether	ND		400
2-Chlorophenol	ND		400
1,3-Dichlorobenzene	ND		400
1,4-Dichlorobenzene	ND		400
Benzyl alcohol	ND		400
1,2-Dichlorobenzene	ND		400
2-Methylphenol	ND		400
2,2'-oxybis(1-Chloropropane)	ND		400
4-Methylphenol	ND		400
n-Nitroso-di-n-propylamine	ND		400
Hexachloroethane	ND		400
Nitrobenzene	ND		400
Isophorone	ND		400
2-Nitrophenol	ND		400
2,4-Dimethylphenol	ND		400
Benzoic acid	ND		1000
bis(2-Chloroethoxy)methane	ND		400
2,4-Dichlorophenol	ND		400
1,2,4-Trichlorobenzene	ND		400
Naphthalene	41	J	400
4-Chloroaniline	ND		400
Hexachlorobutadiene	ND		400
4-Chloro-3-methylphenol	ND		400
2-Methylnaphthalene	ND		400
Hexachlorocyclopentadiene	ND		1000
2,4,6-Trichlorophenol	ND		400
2,4,5-Trichlorophenol	ND		1000
2-Chloronaphthalene	ND		400
2-Nitroaniline	ND		1000

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

59

TEST CODE :SBNA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 82 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33127 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH3 S2

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		400
Acenaphthylene	75	J	400
3-Nitroaniline	ND		1000
Acenaphthene	87	J	400
2,4-Dinitrophenol	ND		1000
4-Nitrophenol	ND		1000
Dibenzofuran	49	J	400
2,4-Dinitrotoluene	ND		400
2,6-Dinitrotoluene	ND		400
Diethylphthalate	ND		400
4-Chlorophenylphenylether	ND		400
Fluorene	96	J	400
4-Nitroaniline	ND		1000
4,6-Dinitro-2-methylphenol	ND		1000
n-Nitrosodiphenylamine	ND		400
4-Bromophenylphenylether	ND		400
Hexachlorobenzene	ND		400
Pentachlorophenol	ND		1000
Phenanthrene	480		400
Anthracene	180	J	400
Fluoranthene	760		400
di-n-Butylphthalate	ND		400
Pyrene	260	J	400
Butylbenzylphthalate	140	J	400
3,3'-Dichlorobenzidine	ND		800
Benzo(a)anthracene	260	J	400
bis(2-Ethylhexyl)phthalate	310	J	400
Chrysene	280	J	400
di-n-Octylphthalate	ND		400
Benzo(b)fluoranthene	230	J	400
Benzo(k)fluoranthene	220	J	400
Benzo(a)pyrene	230	J	400
Indeno(1,2,3-cd)pyrene	78	J	400
Dibenzo(a,h)anthracene	ND		400
Benzo(ghi)perylene	79	J	400

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 77 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33128 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH3 S3

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	2100	J	2100
bis(2-Chloroethyl)ether	ND		2100
2-Chlorophenol	ND		2100
1,3-Dichlorobenzene	ND		2100
1,4-Dichlorobenzene	ND		2100
Benzyl alcohol	ND		2100
1,2-Dichlorobenzene	ND		2100
2-Methylphenol	ND		2100
2,2'-oxybis(1-Chloropropane)	ND		2100
4-Methylphenol	2200		2100
n-Nitroso-di-n-propylamine	ND		2100
Hexachloroethane	ND		2100
Nitrobenzene	ND		2100
Isophorone	ND		2100
2-Nitrophenol	ND		2100
2,4-Dimethylphenol	ND		2100
Benzoic acid	480	J	5400
bis(2-Chloroethoxy)methane	ND		2100
2,4-Dichlorophenol	ND		2100
1,2,4-Trichlorobenzene	ND		2100
Naphthalene	ND		2100
4-Chloroaniline	ND		2100
Hexachlorobutadiene	ND		2100
4-Chloro-3-methylphenol	ND		2100
2-Methylnaphthalene	390	J	2100
Hexachlorocyclopentadiene	ND		5400
2,4,6-Trichlorophenol	ND		2100
2,4,5-Trichlorophenol	ND		5400
2-Chloronaphthalene	ND		2100
2-Nitroaniline	ND		5400

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

61

TEST CODE :SBNA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 77 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33128 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH3 S3

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		2100
Acenaphthylene	270	J	2100
3-Nitroaniline	ND		5400
Acenaphthene	280	J	2100
2,4-Dinitrophenol	ND		5400
4-Nitrophenol	ND		5400
Dibenzofuran	ND		2100
2,4-Dinitrotoluene	ND		2100
2,6-Dinitrotoluene	ND		2100
Diethylphthalate	5400		2100
4-Chlorophenylphenylether	ND		2100
Fluorene	420	J	2100
4-Nitroaniline	ND		5400
4,6-Dinitro-2-methylphenol	ND		5400
n-Nitrosodiphenylamine	660	J	2100
4-Bromophenylphenylether	ND		2100
Hexachlorobenzene	ND		2100
Pentachlorophenol	ND		5400
Phenanthrene	2200		2100
Anthracene	ND		2100
Fluoranthene	1500	J	2100
di-n-Butylphthalate	190000		64000
Pyrene	1900	J	2100
Butylbenzylphthalate	99000		64000
3,3'-Dichlorobenzidine	ND		4300
Benzo(a)anthracene	310	J	2100
bis(2-Ethylhexyl)phthalate	4000000		1300000
Chrysene	1500	J	2100
di-n-Octylphthalate	88000		64000
Benzo(b)fluoranthene	620	J	2100
Benzo(k)fluoranthene	530	J	2100
Benzo(a)pyrene	640	J	2100
Indeno(1,2,3-cd)pyrene	ND		2100
Dibenzo(a,h)anthracene	ND		2100
Benzo(ghi)perylene	250	J	2100

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

62

TEST CODE :SBNA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 85 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33129 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH4 S1

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		380
bis(2-Chloroethyl)ether	ND		380
2-Chlorophenol	ND		380
1,3-Dichlorobenzene	ND		380
1,4-Dichlorobenzene	ND		380
Benzyl alcohol	ND		380
1,2-Dichlorobenzene	ND		380
2-Methylphenol	ND		380
2,2'-oxybis(1-Chloropropane)	ND		380
4-Methylphenol	ND		380
n-Nitroso-di-n-propylamine	ND		380
Hexachloroethane	ND		380
Nitrobenzene	ND		380
Isophorone	ND		380
2-Nitrophenol	ND		380
2,4-Dimethylphenol	ND		380
Benzoic acid	ND		960
bis(2-Chloroethoxy)methane	ND		380
2,4-Dichlorophenol	ND		380
1,2,4-Trichlorobenzene	ND		380
Naphthalene	86	J	380
4-Chloroaniline	ND		380
Hexachlorobutadiene	ND		380
4-Chloro-3-methylphenol	ND		380
2-Methylnaphthalene	130	J	380
Hexachlorocyclopentadiene	ND		960
2,4,6-Trichlorophenol	ND		380
2,4,5-Trichlorophenol	ND		960
2-Chloronaphthalene	ND		380
2-Nitroaniline	ND		960

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

63

TEST CODE :SBNA0A1

JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8270C BNA
SAMPLE ID LAB : EE-99-33129
SAMPLE ID CLIENT: KL-BH4 S1

%SOLIDS : 85 %
UNITS : UG/KG
MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		380
Acenaphthylene	ND		380
3-Nitroaniline	ND		960
Acenaphthene	150	J	380
2,4-Dinitrophenol	ND		960
4-Nitrophenol	ND		960
Dibenzofuran	82	J	380
2,4-Dinitrotoluene	ND		380
2,6-Dinitrotoluene	ND		380
Diethylphthalate	ND		380
4-Chlorophenylphenylether	ND		380
Fluorene	91	J	380
4-Nitroaniline	ND		960
4,6-Dinitro-2-methylphenol	ND		960
n-Nitrosodiphenylamine	ND		380
4-Bromophenylphenylether	ND		380
Hexachlorobenzene	ND		380
Pentachlorophenol	ND		960
Phenanthrene	900		380
Anthracene	260	J	380
Fluoranthene	1400		380
di-n-Butylphthalate	ND		380
Pyrene	920		380
Butylbenzylphthalate	ND		380
3,3'-Dichlorobenzidine	ND		770
Benzo(a)anthracene	590		380
bis(2-Ethylhexyl)phthalate	46	J	380
Chrysene	640		380
di-n-Octylphthalate	ND		380
Benzo(b)fluoranthene	440		380
Benzo(k)fluoranthene	460		380
Benzo(a)pyrene	520		380
Indeno(1,2,3-cd)pyrene	600		380
Dibenzo(a,h)anthracene	130	J	380
Benzo(ghi)perylene	320	J	380

QUALIFIERS: C = COMMENT
ND = NOT DETECTED
J = ESTIMATED VALUE
B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

64

TEST CODE :SBNA0A1

JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT
TEST NAME : 8270C BNA
SAMPLE ID LAB : EE-99-33130
SAMPLE ID CLIENT: KL-BH4 S2

%SOLIDS : 90 %
UNITS : UG/KG
MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		360
bis(2-Chloroethyl)ether	ND		360
2-Chlorophenol	ND		360
1,3-Dichlorobenzene	ND		360
1,4-Dichlorobenzene	ND		360
Benzyl alcohol	ND		360
1,2-Dichlorobenzene	ND		360
2-Methylphenol	ND		360
2,2'-oxybis(1-Chloropropane)	ND		360
4-Methylphenol	54	J	360
n-Nitroso-di-n-propylamine	ND		360
Hexachloroethane	ND		360
Nitrobenzene	ND		360
Isophorone	ND		360
2-Nitrophenol	ND		360
2,4-Dimethylphenol	ND		360
Benzoic acid	410	J	900
bis(2-Chloroethoxy)methane	ND		360
2,4-Dichlorophenol	ND		360
1,2,4-Trichlorobenzene	ND		360
Naphthalene	76	J	360
4-Chloroaniline	ND		360
Hexachlorobutadiene	ND		360
4-Chloro-3-methylphenol	ND		360
2-Methylnaphthalene	76	J	360
Hexachlorocyclopentadiene	ND		900
2,4,6-Trichlorophenol	ND		360
2,4,5-Trichlorophenol	ND		900
2-Chloronaphthalene	ND		360
2-Nitroaniline	ND		900

QUALIFIERS: C = COMMENT
ND = NOT DETECTED
J = ESTIMATED VALUE
B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

65

TEST CODE :SBNA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 90 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33130 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH4 S2

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		360
Acenaphthylene	450		360
3-Nitroaniline	ND		900
Acenaphthene	86	J	360
2,4-Dinitrophenol	ND		900
4-Nitrophenol	ND		900
Dibenzofuran	57	J	360
2,4-Dinitrotoluene	ND		360
2,6-Dinitrotoluene	ND		360
Diethylphthalate	ND		360
4-Chlorophenylphenylether	ND		360
Fluorene	84	J	360
4-Nitroaniline	ND		900
4,6-Dinitro-2-methylphenol	ND		900
n-Nitrosodiphenylamine	ND		360
4-Bromophenylphenylether	ND		360
Hexachlorobenzene	ND		360
Pentachlorophenol	ND		900
Phenanthrene	800		360
Anthracene	220	J	360
Fluoranthene	1000		360
di-n-Butylphthalate	ND		360
Pyrene	560		360
Butylbenzylphthalate	ND		360
3,3'-Dichlorobenzidine	ND		710
Benzo(a)anthracene	310	J	360
bis(2-Ethylhexyl)phthalate	72	J	360
Chrysene	380		360
di-n-Octylphthalate	110	J	360
Benzo(b)fluoranthene	330	J	360
Benzo(k)fluoranthene	320	J	360
Benzo(a)pyrene	240	J	360
Indeno(1,2,3-cd)pyrene	46	J	360
Dibenzo(a,h)anthracene	44	J	360
Benzo(ghi)perylene	100	J	360

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

TEST CODE :SBNA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 94 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33131 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH4 S3

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		350
bis(2-Chloroethyl)ether	ND		350
2-Chlorophenol	ND		350
1,3-Dichlorobenzene	ND		350
1,4-Dichlorobenzene	ND		350
Benzyl alcohol	ND		350
1,2-Dichlorobenzene	ND		350
2-Methylphenol	ND		350
2,2'-oxybis(1-Chloropropane)	ND		350
4-Methylphenol	48	J	350
n-Nitroso-di-n-propylamine	ND		350
Hexachloroethane	ND		350
Nitrobenzene	ND		350
Isophorone	ND		350
2-Nitrophenol	ND		350
2,4-Dimethylphenol	ND		350
Benzoic acid	ND		880
bis(2-Chloroethoxy)methane	ND		350
2,4-Dichlorophenol	ND		350
1,2,4-Trichlorobenzene	ND		350
Naphthalene	ND		350
4-Chloroaniline	ND		350
Hexachlorobutadiene	ND		350
4-Chloro-3-methylphenol	ND		350
2-Methylnaphthalene	ND		350
Hexachlorocyclopentadiene	ND		880
2,4,6-Trichlorophenol	ND		350
2,4,5-Trichlorophenol	ND		880
2-Chloronaphthalene	ND		350
2-Nitroaniline	ND		880

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

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TEST CODE :SBNA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 94 %
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : EE-99-33131 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH4 S3

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		350
Acenaphthylene	ND		350
3-Nitroaniline	ND		880
Acenaphthene	ND		350
2,4-Dinitrophenol	ND		880
4-Nitrophenol	ND		880
Dibenzofuran	ND		350
2,4-Dinitrotoluene	ND		350
2,6-Dinitrotoluene	ND		350
Diethylphthalate	ND		350
4-Chlorophenylphenylether	ND		350
Fluorene	ND		350
4-Nitroaniline	ND		880
4,6-Dinitro-2-methylphenol	ND		880
n-Nitrosodiphenylamine	ND		350
4-Bromophenylphenylether	ND		350
Hexachlorobenzene	ND		350
Pentachlorophenol	ND		880
Phenanthrene	48	J	350
Anthracene	ND		350
Fluoranthene	92	J	350
di-n-Butylphthalate	ND		350
Pyrene	81	J	350
Butylbenzylphthalate	ND		350
3,3'-Dichlorobenzidine	ND		700
Benzo(a)anthracene	74	J	350
bis(2-Ethylhexyl)phthalate	110	J	350
Chrysene	82	J	350
di-n-Octylphthalate	ND		350
Benzo(b)fluoranthene	62	J	350
Benzo(k)fluoranthene	66	J	350
Benzo(a)pyrene	75	J	350
Indeno(1,2,3-cd)pyrene	110	J	350
Dibenzo(a,h)anthracene	ND		350
Benzo(ghi)perylene	85	J	350

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

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GC/MS Spike Summary Form

SV Data

Instrument ID : kim.i
Batch : 990510491r
Units: ng

Compound	Original 9901.361 33131.02 k1584.d	Amount Added	Limits	MS MS 9901.361 33131.02 k1585.d Amt Det	MS Rec	MSD MSD9901.361 33131.02 k1586.d Amt Det	MSD Rec	%RPD
Phenol	< 0.00	120.00	20.5->132.1	133.42	111.2	126.50	105.4	5.33
2-Chlorophenol	< 0.00	120.00	20.4->131.6	125.96	105.0	118.05	98.4	6.48
1,4-Dichlorobenzene	< 0.00	100.00	12.0-> 99.4	83.43	83.4	78.57	78.6	6.00
N-Nitrosodi-n-propylamine	< 0.00	100.00	30.0->106.0	115.76	115.8 H	106.88	106.9 H	7.98
1,2,4-Trichlorobenzene	< 0.00	100.00	17.4->105.6	81.78	81.8	77.88	77.9	4.88
4-chloro-3-methylphenol	< 0.00	120.00	33.2->113.1	128.85	107.4	117.78	98.1	8.98
Acenaphthene	< 0.00	100.00	30.7->108.8	93.45	93.4	82.53	82.5	12.41
4-Nitrophenol	< 0.00	120.00	10.0->115.0	117.02	97.5	109.36	91.1	6.77
2,4-Dinitrotoluene	< 0.00	100.00	33.2-> 95.1	99.31	99.3 H	89.67	89.7	10.19
Pentachlorophenol	< 0.00	120.00	34.3->116.5	119.03	99.2	107.42	89.5	10.26
Pyrene	4.59	100.00	31.4->125.7	65.89	61.3	68.23	63.6	3.74

69

GC/MS Spike Summary Form

SV Data

Instrument ID : kim.i
Batch : 990510411r
Units: ng

Compound	Detection Limit	Amount Added	Limits	MS LCS 1356-138-2 k1580.d Amt Det	Rec
Phenol	< 0.00	120.00	25.0->115.0	104.77	87.3
2-Chlorophenol	< 0.00	120.00	42.4->115.0	93.07	77.6
1,4-Dichlorobenzene	< 0.00	100.00	25.0->115.0	58.54	58.5
N-Nitrosodi-n-propylamine	< 0.00	100.00	34.0->105.0	84.64	84.6
1,2,4-Trichlorobenzene	< 0.00	100.00	50.9->100.6	59.70	59.7
4-chloro-3-methylphenol	< 0.00	120.00	43.6->113.7	101.25	84.4
Acenaphthene	< 0.00	100.00	45.3->109.3	71.81	71.8
4-Nitrophenol	< 0.00	120.00	10.0->115.0	91.39	76.2
2,4-Dinitrotoluene	< 0.00	100.00	44.8->112.3	80.05	80.0
Pentachlorophenol	< 0.00	120.00	37.8->110.8	92.41	77.0
Pyrene	< 0.00	100.00	42.7->110.6	78.96	79.0

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GC/MS Surrogate Summary Form

SV Data

Instrument ID : kim.i
Batch : 990510411r
Units: ng

Surrogate:	2-Fluorophenol		Phenol-d5		Nitrobenzene-d5		2-Fluorobipheny		2,4,6-Tribromop		Terphenyl-d14	
Amount Added:	120.0		120.0		100.0		100.0		120.0		100.0	
Limits:	25.0--> 121.0		24.0--> 113.0		23.0--> 120.0		30.0--> 115.0		19.0--> 122.0		18.0--> 137.0	
Job/Sample Number	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec
k1579.d BLK 1356-138-1	123.00	102.0	120.00	100.0	81.30	81.3	74.10	74.1	93.90	78.2	66.40	66.4
k1580.d LCS 1356-138-2	94.40	78.7	101.00	84.3	57.60	57.6	57.40	57.4	85.10	70.9	61.20	61.2
k1591.d 9901.361 33119.02	107.00	89.4	111.00	92.4	66.50	66.5	65.80	65.8	96.50	80.4	36.80	36.8
k1590.d 9901.361 33120.02	98.40	82.0	110.00	91.8	59.20	59.2	65.90	65.9	105.00	87.6	52.30	52.3
k1587.d 9901.361 33121.02	129.00	107.0	126.00	105.0	81.60	81.6	73.50	73.5	104.00	87.0	61.00	61.0
k1581.d 9901.361 33122.02	119.00	98.8	120.00	99.8	73.00	73.0	69.80	69.8	100.00	83.5	70.90	70.9
k1589.d 9901.361 33123.02	126.00	105.0	126.00	105.0	75.20	75.2	72.10	72.1	101.00	84.4	42.70	42.7
k1582.d 9901.361 33124.02	118.00	98.1	119.00	99.3	72.60	72.6	69.90	69.9	99.60	83.0	67.80	67.8

GC/MS Surrogate Summary Form

SV Data

Instrument ID : kim.i
Batch : 0X FV=2
Units: ng

Surrogate:	Nitrobenzene-d5		2-Fluorobipheny		Terphenyl-d14		Phenol-d5		2-Fluorophenol		2,4,6-Tribromop	
Amount Added:	100.0		100.0		100.0		120.0		120.0		120.0	
Limits:	23.0--> 120.0		30.0--> 115.0		18.0--> 137.0		24.0--> 113.0		25.0--> 121.0		19.0--> 122.0	
Job/Sample Number	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec	Amt	Rec
k1598.d 9901.361 33125.02 20 (diluted out)	0.00	0.0 L	0.00	0.0 L	0.00	0.0 L	0.00	0.0 L	0.00	0.0 L	0.00	0.0 L
k1583.d 9901.361 33126.02	65.70	65.7	67.30	67.3	73.10	73.1	114.00	95.0	111.00	92.3	108.00	89.7
k1604.d 9901.361 33127.02	77.60	77.6	73.30	73.3	36.20	36.2	100.00	83.5	110.00	92.0	91.20	76.0
k1603.d 9901.361 33128.02 5X	69.40	69.4	56.10	56.1	102.00	102.0	114.00	94.9	108.00	90.5	94.80	79.0
k1588.d 9901.361 33129.02	68.60	68.6	62.70	62.7	46.50	46.5	110.00	91.6	111.00	92.5	84.70	70.6
k1606.d 9901.361 33130.02	70.70	70.7	62.80	62.8	54.20	54.2	97.50	81.3	106.00	88.0	108.00	90.0
k1584.d 9901.361 33131.02	61.60	61.6	68.20	68.2	68.40	68.4	112.00	93.8	101.00	84.0	105.00	87.6
k1585.d MS 9901.361 33131.02	81.30	81.3	76.70	76.7	51.40	51.4	130.00	108.0	131.00	110.0	110.00	91.4
k1586.d MSD9901.361 33131.02	78.30	78.3	67.80	67.8	53.00	53.0	120.00	100.0	125.00	104.0	95.60	79.7

TEST CODE :SBNA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : METHOD BLANK MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Phenol	ND		330
bis(2-Chloroethyl)ether	ND		330
2-Chlorophenol	ND		330
1,3-Dichlorobenzene	ND		330
1,4-Dichlorobenzene	ND		330
Benzyl alcohol	ND		330
1,2-Dichlorobenzene	ND		330
2-Methylphenol	ND		330
2,2'-oxybis(1-Chloropropane)	ND		330
4-Methylphenol	ND		330
n-Nitroso-di-n-propylamine	ND		330
Hexachloroethane	ND		330
Nitrobenzene	ND		330
Isophorone	ND		330
2-Nitrophenol	ND		330
2,4-Dimethylphenol	ND		330
Benzoic acid	ND		830
bis(2-Chloroethoxy)methane	ND		330
2,4-Dichlorophenol	ND		330
1,2,4-Trichlorobenzene	ND		330
Naphthalene	ND		330
4-Chloroaniline	ND		330
Hexachlorobutadiene	ND		330
4-Chloro-3-methylphenol	ND		330
2-Methylnaphthalene	ND		330
Hexachlorocyclopentadiene	ND		830
2,4,6-Trichlorophenol	ND		330
2,4,5-Trichlorophenol	ND		830
2-Chloronaphthalene	ND		330
2-Nitroaniline	ND		830

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

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TEST CODE :SBNA0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
TEST NAME : 8270C BNA UNITS : UG/KG
SAMPLE ID LAB : METHOD BLANK MATRIX : SOLID

PARAMETER	RESULTS	Q	QNT. LIMIT
Dimethylphthalate	ND		330
Acenaphthylene	ND		330
3-Nitroaniline	ND		830
Acenaphthene	ND		330
2,4-Dinitrophenol	ND		830
4-Nitrophenol	ND		830
Dibenzofuran	ND		330
2,4-Dinitrotoluene	ND		330
2,6-Dinitrotoluene	ND		330
Diethylphthalate	ND		330
4-Chlorophenylphenylether	ND		330
Fluorene	ND		330
4-Nitroaniline	ND		830
4,6-Dinitro-2-methylphenol	ND		830
n-Nitrosodiphenylamine	ND		330
4-Bromophenylphenylether	ND		330
Hexachlorobenzene	ND		330
Pentachlorophenol	ND		830
Phenanthrene	ND		330
Anthracene	ND		330
Fluoranthene	ND		330
di-n-Butylphthalate	ND		330
Pyrene	ND		330
Butylbenzylphthalate	ND		330
3,3'-Dichlorobenzidine	ND		660
Benzo(a)anthracene	ND		330
bis(2-Ethylhexyl)phthalate	ND		330
Chrysene	ND		330
di-n-Octylphthalate	ND		330
Benzo(b)fluoranthene	ND		330
Benzo(k)fluoranthene	ND		330
Benzo(a)pyrene	ND		330
Indeno(1,2,3-cd)pyrene	ND		330
Dibenzo(a,h)anthracene	ND		330
Benzo(ghi)perylene	ND		330

QUALIFIERS: C = COMMENT ND = NOT DETECTED
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A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

74

TEST CODE :SPEST 1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 89 %
TEST NAME : 8081A PESTICIDES UNITS : UG/KG
SAMPLE ID LAB : EE-99-33126 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH3 S1

PARAMETER	RESULTS	Q	QNT. LIMIT
gamma-Chlordane	ND		1.1
Aldrin	ND		1.1
alpha-BHC	ND		1.1
beta-BHC	ND		1.1
gamma-BHC (Lindane)	ND		1.1
delta-BHC	ND		1.1
alpha-Chlordane	ND		1.1
4,4'-DDD	ND		2.2
4,4'-DDE	ND		2.2
4,4'-DDT	ND		2.2
Dieldrin	ND		2.2
Endosulfan I	ND		2.2
Endosulfan II	ND		2.2
Endosulfan sulfate	ND		2.2
Endrin	ND		2.2
Endrin aldehyde	ND		2.2
Heptachlor	ND		1.1
Heptachlor epoxide	ND		1.1
Toxaphene	ND		56
Methoxychlor	ND		11

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

83

TEST CODE :SPEST 1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 82 %
TEST NAME : 8081A PESTICIDES UNITS : UG/KG
SAMPLE ID LAB : EE-99-33127 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH3 S2

PARAMETER	RESULTS	Q	QNT. LIMIT
gamma-Chlordane	ND		12
Aldrin	ND		12
alpha-BHC	ND		12
beta-BHC	ND		12
gamma-BHC (Lindane)	ND		12
delta-BHC	ND		12
alpha-Chlordane	ND		12
4,4'-DDD	57		24
4,4'-DDE	ND		24
4,4'-DDT	ND		24
Dieldrin	ND		24
Endosulfan I	ND		24
Endosulfan II	ND		24
Endosulfan sulfate	ND		24
Endrin	ND		24
Endrin aldehyde	ND		24
Heptachlor	ND		12
Heptachlor epoxide	ND		12
Toxaphene	ND		610
Methoxychlor	ND		120

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

84

TEST CODE :SPEST 1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 77 %
TEST NAME : 8081A PESTICIDES UNITS : UG/KG
SAMPLE ID LAB : EE-99-33128 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH3 S3

PARAMETER	RESULTS	Q	QNT. LIMIT
gamma-Chlordane	ND		6.5
Aldrin	ND		6.5
alpha-BHC	ND		6.5
beta-BHC	ND		6.5
gamma-BHC (Lindane)	ND		6.5
delta-BHC	ND		6.5
alpha-Chlordane	ND		6.5
4,4'-DDD	34		13
4,4'-DDE	ND		13
4,4'-DDT	ND		13
Dieldrin	ND		13
Endosulfan I	ND		13
Endosulfan II	ND		13
Endosulfan sulfate	ND		13
Endrin	ND		13
Endrin aldehyde	ND		13
Heptachlor	ND		6.5
Heptachlor epoxide	ND		6.5
Toxaphene	ND		320
Methoxychlor	ND		65

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

85

TEST CODE :SPEST 1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 85 %
TEST NAME : 8081A PESTICIDES UNITS : UG/KG
SAMPLE ID LAB : EE-99-33129 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH4 S1

PARAMETER	RESULTS	Q	QNT. LIMIT
gamma-Chlordane	ND		4.7
Aldrin	ND		4.7
alpha-BHC	ND		4.7
beta-BHC	ND		4.7
gamma-BHC (Lindane)	ND		4.7
delta-BHC	ND		4.7
alpha-Chlordane	ND		4.7
4,4'-DDD	ND		9.4
4,4'-DDE	ND		9.4
4,4'-DDT	ND		9.4
Dieldrin	ND		9.4
Endosulfan I	ND		9.4
Endosulfan II	ND		9.4
Endosulfan sulfate	ND		9.4
Endrin	ND		9.4
Endrin aldehyde	ND		9.4
Heptachlor	ND		4.7
Heptachlor epoxide	ND		4.7
Toxaphene	ND		240
Methoxychlor	ND		47

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

86

TEST CODE :SPEST 1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 90 %
TEST NAME : 8081A PESTICIDES UNITS : UG/KG
SAMPLE ID LAB : EE-99-33130 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH4 S2

PARAMETER	RESULTS	Q	QNT. LIMIT
gamma-Chlordane	ND		11
Aldrin	ND		11
alpha-BHC	ND		11
beta-BHC	ND		11
gamma-BHC (Lindane)	ND		11
delta-BHC	ND		11
alpha-Chlordane	ND		11
4,4'-DDD	ND		22
4,4'-DDE	ND		22
4,4'-DDT	ND		22
Dieldrin	ND		22
Endosulfan I	ND		22
Endosulfan II	ND		22
Endosulfan sulfate	ND		22
Endrin	ND		22
Endrin aldehyde	ND		22
Heptachlor	ND		11
Heptachlor epoxide	ND		11
Toxaphene	ND		560
Methoxychlor	ND		110

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

87

TEST CODE :SPEST 1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 94 %
TEST NAME : 8081A PESTICIDES UNITS : UG/KG
SAMPLE ID LAB : EE-99-33131 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH4 S3

PARAMETER	RESULTS	Q	QNT. LIMIT
gamma-Chlordane	ND		5.3
Aldrin	ND		5.3
alpha-BHC	ND		5.3
beta-BHC	ND		5.3
gamma-BHC (Lindane)	ND		5.3
delta-BHC	ND		5.3
alpha-Chlordane	ND		5.3
4,4'-DDD	22		11
4,4'-DDE	25		11
4,4'-DDT	ND		11
Dieldrin	ND		11
Endosulfan I	ND		11
Endosulfan II	ND		11
Endosulfan sulfate	ND		11
Endrin	ND		11
Endrin aldehyde	ND		11
Heptachlor	ND		5.3
Heptachlor epoxide	ND		5.3
Toxaphene	ND		260
Methoxychlor	ND		53

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

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PESTICIDE
QUALITY CONTROL FOR ACCURACY
PERCENT RECOVERY OF SURROGATE SPIKES
SOIL MATRIX

UG/KG **E & E Job No: 9803.361**

	Tetrachloro-m-xylene				Decachlorobiphenyl			
Sample Identification	Amount Added	Amount Determined	Percent Recovery	Q	Amount Added	Amount Determined	Percent Recovery	Q
1366-162-1	6.65	6.10	91.7%		6.65	5.42	81.5%	
1366-162-3	6.63	6.02	90.8%		6.63	5.43	81.9%	
33119	6.66	4.84	72.7%		6.66	4.13	62.0%	
33120	6.61	5.86	88.7%		6.61	4.83	73.1%	
33121	6.61	5.65	85.5%		6.61	4.86	73.5%	
33122	6.57	4.95	75.3%		6.57	6.02	91.6%	
33123	6.61	5.84	88.4%		6.61	4.45	67.3%	
33124	6.62	6.15	92.9%		6.62	5.85	88.4%	
33125	6.66	D	D		6.66	D	D	
33126	6.54	4.74	72.5%		6.54	3.57	54.6%	
33127	6.56	5.35	81.6%		6.56	4.41	67.2%	
33128	6.49	6.67	102.8%		6.49	4.54	70.0%	
33129	6.64	4.63	69.7%		6.64	6.62	99.7%	
33130	6.52	6.55	100.5%		6.52	5.40	82.8%	
33131	6.58	5.23	79.5%		6.58	4.19	63.7%	
33122 MS	6.66	5.82	87.4%		6.66	4.61	69.2%	
33122 MSD	6.48	5.50	84.9%		6.48	4.38	67.6%	

Q - Column used to flag recovery
* - Value is outside E & E, INC. QC limits.
D - Diluted Out.
LCS/LCSD = LABORATORY CONTROL SAMPLE/DUP
MS/MSD = MATRIX SPIKE/MATRIX SPIKE DUPLICATE

QC LIMITS	
Tetrachloro-m-xylene	36-132
Decachlorobiphenyl	31-138

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3

SOIL PESTICIDE MS/MSD RECOVERY
(GC.14-8081, GC.72-8081A)

Lab Name: E & E INC Contract:

Prep Batch: 990512330P Job No.: 9901.361

Sample No.: 33122 Instrument: HP58901 A Run Date: 5/21/99

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONC. (ug/Kg)	MS CONC. (ug/Kg)	MS % REC	QC LIMITS REC.
gamma-BHC	3.33	0.00	2.76	82.8	73 - 134
Heptachlor	3.33	0.00	5.94	178.3 *	69 - 141
Aldrin	3.33	0.00	5.38	161.5 *	45 - 148
Dieldrin	3.33	0.00	3.22	96.6	60 - 146
Endrin	3.33	0.00	4.66	139.8	63 - 140
4,4'-DDT	3.33	0.00	5.08	152.5 *	48 - 150

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONC. (ug/Kg)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC
gamma-BHC	3.24	2.62	80.9	2.3	30	73 - 134
Heptachlor	3.24	6.19	191.1 *	7.0	30	69 - 141
Aldrin	3.24	5.59	172.6 *	6.7	30	45 - 148
Dieldrin	3.24	4.14	127.8	27.8	34	60 - 146
Endrin	3.24	5.90	182.2 *	26.3	32	63 - 140
4,4'-DDT	3.24	4.82	148.8	2.4	36	48 - 150

* Values outside of QC limits
D - Diluted out

RPD: 0 out of 6 outside limits
Spike Recovery: 6 out of 12 outside limits

COMMENTS: **Sample, MS and MSD were analyzed at a 5X dilution due to matrix.**

FORM III PEST-2 QC Limits Generated from E&E QA Chart Program 11/2/98

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SOIL PESTICIDE LCS RECOVERY
(GC.14-8081, GC.72-8081A)

Lab Name: E & E INC Contract:

Prep Batch: 990512330P Job No.: 9901.361/390

Sample No.: SLCS1366-162-3 Instrument: HP58901 A Run Date: 5/20/99

COMPOUND	SPIKE ADDED (ug/Kg)	LCS CONC. (ug/Kg)	LCS % REC	QC LIMITS REC.
gamma-BHC	3.31	2.73	82.4	73 - 134
Heptachlor	3.31	2.49	75.1	69 - 141
Aldrin	3.31	2.44	73.6	45 - 148
Dieldrin	3.31	2.53	76.3	60 - 146
Endrin	3.31	2.77	83.6	63 - 140
4,4'-DDT	3.31	2.57	77.5	48 - 150

* Values outside of QC limits

Spike Recovery: 0 out of 6 outside limits

COMMENTS:

FORM III PEST-2

QC Limits Generated from
E&E QA Chart Program 11/2/98

91

TEST CODE :SPEST 1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
TEST NAME : 8081A PESTICIDES UNITS : UG/KG
SAMPLE ID LAB : METHOD BLANK (1366-162-1) MATRIX : SOLID
DATE OF ANALYSIS: 05/20/99
ASSOCIATED SAMPLES: 33199, 33120, 33121, 33122, 33122 MS, 33122 MSD, 33123, 33124, 33125, 33126, 33127, 33128, 33129, 33130 AND 33131

PARAMETER	RESULTS	Q	QNT. LIMIT
gamma-Chlordane	ND		1.0
Aldrin	ND		1.0
alpha-BHC	ND		1.0
beta-BHC	ND		1.0
gamma-BHC (Lindane)	ND		1.0
delta-BHC	ND		1.0
alpha-Chlordane	ND		1.0
4,4'-DDD	ND		2.0
4,4'-DDE	ND		2.0
4,4'-DDT	ND		2.0
Dieldrin	ND		2.0
Endosulfan I	ND		2.0
Endosulfan II	ND		2.0
Endosulfan sulfate	ND		2.0
Endrin	ND		2.0
Endrin aldehyde	ND		2.0
Heptachlor	ND		1.0
Heptachlor epoxide	ND		1.0
Toxaphene	ND		50
Methoxychlor	ND		10

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
X = EXCEEDS CALIBRATION LIMIT
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE
A = PHENOMENON OF METHODOLOGY WITH ACID PRESERVATION

92

JOB NUMBER : 9901.361

Ecology and Environment, Inc.
SAMPLE TRACKING REPORT

SAMPLE NUMBER	CLIENT SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED
8082 PCB	-S			
33119.02	KL-MW-7 S2	05/05/99	05/12/99	05/24/99
33120.02	KL-BH1 S1	05/05/99	05/12/99	05/24/99
33121.02	KL-BH1 S2	05/05/99	05/12/99	05/25/99
33122.02	KL-BH1 S3	05/05/99	05/12/99	05/25/99
33123.02	KL-BH2 S1	05/05/99	05/12/99	05/25/99
33124.02	KL-BH2 S2	05/05/99	05/12/99	05/25/99
33125.02	KL-BH2 S3	05/05/99	05/12/99	05/25/99
33126.02	KL-BH3 S1	05/05/99	05/12/99	05/25/99
33127.02	KL-BH3 S2	05/05/99	05/12/99	05/25/99
33128.02	KL-BH3 S3	05/05/99	05/12/99	05/25/99
33129.02	KL-BH4 S1	05/05/99	05/12/99	05/25/99
33130.02	KL-BH4 S2	05/05/99	05/12/99	05/25/99
33131.02	KL-BH4 S3	05/05/99	05/12/99	05/25/99

93

TEST CODE :SPCB0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 78 %
TEST NAME : 8082 PCB UNITS : UG/KG
SAMPLE ID LAB : EE-99-33119 MATRIX : SOLID
SAMPLE ID CLIENT: KL-MW-7 S2

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	620		110
PCB-1254	200		110
PCB-1221	ND		210
PCB-1232	ND		110
PCB-1248	ND		110
PCB-1260	120		110
PCB-1016	ND		110

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

94

TEST CODE :SPCB0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 90 %
TEST NAME : 8082 PCB UNITS : UG/KG
SAMPLE ID LAB : EE-99-33120 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH1 S1

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND		19
PCB-1254	13	J	19
PCB-1221	ND		37
PCB-1232	ND		19
PCB-1248	ND		19
PCB-1260	9.4	J	19
PCB-1016	ND		19

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

95

TEST CODE :SPCB0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 82 %
TEST NAME : 8082 PCB UNITS : UG/KG
SAMPLE ID LAB : EE-99-33121 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH1 S2

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND		21
PCB-1254	16	J	21
PCB-1221	ND		40
PCB-1232	ND		21
PCB-1248	ND		21
PCB-1260	15	J	21
PCB-1016	ND		21

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

96

TEST CODE :SPCB0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
TEST NAME : 8082 PCB UNITS : UG/KG
SAMPLE ID LAB : EE-99-33122 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH1 S3

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	310		79
PCB-1254	170		79
PCB-1221	ND		150
PCB-1232	ND		79
PCB-1248	ND		79
PCB-1260	120		79
PCB-1016	ND		79

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

97

TEST CODE :SPCB0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 83 %
TEST NAME : 8082 PCB UNITS : UG/KG
SAMPLE ID LAB : EE-99-33123 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH2 S1

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND		20
PCB-1254	28		20
PCB-1221	ND		40
PCB-1232	ND		20
PCB-1248	ND		20
PCB-1260	27		20
PCB-1016	ND		20

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

98

TEST CODE :SPCB0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
TEST NAME : 8082 PCB UNITS : UG/KG
SAMPLE ID LAB : EE-99-33124 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH2 S2

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND		20
PCB-1254	ND		20
PCB-1221	ND		38
PCB-1232	ND		20
PCB-1248	ND		20
PCB-1260	ND		20
PCB-1016	ND		20

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

99

TEST CODE :SPCB0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 75 %
TEST NAME : 8082 PCB UNITS : UG/KG
SAMPLE ID LAB : EE-99-33125 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH2 S3

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	260		110
PCB-1254	190		110
PCB-1221	ND		220
PCB-1232	ND		110
PCB-1248	ND		110
PCB-1260	120		110
PCB-1016	ND		110

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

100

TEST CODE :SPCB0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 89 %
TEST NAME : 8082 PCB UNITS : UG/KG
SAMPLE ID LAB : EE-99-33126 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH3 S1

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND		19
PCB-1254	7.0	J	19
PCB-1221	ND		37
PCB-1232	ND		19
PCB-1248	ND		19
PCB-1260	7.0	J	19
PCB-1016	ND		19

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

101

TEST CODE :SPCB0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 82 %
TEST NAME : 8082 PCB UNITS : UG/KG
SAMPLE ID LAB : EE-99-33127 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH3 S2

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	170		83
PCB-1254	170		83
PCB-1221	ND		160
PCB-1232	ND		83
PCB-1248	ND		83
PCB-1260	200		83
PCB-1016	ND		83

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

102

TEST CODE :SPCB0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 77 %
TEST NAME : 8082 PCB UNITS : UG/KG
SAMPLE ID LAB : EE-99-33128 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH3 S3

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	410		110
PCB-1254	180		110
PCB-1221	ND		210
PCB-1232	ND		110
PCB-1248	ND		110
PCB-1260	180		110
PCB-1016	ND		110

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

103

TEST CODE :SPCB0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 85 %
TEST NAME : 8082 PCB UNITS : UG/KG
SAMPLE ID LAB : EE-99-33129 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH4 S1

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND		20
PCB-1254	88		20
PCB-1221	ND		39
PCB-1232	ND		20
PCB-1248	ND		20
PCB-1260	100		20
PCB-1016	ND		20

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

104

TEST CODE :SPCB0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 90 %
TEST NAME : 8082 PCB UNITS : UG/KG
SAMPLE ID LAB : EE-99-33130 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH4 S2

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	91		38
PCB-1254	84		38
PCB-1221	ND		73
PCB-1232	ND		38
PCB-1248	ND		38
PCB-1260	81		38
PCB-1016	ND		38

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

105

TEST CODE :SPCB0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 94 %
TEST NAME : 8082 PCB UNITS : UG/KG
SAMPLE ID LAB : EE-99-33131 MATRIX : SOLID
SAMPLE ID CLIENT: KL-BH4 S3

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND		18
PCB-1254	130		18
PCB-1221	ND		35
PCB-1232	ND		18
PCB-1248	ND		18
PCB-1260	83		18
PCB-1016	ND		18

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

106

PCB
QUALITY CONTROL FOR ACCURACY
PERCENT RECOVERY OF SURROGATE SPIKES
SOIL MATRIX

UG/KG E & E Job No: 9901.361

	Tetrachloro-m-xylene				Decachlorobiphenyl			
Sample Identification	Amount Added	Amount Determined	Percent Recovery	Q	Amount Added	Amount Determined	Percent Recovery	Q
1366-162-1	6.65	6.43	96.7%		6.65	5.04	75.8%	
1366-162-2	6.59	6.71	101.8%		6.59	5.54	84.1%	
33119	6.66	7.06	106.0%		6.66	6.07	91.1%	
33120	6.61	6.58	99.5%		6.61	4.87	73.7%	
33121	6.61	6.38	96.5%		6.61	5.23	79.1%	
33122	6.57	5.72	87.1%		6.57	6.68	101.7%	
33123	6.61	6.03	91.2%		6.61	4.96	75.0%	
33124	6.62	7.01	105.9%		6.62	5.74	86.7%	
33125	6.66	5.98	89.8%		6.66	9.33	140.1%	*
33126	6.54	5.31	81.2%		6.54	4.01	61.3%	
33127	6.56	5.91	90.1%		6.56	5.98	91.2%	
33128	6.49	5.21	80.3%		6.49	6.19	95.4%	
33129	6.64	5.41	81.5%		6.64	5.15	77.6%	
33130	6.52	5.53	84.8%		6.52	5.98	91.7%	
33131	6.58	5.48	83.3%		6.58	5.32	80.9%	
33120 MS	6.57	6.14	93.5%		6.57	4.83	73.5%	
33120 MSD	6.54	5.85	89.4%		6.54	4.32	66.1%	

Q - Column used to flag recovery
* - Value is outside E & E, INC. QC limits.
D - Value is Diluted Out

LCS/LCSD = LABORATORY CONTROL SAMPLE/DUP
MS/MSD = MATRIX SPIKE/MATRIX SPIKE DUPLICATE

QC LIMITS

Tetrachloro-m-xylene	39-125
Decachlorobiphenyl	48-112

107

3

SOIL PCB MS/MSD RECOVERY
SW8082

Lab Name: E & E INC. Job No.: 9901.361

Prep Batch No.: 99512330P Instrument HP58902 B

Sample No.: 33120 Run Date 5/24/99

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONC. (ug/Kg)	MS CONC. (ug/Kg)	MS % REC	QC LIMITS REC.
Aroclor 1016	164	0	123	74.8	57 - 138
Aroclor 1260	164	8.44	116	65.4	40 - 160

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONC. (ug/Kg)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC
Aroclor 1016	164	120	73.4	1.9	16	57 - 138
Aroclor 1260	164	112	63.3	3.3	21	40 - 160

* Values outside of QC limits
D = Diluted out

RPD: 0 out of 2 outside limits
Spike Recovery: 0 out of 4 outside limits

COMMENTS:

FORM III PCB-2

QC Limits Generated from
E&E QA Chart Program 9/14/98

1.8

SOIL PCB LCS RECOVERY
SW8082

Lab Name: E & E INC. Job No.: 9901.361/390

Prep Batch No.: 990512330P Instrument HP58902 B

Sample No.: SLCS1366-162-2 Run Date 5/24/99

COMPOUND	SPIKE ADDED (ug/Kg)	LCS CONC. (ug/Kg)	LCS % REC	QC LIMITS REC.
Aroclor 1016	166	140	84.3	50 - 150
Aroclor 1260	166	142	85.5	50 - 150

* Values outside of QC limits

Spike Recovery: 0 out of 2 outside limits

COMMENTS:

QC Limits Generated from
E&E QA Chart Program 9/14/98

109

TEST CODE :SPCB0A1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
TEST NAME : 8082 PCB UNITS : UG/KG
SAMPLE ID LAB : METHOD BLANK (1366-162-1) MATRIX : SOLID
DATE OF ANALYSIS: 05/24/99
ASSOCIATED SAMPLES: 33119, 33120, 33120 MS, 33120 MSD, 33121, 33122, 33123, 33124, 33125, 33126, 33127, 33128, 33129, 33130 AND 33131

PARAMETER	RESULTS	Q	QNT. LIMIT
PCB-1242	ND		17
PCB-1254	ND		17
PCB-1221	ND		33
PCB-1232	ND		17
PCB-1248	ND		17
PCB-1260	ND		17
PCB-1016	ND		17

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK
N = ANALYTE WAS NOT CONFIRMED BY ALTERNATE PROCEDURE

110

JOB NUMBER : 9901.361

Ecology and Environment, Inc.
SAMPLE TRACKING REPORT

SAMPLE NUMBER	CLIENT SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED
MERCURY (CVAP)-S				
33119.02	KL-MW-7 S2	05/05/99		05/20/99
33120.02	KL-BH1 S1	05/05/99		05/20/99
33121.02	KL-BH1 S2	05/05/99		05/20/99
33122.02	KL-BH1 S3	05/05/99		05/20/99
33123.02	KL-BH2 S1	05/05/99		05/20/99
33124.02	KL-BH2 S2	05/05/99		05/20/99
33125.02	KL-BH2 S3	05/05/99		05/20/99
33126.02	KL-BH3 S1	05/05/99		05/20/99
33127.02	KL-BH3 S2	05/05/99		05/20/99
33128.02	KL-BH3 S3	05/05/99		05/20/99
33129.02	KL-BH4 S1	05/05/99		05/20/99
33130.02	KL-BH4 S2	05/05/99		05/20/99
33131.02	KL-BH4 S3	05/05/99		05/20/99
TAL METALS 1 (ICP)-S				
33119.02	KL-MW-7 S2	05/05/99	05/21/99	05/26/99
33120.02	KL-BH1 S1	05/05/99	05/21/99	05/26/99
33121.02	KL-BH1 S2	05/05/99	05/21/99	05/26/99
33122.02	KL-BH1 S3	05/05/99	05/21/99	05/26/99
33123.02	KL-BH2 S1	05/05/99	05/21/99	05/26/99
33124.02	KL-BH2 S2	05/05/99	05/21/99	05/26/99
33125.02	KL-BH2 S3	05/05/99	05/21/99	05/26/99
33126.02	KL-BH3 S1	05/05/99	05/21/99	05/26/99
33127.02	KL-BH3 S2	05/05/99	05/21/99	05/26/99
33128.02	KL-BH3 S3	05/05/99	05/21/99	05/26/99
33129.02	KL-BH4 S1	05/05/99	05/21/99	05/26/99
33130.02	KL-BH4 S2	05/05/99	05/21/99	05/26/99
33131.02	KL-BH4 S3	05/05/99	05/21/99	05/26/99
TAL METALS 2 (ICP)-S				
33119.02	KL-MW-7 S2	05/05/99	05/21/99	05/26/99
33120.02	KL-BH1 S1	05/05/99	05/21/99	05/26/99
33121.02	KL-BH1 S2	05/05/99	05/21/99	05/26/99
33122.02	KL-BH1 S3	05/05/99	05/21/99	05/26/99
33123.02	KL-BH2 S1	05/05/99	05/21/99	05/26/99
33124.02	KL-BH2 S2	05/05/99	05/21/99	05/26/99
33125.02	KL-BH2 S3	05/05/99	05/21/99	05/26/99
33126.02	KL-BH3 S1	05/05/99	05/21/99	05/26/99
33127.02	KL-BH3 S2	05/05/99	05/21/99	05/26/99
33128.02	KL-BH3 S3	05/05/99	05/21/99	05/26/99
33129.02	KL-BH4 S1	05/05/99	05/21/99	05/26/99
33130.02	KL-BH4 S2	05/05/99	05/21/99	05/26/99
33131.02	KL-BH4 S3	05/05/99	05/21/99	05/26/99

METALS SECTION

JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 78 %
SAMPLE ID LAB : EE-99-33119 MATRIX: SOLID
SAMPLE ID CLIENT: KL-MW-7 S2
DATE RECEIVED : 05/07/99 DATE COLLECTED: 05/05/99

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Arsenic	12		1.3	MG/KG
Lead	1000		0.64	MG/KG
Selenium	28		1.3	MG/KG
Thallium	ND		1.3	MG/KG
Aluminum	10000		13	MG/KG
Antimony	20		1.3	MG/KG
Barium	450		2.6	MG/KG
Beryllium	ND		0.64	MG/KG
Cadmium	9.4		0.64	MG/KG
Calcium	17000		64	MG/KG
Chromium Total	70		1.3	MG/KG
Cobalt	ND		2.6	MG/KG
Copper	890		2.6	MG/KG
Iron	100000		6.4	MG/KG
Magnesium	4600		64	MG/KG
Manganese	640		1.3	MG/KG
Nickel	65		2.6	MG/KG
Potassium	1000		130	MG/KG
Silver	14		1.3	MG/KG
Sodium	1100		130	MG/KG
Vanadium	63		2.6	MG/KG
Zinc	1700		1.3	MG/KG
Mercury	0.36		0.042	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

112

METALS SECTION

JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 90 %
SAMPLE ID LAB : EE-99-33120 MATRIX: SOLID
SAMPLE ID CLIENT: KL-BH1 S1
DATE RECEIVED : 05/07/99 DATE COLLECTED: 05/05/99

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Arsenic	4.5		1.1	MG/KG
Lead	14		0.56	MG/KG
Selenium	8.7		1.1	MG/KG
Thallium	ND		1.1	MG/KG
Aluminum	15000		11	MG/KG
Antimony	1.5		1.1	MG/KG
Barium	93		2.2	MG/KG
Beryllium	1.1		0.56	MG/KG
Cadmium	1.0		0.56	MG/KG
Calcium	7200		56	MG/KG
Chromium Total	48		1.1	MG/KG
Cobalt	15		2.2	MG/KG
Copper	40		2.2	MG/KG
Iron	26000		5.6	MG/KG
Magnesium	8800		56	MG/KG
Manganese	500		1.1	MG/KG
Nickel	38		2.2	MG/KG
Potassium	4800		110	MG/KG
Silver	ND		1.1	MG/KG
Sodium	140		110	MG/KG
Vanadium	55		2.2	MG/KG
Zinc	74		1.1	MG/KG
Mercury	ND		0.037	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

113

METALS SECTION

JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 82 %
SAMPLE ID LAB : EE-99-33121 MATRIX: SOLID
SAMPLE ID CLIENT: KL-BH1 S2
DATE RECEIVED : 05/07/99 DATE COLLECTED: 05/05/99

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Arsenic	3.4		1.2	MG/KG
Lead	22		0.61	MG/KG
Selenium	8.6		1.2	MG/KG
Thallium	ND		1.2	MG/KG
Aluminum	4900		12	MG/KG
Antimony	1.9		1.2	MG/KG
Barium	47		2.4	MG/KG
Beryllium	0.69		0.61	MG/KG
Cadmium	0.96		0.61	MG/KG
Calcium	28000		61	MG/KG
Chromium Total	28		1.2	MG/KG
Cobalt	7.8		2.4	MG/KG
Copper	24		2.4	MG/KG
Iron	32000		6.1	MG/KG
Magnesium	18000		61	MG/KG
Manganese	450		1.2	MG/KG
Nickel	14		2.4	MG/KG
Potassium	1200		120	MG/KG
Silver	ND		1.2	MG/KG
Sodium	ND		120	MG/KG
Vanadium	42		2.4	MG/KG
Zinc	54		1.2	MG/KG
Mercury	ND		0.040	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

114

METALS SECTION

JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
SAMPLE ID LAB : EE-99-33122 MATRIX: SOLID
SAMPLE ID CLIENT: KL-BH1 S3
DATE RECEIVED : 05/07/99 DATE COLLECTED: 05/05/99

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Arsenic	16		1.2	MG/KG
Lead	750		0.58	MG/KG
Selenium	32		1.2	MG/KG
Thallium	ND		1.2	MG/KG
Aluminum	8400		12	MG/KG
Antimony	22		1.2	MG/KG
Barium	390		2.3	MG/KG
Beryllium	ND		0.58	MG/KG
Cadmium	11		0.58	MG/KG
Calcium	22000		58	MG/KG
Chromium Total	64		1.2	MG/KG
Cobalt	ND		2.3	MG/KG
Copper	620		2.3	MG/KG
Iron	120000		5.8	MG/KG
Magnesium	2200		58	MG/KG
Manganese	810		1.2	MG/KG
Nickel	57		2.3	MG/KG
Potassium	580		120	MG/KG
Silver	7.2		1.2	MG/KG
Sodium	900		120	MG/KG
Vanadium	110		2.3	MG/KG
Zinc	1700		1.2	MG/KG
Mercury	0.48		0.038	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

115

METALS SECTION

JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 83 %
SAMPLE ID LAB : EE-99-33123
MATRIX: SOLID
SAMPLE ID CLIENT: KL-BH2 S1
DATE RECEIVED : 05/07/99
DATE COLLECTED: 05/05/99

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Arsenic	3.2		1.2	MG/KG
Lead	26		0.60	MG/KG
Selenium	8.6		1.2	MG/KG
Thallium	ND		1.2	MG/KG
Aluminum	12000		12	MG/KG
Antimony	1.8		1.2	MG/KG
Barium	63		2.4	MG/KG
Beryllium	0.78		0.60	MG/KG
Cadmium	0.79		0.60	MG/KG
Calcium	7600		60	MG/KG
Chromium Total	36		1.2	MG/KG
Cobalt	9.4		2.4	MG/KG
Copper	32		2.4	MG/KG
Iron	24000		6.0	MG/KG
Magnesium	7200		60	MG/KG
Manganese	410		1.2	MG/KG
Nickel	16		2.4	MG/KG
Potassium	3000		120	MG/KG
Silver	ND		1.2	MG/KG
Sodium	1300		120	MG/KG
Vanadium	51		2.4	MG/KG
Zinc	72		1.2	MG/KG
Mercury	ND		0.040	MG/KG

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
ND = NOT DETECTED

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METALS SECTION

JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 86 %
SAMPLE ID LAB : EE-99-33124 MATRIX: SOLID
SAMPLE ID CLIENT: KL-BH2 S2
DATE RECEIVED : 05/07/99 DATE COLLECTED: 05/05/99

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Arsenic	4.2		1.2	MG/KG
Lead	16		0.58	MG/KG
Selenium	7.7		1.2	MG/KG
Thallium	ND		1.2	MG/KG
Aluminum	5300		12	MG/KG
Antimony	1.6		1.2	MG/KG
Barium	60		2.3	MG/KG
Beryllium	0.69		0.58	MG/KG
Cadmium	0.61		0.58	MG/KG
Calcium	3400		58	MG/KG
Chromium Total	15		1.2	MG/KG
Cobalt	5.6		2.3	MG/KG
Copper	19		2.3	MG/KG
Iron	20000		5.8	MG/KG
Magnesium	1500		58	MG/KG
Manganese	260		1.2	MG/KG
Nickel	11		2.3	MG/KG
Potassium	540		120	MG/KG
Silver	ND		1.2	MG/KG
Sodium	200		120	MG/KG
Vanadium	32		2.3	MG/KG
Zinc	47		1.2	MG/KG
Mercury	ND		0.038	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

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METALS SECTION

JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 75 %
SAMPLE ID LAB : EE-99-33125
MATRIX: SOLID
SAMPLE ID CLIENT: KL-BH2 S3
DATE RECEIVED : 05/07/99
DATE COLLECTED: 05/05/99

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Arsenic	9.7		1.3	MG/KG
Lead	150		0.67	MG/KG
Selenium	17		1.3	MG/KG
Thallium	ND		1.3	MG/KG
Aluminum	3500		13	MG/KG
Antimony	4.7		1.3	MG/KG
Barium	520		2.7	MG/KG
Beryllium	ND		0.67	MG/KG
Cadmium	2.9		0.67	MG/KG
Calcium	9800		67	MG/KG
Chromium Total	19		1.3	MG/KG
Cobalt	ND		2.7	MG/KG
Copper	78		2.7	MG/KG
Iron	46000		6.7	MG/KG
Magnesium	1100		67	MG/KG
Manganese	160		1.3	MG/KG
Nickel	18		2.7	MG/KG
Potassium	3800		130	MG/KG
Silver	ND		1.3	MG/KG
Sodium	500		130	MG/KG
Vanadium	25		2.7	MG/KG
Zinc	490		1.3	MG/KG
Mercury	0.51		0.044	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

118

METALS SECTION

JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 89 %
SAMPLE ID LAB : EE-99-33126 MATRIX: SOLID
SAMPLE ID CLIENT: KL-BH3 S1
DATE RECEIVED : 05/07/99 DATE COLLECTED: 05/05/99

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Arsenic	2.6		1.1	MG/KG
Lead	18		0.56	MG/KG
Selenium	6.4		1.1	MG/KG
Thallium	ND		1.1	MG/KG
Aluminum	4400		11	MG/KG
Antimony	ND		1.1	MG/KG
Barium	40		2.2	MG/KG
Beryllium	0.60		0.56	MG/KG
Cadmium	ND		0.56	MG/KG
Calcium	8000		56	MG/KG
Chromium Total	16		1.1	MG/KG
Cobalt	3.5		2.2	MG/KG
Copper	17		2.2	MG/KG
Iron	16000		5.6	MG/KG
Magnesium	2800		56	MG/KG
Manganese	220		1.1	MG/KG
Nickel	12		2.2	MG/KG
Potassium	730		110	MG/KG
Silver	ND		1.1	MG/KG
Sodium	1500		110	MG/KG
Vanadium	32		2.2	MG/KG
Zinc	32		1.1	MG/KG
Mercury	ND		0.037	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

119

METALS SECTION

JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 82 %
SAMPLE ID LAB : EE-99-33127
MATRIX: SOLID
SAMPLE ID CLIENT: KL-BH3 S2
DATE RECEIVED : 05/07/99
DATE COLLECTED: 05/05/99

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Arsenic	5.2		1.2	MG/KG
Lead	140		0.61	MG/KG
Selenium	9.6		1.2	MG/KG
Thallium	ND		1.2	MG/KG
Aluminum	6600		12	MG/KG
Antimony	2.5		1.2	MG/KG
Barium	110		2.4	MG/KG
Beryllium	ND		0.61	MG/KG
Cadmium	1.6		0.61	MG/KG
Calcium	25000		61	MG/KG
Chromium Total	24		1.2	MG/KG
Cobalt	4.1		2.4	MG/KG
Copper	61		2.4	MG/KG
Iron	25000		6.1	MG/KG
Magnesium	1600		61	MG/KG
Manganese	320		1.2	MG/KG
Nickel	12		2.4	MG/KG
Potassium	620		120	MG/KG
Silver	3.2		1.2	MG/KG
Sodium	180		120	MG/KG
Vanadium	32		2.4	MG/KG
Zinc	610		1.2	MG/KG
Mercury	0.16		0.040	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

120

METALS SECTION

JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 77 %
SAMPLE ID LAB : EE-99-33128 MATRIX: SOLID
SAMPLE ID CLIENT: KL-BH3 S3
DATE RECEIVED : 05/07/99 DATE COLLECTED: 05/05/99

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Arsenic	9.4		1.3	MG/KG
Lead	1500		0.65	MG/KG
Selenium	30		1.3	MG/KG
Thallium	ND		1.3	MG/KG
Aluminum	9700		13	MG/KG
Antimony	21		1.3	MG/KG
Barium	280		2.6	MG/KG
Beryllium	ND		0.65	MG/KG
Cadmium	12		0.65	MG/KG
Calcium	19000		65	MG/KG
Chromium Total	39		1.3	MG/KG
Cobalt	ND		2.6	MG/KG
Copper	410		2.6	MG/KG
Iron	120000		6.5	MG/KG
Magnesium	3400		65	MG/KG
Manganese	830		1.3	MG/KG
Nickel	30		2.6	MG/KG
Potassium	940		130	MG/KG
Silver	7.8		1.3	MG/KG
Sodium	1300		130	MG/KG
Vanadium	47		2.6	MG/KG
Zinc	4300		1.3	MG/KG
Mercury	0.091		0.043	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

121

METALS SECTION

JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT
%SOLIDS : 85 %
SAMPLE ID LAB : EE-99-33129
MATRIX: SOLID
SAMPLE ID CLIENT: KL-BH4 S1
DATE RECEIVED : 05/07/99
DATE COLLECTED: 05/05/99

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Arsenic	9.6		1.2	MG/KG
Lead	150		0.59	MG/KG
Selenium	10		1.2	MG/KG
Thallium	ND		1.2	MG/KG
Aluminum	5400		12	MG/KG
Antimony	7.8		1.2	MG/KG
Barium	120		2.4	MG/KG
Beryllium	ND		0.59	MG/KG
Cadmium	1.2		0.59	MG/KG
Calcium	21000		59	MG/KG
Chromium Total	30		1.2	MG/KG
Cobalt	4.3		2.4	MG/KG
Copper	89		2.4	MG/KG
Iron	27000		5.9	MG/KG
Magnesium	3700		59	MG/KG
Manganese	260		1.2	MG/KG
Nickel	22		2.4	MG/KG
Potassium	1000		120	MG/KG
Silver	ND		1.2	MG/KG
Sodium	180		120	MG/KG
Vanadium	31		2.4	MG/KG
Zinc	100		1.2	MG/KG
Mercury	0.25		0.039	MG/KG

QUALIFIERS: C = COMMENT
ND = NOT DETECTED
J = ESTIMATED VALUE

122

METALS SECTION

JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 90 %
SAMPLE ID LAB : EE-99-33130 MATRIX: SOLID
SAMPLE ID CLIENT: KL-BH4 S2
DATE RECEIVED : 05/07/99 DATE COLLECTED: 05/05/99

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Arsenic	4.2		1.1	MG/KG
Lead	82		0.56	MG/KG
Selenium	9.6		1.1	MG/KG
Thallium	ND		1.1	MG/KG
Aluminum	5300		11	MG/KG
Antimony	2.4		1.1	MG/KG
Barium	90		2.2	MG/KG
Beryllium	ND		0.56	MG/KG
Cadmium	1.1		0.56	MG/KG
Calcium	35000		56	MG/KG
Chromium Total	27		1.1	MG/KG
Cobalt	4.4		2.2	MG/KG
Copper	39		2.2	MG/KG
Iron	22000		5.6	MG/KG
Magnesium	3800		56	MG/KG
Manganese	400		1.1	MG/KG
Nickel	26		2.2	MG/KG
Potassium	840		110	MG/KG
Silver	ND		1.1	MG/KG
Sodium	170		110	MG/KG
Vanadium	25		2.2	MG/KG
Zinc	170		1.1	MG/KG
Mercury	0.089		0.037	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

123

METALS SECTION

JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 94 %
SAMPLE ID LAB : EE-99-33131 MATRIX: SOLID
SAMPLE ID CLIENT: KL-BH4 S3
DATE RECEIVED : 05/07/99 DATE COLLECTED: 05/05/99

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Arsenic	16		1.1	MG/KG
Lead	2500		0.53	MG/KG
Selenium	46		1.1	MG/KG
Thallium	ND		1.1	MG/KG
Aluminum	6900		11	MG/KG
Antimony	29		1.1	MG/KG
Barium	1000		2.1	MG/KG
Beryllium	ND		0.53	MG/KG
Cadmium	13		0.53	MG/KG
Calcium	14000		53	MG/KG
Chromium Total	58		1.1	MG/KG
Cobalt	ND		2.1	MG/KG
Copper	730		2.1	MG/KG
Iron	180000		5.3	MG/KG
Magnesium	1900		53	MG/KG
Manganese	840		1.1	MG/KG
Nickel	110		2.1	MG/KG
Potassium	660		110	MG/KG
Silver	14		1.1	MG/KG
Sodium	1200		110	MG/KG
Vanadium	54		2.1	MG/KG
Zinc	2500		1.1	MG/KG
Mercury	0.32		0.035	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

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QUALITY CONTROL FOR ACCURACY AND PRECISION;
PERCENT RECOVERY AND RELATIVE PERCENT DIFFERENCE (RPD)
OF SOLID MATRIX SPIKE (MS) AND MATRIX SPIKE DUPLICATE (MSD)

Sample # 33131

9901.361

(mg/Kg)

Analyte	Original Value	Amount Added MS	Amount Added MSD	Amount Determined MS	Amount Determined MSD	Percent Recovery MS	Percent Recovery MSD	RPD	Percent Recovery Limits
Silver (Ag)	13.088	5	5	14	42	9.9L	573.2H	101.8	68.9 - 108.0
Aluminum (Al)	6449	200	200	6222	7318	4X	4X	16.2	45.7 - 109.3
Arsenic (As)	14.943	200	200	182	180	83.5	82.3	1.3	78.0 - 108.5
Barium (Ba)	957.95	200	200	820	765	4X	4X	7.0	75.7 - 109.4
Beryllium (Be)	ND	5	5	4	4	77.8	81.2	4.2	73.5 - 116.7
Cadmium (Cd)	12.154	5	5	13	14	23.1L	30.7L	2.8	63.2 - 113.7
Cobalt (Co)	ND	50	50	37	38	73.9L	75.7L	2.4	76.6 - 113.8
Chromium (Cr)	54.462	20	20	65	65	54.1L	54.9L	0.2	57.3 - 125.6
Copper (Cu)	689.02	25	25	726	1656	4X	4X	78.1	54.3 - 135.3
Manganese (Mn)	790.1	50	50	769	794	4X	4X	3.2	70.0 - 130.0
Nickel (Ni)	102.78	50	50	128	370	50.5L	535.4H	97.3	69.6 - 115.9
Lead (Pb)	2350	50	50	1819	1384	4X	4X	27.2	48.1 - 129.5
Antimony (Sb)	26.921	50	50	71	54	87.3	55.1	25.7	2.5 - 142.2
Selenium (Se)	42.815	200	200	182	183	69.5L	70.2L	0.8	73.9 - 109.3
Thallium (Tl)	ND	200	200	157	161	78.5	80.5	2.6	71.5 - 107.3
Vanadium (V)	50.917	50	50	85	86	68.4L	69.3L	0.6	76.5 - 115.4
Zinc (Zn)	2362.8	50	50	2098	2529	4X	4X	18.6	57.2 - 132.1

ALL RECOVERIES ARE WITHIN E&E ASC QC LIMITS UNLESS FLAGGED.
H FLAGS INDICATE RECOVERIES HIGHER THAN E&E ASC QC LIMITS.
L FLAGS INDICATE RECOVERIES LOWER THAN E&E ASC QC LIMITS.

ND = NOT DETECTED

NC = NOT CALCUABLE

4X = RECOVERY NOT DETERMINED BECAUSE SAMPLE AMOUNT IS FOUR OR MORE TIMES GREATER THAN SPIKE AMOUNT

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Optima MS-MSD Soil

QUALITY CONTROL FOR ACCURACY AND PRECISION;
PERCENT RECOVERY AND RELATIVE PERCENT DIFFERENCE (RPD)
OF SOLID MATRIX SPIKE (MS) AND MATRIX SPIKE DUPLICATE (MSD)

SAMPLE # 33131

9901.361

(mg/Kg)

Analyte	Original Value	Amount Added MS	Amount Added MSD	Amount Determined MS	Amount Determined MSD	Percent Recovery MS	Percent Recovery MSD	RPD	Percent Recovery Limits
Iron (Fe)	171150	100	100	29040	27500	4X	4X	5.4	70.0 - 130.0

ALL RECOVERIES ARE WITHIN E&E ASC QC LIMITS UNLESS FLAGGED.
H FLAGS INDICATE RECOVERIES HIGHER THAN E&E ASC QC LIMITS.
L FLAGS INDICATE RECOVERIES LOWER THAN E&E ASC QC LIMITS.

ND = NOT DETECTED

NC = NOT CALCUABLE

4X = RECOVERY NOT DETERMINED BECAUSE SAMPLE AMOUNT IS FOUR OR MORE TIMES GREATER THAN SPIKE AMOUNT

LABORATORY CONTROL SAMPLE - SOIL
PERCENT RECOVERY

LCSS 839-036-1

9901.361

(mg/Kg)

Analyte	True Value	Amount Determined	Percent Recovery	Percent Recovery Limits		
Silver (Ag)	50	53	105.5	73.6	-	116.4
Aluminum (Al)	1000	1039	103.9	80.0	-	120.0
Arsenic (As)	1000	1006	100.6	80.0	-	120.0
Barium (Ba)	1000	1031	103.1	79.2	-	117.1
Beryllium (Be)	1000	1009	100.9	82.4	-	120.2
Cadmium (Cd)	1000	1013	101.3	78.6	-	112.7
Cobalt (Co)	1000	1016	101.6	80.0	-	120.0
Chromium (Cr)	1000	1018	101.8	79.8	-	116.0
Copper (Cu)	1000	1024	102.4	80.0	-	118.2
Manganese (Mn)	1000	1035	103.5	76.9	-	118.2
Nickel (Ni)	1000	1012	101.2	80.0	-	114.1
Lead (Pb)	1000	1018	101.8	80.0	-	120.0
Antimony (Sb)	1000	1004	100.4	61.6	-	128.9
Selenium (Se)	1000	972	97.2	66.1	-	122.8
Thallium (Tl)	1000	1030	103.0	80.0	-	120.0
Vanadium (V)	1000	1024	102.4	80.0	-	120.0
Zinc (Zn)	1000	1021	102.1	81.6	-	116.4

ALL RECOVERIES ARE WITHIN E&E ASC QC LIMITS UNLESS FLAGGED.
H FLAGS INDICATE RECOVERIES HIGHER THAN E&E ASC QC LIMITS.
L FLAGS INDICATE RECOVERIES LOWER THAN E&E ASC QC LIMITS.

127

Optima LCSS

LABORATORY CONTROL SAMPLE - SOIL
PERCENT RECOVERY

LCSS 839-036-1

9901.361

(mg/Kg)

Analyte	True Value	Amount Determined	Percent Recovery	Percent Recovery Limits		
Calcium (Ca)	10000	10500	105.0	80.0	-	120.0
Iron (Fe)	1000	1039	103.9	80.0	-	120.0
Potassium (K)	10000	9298	93.0	70.0	-	130.0
Magnesium (Mg)	10000	10620	106.2	84.9	-	120.4
Sodium (Na)	10000	9319	93.2	80.0	-	120.0

ALL RECOVERIES ARE WITHIN E&E ASC QC LIMITS UNLESS FLAGGED.
H FLAGS INDICATE RECOVERIES HIGHER THAN E&E ASC QC LIMITS.
L FLAGS INDICATE RECOVERIES LOWER THAN E&E ASC QC LIMITS.

128
JY LCSS

LABORATORY CONTROL SAMPLE - SOIL
PERCENT RECOVERY

LCSS (05/20/99)

9901.361

(mg / Kg)

Analyte	True Value LCSS Book Ref 1021-151-1	Amount Determined	Percent Recovery	Percent Recovery Limits
Mercury (Hg) by CVAA	1.18	0.97	82.2	80.0 - 120.0

ALL RECOVERIES ARE WITHIN E&E ASC QC LIMITS UNLESS FLAGGED.
H FLAGS INDICATE RECOVERIES HIGHER THAN E&E ASC QC LIMITS.
L FLAGS INDICATE RECOVERIES LOWER THAN E&E ASC QC LIMITS.

129

Mercury LCSS

METALS SECTION

JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 94 %
SAMPLE ID LAB : METHOD BLANK (839-036-1) MATRIX: SOLID
DATE OF ANALYSIS: 05/26/99
ASSOCIATED SAMPLE: 33131

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Arsenic	ND		1.1	MG/KG
Lead	ND		0.53	MG/KG
Selenium	ND		1.1	MG/KG
Thallium	ND		1.1	MG/KG
Aluminum	ND		11	MG/KG
Antimony	ND		1.1	MG/KG
Barium	ND		2.1	MG/KG
Beryllium	ND		0.53	MG/KG
Cadmium	ND		0.53	MG/KG
Calcium	ND		53	MG/KG
Chromium Total	ND		1.1	MG/KG
Cobalt	ND		2.1	MG/KG
Copper	ND		2.1	MG/KG
Iron	ND		5.3	MG/KG
Magnesium	ND		53	MG/KG
Manganese	ND		1.1	MG/KG
Nickel	ND		2.1	MG/KG
Potassium	ND		110	MG/KG
Silver	ND		1.1	MG/KG
Sodium	ND		110	MG/KG
Vanadium	ND		2.1	MG/KG
Zinc	ND		1.1	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

130

METALS SECTION

JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
RESULTS IN DRY WEIGHT %SOLIDS : 94 %
SAMPLE ID LAB : METHOD BLANK (05/20/99) MATRIX: SOLID
DATE OF ANALYSIS: 05/20/99
ASSOCIATED SAMPLE: 33131

PARAMETER	RESULTS	Q	QNT. LIMIT	UNITS
Mercury	ND		0.035	MG/KG

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

131

JOB NUMBER : 9901.361

Ecology and Environment, Inc.
SAMPLE TRACKING REPORT

SAMPLE NUMBER	CLIENT SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED
CYANIDE TOTAL	-S			
33119.02	KL-MW-7 S2	05/05/99		05/17/99
33120.02	KL-BH1 S1	05/05/99		05/17/99
33121.02	KL-BH1 S2	05/05/99		05/17/99
33122.02	KL-BH1 S3	05/05/99		05/17/99
33123.02	KL-BH2 S1	05/05/99		05/17/99
33124.02	KL-BH2 S2	05/05/99		05/17/99
33125.02	KL-BH2 S3	05/05/99		05/17/99
33126.02	KL-BH3 S1	05/05/99		05/17/99
33127.02	KL-BH3 S2	05/05/99		05/17/99
33128.02	KL-BH3 S3	05/05/99		05/17/99
33129.02	KL-BH4 S1	05/05/99		05/17/99
33130.02	KL-BH4 S2	05/05/99		05/17/99
33131.02	KL-BH4 S3	05/05/99		05/17/99
SOLIDS TOTAL	-S			
33119.02	KL-MW-7 S2	05/05/99		05/11/99
33120.02	KL-BH1 S1	05/05/99		05/11/99
33121.02	KL-BH1 S2	05/05/99		05/11/99
33122.02	KL-BH1 S3	05/05/99		05/11/99
33123.02	KL-BH2 S1	05/05/99		05/11/99
33124.02	KL-BH2 S2	05/05/99		05/11/99
33125.02	KL-BH2 S3	05/05/99		05/11/99
33126.02	KL-BH3 S1	05/05/99		05/11/99
33127.02	KL-BH3 S2	05/05/99		05/11/99
33128.02	KL-BH3 S3	05/05/99		05/11/99
33129.02	KL-BH4 S1	05/05/99		05/11/99
33130.02	KL-BH4 S2	05/05/99		05/11/99
33131.02	KL-BH4 S3	05/05/99		05/11/99
TRPH	-S			
33119.02	KL-MW-7 S2	05/05/99		05/24/99
33120.02	KL-BH1 S1	05/05/99		05/24/99
33121.02	KL-BH1 S2	05/05/99		05/24/99
33122.02	KL-BH1 S3	05/05/99		05/24/99
33123.02	KL-BH2 S1	05/05/99		05/24/99
33124.02	KL-BH2 S2	05/05/99		05/24/99
33125.02	KL-BH2 S3	05/05/99		05/24/99
33126.02	KL-BH3 S1	05/05/99		05/24/99
33127.02	KL-BH3 S2	05/05/99		05/14/99
33128.02	KL-BH3 S3	05/05/99		05/14/99
33129.02	KL-BH4 S1	05/05/99		05/14/99
33130.02	KL-BH4 S2	05/05/99		05/14/99
33131.02	KL-BH4 S3	05/05/99		05/14/99

TEST CODE :STS 1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH
TEST NAME : SOLIDS TOTAL UNITS : %
PARAMETER : Solids-Total

SAMPLE ID	RESULTS	Q
EE-99-33119 KL-MW-7 S2	78	
EE-99-33120 KL-BH1 S1	90	
EE-99-33121 KL-BH1 S2	82	
EE-99-33122 KL-BH1 S3	86	
EE-99-33123 KL-BH2 S1	83	
EE-99-33124 KL-BH2 S2	86	
EE-99-33125 KL-BH2 S3	75	
EE-99-33126 KL-BH3 S1	89	
EE-99-33127 KL-BH3 S2	82	
EE-99-33128 KL-BH3 S3	78	
EE-99-33129 KL-BH4 S1	85	
EE-99-33130 KL-BH4 S2	90	
EE-99-33131 KL-BH4 S3	94	

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE

133

QUALITY CONTROL FOR PRECISION
RESULTS OF ANALYSIS OF DUPLICATE
ANALYSES OF SOLID SAMPLES

9901.361

(%)

Parameter	E & E Laboratory No. 99-	Sample Result	Duplicate Result	Relative Percent Difference (RPD)
Solids-Total	33119	78.3	78.6	0.38

TEST CODE :SCNT 1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH

RESULTS IN DRY WEIGHT
UNITS : MG/KG

TEST NAME : CYANIDE TOTAL
PARAMETER : Cyanide Total

SAMPLE ID	RESULTS	Q	QNT. LIMIT
EE-99-33119 KL-MW-7 S2	ND		0.64
EE-99-33120 KL-BH1 S1	ND		0.56
EE-99-33121 KL-BH1 S2	ND		0.61
EE-99-33122 KL-BH1 S3	ND		0.58
EE-99-33123 KL-BH2 S1	ND		0.60
EE-99-33124 KL-BH2 S2	ND		0.58
EE-99-33125 KL-BH2 S3	ND		0.67
EE-99-33126 KL-BH3 S1	ND		0.56
EE-99-33127 KL-BH3 S2	ND		0.61
EE-99-33128 KL-BH3 S3	ND		0.65
EE-99-33129 KL-BH4 S1	ND		0.59
EE-99-33130 KL-BH4 S2	ND		0.56
EE-99-33131 KL-BH4 S3	0.76		0.53

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE
NA = NOT APPLICABLE

135

QUALITY CONTROL FOR ACCURACY: PERCENT RECOVERY
FOR SPIKED SOLID SAMPLES

9901.361

(mg/kg as received)

Parameter	E & E Laboratory No. 99-	Sample Result	Spiked Sample Result	Spike Amount	Percent Recovery
CYANIDE TOTAL	33120	ND	2.75	2.90	94.8

ND = NOT DETECTED

136

QUALITY CONTROL FOR PRECISION
RESULTS OF ANALYSIS OF DUPLICATE
ANALYSES OF SOLID SAMPLES

9901.361

(mg/kg as received)

Parameter	E & E Laboratory No. 99-	Sample Result	Duplicate Result	Relative Percent Difference (RPD)
CYANIDE TOTAL	33119	ND	ND	NC

ND = NOT DETECTED

NC = NOT CALCULABLE

137

LABORATORY CONTROL SAMPLE (1372-20)

9901.361

(mg/L)

ANALYTE	FOUND VALUE	TRUE VALUE	PERCENT RECOVERY
CYANIDE TOTAL	0.275	0.290	94.8

THIS RECOVERY IS WITHIN QC TARGETS.

130

TEST CODE :SCNT 1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH

RESULTS IN DRY WEIGHT
UNITS : MG/KG

TEST NAME : CYANIDE TOTAL
PARAMETER : Cyanide Total

SAMPLE ID	RESULTS	Q	QNT. LIMIT
METHOD BLANK	ND		0.50

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE
NA = NOT APPLICABLE

135

TEST CODE :SPETHY1

JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH

RESULTS IN DRY WEIGHT
UNITS : MG/KG

TEST NAME : TRPH
PARAMETER : Petroleum Hydrocarbons

SAMPLE ID	RESULTS	Q	QNT. LIMIT
EE-99-33119 KL-MW-7 S2	280		26
EE-99-33120 KL-BH1 S1	210		22
EE-99-33121 KL-BH1 S2	730		24
EE-99-33122 KL-BH1 S3	260		23
EE-99-33123 KL-BH2 S1	250		24
EE-99-33124 KL-BH2 S2	46		23
EE-99-33125 KL-BH2 S3	2300		27
EE-99-33126 KL-BH3 S1	490		22
EE-99-33127 KL-BH3 S2	400		24
EE-99-33128 KL-BH3 S3	570		26
EE-99-33129 KL-BH4 S1	560		24
EE-99-33130 KL-BH4 S2	120		22
EE-99-33131 KL-BH4 S3	70		21

QUALIFIERS: C = COMMENT
J = ESTIMATED VALUE
NA = NOT APPLICABLE
ND = NOT DETECTED

140

TEST CODE :SPETHY1 JOB NUMBER :9901.361
ELAP ID : 10486

Ecology and Environment, Inc.
Analytical Services Center

CLIENT : YM7000-NPS-KENILWORTH

RESULTS IN DRY WEIGHT
UNITS : MG/KG

TEST NAME : TRPH
PARAMETER : Petroleum Hydrocarbons

SAMPLE ID	RESULTS	Q	QNT. LIMIT
METHOD BLANK(5/14/99)	ND		20
METHOD BLANK(5/24/99)	ND		20

QUALIFIERS: C = COMMENT ND = NOT DETECTED
J = ESTIMATED VALUE
NA = NOT APPLICABLE

141

QUALITY CONTROL FOR ACCURACY: PERCENT RECOVERY
FOR SPIKED SOLID SAMPLES

9901.361

(mg/kg as received)

Parameter	E & E Laboratory No. 99-	Sample Result	Spiked Sample Result	Spike Amount	Percent Recovery
TRPH	33126	437	306	143	0

142

QUALITY CONTROL FOR PRECISION
RESULTS OF ANALYSIS OF DUPLICATE
ANALYSES OF SOLID SAMPLES

9901.361

(mg/kg as received)

Parameter	E & E Laboratory No. 99-	Sample Result	Duplicate Result	Relative Percent Difference (RPD)
TRPH	33126	437	85.3	135

LABORATORY CONTROL SAMPLE (1286-51)

9901.361

(mg/kg)

ANALYTE	FOUND VALUE	TRUE VALUE	PERCENT RECOVERY
TRPH	166	161	103

THIS RECOVERY IS WITHIN E & E, INC. QC TARGETS (80-119%).

14

LABORATORY CONTROL SAMPLE (1286-54)

9901.361

(mg/kg)

ANALYTE	FOUND VALUE	TRUE VALUE	PERCENT RECOVERY
TRPH	178	161	111

THIS RECOVERY IS WITHIN E & E, INC. QC TARGETS (80-119%).

14

Preliminary Assessment/ Site Investigation of Kenilworth Park Landfill N.E. Washington, D.C. Volume III Analytical Results Second Round of Sampling

Contract No.: 1443CX0001-95-003
Task Order No.: 1443PX300099536

March 2000

Prepared for:

NATIONAL PARK SERVICE
National Capital Region
1100 Ohio Drive S.W.
Washington, D.C. 20242

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Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

March 31, 2000

Ms. Nermin Ahmad
E and E Washington D.C. Office
1700 North Moore St.
Arlington, VA 22209

RE: Kenilworth Park PA/SI
Work Order No.: **0003127**

Dear Ms. Nermin Ahmad,

Ecology and Environment, Inc. received 17 samples on Wednesday, March 15, 2000 for the analyses presented in the following report.

You will receive an invoice under separate cover.

E & E will retain the samples addressed in this report for 30 days, unless otherwise instructed by the client. If additional storage is requested, the storage fee is $1.00 per sample container per month, to accrue until the client authorizes sample destruction.

Sincerely,

Tony Bogolin

Tony Bogolin
Project Manager

CC:
Enclosures as note

CHAIN OF CUSTODY RECORD

ASC analytical services center

Ecology and Environment, Inc., Analytical Services Center
4493 Walden Avenue, Lancaster, New York, 14086, Tel: 716/685-8080, Fax 716/685-0852
Where Scientific Excellence and Efficiency Meet

Cooler No:
Lab:
Page: of

PROJECT No: 000515/M07024030

CLIENT: NATIONAL PARK SERVICE

LOCATION: (Include State) WASHINGTON DC

SITE NAME: KENILWORTH LANDFILL

PROJECT MANAGER: NARMIN ALMAS
OFFICE No.: (703) 522-6065

FIELD TEAM LEADER: HOSSEIN ALDIS
PHONE No.: (703) 522 6065

SAMPLERS: (PRINT)
SARA McMAHON
NATHAN GAITZ

CONTAINER TYPE AND PRESERVATIVE: 1L POLY HNO3

REQUESTED ANALYSIS: GW; RCRA METAL

TURNAROUND TIME: 24-HOUR, 48-HOUR, 1-WEEK, STANDARD, OTHER — RUSH

DATE	TIME	SAMPLE ID	MATRIX CODE	CHECK FOR MS/MSD	No. OF CONTAINERS	RCRA METAL	OVA/HNU READINGS (PPM)	BEGINNING DEPTH (FEET BGS)	ENDING DEPTH (FEET BGS)	REMARKS
03/13/00	1234	TMW-12	H2O		1	✓				
03/13/00	1243	TMW-12F								
03/13/00	1350	MW-6								
03/13/00	1510	MW-6F								
03/13/00	1440	EQUIPMENT BLANK								
03/13/00	1621	MW-5	GW							
03/13/00	1721	MW-5F								
03/14/00	1106	MW-4								
03/14/00	1117	MW-4F								
03/14/00	1150	MW-3								

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	Temperature Blank Info. Enclosed: Yes No	LAB PROJECT No.:	LAB PROJECT MANAGER:
[signature]	15:30 03/14/00	[signature]	3/15/00 10:20			
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	Ship Via: Date:	(FOR LAB USE ONLY) Date: Time:	
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	BL/Airbill Number:	Temperature: °C Work Order No:	

Distribution: White - Lab original Yellow - Field team leader/Project Manager

F1260699.P65

2

CHAIN OF CUSTODY RECORD

ASC analytical services center

Ecology and Environment, Inc., Analytical Services Center
4493 Walden Avenue, Lancaster, New York, 14086, Tel: 716/685-8080, Fax 716/685-0852
Where Scientific Excellence and Efficiency Meet

Cooler No: –
Lab:
Page: of

PROJECT No: 00054 5YM07 00 9300

CLIENT: NATIONAL PARK SERVICE

LOCATION: (Include State) WASHINGTON D.C.

SITE NAME: KENILWORTH LANDFILL

PROJECT MANAGER: NEERMIL AHMAD
OFFICE No.: (703) 522-6065

FIELD TEAM LEADER: HUSSEIN ALOIS
PHONE No.: (703) 522-6065

SAMPLERS: (PRINT) SARA McMahon, NATA GAMIL

CONTAINER TYPE AND PRESERVATIVE: 1L PAT / HNO3

TURNAROUND TIME: 24-HOUR ☐ 48-HOUR ☐ 1-WEEK ☐ STANDARD ☐ (RUSH) OTHER ____

REQUESTED ANALYSIS: RCRA METAL

DATE	TIME	SAMPLE ID	MATRIX CODE	CHECK FOR MS/MSD	No. OF CONTAINERS	RCRA METAL	OVA/HNU READINGS (PPM)	BEGINNING DEPTH (FEET BGS)	ENDING DEPTH (FEET BGS)	REMARKS
03/14/00	1154	MW-3F	H2O		1	✓				
03/14/00	1315	MW-2	GW							
03/14/00	1330	MW-2F								
03/14/00	1340	MW-2FDUP								
03/14/00	1338	MW-2DUP								
03/14/00	1407	MW-1								
03/14/00	1416	MW-1F		✓	✓					

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	Temperature Blank Info. Enclosed: Yes No	LAB PROJECT No.:	LAB PROJECT MANAGER:
[signature]	1530 03/14/00	[signature]	3/15/00 10:00			
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	Ship Via: Date:	(FOR LAB USE ONLY) Date: Time:	
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	BL/Airbill Number:	Temperature: °C Work Order No:	

Distribution: White - Lab original Yellow - Field team leader/Project Manager

F1260699.P65

Ecology and Environment, Inc. Analytical Services Center

Cooler Receipt Form

PACKAGE RECEIPT #: 5683 NUMBER OF COOLERS: 1 cooler DATE RECEIVED: 3/15/00

E & E PROJECT #: _____ PROJECT OR SITE NAME: Kenilworth Landfill

A. Preliminary Examination Phase

CIRCLE ONE

1. Did coolers come with airbill or packing slip? _____ (YES) NO NA

   Enter carrier here and print airbill # below: *(Circle One)* (FedEx) Airborne Client Other

2. Did cooler(s) have custody seals? _____ YES (NO) NA

   If YES, how many and where? _____

3. Were custody seals unbroken and intact on receipt? _____ YES NO* (NA)

4. Were custody seals dated and signed? _____ YES NO (NA)

   If YES, enter date: _____ Name: _____

5. Sign here to acknowledge receipt of cooler (s): [signature]

   Date cooler(s) opened: 3/15/00 C-O-C numbers: _____

   Cooler(s) opened by (print): Jennifer Wasf Signature: [signature]

6. Were the C-O-C forms received? _____ (YES) NO* NA

7. Was the project identifiable from the C-O-C form? _____ (YES) NO* NA
   If YES, enter the project number and name in the heading above.

Please record Temperature Blank Vial or Cooler Temperature for Each Cooler, Range (2 - 6C)* NJDEP must be <4C

AIRBILL #	TEMP. °C	AIRBILL #	TEMP. °C	AIRBILL #	TEMP. °C
8713 5702 7906 5	4°C				

Thermometer # 134 Correction Factor 0 * If No or Temperature Outside of Acceptable Range, prepare a PM Notification form.

B. Unpacking Phase

8. Was enough packing material used in cooler(s)? _____ (YES) NO NA
   Type of material: Vermiculite Bubble Wrap (Other)

9. If required, was enough ice used? _____ (YES) NO NA
   If YES, type of ice used: (Wet) Dry Blue Other

10. Was a temperature blank vial included inside cooler(s)? _____ YES (NO) NA
    If YES, indicate temperature blank vial temperature in table above. If NO, indicate cooler temperature in table above.

11. Were all containers sealed in separate plastic bags? _____ YES (NO) NA

12. Did all containers arrive unbroken and in good condition? _____ (YES) NO* NA

C. Login Phase

Samples Logged in By (print): _____ Signature: _____ Date: _____

13. Were all container labels complete (e.g. date, time preserv)? _____ YES NO* NA

14. Were all C-O-C forms filled out properly in ink and signed? _____ YES NO* NA

15. Did the C-O-C form agree with containers received? _____ YES NO* NA

16. Were the correct containers used for the tests requested? _____ YES NO* NA

17. Were the correct preservatives listed on the sample labels? _____ YES NO* NA

18. Was a sufficient sample volume sent for the tests requested? _____ YES NO* NA

19. Were all volatile samples received without head space? _____ YES NO* NA

*Prepare a PM Notification form.

L:\Forms & Lists\Final\F_024.ene\Rev 0\Approval Date 4-1-98\Last Update: 02/09/00 10:52 AM

4

Ecology and Environment, Inc.

Analytical Services Center
Lancaster, New York 14086
Phone: (716) 685-8080

Laboratory Results

NYS ELAP ID#: 10486

Lab Order: 0003127
Client: E and E Washington D.C. Office
Project: Kenilworth Park PA/SI

DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
0003127-01A	TMW-12	03/13/2000 12:34:00 PM	Water	Mercury Analysis in Water by Method 7470A		03/20/2000	03/21/2000
				Metals, RCRA by ICP Method 6010B		03/22/2000	03/28/2000
0003127-02A	TMW-12F	03/13/2000 12:43:00 PM		Mercury Analysis in Water by Method 7470A		03/20/2000	03/21/2000
				Metals, RCRA by ICP Method 6010B		03/22/2000	03/28/2000
0003127-03A	MW-6	03/13/2000 1:50:00 PM		Mercury Analysis in Water by Method 7470A		03/20/2000	03/21/2000
				Metals, RCRA by ICP Method 6010B		03/22/2000	03/28/2000
0003127-04A	MW-6F	03/13/2000 3:10:00 PM		Mercury Analysis in Water by Method 7470A		03/20/2000	03/21/2000
				Metals, RCRA by ICP Method 6010B		03/22/2000	03/28/2000
0003127-05A	EQUIPMENT BLANK	03/13/2000 2:40:00 PM		Mercury Analysis in Water by Method 7470A		03/20/2000	03/21/2000
				Metals, RCRA by ICP Method 6010B		03/22/2000	03/28/2000
0003127-06A	MW-5	03/13/2000 4:27:00 PM		Mercury Analysis in Water by Method 7470A		03/20/2000	03/21/2000
				Metals, RCRA by ICP Method 6010B		03/22/2000	03/28/2000
0003127-07A	MW-5F	03/13/2000 5:21:00 PM		Mercury Analysis in Water by Method 7470A		03/20/2000	03/21/2000
				Metals, RCRA by ICP Method 6010B		03/22/2000	03/28/2000
0003127-08A	MW-4	03/14/2000 11:06:00 AM		Mercury Analysis in Water by Method 7470A		03/24/2000	03/25/2000
				Metals, RCRA by ICP Method 6010B		03/22/2000	03/28/2000
0003127-09A	MW-4F	03/14/2000 11:17:00 AM		Mercury Analysis in Water by Method 7470A		03/20/2000	03/21/2000
				Metals, RCRA by ICP Method 6010B		03/22/2000	03/28/2000
0003127-10A	MW-3	03/14/2000 11:50:00 AM		Mercury Analysis in Water by Method 7470A		03/20/2000	03/21/2000
				Metals, RCRA by ICP Method 6010B		03/22/2000	03/28/2000

Ecology and Environment, Inc.

Analytical Services Center
Lancaster, New York 14086
Phone: (716) 685-8080

Laboratory Results

NYS ELAP ID#: 10486

Lab Order: 0003127
Client: E and E Washington D.C. Office
Project: Kenilworth Park PA/SI

DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
0003127-11A	MW-3F	03/14/2000 11:54:00 AM	Water	Mercury Analysis in Water by Method 7470A		03/20/2000	03/21/2000
				Metals, RCRA by ICP Method 6010B		03/22/2000	03/28/2000
0003127-12A	MW-2	03/14/2000 1:15:00 PM		Mercury Analysis in Water by Method 7470A		03/20/2000	03/21/2000
				Metals, RCRA by ICP Method 6010B		03/22/2000	03/28/2000
0003127-13A	MW-2F	03/14/2000 1:30:00 PM		Mercury Analysis in Water by Method 7470A		03/20/2000	03/21/2000
				Metals, RCRA by ICP Method 6010B		03/22/2000	03/28/2000
0003127-14A	MW-2FDUP	03/14/2000 1:40:00 PM		Mercury Analysis in Water by Method 7470A		03/20/2000	03/21/2000
				Metals, RCRA by ICP Method 6010B		03/22/2000	03/28/2000
0003127-15A	MW-2DUP	03/14/2000 1:38:00 PM		Mercury Analysis in Water by Method 7470A		03/20/2000	03/21/2000
				Metals, RCRA by ICP Method 6010B		03/22/2000	03/28/2000
0003127-16A	MW-1	03/14/2000 2:07:00 PM		Mercury Analysis in Water by Method 7470A		03/20/2000	03/21/2000
				Metals, RCRA by ICP Method 6010B		03/22/2000	03/28/2000
0003127-17A	MW-1F	03/14/2000 2:16:00 PM		Mercury Analysis in Water by Method 7470A		03/20/2000	03/21/2000
				Metals, RCRA by ICP Method 6010B		03/22/2000	03/28/2000

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	TMW-12
Lab Order:	0003127	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/13/00 12:34:00 PM
Lab ID:	0003127-01A **Sample Type:** SAMP	**Matrix:**	WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
1_6010B_RCRA_W								
Arsenic	ND		10.0	µg/L	1	3/28/00 3:14:41 PM		SHT
Barium	144		20.0	µg/L	1			
Cadmium	ND		5.00	µg/L	1			
Chromium	18.7		10.0	µg/L	1			
Lead	20.3		5.00	µg/L	1			
Selenium	ND		10.0	µg/L	1			
Silver	ND		10.0	µg/L	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.1 - 3/10/00 12:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	TMW-12
Lab Order:	0003127	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/13/00 12:34:00 PM
Lab ID:	0003127-01A **Sample Type:** SAMP	**Matrix:**	WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN WATER BY METHOD 7470A								
1_7470A_HG_W								
Mercury	ND		0.2	µg/L	1	3/21/00 8:27:50 PM	LEEMAN_000321D	PH

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.1 - 3/10/00 12:00:00 PM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	**TMW-12F**
Lab Order:	0003127	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/13/00 12:43:00 PM
Lab ID:	**0003127-02A** **Sample Type:** SAMP	**Matrix:**	WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
1_6010B_RCRA_W								
Arsenic	ND		10.0	µg/L	1	3/28/00 3:18:17 PM		SHT
Barium	122		20.0	µg/L	1			
Cadmium	ND		5.00	µg/L	1			
Chromium	ND		10.0	µg/L	1			
Lead	8.71		5.00	µg/L	1			
Selenium	ND		10.0	µg/L	1			
Silver	ND		10.0	µg/L	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.1 - 3/10/00 12:00:00 PM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	TMW-12F
Lab Order:	0003127	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/13/00 12:43:00 PM
Lab ID:	0003127-02A **Sample Type:** SAMP	**Matrix:**	WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN WATER BY METHOD 7470A								
1_7470A_HG_W								
Mercury	ND		0.2	µg/L	1	3/21/00 8:28:44 PM	LEEMAN_000321D	PH

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.1 - 3/10/00 12:00:00 PM

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CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	MW-6
Lab Order:	0003127	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/13/00 1:50:00 PM
Lab ID:	0003127-03A **Sample Type:** SAMP	**Matrix:**	WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
1_6010B_RCRA_W								
Arsenic	ND		10.0	µg/L	1	3/28/00 3:21:52 PM		SHT
Barium	243		20.0	µg/L	1			
Cadmium	ND		5.00	µg/L	1			
Chromium	1550		10.0	µg/L	1			
Lead	17.1		5.00	µg/L	1			
Selenium	ND		10.0	µg/L	1			
Silver	ND		10.0	µg/L	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.1 - 3/10/00 12:00:00 PM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	MW-6
Lab Order:	0003127	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/13/00 1:50:00 PM
Lab ID:	0003127-03A **Sample Type:** SAMP	**Matrix:**	WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN WATER BY METHOD 7470A								
1_7470A_HG_W								
Mercury	ND		0.2	µg/L	1	3/21/00 8:29:59 PM	LEEMAN_000321D	PH

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.1 - 3/10/00 12:00:00 PM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	**MW-6F**
Lab Order:	0003127	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/13/00 3:10:00 PM
Lab ID:	**0003127-04A** **Sample Type:** SAMP	**Matrix:**	WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
1_6010B_RCRA_W								
Arsenic	ND		10.0	µg/L	1	3/28/00 3:25:27 PM		SHT
Barium	151		20.0	µg/L	1			
Cadmium	ND		5.00	µg/L	1			
Chromium	ND		10.0	µg/L	1			
Lead	ND		5.00	µg/L	1			
Selenium	ND		10.0	µg/L	1			
Silver	ND		10.0	µg/L	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.1 - 3/10/00 12:00:00 PM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	MW-6F
Lab Order:	0003127	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/13/00 3:10:00 PM
Lab ID:	0003127-04A **Sample Type:** SAMP	**Matrix:**	WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN WATER BY METHOD 7470A								
1_7470A_HG_W								
Mercury	ND		0.2	µg/L	1	3/21/00 8:31:02 PM	LEEMAN_000321D	PH

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.1 - 3/10/00 12:00:00 PM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003127
Project: Kenilworth Park PA/SI
Lab ID: 0003127-05A **Sample Type:** SAMP

Client Sample ID: EQUIPMENT BLANK
Alt. Client ID:
Collection Date: 3/13/00 2:40:00 PM
Matrix: WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
1_6010B_RCRA_W								
Arsenic	ND		10.0	µg/L	1	3/28/00 3:28:54 PM		SHT
Barium	ND		20.0	µg/L	1			
Cadmium	ND		5.00	µg/L	1			
Chromium	ND		10.0	µg/L	1			
Lead	ND		5.00	µg/L	1			
Selenium	ND		10.0	µg/L	1			
Silver	ND		10.0	µg/L	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.1 - 3/10/00 12:00:00 PM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	EQUIPMENT BLANK
Lab Order:	0003127	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/13/00 2:40:00 PM
Lab ID:	0003127-05A **Sample Type:** SAMP	**Matrix:**	WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN WATER BY METHOD 7470A 1_7470A_HG_W								
Mercury	ND		0.2	µg/L	1	3/21/00 8:32:48 PM	LEEMAN_000321D	PH

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.1 - 3/10/00 12:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	MW-5
Lab Order:	0003127	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/13/00 4:27:00 PM
Lab ID:	0003127-06A **Sample Type:** SAMP	**Matrix:**	WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
1_6010B_RCRA_W								
Arsenic	ND		10.0	µg/L	1	3/28/00 3:32:31 PM		SHT
Barium	200		20.0	µg/L	1			
Cadmium	ND		5.00	µg/L	1			
Chromium	10.6		10.0	µg/L	1			
Lead	35.6		5.00	µg/L	1			
Selenium	ND		10.0	µg/L	1			
Silver	ND		10.0	µg/L	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.1 - 3/10/00 12:00:00 PM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003127
Project: Kenilworth Park PA/SI
Lab ID: 0003127-06A **Sample Type:** SAMP

Client Sample ID: MW-5
Alt. Client ID:
Collection Date: 3/13/00 4:27:00 PM
Matrix: WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN WATER BY METHOD 7470A 1_7470A_HG_W								
Mercury	ND		0.2	µg/L	1	3/21/00 8:33:54 PM	LEEMAN_000321D	PH

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.1 - 3/10/00 12:00:00 PM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	MW-5F
Lab Order:	0003127	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/13/00 5:21:00 PM
Lab ID:	0003127-07A **Sample Type:** SAMP	**Matrix:**	WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
1_6010B_RCRA_W								
Arsenic	ND		10.0	µg/L	1	3/28/00 3:36:09 PM		SHT
Barium	184		20.0	µg/L	1			
Cadmium	5.00		5.00	µg/L	1			
Chromium	ND		10.0	µg/L	1			
Lead	94.5		5.00	µg/L	1			
Selenium	ND		10.0	µg/L	1			
Silver	ND		10.0	µg/L	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.1 - 3/10/00 12:00:00 PM

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NYS ELAP ID#: 10486
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CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	MW-5F
Lab Order:	0003127	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/13/00 5:21:00 PM
Lab ID:	0003127-07A **Sample Type:** SAMP	**Matrix:**	WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN WATER BY METHOD 7470A								
1_7470A_HG_W								
Mercury	ND		0.2	µg/L	1	3/21/00 8:34:58 PM	LEEMAN_000321D	PH

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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NYS ELAP ID#: 10486
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CLIENT: E and E Washington D.C. Office
Lab Order: 0003127
Project: Kenilworth Park PA/SI
Lab ID: 0003127-08A **Sample Type:** SAMP

Client Sample ID: MW-4
Alt. Client ID:
Collection Date: 3/14/00 11:06:00 AM
Matrix: WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
1_6010B_RCRA_W								
Arsenic	ND		10.0	µg/L	1	3/28/00 3:46:52 PM		SHT
Barium	309		20.0	µg/L	1			
Cadmium	ND		5.00	µg/L	1			
Chromium	ND		10.0	µg/L	1			
Lead	ND		5.00	µg/L	1			
Selenium	ND		10.0	µg/L	1			
Silver	ND		10.0	µg/L	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.1 - 3/10/00 12:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486

Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	MW-4
Lab Order:	0003127	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/14/00 11:06:00 AM
Lab ID:	0003127-08A **Sample Type:** SAMP	**Matrix:**	WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN WATER BY METHOD 7470A								
1_7470A_HG_W								
Mercury	ND		0.2	µg/L	1	3/25/00 3:12:11 PM	LEEMAN_000325A	TS

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.1 - 3/10/00 12:00:00 PM

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Laboratory Results

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	MW-4F
Lab Order:	0003127	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/14/00 11:17:00 AM
Lab ID:	0003127-09A **Sample Type:** SAMP	**Matrix:**	WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
1_6010B_RCRA_W								
Arsenic	ND		10.0	µg/L	1	3/28/00 3:50:29 PM		SHT
Barium	301		20.0	µg/L	1			
Cadmium	ND		5.00	µg/L	1			
Chromium	ND		10.0	µg/L	1			
Lead	8.35		5.00	µg/L	1			
Selenium	ND		10.0	µg/L	1			
Silver	ND		10.0	µg/L	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.1 - 3/10/00 12:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	MW-4F
Lab Order:	0003127	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/14/00 11:17:00 AM
Lab ID:	0003127-09A **Sample Type:** SAMP	**Matrix:**	WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN WATER BY METHOD 7470A								
1_7470A_HG_W								
Mercury	ND		0.2	µg/L	1	3/21/00 8:35:55 PM	LEEMAN_000321D	PH

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.1 - 3/10/00 12:00:00 PM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003127
Project: Kenilworth Park PA/SI
Lab ID: 0003127-10A **Sample Type:** SAMP

Client Sample ID: MW-3
Alt. Client ID:
Collection Date: 3/14/00 11:50:00 AM
Matrix: WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
1_6010B_RCRA_W								
Arsenic	ND		10.0	µg/L	1	3/28/00 3:54:09 PM		SHT
Barium	193		20.0	µg/L	1			
Cadmium	ND		5.00	µg/L	1			
Chromium	ND		10.0	µg/L	1			
Lead	ND		5.00	µg/L	1			
Selenium	ND		10.0	µg/L	1			
Silver	ND		10.0	µg/L	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.1 - 3/10/00 12:00:00 PM

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Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003127
Project: Kenilworth Park PA/SI
Lab ID: 0003127-10A **Sample Type:** SAMP

Client Sample ID: MW-3
Alt. Client ID:
Collection Date: 3/14/00 11:50:00 AM
Matrix: WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN WATER BY METHOD 7470A 1_7470A_HG_W								
Mercury	ND		0.2	µg/L	1	3/21/00 8:39:58 PM	LEEMAN_000321D	PH

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.1 - 3/10/00 12:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	MW-3F
Lab Order:	0003127	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/14/00 11:54:00 AM
Lab ID:	0003127-11A **Sample Type:** SAMP	**Matrix:**	WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
1_6010B_RCRA_W								
Arsenic	ND		10.0	µg/L	1	3/28/00 3:57:49 PM		SHT
Barium	161		20.0	µg/L	1			
Cadmium	ND		5.00	µg/L	1			
Chromium	ND		10.0	µg/L	1			
Lead	ND		5.00	µg/L	1			
Selenium	ND		10.0	µg/L	1			
Silver	ND		10.0	µg/L	1			

Definitions:	ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
	J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
	H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.1 - 3/10/00 12:00:00 PM

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	MW-3F
Lab Order:	0003127	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/14/00 11:54:00 AM
Lab ID:	0003127-11A **Sample Type:** SAMP	**Matrix:**	WATER. **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN WATER BY METHOD 7470A 1_7470A_HG_W								
Mercury	ND		0.2	µg/L	1	3/21/00 8:40:56 PM	LEEMAN_000321D	PH

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.1 - 3/10/00 12:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	MW-2
Lab Order:	0003127	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/14/00 1:15:00 PM
Lab ID:	0003127-12A **Sample Type:** SAMP	**Matrix:**	WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
1_6010B_RCRA_W								
Arsenic	ND		10.0	µg/L	1	3/28/00 4:01:30 PM		SHT
Barium	1060		20.0	µg/L	1			
Cadmium	5.49		5.00	µg/L	1			
Chromium	ND		10.0	µg/L	1			
Lead	13.7		5.00	µg/L	1			
Selenium	ND		10.0	µg/L	1			
Silver	ND		10.0	µg/L	1			

Definitions:			
	ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
	J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
	H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.1 - 3/10/00 12:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	MW-2
Lab Order:	0003127	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/14/00 1:15:00 PM
Lab ID:	0003127-12A **Sample Type:** SAMP	**Matrix:**	WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN WATER BY METHOD 7470A								
1_7470A_HG_W								
Mercury	ND		0.2	µg/L	1	3/21/00 8:41:56 PM	LEEMAN_000321D	PH

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.1 - 3/10/00 12:00:00 PM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	**MW-2F**
Lab Order:	0003127	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/14/00 1:30:00 PM
Lab ID:	**0003127-13A** **Sample Type:** SAMP	**Matrix:**	WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
1_6010B_RCRA_W								
Arsenic	ND		10.0	µg/L	1	3/28/00 4:05:12 PM		SHT
Barium	987		20.0	µg/L	1			
Cadmium	ND		5.00	µg/L	1			
Chromium	ND		10.0	µg/L	1			
Lead	ND		5.00	µg/L	1			
Selenium	ND		10.0	µg/L	1			
Silver	ND		10.0	µg/L	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.1 - 3/10/00 12:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	**MW-2F**
Lab Order:	0003127	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/14/00 1:30:00 PM
Lab ID:	**0003127-13A** **Sample Type:** SAMP	**Matrix:**	WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN WATER BY METHOD 7470A								
1_7470A_HG_W								
Mercury	ND		0.2	µg/L	1	3/21/00 8:43:03 PM	LEEMAN_000321D	PH

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.1 - 3/10/00 12:00:00 PM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003127
Project: Kenilworth Park PA/SI
Lab ID: 0003127-14A **Sample Type:** SAMP

Client Sample ID: MW-2FDUP
Alt. Client ID:
Collection Date: 3/14/00 1:40:00 PM
Matrix: WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
1_6010B_RCRA_W								
Arsenic	ND		10.0	µg/L	1	3/28/00 4:08:50 PM		SHT
Barium	1040		20.0	µg/L	1			
Cadmium	ND		5.00	µg/L	1			
Chromium	ND		10.0	µg/L	1			
Lead	ND		5.00	µg/L	1			
Selenium	ND		10.0	µg/L	1			
Silver	ND		10.0	µg/L	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.1 - 3/10/00 12:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	MW-2FDUP
Lab Order:	0003127	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/14/00 1:40:00 PM
Lab ID:	0003127-14A **Sample Type:** SAMP	**Matrix:**	WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN WATER BY METHOD 7470A								
1_7470A_HG_W								
Mercury	ND		0.2	µg/L	1	3/21/00 8:44:17 PM	LEEMAN_000321D	PH

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.1 - 3/10/00 12:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	**MW-2DUP**
Lab Order:	0003127	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/14/00 1:38:00 PM
Lab ID:	**0003127-15A** **Sample Type:** SAMP	**Matrix:**	WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
1_6010B_RCRA_W								
Arsenic	ND		10.0	µg/L	1	3/28/00 4:12:24 PM		SHT
Barium	1140		20.0	µg/L	1			
Cadmium	5.38		5.00	µg/L	1			
Chromium	ND		10.0	µg/L	1			
Lead	15.6		5.00	µg/L	1			
Selenium	ND		10.0	µg/L	1			
Silver	ND		10.0	µg/L	1			

Definitions:			
	ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
	J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
	H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.1 - 3/10/00 12:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	MW-2DUP
Lab Order:	0003127	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/14/00 1:38:00 PM
Lab ID:	0003127-15A **Sample Type:** SAMP	**Matrix:**	WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN WATER BY METHOD 7470A								
1_7470A_HG_W								
Mercury	ND		0.2	µg/L	1	3/21/00 8:45:09 PM	LEEMAN_000321D	PH

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.1 - 3/10/00 12:00:00 PM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	MW-1
Lab Order:	0003127	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/14/00 2:07:00 PM
Lab ID:	0003127-16A **Sample Type:** SAMP	**Matrix:**	WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
1_6010B_RCRA_W								
Arsenic	ND		10.0	µg/L	1	3/28/00 4:16:00 PM		SHT
Barium	230		20.0	µg/L	1			
Cadmium	ND		5.00	µg/L	1			
Chromium	28.5		10.0	µg/L	1			
Lead	7.91		5.00	µg/L	1			
Selenium	ND		10.0	µg/L	1			
Silver	ND		10.0	µg/L	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.1 - 3/10/00 12:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	MW-1
Lab Order:	0003127	Alt. Client ID:	
Project:	Kenilworth Park PA/SI	Collection Date:	3/14/00 2:07:00 PM
Lab ID:	0003127-16A Sample Type: SAMP	Matrix:	WATER % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN WATER BY METHOD 7470A 1_7470A_HG_W								
Mercury	ND		0.2	µg/L	1	3/21/00 8:46:46 PM	LEEMAN_000321D	PH

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.1 - 3/10/00 12:00:00 PM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	MW-1F
Lab Order:	0003127	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/14/00 2:16:00 PM
Lab ID:	0003127-17A **Sample Type:** SAMP	**Matrix:**	WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
1_6010B_RCRA_W								
Arsenic	ND		10.0	µg/L	1	3/28/00 4:26:42 PM		SHT
Barium	183		20.0	µg/L	1			
Cadmium	ND		5.00	µg/L	1			
Chromium	ND		10.0	µg/L	1			
Lead	ND		5.00	µg/L	1			
Selenium	ND		10.0	µg/L	1			
Silver	ND		10.0	µg/L	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.1 - 3/10/00 12:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	MW-1F
Lab Order:	0003127	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/14/00 2:16:00 PM
Lab ID:	0003127-17A **Sample Type:** SAMP	**Matrix:**	WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN WATER BY METHOD 7470A								
1_7470A_HG_W								
Mercury	ND		0.2	µg/L	1	3/21/00 8:48:00 PM	LEEMAN_000321D	PH

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.1 - 3/10/00 12:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003127
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Sample Matrix Spike

Metals, RCRA by ICP Method 6010B Test Code: *1_6010B_RCRA_W* Units: µg/L

Sample ID: **0003127-17AS**

Run Batch ID: **OPTIMA_000328B** SeqNo: **170461** Analysis Date **3/28/00 4:30:20 PM** Prep Batch ID: **200000666** Prep Date: **3/22/00**

	Analyte	Result	PQL	SPK Added	Orig Result	%REC	%RPD
A	Arsenic	35.25	10	40	0	88%	0.0%
A	Barium	2091	20	2000	183.5	95%	0.0%
A	Cadmium	51.63	5	50	2.941	97%	0.0%
A	Chromium	198	10	200	1.56	98%	0.0%
A	Lead	19.8	5	20	3.535	81%	0.0%
A	Selenium	ND	10	10	0	0%	0.0%
A	Silver	47.1	10	50	0	94%	0.0%

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Qualifiers: ND - Not Detected at the Reporting Limit (PQL) S - Spike Recovery outside accepted recovery limits R - RPD outside accepted recovery limits
J - Analyte detected below quantitation limits (MDL<*<PQL) B - Analyte detected in the associated Method Blank

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003127
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Sample Matrix Spike Duplicate

Metals, RCRA by ICP Method 6010B Test Code: *1_6010B_RCRA_W* Units: µg/L

Sample ID: **0003127-17AS1**

Run Batch ID: **OPTIMA_000328B** SeqNo: **170462** Analysis Date **3/28/00 4:33:58 PM** Prep Batch ID: **200000666** Prep Date: **3/22/00**

	Analyte	Result	PQL	SPK Added	Orig Result	%REC	%RPD
A	Arsenic	41.89	10	40	0	105%	17.2%
A	Barium	2011	20	2000	183.5	91%	4.3%
A	Cadmium	49.5	5	50	2.941	93%	4.5%
A	Chromium	190.7	10	200	1.56	95%	3.8%
A	Lead	20.7	5	20	3.535	86%	5.4%
A	Selenium	13.59	10	10	0	136%	200.0%
A	Silver	45.11	10	50	0	90%	4.3%

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Qualifiers: ND - Not Detected at the Reporting Limit (PQL) S - Spike Recovery outside accepted recovery limits R - RPD outside accepted recovery limits
J - Analyte detected below quantitation limits (MDL<*<PQL) B - Analyte detected in the associated Method Blank

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Laboratory Results

YS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003127
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT

Sample Matrix Spike

Mercury Analysis in Water by Method 7470A Test Code: *1_7470A_HG_W* Units: µg/L

Sample ID: **0003127-17AS1**

Run Batch ID: LEEMAN_000321D SeqNo: 166707 Analysis Date: 3/21/00 8:50:04 PM Prep Batch ID: 000320296 Prep Date: 3/20/00

Analyte	Result	PQL	SPK Added	Orig Result	%REC	%RPD
A Mercury	0.7067	0.2	1	0	71%	0.0%

43

Qualifiers: ND - Not Detected at the Reporting Limit (PQL)
J - Analyte detected below quantitation limits (MDL<*<PQL)
S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
R - RPD outside accepted recovery limits

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003127
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Sample Duplicate

Mercury Analysis in Water by Method 7470A Test Code: *1_7470A_HG_W* Units: µg/L

Sample ID: **0003127-17AS** DF: 1 DL_No: 1

Run Batch ID: **LEEMAN_000321D** SeqNo: **166706** Analysis Date: **3/21/00 8:48:56 PM** Prep Batch ID: **000320296** Prep Date: **3/20/00**

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Mercury	ND	0.2	0	0	0%	0	0	0.0%	20	

44

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated

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Analytical Services Center
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Lancaster, New York 14086-

Laboratory Results

YS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003127
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Sample Matrix Spike

Mercury Analysis in Water by Method 7470A Test Code: *1_7470A_HG_W* Units: µg/L

Sample ID: **0003149-09CS**

Run Batch ID: LEEMAN_000325A SeqNo: 170234 Analysis Date: 3/25/00 2:54:48 PM Prep Batch ID: 000324290 Prep Date: 3/24/00

Analyte	Result	PQL	SPK Added	Orig Result	%REC	%RPD
A Mercury	0.9144	0.2	1	0	91%	0.0%

B-1271

45

Qualifiers: ND - Not Detected at the Reporting Limit (PQL)
J - Analyte detected below quantitation limits (MDL<*<PQL)
S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
R - RPD outside accepted recovery limits

Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

Laboratory Results

YS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003127
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT

Sample Matrix Spike Duplicate

Mercury Analysis in Water by Method 7470A Test Code: *1_7470A_HG_W* Units: µg/L

Sample ID: **0003149-09CS1**

Run Batch ID: **LEEMAN_000325A** SeqNo: **170235** Analysis Date: **3/25/00 2:56:04 PM** Prep Batch ID: **000324290** Prep Date: **3/24/00**

Analyte	Result	PQL	SPK Added	Orig Result	%REC	%RPD
A Mercury	1.13	0.2	1	0	113%	21.0%

B-1272

46

Qualifiers: ND - Not Detected at the Reporting Limit (PQL)
J - Analyte detected below quantitation limits (MDL<*<PQL)
S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
R - RPD outside accepted recovery limits

Ecology and Environment, Inc.
Analytical Services Center
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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003127
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Laboratory Control Spike - generic

Metals, RCRA by ICP Method 6010B Test Code: *1_6010B_RCRA_W* Units: µg/L

Sample ID: **LCS-200000666** DF: 1 DL_No: 1

Run Batch ID: **OPTIMA_000328B** SeqNo: **170439** Analysis Date **3/28/00 3:11:05 PM** Prep Batch ID: **200000666** Prep Date: **3/22/00**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Arsenic	975.7	10	1000	0	98%	85	115	0.0%		
A	Barium	966.9	20	1000	0	97%	85	115	0.0%		
A	Cadmium	951.7	5	1000	0	95%	85	115	0.0%		
A	Chromium	952.6	10	1000	0	95%	85	115	0.0%		
A	Lead	952.8	5	1000	0	95%	85	115	0.0%		
A	Selenium	973.1	10	1000	0	97%	85	115	0.0%		
A	Silver	48.91	10	50	0	98%	85	115	0.0%		

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; RL -Reporting Limit
J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated

Ecology and Environment, Inc.

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Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003127
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT

Laboratory Control Spike - generic

Mercury Analysis in Water by Method 7470A Test Code: *1_7470A_HG_W* Units: µg/L

Sample ID: **Ck3LCSW** DF: 1 DL_No: 1

Run Batch ID: **LEEMAN_000321D** SeqNo: **166686** Analysis Date: **3/21/00 8:26:10 PM** Prep Batch ID: **000320296** Prep Date: **3/20/00**

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Mercury	1	0.2	1	0	100%	80	120	0.0%		

48

B-1274

Definitions: ND - Not Detected at the Reporting Limit; J - Analyte detected below reporting limits; 1 - Represents RSD Limit for Quad Analysis; * - LCS Recovery outside limits; B - Analyte detected in the associated Method Blank; NC - Not Calculated; M - Matrix Spike Recovery outside limits; RL -Reporting Limit; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)

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Analytical Services Center
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Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003127
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Laboratory Control Spike - generic

Mercury Analysis in Water by Method 7470A Test Code: *1_7470A_HG_W* Units: µg/L

Sample ID: **Ck3LCSW** DF: 1 DL_No: 1

Run Batch ID: LEEMAN_000325A SeqNo: 170222 Analysis Date: 3/25/00 2:37:21 PM Prep Batch ID: 000324290 Prep Date: 3/24/00

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Mercury	0.9459	0.2	1	0	95%	85	115	0.0%		

49

B-1275

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; RL -Reporting Limit
J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003127
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Method Blank

Metals, RCRA by ICP Method 6010B Test Code: *1_6010B_RCRA_W* Units: µg/L

Sample ID: **MB-200000666** DF: 1 DL_No: 1

Run Batch ID: **OPTIMA_000328B** SeqNo: **170438** Analysis Date **3/28/00 3:07:38 PM** Prep Batch ID: **200000666** Prep Date: **3/22/00**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Arsenic	ND	10								
A	Barium	0.6869	20								J
A	Cadmium	0.6696	5								J
A	Chromium	ND	10								
A	Lead	ND	5								
A	Selenium	ND	10								
A	Silver	ND	10								

50

Definitions: ND - Not Detected at the Reporting Limit
J - Analyte detected below reporting limits
1 - Represents RSD Limit for Quad Analysis
* - LCS Recovery outside limits
B - Analyte detected in the associated Method Blank
NC - Not Calculated
M - Matrix Spike Recovery outside limits
RL -Reporting Limit
R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003127
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Method Blank

Mercury Analysis in Water by Method 7470A Test Code: *1_7470A_HG_W* Units: µg/L

Sample ID: **Ck6PBW** DF: 1 DL_No: 1

Run Batch ID: LEEMAN_000321D SeqNo: 166685 Analysis Date: 3/21/00 8:25:01 PM Prep Batch ID: 000320296 Prep Date: 3/20/00

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Mercury	ND	0.2								

B-1277

51

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003127
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Method Blank

Mercury Analysis in Water by Method 7470A Test Code: *1_7470A_HG_W* Units: µg/L

Sample ID: **Ck6PBW** DF: 1 DL_No: 1

Run Batch ID: LEEMAN_000325A SeqNo: 170221 Analysis Date: 3/25/00 2:35:59 PM Prep Batch ID: 000324290 Prep Date: 3/24/00

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Mercury	ND	0.2								

52

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; RL -Reporting Limit
J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated

Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

April 18, 2000

Ms. Nermin Ahmad
E and E Washington D.C. Office
1700 North Moore St.
Arlington, VA 22209

RE: Kenilworth Park PA/SI
Work Order No.: **0003202**

Dear Ms. Nermin Ahmad,

Ecology and Environment, Inc. received 46 samples on Wednesday, March 22, 2000 for the analyses presented in the following report.

You will receive an invoice under separate cover.

E & E will retain the samples addressed in this report for 30 days, unless otherwise instructed by the client. If additional storage is requested, the storage fee is $1.00 per sample container per month, to accrue until the client authorizes sample destruction.

Sincerely,

Tony Bogolin

Tony Bogolin
Project Manager

CC:
Enclosures as note

CHAIN OF CUSTODY RECORD

ASC analytical services center

Ecology and Environment, Inc., Analytical Services Center
4493 Walden Avenue, Lancaster, New York, 14086, Tel: 716/685-8080, Fax 716/685-0852
Where Scientific Excellence and Efficiency Meet

Cooler No: _____
Lab: _____
Page: of

PROJECT No: 0005 45 Y M0 7 00 03 00

LOCATION: (Include State) WASHINGTON, DC

CLIENT: NATIONAL PARK SERVICE

SITE NAME: KENILWORTH LANDFILL

PROJECT MANAGER: NERMIN AHMAD
OFFICE No.: (703) 522-6065

FIELD TEAM LEADER: HUSSEIN ALDIS
PHONE No.: (703) 522-6065

SAMPLERS: (PRINT)
HUSSEIN ALDIS
SARA McMAHON
MATT RIES

CONTAINER TYPE AND PRESERVATIVE: 8oz glass reF-g

TURNAROUND TIME:
- 24-HOUR ☐
- 48-HOUR ☐
- 1-WEEK ☐
- STANDARD ☑
- OTHER _____

RUSH

REQUESTED ANALYSIS

DATE	TIME	SAMPLE ID	MATRIX CODE	CHECK FOR MS/MSD	No. OF CONTAINERS	PAH, PCB, Lead	OVA/HNU READINGS (PPM)	BEGINNING DEPTH (FEET BGS)	ENDING DEPTH (FEET BGS)	REMARKS
03/15/00	10:50	SMP-A	SD		1	✓				
3/15/00	11:00	SMP-B	↓		↓	↓				
03/15/00	11:20	SMP-C								
~~03/15/00~~	~~14:40~~	~~SMP-F~~								
03/15/00	15:10	SMP-E								
03/16/00	9:14	SMP-J								
~~03/16/00~~	~~9:50~~	~~SMP-L~~								
03/16/00	10:20	SMP-K								
03/16/00	10:50	SMP-I								
03/16/00	11:30	SMP-G	↓		↓	↓				

m not placed in cooler
Sm
NO

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	Temperature Blank Info.	LAB PROJECT No.:	LAB PROJECT MANAGER:
Sara A McMahon	03/21/00 17:00	[illegible]	3/22/00 10:25	Enclosed: Yes No		
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	Ship Via: Date:	(FOR LAB USE ONLY) Date: _____ Time: _____	
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	BL/Airbill Number:	Temperature: _____ °C Work Order No: _____	

ution: White - Lab original Yellow - Field team leader/Project Manager

F1260699.P65

CHAIN OF CUSTODY RECORD

ASC analytical services center

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Cooler No:
Lab:
Page: of

PROJECT No: 000545YM07000300

CLIENT: NATIONAL PARK SERVICE

SITE NAME: KENILWORTH LANDFILL

LOCATION: (Include State) WASHINGTON, DC

PROJECT MANAGER: NERMIN AHMAD
OFFICE No.: (703) 522-6065

FIELD TEAM LEADER: HUSSEIN ALDIS
PHONE No.: (703) 522-6065

SAMPLERS: (PRINT) HUSSEIN ALDIS, MATT RIES, SARA McMAHON

CONTAINER TYPE AND PRESERVATIVE: 8oz glass jars reFrig.

TURNAROUND TIME: 24-HOUR / 48-HOUR / 1-WEEK / STANDARD ☑ / OTHER — RUSH

REQUESTED ANALYSIS: PAH, PCB, Lead

DATE	TIME	SAMPLE ID	MATRIX CODE	CHECK FOR MS/MSD	No. OF CONTAINERS	PAH, PCB, Lead	OVA/HNU READINGS (PPM)	BEGINNING DEPTH (FEET BGS)	ENDING DEPTH (FEET BGS)	REMARKS
03/16/00	12:00	SMP-M	SD		1	✓				
03/16/00	13:15	SMP-N	SD		1	✓				
03/17/00	11:50	SS-2	SS							
03/17/00	12:00	SS-1								
03/17/00	12:05	SS-8								
03/17/00	12:10	SS-7								
03/17/00	12:20	SS-6								
03/17/00	12:25	SS-5								
03/17/00	12:30	SS-9								
03/17/00	12:40	SS-10								

1871-8 3/21/00 Sealed in cooler

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	Temperature Blank Info. Enclosed: Yes No	LAB PROJECT No.:	LAB PROJECT MANAGER:
Sara A McMahon	03/21/00 17:00	[illegible]	3/21/00 10:25			
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	Ship Via: Date:	(FOR LAB USE ONLY) Date: Time:	
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	BL/Airbill Number:	Temperature: °C Work Order No:	

F1260699.P65

Distribution: White - Lab original Yellow - Field team leader/Project Manager

CHAIN OF CUSTODY RECORD

ASC analytical services center

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Cooler No: ____
Lab: ____
Page: of

PROJECT No: 000545YM070003 00

CLIENT: NATIONAL PARK SERVICE

SITE NAME: KENILWORTH LANDFILL

LOCATION: (Include State) WASHINGTON, DC

PROJECT MANAGER: NERMIN AHMAD
OFFICE No.: (703) 522-6065

FIELD TEAM LEADER: HUSSEIN ALDIS
PHONE No.: (703) 522-6065

SAMPLERS: (PRINT)
HUSSEIN ALDIS MATT RIES
SARA McMAHON

CONTAINER TYPE AND PRESERVATIVE: 8oz glass jar no preservative

TURNAROUND TIME: 24-HOUR ☐ 48-HOUR ☐ 1-WEEK ☐ STANDARD ☑ (RUSH) OTHER ____

REQUESTED ANALYSIS: PAH, PCB, Lead

DATE	TIME	SAMPLE ID	MATRIX CODE	CHECK FOR MS/MSD	No. OF CONTAINERS	PAH, PCB, Lead	OVA/HNU READINGS (PPM)	BEGINNING DEPTH (FEET BGS)	ENDING DEPTH (FEET BGS)	REMARKS
03/17/00	12:50	SS-11	SS		1	✓				
03/17/00	13:00	SS-14								
03/17/00	13:09	SS-13								
03/17/00	13:15	SS-18								
03/17/00	13:20	SS-17								
03/17/00	13:25	SS-16								
03/17/00	13:46	SS-23								
03/17/00	13:55	SS-22								
03/17/00	14:00	SS-19								
03/17/00	14:10	SS-21	SS		✓	✓				

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	Temperature Blank Info.	LAB PROJECT No.:	LAB PROJECT MANAGER:
Sara A McMahon	03/21/00 17:00	Mary Rhu	3/22/00 10:25	Enclosed: Yes No		
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	Ship Via: Date:	(FOR LAB USE ONLY) Date: ____ Time: ____	
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	BL/Airbill Number:	Temperature: ____ °C Work Order No: ____	

Distribution: White - Lab original Yellow - Field team leader/Project Manager

F1260699.P65

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Cooler No:
Lab:
Page: of

PROJECT No: 000545YM07000300

LOCATION: (Include State) WASHINGTON, DC

CLIENT: NATIONAL PARK SERVICE

SITE NAME: KENILWORTH LANDFILL

PROJECT MANAGER: NERMIN AHMAD
OFFICE No.: (703) 522-6065

FIELD TEAM LEADER: HUSSEIN ALDIS
PHONE No.: (703) 522-6065

SAMPLERS: (PRINT)
SARA McMAHON
MATT RIES

CONTAINER TYPE AND PRESERVATIVE: 8oz glass jars w/only

TURNAROUND TIME: 24-HOUR ☐ 48-HOUR ☐ 1-WEEK ☐ STANDARD ☑ RUSH ☐ OTHER

REQUESTED ANALYSIS: PAH, PCB, lead

DATE	TIME	SAMPLE ID	MATRIX CODE	CHECK FOR MS/MSD	No. OF CONTAINERS	PAH, PCB, lead	OVA/HNU READINGS (PPM)	BEGINNING DEPTH (FEET BGS)	ENDING DEPTH (FEET BGS)	REMARKS
03/17/00	14:12	SS-20	~~SD~~ SS		1	✓				
03/17/00	14:19	SS-24								
03/20/00	11:00	SS-15								
03/20/00	11:15	SS-25								
03/20/00	11:35	SS-4								
03/20/00	11:45	SS-12								
03/20/00	11:50	SS-12 DUP								
03/20/00	12:05	SS-26								
03/20/00	12:10	SS-26 DUP								
03/20/00	12:20	SS-27								

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:
Sara McMahon	03/21/00 7:00	[illegible]	3/22/00 10:25
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:

Temperature Blank Info. Enclosed: Yes No
Ship Via: Date:
BL/Airbill Number:

LAB PROJECT No.:
LAB PROJECT MANAGER:

(FOR LAB USE ONLY)
Date: Time:
Temperature: °C
Work Order No:

F1260699.P65

Distribution: White - Lab original Yellow - Field team leader/Project Manager

CHAIN OF CUSTODY RECORD

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Cooler No: _____
Lab: _____

Page: ____ of ____

PROJECT No: 000545YM07 000300

SITE NAME: KENILWORTH LANDFILL

LOCATION: (Include State) WASHINGTON DC

CLIENT: NATIONAL PARK SERVICE

PROJECT MANAGER: NERMIN AHMAD

OFFICE No: (703) 522-6065

FIELD TEAM LEADER: HUSSEIN ALDIS

PHONE No: (703) 522-6065

SAMPLERS: (PRINT)
MATT RIES
SARA MCMAHON

CONTAINER TYPE AND PRESERVATIVE: 8oz glass jar w/ Teflon

REQUESTED ANALYSIS: PAH, PCB, Lead

TURNAROUND TIME: 24-HOUR ☐ 48-HOUR ☐ 1-WEEK ☐ STANDARD ☑ RUSH _____ days OTHER _____

(FOR LAB USE ONLY)
Lab Job No:
Report type:
Batch QC: Yes No

DATE	TIME	SAMPLE ID	SAMPLE MATRIX	CHECK FOR MS/MSD	SAMPLE TYPE	No. OF CONTAINERS	PAH, PCB, Lead	OVA/HNU READINGS (PPM)	BEGINNING DEPTH (FEET BGS)	ENDING DEPTH (FEET BGS)	REMARKS
03/20/00	12:40	SS-28 SM SS	SE			1	/				
03/20/00	14:15	SS-29 (BACKGROUND)									
03/20/00	14:15	SS-30 (BACKGROUND)									
03/20/00	16:00	SS-31									

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	Ship Via:	Date:	Temperature Blank Info.
Sara A McMahon	03/21/00 17:00	Marty Nelson	3/22/00 10:25			Enclosed: Yes No
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	BL/Airbill Number:		(FOR LAB USE ONLY) Date: _____ Time: _____ Temperature: _____ °C

Distribution: White - Lab original Yellow - Field team leader

0881297

CHAIN OF CUSTODY RECORD

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Cooler No: _____
Lab: _____
Page: ____ of ____

PROJECT No: 000545Y007 000300

SITE NAME: KENILWORTH PARK LANDFILL

LOCATION: (Include State) WASHINGTON, DC

CLIENT: NATIONAL PARK SERVICE

PROJECT MANAGER: NERMIN AHMAD

OFFICE No: (703) 522-6065

FIELD TEAM LEADER: HUSSEIN ALDIS

PHONE No: (703) 522-6065

SAMPLERS: (PRINT)
MATT RIES
SARA McMAHON

CONTAINER TYPE AND PRESERVATIVE: 8oz glass jar, no preservatives

REQUESTED ANALYSIS: PAH, PCB, Lead

DATE	TIME	SAMPLE ID	SAMPLE MATRIX	CHECK FOR MS/MSD	SAMPLE TYPE	No. OF CONTAINERS	PAH, PCB, Lead	OVA/HNU READINGS (PPM)	BEGINNING DEPTH (FEET BGS)	ENDING DEPTH (FEET BGS)	REMARKS
03/15/00	14:40	SMP-F	SD			1	✓				
03/16/00	09:50	SMP-L	✓		✓	✓	✓				
03/16/00	12:00	SMP-M	✓			✓	✓				
03/21/00	16:00	SS-32	SS			1	✓				
03/21/00	16:10	SS-33	✓			✓	✓				
03/21/00	16:15	SS-34	✓			✓	✓				

TURNAROUND TIME
- 24-HOUR ☐
- 48-HOUR ☐
- 1-WEEK ☐
- STANDARD ☑
- RUSH _____ days
- OTHER _____

(FOR LAB USE ONLY)
Lab Job No:
Report type:
Batch QC: Yes No

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	Ship Via:	Date:
Sara McMahon	17:30 03/21/00	[illegible]	3/22/00 11:25		
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	BL/Airbill Number:	

Temperature Blank Info.
Enclosed: Yes No

(FOR LAB USE ONLY)
Date: _____ Time: _____
Temperature: _____ °C

Distribution: White - Lab original Yellow - Field team leader

0881297

Ecology and Environment, Inc. Analytical Services Center

Cooler Receipt Form

PACKAGE RECEIPT #: 5748 NUMBER OF COOLERS: 2 DATE RECEIVED: 3/22/00

E & E PROJECT #: _____ PROJECT OR SITE NAME: Kenilworth Park Landfill

A. Preliminary Examination Phase

CIRCLE ONE

1. Did coolers come with airbill or packing slip? _____ (YES) NO NA

   Enter carrier here and print airbill # below: *(Circle One)* FedEx Airborne Client (Other) UPS

2. Did cooler(s) have custody seals? _____ YES (NO) NA

   If YES, how many and where? _____

3. Were custody seals unbroken and intact on receipt? _____ YES NO* NA

4. Were custody seals dated and signed? _____ YES NO NA

   If YES, enter date: _____ Name: _____

5. Sign here to acknowledge receipt of cooler (s): Mark J Rehmer

   Date cooler(s) opened: 3/22/00 C-O-C numbers: _____

   Cooler(s) opened by (print): Mark J Rehmer Signature: Mark J Rehmer

6. Were the C-O-C forms received? _____ (YES) NO* NA

7. Was the project identifiable from the C-O-C form? _____ YES NO* NA

   If YES, enter the project number and name in the heading above.

Please record Temperature Blank Vial or Cooler Temperature for Each Cooler. Range (2 - 6C)* NJDEP must be <4C

AIRBILL #	TEMP. °C	AIRBILL #	TEMP. °C	AIRBILL #	TEMP. °C
EZA09R092100 2460	7.5				
EZA09R092100 2479	6				

Thermometer # 142 Correction Factor 0 * If No or Temperature Outside of Acceptable Range, prepare a PM Notification form.

B. Unpacking Phase

8. Was enough packing material used in cooler(s)? _____ (YES) NO NA

   Type of material: Vermiculite (Bubble Wrap) Other

9. If required, was enough ice used? _____ YES (NO) NA

   If YES, type of ice used: (Wet) Dry Blue Other

10. Was a temperature blank vial included inside cooler(s)? _____ YES NO NA

    If YES, indicate temperature blank vial temperature in table above. If NO, indicate cooler temperature in table above.

11. Were all containers sealed in separate plastic bags? _____ (YES) NO NA

12. Did all containers arrive unbroken and in good condition? _____ (YES) (NO*) NA

C. Login Phase

Samples Logged in By (print): J Henderson Signature: J Henderson Date: 3/23/00

13. Were all container labels complete (e.g. date, time preserv)? _____ (YES) NO* NA

14. Were all C-O-C forms filled out properly in ink and signed? _____ (YES) NO* NA

15. Did the C-O-C form agree with containers received? _____ (YES) NO* NA

16. Were the correct containers used for the tests requested? _____ (YES) NO* NA

17. Were the correct preservatives listed on the sample labels? _____ (YES) NO* NA

18. Was a sufficient sample volume sent for the tests requested? _____ (YES) NO* NA

19. Were all volatile samples received without head space? _____ YES NO* (NA)

*Prepare a PM Notification form.

L:\Forms & Lists\Final\F_024.ene\Rev 0\Approval Date 4-1-98\Last Update: 02/09/00 10:52 AM

8

Ecology and Environment, Inc.
Analytical Services Center
Lancaster, New York 14086
Phone: (716) 685-8080

Laboratory Results

NYS ELAP ID#: 10486

CLIENT: E and E Washington D.C. Office
Project: Kenilworth Park PA/SI
Lab Order: 0003202

CASE NARRATIVE

The analyses requested on the chain-of-custody form were incorrect per a telephone conversation with Hussein Aldis on March 23, 2000. Soil samples (indicated by matrix code SS) are to be analyzed for RCRA metals and PAH's by method 8310 and sediments (matrix code SD) should be analyzed for RCRA metals, PAH's by method 8310 and PCB's. PCB analysis was also requested on samples SS-29, -30, -32, -33, -34 by Mr. Aldis. Sample SS-20 arrived broken and could not be analyzed.

Samples were analyzed using the methods outlined in the following references:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition

PCB

The column used for analysis was an RTX-35, 30 meters long and 0.53 mm in diameter, with a 1.0 um film thickness.

A secondary dilution was performed on sample SMP-L based on the level of target compounds present in the native extract.

Recovery of the surrogate DCB exceeded QC limits as a result of sample matrix interferences for sample SS-34. Recovery of the surrogate TCMX was within acceptable limits.

PAH'S

Secondary dilutions were performed on all samples except SMP-E, SS-1, SS-6, SS-5, SS-14, SS-13, SS-18, SS-23, SS-15, SS-25, SS-29, SS-32, and SS-33 due to the level of target compounds present in the native extracts.

Recovery of the surrogate terphenyl-d14 fell outside QC limits in most samples as a result of sample matrix interferences.

Recovery of several of the matrix spike compounds fell outside QC limits in the matrix spike/matrix spike duplicate analysis of samples SS-13 and SS-31 as a result of sample matrix interferences. All recoveries were within acceptable limits in the associated laboratory control samples.

METALS

Recovery of arsenic, chromium, lead, selenium and silver in the matrix spike/matrix spike duplicate

analysis of samples SS-13 and SS-31 were erratic due to matrix interferences. All recoveries were within acceptable limits in the associated laboratory control samples.

MERCURY

Samples SS-2, SS-7, SS-9, and SS-28 were analyzed at secondary dilutions for mercury due to the concentration present in the native sample.

The matrix spike duplicate analysis of sample SS-31 had no spike recovery. The matrix spike and the associated laboratory control sample met spike recovery criterion. Mercury was detected in the sample. Sample non-homogeneity is suspected. Additional MS/MSD analyses were acceptable.

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Laboratory Results

NYS ELAP ID#: 10486

DATES REPORT

Lab Order: 0003202
Client: E and E Washington D.C. Office
Project: Kenilworth Park PA/SI

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
0003202-01A	SMP-A	3/15/00 10:50:00 AM	Soil	Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/3/00
				PCBs by Method 8082		3/28/00	4/11/00
				Percent Moisture		3/31/00	3/31/00
0003202-02A	SMP-B	3/15/00 11:00:00 AM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/3/00
				PCBs by Method 8082		3/28/00	4/11/00
				Percent Moisture		3/31/00	3/31/00
0003202-03A	SMP-C	3/15/00 11:20:00 AM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/3/00
				PCBs by Method 8082		3/28/00	4/11/00
				Percent Moisture		3/31/00	3/31/00
0003202-04A	SMP-E	3/15/00 3:10:00 PM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/4/00
				PCBs by Method 8082		3/28/00	4/11/00
				Percent Moisture		3/31/00	3/31/00
0003202-05A	SMP-J	3/16/00 9:14:00 AM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/4/00
				PCBs by Method 8082		3/28/00	4/11/00

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Laboratory Results

NYS ELAP ID#: 10486

Lab Order: 0003202
Client: E and E Washington D.C. Office
Project: Kenilworth Park PA/SI

DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
0003202-05A	SMP-J	3/16/00 9:14:00 AM	Soil	Percent Moisture		3/31/00	3/31/00
0003202-06A	SMP-K	3/16/00 10:20:00 AM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/3/00
				PCBs by Method 8082		3/28/00	4/11/00
				Percent Moisture		3/31/00	3/31/00
0003202-07A	SMP-I	3/16/00 10:50:00 AM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/3/00
				PCBs by Method 8082		3/28/00	4/11/00
				Percent Moisture		3/31/00	3/31/00
0003202-08A	SMP-G	3/15/00 11:30:00 AM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/4/00
				PCBs by Method 8082		3/28/00	4/11/00
				Percent Moisture		3/31/00	3/31/00
0003202-09A	SMP-N	3/16/00 1:15:00 PM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/4/00
				PCBs by Method 8082		3/28/00	4/11/00
				Percent Moisture		3/31/00	3/31/00
0003202-10A	SS-2	3/17/00 11:50:00 AM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00

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DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
0003202-10A	SS-2	3/17/00 11:50:00 AM	Soil	PAH by Method 8310		3/29/00	4/4/00
				Percent Moisture		3/31/00	3/31/00
0003202-11A	SS-1	3/17/00 12:00:00 PM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/4/00
				Percent Moisture		3/31/00	3/31/00
0003202-12A	SS-8	3/17/00 12:05:00 PM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/4/00
				Percent Moisture		3/31/00	3/31/00
0003202-13A	SS-7	3/17/00 12:10:00 PM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/4/00
				Percent Moisture		3/31/00	3/31/00
0003202-14A	SS-6	3/17/00 12:20:00 PM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/4/00
				Percent Moisture		3/31/00	3/31/00
0003202-15A	SS-5	3/17/00 12:25:00 PM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/4/00
				Percent Moisture		3/31/00	3/31/00
0003202-16A	SS-9	3/17/00 12:30:00 PM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00

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Laboratory Results

NYS ELAP ID#: 10486

Lab Order: 0003202
Client: E and E Washington D.C. Office
Project: Kenilworth Park PA/SI

DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
0003202-16A	SS-9	3/17/00 12:30:00 PM	Soil	Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/4/00
				Percent Moisture		3/31/00	3/31/00
0003202-17A	SS-10	3/17/00 12:40:00 PM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/5/00
				Percent Moisture		3/31/00	3/31/00
0003202-18A	SS-11	3/17/00 12:50:00 PM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/5/00
				Percent Moisture		3/31/00	3/31/00
0003202-19A	SS-14	3/17/00 1:00:00 PM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/5/00
				Percent Moisture		3/31/00	3/31/00
0003202-20A	SS-13	3/17/00 1:09:00 PM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/5/00
				Percent Moisture		3/31/00	3/31/00
0003202-21A	SS-18	3/17/00 1:15:00 PM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/5/00
				Percent Moisture		3/31/00	3/31/00

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Laboratory Results

NYS ELAP ID#: 10486

DATES REPORT

Lab Order: 0003202
Client: E and E Washington D.C. Office
Project: Kenilworth Park PA/SI

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
0003202-22A	SS-17	3/17/00 1:20:00 PM	Soil	Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/5/00
				Percent Moisture		3/31/00	3/31/00
0003202-23A	SS-16	3/17/00 1:25:00 PM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/5/00
				Percent Moisture		3/31/00	3/31/00
0003202-24A	SS-23	3/17/00 1:46:00 PM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/5/00
				Percent Moisture		3/31/00	3/31/00
0003202-25A	SS-22	3/17/00 1:55:00 PM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/5/00
				Percent Moisture		3/31/00	3/31/00
0003202-26A	SS-19	3/17/00 2:00:00 PM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/5/00
				Percent Moisture		3/31/00	3/31/00
0003202-27A	SS-21	3/17/00 2:10:00 PM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/6/00
				Percent Moisture		3/31/00	3/31/00

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Laboratory Results

NYS ELAP ID#: 10486

Lab Order: 0003202
Client: E and E Washington D.C. Office
Project: Kenilworth Park PA/SI

DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
0003202-28A	SS-24	3/17/00 2:19:00 PM	Soil	Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/6/00
				Percent Moisture		3/31/00	3/31/00
0003202-29A	SS-15	3/20/00 11:00:00 AM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/6/00
				Percent Moisture		3/31/00	3/31/00
0003202-30A	SS-25	3/20/00 11:15:00 AM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/6/00
				Percent Moisture		3/31/00	3/31/00
0003202-31A	SS-4	3/20/00 11:35:00 AM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/6/00
				Percent Moisture		3/31/00	3/31/00
0003202-32A	SS-12	3/20/00 11:45:00 AM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/6/00
				Percent Moisture		3/31/00	3/31/00
0003202-33A	SS-12DUP	3/20/00 11:50:00 AM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/6/00
				Percent Moisture		3/31/00	3/31/00

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Laboratory Results

NYS ELAP ID#: 10486

DATES REPORT

Lab Order: 0003202
Client: E and E Washington D.C. Office
Project: Kenilworth Park PA/SI

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
0003202-34A	SS-26	3/20/00 12:05:00 PM	Soil	Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/6/00
				Percent Moisture		3/31/00	3/31/00
0003202-35A	SS-26DUP	3/20/00 12:10:00 PM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/6/00
				Percent Moisture		3/31/00	3/31/00
0003202-36A	SS-27	3/20/00 12:20:00 PM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/6/00
				Percent Moisture		3/31/00	3/31/00
0003202-37A	SS-28	3/20/00 12:40:00 PM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Mercury Analysis in Soil by Method 7471A		4/6/00	4/8/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/6/00
				Percent Moisture		3/31/00	3/31/00
0003202-38A	SS-29	3/20/00 2:15:00 PM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/6/00
				PCBs by Method 8082		3/28/00	4/11/00
				Percent Moisture		3/31/00	3/31/00
0003202-39A	SS-30			Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00

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NYS ELAP ID#: 10486

Lab Order: 0003202
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Project: Kenilworth Park PA/SI

DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
0003202-39A	SS-30	3/20/00 2:15:00 PM	Soil	PAH by Method 8310		3/29/00	4/6/00
				PCBs by Method 8082		3/28/00	4/11/00
				Percent Moisture		3/31/00	3/31/00
0003202-40A	SS-31	3/20/00 4:00:00 PM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/7/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/6/00
				Percent Moisture		3/31/00	3/31/00
0003202-41A	SMP-F	3/15/00 2:40:00 PM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/8/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/5/00
				PCBs by Method 8082		3/28/00	4/11/00
				Percent Moisture		3/31/00	3/31/00
0003202-42A	SMP-L	3/16/00 9:50:00 AM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/8/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/5/00
				PCBs by Method 8082		3/28/00	4/11/00
				Percent Moisture		3/31/00	3/31/00
0003202-43A	SMP-M	3/16/00 12:00:00 PM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/8/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00
				PAH by Method 8310		3/29/00	4/5/00
				PCBs by Method 8082		3/28/00	4/11/00
				Percent Moisture		3/31/00	3/31/00
0003202-44A	SS-32	3/21/00 4:00:00 PM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/8/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/5/00

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Lancaster, New York 14086
Phone: (716) 685-8080

Laboratory Results

NYS ELAP ID#: 10486

Lab Order: 0003202
Client: E and E Washington D.C. Office
Project: Kenilworth Park PA/SI

DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
0003202-44A	SS-32	3/21/00 4:00:00 PM	Soil	PAH by Method 8310		3/29/00	4/6/00
				PCBs by Method 8082		3/28/00	4/11/00
				Percent Moisture		3/31/00	3/31/00
0003202-45A	SS-33	3/21/00 4:10:00 PM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/8/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/6/00
				PAH by Method 8310		3/29/00	4/6/00
				PCBs by Method 8082		3/28/00	4/11/00
				Percent Moisture		3/31/00	3/31/00
0003202-46A	SS-34	3/21/00 4:15:00 PM		Mercury Analysis in Soil by Method 7471A		4/6/00	4/8/00
				Metals, RCRA by ICP Method 6010B		4/4/00	4/6/00
				PAH by Method 8310		3/29/00	4/5/00
				PCBs by Method 8082		3/28/00	4/11/00
				Percent Moisture		3/31/00	3/31/00

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-01A Sample Type: SAMP

Client Sample ID: SMP-A
Alt. Client ID:
Collection Date: 3/15/00 10:50:00 AM
Matrix: SOIL
% Moist: 44.30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		34.8	µg/Kg-dry	1	4/11/00 3:09:22 AM	HP58901B_000410A	RN
Aroclor 1221	ND		69.7	µg/Kg-dry	1			
Aroclor 1232	ND		34.8	µg/Kg-dry	1			
Aroclor 1242	ND		34.8	µg/Kg-dry	1			
Aroclor 1248	ND		34.8	µg/Kg-dry	1			
Aroclor 1254	57.1		34.8	µg/Kg-dry	1			
Aroclor 1260	64.1		34.8	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	82		52-115	%REC	1			
Surr:Tetrachloro-m-xylene	76		39-125	%REC	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Laboratory Results

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	SMP-B
Lab Order:	0003202	Alt. Client ID:	
Project:	Kenilworth Park PA/SI	Collection Date:	3/15/00 11:00:00 AM
Lab ID:	0003202-02A Sample Type: SAMP	Matrix:	SOIL % Moist: 50.80

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		40.2	µg/Kg-dry	1	4/11/00 3:50:09 AM	HP58901B_000410A	RN
Aroclor 1221	ND		80.3	µg/Kg-dry	1			
Aroclor 1232	ND		40.2	µg/Kg-dry	1			
Aroclor 1242	ND		40.2	µg/Kg-dry	1			
Aroclor 1248	ND		40.2	µg/Kg-dry	1			
Aroclor 1254	53.2		40.2	µg/Kg-dry	1			
Aroclor 1260	54.2		40.2	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	89		52-115	%REC	1			
Surr:Tetrachloro-m-xylene	88		39-125	%REC	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	SMP-C
Lab Order:	0003202	Alt. Client ID:	
Project:	Kenilworth Park PA/SI	Collection Date:	3/15/00 11:20:00 AM
Lab ID:	0003202-03A Sample Type: SAMP	Matrix:	SOIL % Moist: 40.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		33.3	µg/Kg-dry	1	4/11/00 4:30:56 AM	HP58901B_000410A	RN
Aroclor 1221	ND		66.6	µg/Kg-dry	1			
Aroclor 1232	ND		33.3	µg/Kg-dry	1			
Aroclor 1242	283		33.3	µg/Kg-dry	1			
Aroclor 1248	ND		33.3	µg/Kg-dry	1			
Aroclor 1254	127		33.3	µg/Kg-dry	1			
Aroclor 1260	88.5		33.3	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	87		52-115	%REC	1			
Surr:Tetrachloro-m-xylene	90		39-125	%REC	1			

Definitions:			
	ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
	J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
	H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-04A Sample Type: SAMP

Client Sample ID: SMP-E
Alt. Client ID:
Collection Date: 3/15/00 3:10:00 PM
Matrix: SOIL % Moist: 48.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		38.6	µg/Kg-dry	1	4/11/00 5:11:43 AM	HP58901B_000410A	RN
Aroclor 1221	ND		77.2	µg/Kg-dry	1			
Aroclor 1232	ND		38.6	µg/Kg-dry	1			
Aroclor 1242	54.6		38.6	µg/Kg-dry	1			
Aroclor 1248	ND		38.6	µg/Kg-dry	1			
Aroclor 1254	68.5		38.6	µg/Kg-dry	1			
Aroclor 1260	59.6		38.6	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	93		52-115	%REC	1			
Surr:Tetrachloro-m-xylene	94		39-125	%REC	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-05A Sample Type: SAMP

Client Sample ID: SMP-J
Alt. Client ID:
Collection Date: 3/16/00 9:14:00 AM
Matrix: SOIL % Moist: 59.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		49.1	µg/Kg-dry	1	4/11/00 5:52:27 AM	HP58901B_000410A	RN
Aroclor 1221	ND		98.2	µg/Kg-dry	1			
Aroclor 1232	ND		49.1	µg/Kg-dry	1			
Aroclor 1242	ND		49.1	µg/Kg-dry	1			
Aroclor 1248	ND		49.1	µg/Kg-dry	1			
Aroclor 1254	90.5		49.1	µg/Kg-dry	1			
Aroclor 1260	76.3		49.1	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	87		52-115	%REC	1			
Surr:Tetrachloro-m-xylene	91		39-125	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-06A Sample Type: SAMP

Client Sample ID: SMP-K
Alt. Client ID:
Collection Date: 3/16/00 10:20:00 AM
Matrix: SOIL % Moist: 51.10

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		40.0	µg/Kg-dry	1	4/11/00 6:33:16 AM	HP58901B_000410A	RN
Aroclor 1221	ND		80.0	µg/Kg-dry	1			
Aroclor 1232	ND		40.0	µg/Kg-dry	1			
Aroclor 1242	ND		40.0	µg/Kg-dry	1			
Aroclor 1248	ND		40.0	µg/Kg-dry	1			
Aroclor 1254	202		40.0	µg/Kg-dry	1			
Aroclor 1260	159		40.0	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	94		52-115	%REC	1			
Surr:Tetrachloro-m-xylene	95		39-125	%REC	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-07A Sample Type: SAMP

Client Sample ID: SMP-I
Alt. Client ID:
Collection Date: 3/16/00 10:50:00 AM
Matrix: SOIL
% Moist: 48.50

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		37.8	µg/Kg-dry	1	4/11/00 7:14:07 AM	HP58901B_000410A	RN
Aroclor 1221	ND		75.7	µg/Kg-dry	1			
Aroclor 1232	ND		37.8	µg/Kg-dry	1			
Aroclor 1242	54.6		37.8	µg/Kg-dry	1			
Aroclor 1248	ND		37.8	µg/Kg-dry	1			
Aroclor 1254	73.6		37.8	µg/Kg-dry	1			
Aroclor 1260	48.8		37.8	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	89		52-115	%REC	1			
Surr:Tetrachloro-m-xylene	87		39-125	%REC	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Laboratory Results

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-08A Sample Type: SAMP

Client Sample ID: SMP-G
Alt. Client ID:
Collection Date: 3/15/00 11:30:00 AM
Matrix: SOIL % Moist: 52.00

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		40.6	µg/Kg-dry	1	4/11/00 7:54:51 AM	HP58901B_000410A	RN
Aroclor 1221	ND		81.2	µg/Kg-dry	1			
Aroclor 1232	ND		40.6	µg/Kg-dry	1			
Aroclor 1242	52.4		40.6	µg/Kg-dry	1			
Aroclor 1248	ND		40.6	µg/Kg-dry	1			
Aroclor 1254	90.3		40.6	µg/Kg-dry	1			
Aroclor 1260	57.3		40.6	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	103		52-115	%REC	1			
Surr:Tetrachloro-m-xylene	108		39-125	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Laboratory Results

Analytical Services Center
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Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-09A Sample Type: SAMP

Client Sample ID: SMP-N
Alt. Client ID:
Collection Date: 3/16/00 1:15:00 PM
Matrix: SOIL % Moist: 45.50

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		35.9	µg/Kg-dry	1	4/11/00 9:57:42 AM	HP58901B_000410A	RN
Aroclor 1221	ND		71.8	µg/Kg-dry	1			
Aroclor 1232	ND		35.9	µg/Kg-dry	1			
Aroclor 1242	71.4		35.9	µg/Kg-dry	1			
Aroclor 1248	ND		35.9	µg/Kg-dry	1			
Aroclor 1254	101		35.9	µg/Kg-dry	1			
Aroclor 1260	60.9		35.9	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	88		52-115	%REC	1			
Surr:Tetrachloro-m-xylene	90		39-125	%REC	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	SS-29
Lab Order:	0003202	Alt. Client ID:	Background 1
Project:	Kenilworth Park PA/SI	Collection Date:	3/20/00 2:15:00 PM
Lab ID:	0003202-38A Sample Type: SAMP	Matrix:	SOIL % Moist: 32.60

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		29.5	µg/Kg-dry	1	4/11/00 10:38:29 AM	HP58901B_000410A	RN
Aroclor 1221	ND		59.0	µg/Kg-dry	1			
Aroclor 1232	ND		29.5	µg/Kg-dry	1			
Aroclor 1242	ND		29.5	µg/Kg-dry	1			
Aroclor 1248	ND		29.5	µg/Kg-dry	1			
Aroclor 1254	79.5		29.5	µg/Kg-dry	1			
Aroclor 1260	58.5		29.5	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	95		52-115	%REC	1			
Surr:Tetrachloro-m-xylene	102		39-125	%REC	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Laboratory Results

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Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-39A Sample Type: SAMP

Client Sample ID: SS-30
Alt. Client ID: Background 2
Collection Date: 3/20/00 2:15:00 PM
Matrix: SOIL % Moist: 23.00

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		25.6	µg/Kg-dry	1	4/11/00 12:41:10 PM	HP58901B_000410A	RN
Aroclor 1221	ND		51.2	µg/Kg-dry	1			
Aroclor 1232	ND		25.6	µg/Kg-dry	1			
Aroclor 1242	ND		25.6	µg/Kg-dry	1			
Aroclor 1248	ND		25.6	µg/Kg-dry	1			
Aroclor 1254	ND		25.6	µg/Kg-dry	1			
Aroclor 1260	83.4		25.6	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	105		52-115	%REC	1			
Surr:Tetrachloro-m-xylene	103		39-125	%REC	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-41A Sample Type: SAMP

Client Sample ID: SMP-F
Alt. Client ID:
Collection Date: 3/15/00 2:40:00 PM
Matrix: SOIL % Moist: 65.30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		56.1	µg/Kg-dry	1	4/11/00 1:21:57 PM	HP58901B_000410A	RN
Aroclor 1221	ND		112	µg/Kg-dry	1			
Aroclor 1232	ND		56.1	µg/Kg-dry	1			
Aroclor 1242	52.2	J	56.1	µg/Kg-dry	1			
Aroclor 1248	ND		56.1	µg/Kg-dry	1			
Aroclor 1254	137		56.1	µg/Kg-dry	1			
Aroclor 1260	84.0		56.1	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	81		52-115	%REC	1			
Surr:Tetrachloro-m-xylene	92		39-125	%REC	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Ecology and Environment, Inc.

Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-42A Sample Type: SAMP

Client Sample ID: SMP-L
Alt. Client ID:
Collection Date: 3/16/00 9:50:00 AM
Matrix: SOIL % Moist: 44.90

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		180	µg/Kg-dry	5	4/11/00 2:02:51 PM	HP58901B_000410A	RN
Aroclor 1221	ND		359	µg/Kg-dry	5			
Aroclor 1232	ND		180	µg/Kg-dry	5			
Aroclor 1242	354		180	µg/Kg-dry	5			
Aroclor 1248	ND		180	µg/Kg-dry	5			
Aroclor 1254	571		180	µg/Kg-dry	5			
Aroclor 1260	409		180	µg/Kg-dry	5			
Surr:Decachlorobiphenyl	113		52-115	%REC	5			
Surr:Tetrachloro-m-xylene	105		39-125	%REC	5			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	SMP-M
Lab Order:	0003202	Alt. Client ID:	
Project:	Kenilworth Park PA/SI	Collection Date:	3/16/00 12:00:00 PM
Lab ID:	0003202-43A Sample Type: SAMP	Matrix:	SOIL % Moist: 51.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		40.6	µg/Kg-dry	1	4/11/00 2:43:38 PM	HP58901B_000410A	RN
Aroclor 1221	ND		81.2	µg/Kg-dry	1			
Aroclor 1232	ND		40.6	µg/Kg-dry	1			
Aroclor 1242	84.0		40.6	µg/Kg-dry	1			
Aroclor 1248	ND		40.6	µg/Kg-dry	1			
Aroclor 1254	212		40.6	µg/Kg-dry	1			
Aroclor 1260	105		40.6	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	87		52-115	%REC	1			
Surr:Tetrachloro-m-xylene	92		39-125	%REC	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	SS-32
Lab Order:	0003202	Alt. Client ID:	
Project:	Kenilworth Park PA/SI	Collection Date:	3/21/00 4:00:00 PM
Lab ID:	0003202-44A Sample Type: SAMP	Matrix:	SOIL % Moist: 17.90

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		24.3	µg/Kg-dry	1	4/11/00 3:24:29 PM	HP58901B_000410A	RN
Aroclor 1221	ND		48.6	µg/Kg-dry	1			
Aroclor 1232	ND		24.3	µg/Kg-dry	1			
Aroclor 1242	ND		24.3	µg/Kg-dry	1			
Aroclor 1248	ND		24.3	µg/Kg-dry	1			
Aroclor 1254	ND		24.3	µg/Kg-dry	1			
Aroclor 1260	30.6		24.3	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	97		52-115	%REC	1			
Surr:Tetrachloro-m-xylene	108		39-125	%REC	1			

Definitions:			
	ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
	J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
	H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-45A Sample Type: SAMP

Client Sample ID: SS-33
Alt. Client ID:
Collection Date: 3/21/00 4:10:00 PM
Matrix: SOIL
% Moist: 21.60

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		25.3	µg/Kg-dry	1	4/11/00 4:05:30 PM	HP58901B_000410A	RN
Aroclor 1221	ND		50.5	µg/Kg-dry	1			
Aroclor 1232	ND		25.3	µg/Kg-dry	1			
Aroclor 1242	ND		25.3	µg/Kg-dry	1			
Aroclor 1248	ND		25.3	µg/Kg-dry	1			
Aroclor 1254	ND		25.3	µg/Kg-dry	1			
Aroclor 1260	44.1		25.3	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	98		52-115	%REC	1			
Surr:Tetrachloro-m-xylene	105		39-125	%REC	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-46A Sample Type: SAMP

Client Sample ID: SS-34
Alt. Client ID:
Collection Date: 3/21/00 4:15:00 PM
Matrix: SOIL % Moist: 22.10

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	16.5	J	24.9	µg/Kg-dry	1	4/11/00 4:46:21 PM	HP58901B_000410A	RN
Aroclor 1221	ND		49.9	µg/Kg-dry	1			
Aroclor 1232	ND		24.9	µg/Kg-dry	1			
Aroclor 1242	ND		24.9	µg/Kg-dry	1			
Aroclor 1248	ND		24.9	µg/Kg-dry	1			
Aroclor 1254	ND		24.9	µg/Kg-dry	1			
Aroclor 1260	107		24.9	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	133	*	52-115	%REC	1			
Surr:Tetrachloro-m-xylene	105		39-125	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

Laboratory Results

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

QC SUMMARY REPORT
Method Blank

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

Test Code: *1_8082_3550b_s* Units: µg/Kg

PCBs by Method 8082

Sample ID: **MB-200000714** DF: 1 DL_No: 1 Prep Date: 3/28/00
Run Batch ID: **HP58901B_000410A** SeqNo: **178675** Analysis Date **4/11/00 1:47:49 AM** Prep Batch ID: **200000714**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Aroclor 1016	ND	19.6								
A	Aroclor 1221	ND	39.2								
A	Aroclor 1232	ND	19.6								
A	Aroclor 1242	ND	19.6								
A	Aroclor 1248	ND	19.6								
A	Aroclor 1254	ND	19.6								
A	Aroclor 1260	ND	19.6								
S	Decachlorobiphenyl	6.441		6.537		99	52	115			
S	Tetrachloro-m-xylene	6.382		6.537		98	39	125			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below reporting limits
1 - Represents RSD Limit for Quad Analysis
* - LCS Recovery outside limits
B - Analyte detected in the associated Method Blank
NC - Not Calculated
M - Matrix Spike Recovery outside limits
E - Result exceeds Highest Calibration Standard
RL -Reporting Limit
R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Sample Matrix Spike

PCBs by Method 8082 Test Code: *1_8082_3550b_s* Units: µg/Kg-dry

Sample ID: **0003202-38AMS** DF: 1 DL_No: 1

Run Batch ID: **HP58901B_000410A** SeqNo: **178683** Analysis Date **4/11/00 11:19:19 AM** Prep Batch ID: 200000714 Prep Date: 3/28/00

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Aroclor 1016	225.5	28.8	240.1	0	94	50	150			
A	Aroclor 1260	295.4	28.8	240.1	58.52	99	50	150			
S	Decachlorobiphenyl	9.211		9.589	0	96	52	115			
S	Tetrachloro-m-xylene	9.158		9.589	0	96	39	125			

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; RL -Reporting Limit
J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated; E - Result exceeds Highest Calibration Standard

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

QC SUMMARY REPORT
Sample Matrix Spike Duplicate

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

Test Code: *1_8082_3550b_s* Units: µg/Kg-dry

PCBs by Method 8082

Sample ID: **0003202-38AMSD** DF: 1 DL_No: 1
Run Batch ID: **HP58901B_000410A** SeqNo: **178682** Analysis Date **4/11/00 12:00:05 PM** Prep Batch ID: **200000714** Prep Date: **3/28/00**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Aroclor 1016	274.2	28.9	241	0	114	50	150	19.1	35	
A	Aroclor 1260	338.7	28.9	241	58.52	116	50	150	16.4	35	
S	Decachlorobiphenyl	10.62		9.627	0	110	52	115	0	0	
S	Tetrachloro-m-xylene	11.14		9.627	0	116	39	125	0	0	

Definitions: ND - Not Detected at the Reporting Limit; J - Analyte detected below reporting limits; 1 - Represents RSD Limit for Quad Analysis; * - LCS Recovery outside limits; B - Analyte detected in the associated Method Blank; NC - Not Calculated; M - Matrix Spike Recovery outside limits; E - Result exceeds Highest Calibration Standard; RL -Reporting Limit; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Laboratory Control Spike - generic

PCBs by Method 8082 Test Code: *1_8082_3550b_s* Units: µg/Kg

Sample ID: **LCS-200000714** DF: 1 DL_No: 1

Run Batch ID: **HP58901B_000410A** SeqNo: **178694** Analysis Date **4/11/00 2:28:35 AM** Prep Batch ID: **200000714** Prep Date: 3/28/00

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Aroclor 1016	162.9	20	166.8	0	98	59	119			
A	Aroclor 1260	169.2	20	166.8	0	101	50	150			
S	Decachlorobiphenyl	6.772		6.663	0	102	52	115			
S	Tetrachloro-m-xylene	7.944		6.663	0	119	39	125			

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated; E - Result exceeds Highest Calibration Standard

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Laboratory Results

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4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-01A Sample Type: SAMP

Client Sample ID: SMP-A
Alt. Client ID:
Collection Date: 3/15/00 10:50:00 AM
Matrix: SOIL % Moist: 44.30

DETERMINATION OF PAH BY METHOD 8310
1_8310_3550B_S

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
1-Methylnaphthalene	ND		1790	µg/Kg-dry	5	4/3/00 4:06:04 PM	LC-3_000403A	SDC
2-Methylnaphthalene	ND		1790	µg/Kg-dry	5			
Acenaphthene	ND		1790	µg/Kg-dry	5			
Acenaphthylene	ND		1790	µg/Kg-dry	5			
Anthracene	59.1	J	179	µg/Kg-dry	5			
Benz(a)anthracene	302		179	µg/Kg-dry	5			
Benzo(a)pyrene	370		179	µg/Kg-dry	5			
Benzo(b)fluoranthene	980		179	µg/Kg-dry	5			
Benzo(g,h,i)perylene	352	J	449	µg/Kg-dry	5			
Benzo(k)fluoranthene	1170		179	µg/Kg-dry	5			
Chrysene	450		179	µg/Kg-dry	5			
Dibenz(a,h)anthracene	ND		449	µg/Kg-dry	5			
Fluoranthene	701		449	µg/Kg-dry	5			
Fluorene	ND		179	µg/Kg-dry	5			
Indeno(1,2,3-cd)pyrene	147	J	179	µg/Kg-dry	5			
Naphthalene	ND		1790	µg/Kg-dry	5			
Phenanthrene	215		179	µg/Kg-dry	5			
Pyrene	746		449	µg/Kg-dry	5			
Surr:Terphenyl-d14	180	*	66-113	%REC	5			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-02A Sample Type: SAMP

Client Sample ID: SMP-B
Alt. Client ID:
Collection Date: 3/15/00 11:00:00 AM
Matrix: SOIL
% Moist: 50.80

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		4020	µg/Kg-dry	10	4/3/00 4:51:26 PM	LC-3_000403A	SDC
2-Methylnaphthalene	ND		4020	µg/Kg-dry	10			
Acenaphthene	ND		4020	µg/Kg-dry	10			
Acenaphthylene	ND		4020	µg/Kg-dry	10			
Anthracene	181	J	402	µg/Kg-dry	10			
Benz(a)anthracene	603		402	µg/Kg-dry	10			
Benzo(a)pyrene	1030		402	µg/Kg-dry	10			
Benzo(b)fluoranthene	1470		402	µg/Kg-dry	10			
Benzo(g,h,i)perylene	445	J	1010	µg/Kg-dry	10			
Benzo(k)fluoranthene	1320		402	µg/Kg-dry	10			
Chrysene	1060		402	µg/Kg-dry	10			
Dibenz(a,h)anthracene	ND		1010	µg/Kg-dry	10			
Fluoranthene	2150		1010	µg/Kg-dry	10			
Fluorene	ND		402	µg/Kg-dry	10			
Indeno(1,2,3-cd)pyrene	671		402	µg/Kg-dry	10			
Naphthalene	ND		4020	µg/Kg-dry	10			
Phenanthrene	643		402	µg/Kg-dry	10			
Pyrene	1920		1010	µg/Kg-dry	10			
Surr:Terphenyl-d14	239	*	66-113	%REC	10			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
SURT - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Laboratory Results

Analytical Services Center
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Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-03A Sample Type: SAMP

Client Sample ID: SMP-C
Alt. Client ID:
Collection Date: 3/15/00 11:20:00 AM
Matrix: SOIL % Moist: 40.40

DETERMINATION OF PAH BY METHOD 8310

1_8310_3550B_S

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
1-Methylnaphthalene	ND		3210	µg/Kg-dry	10	4/3/00 5:36:47 PM	LC-3_000403A	SDC
2-Methylnaphthalene	ND		3210	µg/Kg-dry	10			
Acenaphthene	ND		3210	µg/Kg-dry	10			
Acenaphthylene	ND		3210	µg/Kg-dry	10			
Anthracene	141	J	321	µg/Kg-dry	10			
Benz(a)anthracene	495		321	µg/Kg-dry	10			
Benzo(a)pyrene	848		321	µg/Kg-dry	10			
Benzo(b)fluoranthene	1040		321	µg/Kg-dry	10			
Benzo(g,h,i)perylene	295	J	802	µg/Kg-dry	10			
Benzo(k)fluoranthene	2070		321	µg/Kg-dry	10			
Chrysene	855		321	µg/Kg-dry	10			
Dibenz(a,h)anthracene	ND		802	µg/Kg-dry	10			
Fluoranthene	1470		802	µg/Kg-dry	10			
Fluorene	ND		321	µg/Kg-dry	10			
Indeno(1,2,3-cd)pyrene	321		321	µg/Kg-dry	10			
Naphthalene	ND		3210	µg/Kg-dry	10			
Phenanthrene	371		321	µg/Kg-dry	10			
Pyrene	1340		802	µg/Kg-dry	10			
Surr:Terphenyl-d14	260	*	66-113	%REC	10			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-04A Sample Type: SAMP

Client Sample ID: SMP-E
Alt. Client ID:
Collection Date: 3/15/00 3:10:00 PM
Matrix: SOIL % Moist: 48.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		384	µg/Kg-dry	1	4/4/00 2:12:54 PM	LC-3_000404A	SDC
2-Methylnaphthalene	ND		384	µg/Kg-dry	1			
Acenaphthene	132	J	384	µg/Kg-dry	1			
Acenaphthylene	ND		384	µg/Kg-dry	1			
Anthracene	29.9	J	38.4	µg/Kg-dry	1			
Benz(a)anthracene	98.3		38.4	µg/Kg-dry	1			
Benzo(a)pyrene	129		38.4	µg/Kg-dry	1			
Benzo(b)fluoranthene	193		38.4	µg/Kg-dry	1			
Benzo(g,h,i)perylene	84.5	J	95.9	µg/Kg-dry	1			
Benzo(k)fluoranthene	119		38.4	µg/Kg-dry	1			
Chrysene	163		38.4	µg/Kg-dry	1			
Dibenz(a,h)anthracene	ND		95.9	µg/Kg-dry	1			
Fluoranthene	313		95.9	µg/Kg-dry	1			
Fluorene	ND		38.4	µg/Kg-dry	1			
Indeno(1,2,3-cd)pyrene	87.5		38.4	µg/Kg-dry	1			
Naphthalene	ND		384	µg/Kg-dry	1			
Phenanthrene	107		38.4	µg/Kg-dry	1			
Pyrene	296		95.9	µg/Kg-dry	1			
Surr:Terphenyl-d14	113		66-113	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-05A Sample Type: SAMP

Client Sample ID: SMP-J
Alt. Client ID:
Collection Date: 3/16/00 9:14:00 AM
Matrix: SOIL % Moist: 59.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		2450	µg/Kg-dry	5	4/4/00 2:58:18 PM	LC-3_000404A	SDC
2-Methylnaphthalene	ND		2450	µg/Kg-dry	5			
Acenaphthene	ND		2450	µg/Kg-dry	5			
Acenaphthylene	ND		2450	µg/Kg-dry	5			
Anthracene	39.2	J	245	µg/Kg-dry	5			
Benz(a)anthracene	159	J	245	µg/Kg-dry	5			
Benzo(a)pyrene	235	J	245	µg/Kg-dry	5			
Benzo(b)fluoranthene	446		245	µg/Kg-dry	5			
Benzo(g,h,i)perylene	151	J	613	µg/Kg-dry	5			
Benzo(k)fluoranthene	481		245	µg/Kg-dry	5			
Chrysene	272		245	µg/Kg-dry	5			
Dibenz(a,h)anthracene	ND		613	µg/Kg-dry	5			
Fluoranthene	483	J	613	µg/Kg-dry	5			
Fluorene	ND		245	µg/Kg-dry	5			
Indeno(1,2,3-cd)pyrene	146	J	245	µg/Kg-dry	5			
Naphthalene	ND		2450	µg/Kg-dry	5			
Phenanthrene	138	J	245	µg/Kg-dry	5			
Pyrene	472	J	613	µg/Kg-dry	5			
Surr:Terphenyl-d14	128	*	66-113	%REC	5			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-06A Sample Type: SAMP

Client Sample ID: SMP-K
Alt. Client ID:
Collection Date: 3/16/00 10:20:00 AM
Matrix: SOIL
% Moist: 51.10

DETERMINATION OF PAH BY METHOD 8310

1_8310_3550B_S

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
1-Methylnaphthalene	ND		3990	µg/Kg-dry	10	4/3/00 7:52:56 PM	LC-3_000403A	SDC
2-Methylnaphthalene	ND		3990	µg/Kg-dry	10			
Acenaphthene	ND		3990	µg/Kg-dry	10			
Acenaphthylene	ND		3990	µg/Kg-dry	10			
Anthracene	91.2	J	399	µg/Kg-dry	10			
Benz(a)anthracene	314	J	399	µg/Kg-dry	10			
Benzo(a)pyrene	423		399	µg/Kg-dry	10			
Benzo(b)fluoranthene	997		399	µg/Kg-dry	10			
Benzo(g,h,i)perylene	248	J	996	µg/Kg-dry	10			
Benzo(k)fluoranthene	ND		399	µg/Kg-dry	10			
Chrysene	545		399	µg/Kg-dry	10			
Dibenz(a,h)anthracene	ND		996	µg/Kg-dry	10			
Fluoranthene	1030		996	µg/Kg-dry	10			
Fluorene	ND		399	µg/Kg-dry	10			
Indeno(1,2,3-cd)pyrene	263	J	399	µg/Kg-dry	10			
Naphthalene	ND		3990	µg/Kg-dry	10			
Phenanthrene	306	J	399	µg/Kg-dry	10			
Pyrene	933	J	996	µg/Kg-dry	10			
Surr:Terphenyl-d14	184	*	66-113	%REC	10			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-07A Sample Type: SAMP

Client Sample ID: SMP-I
Alt. Client ID:
Collection Date: 3/16/00 10:50:00 AM
Matrix: SOIL % Moist: 48.50

DETERMINATION OF PAH BY METHOD 8310

1_8310_3550B_S

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
1-Methylnaphthalene	ND		3860	µg/Kg-dry	10	4/3/00 8:38:17 PM	LC-3_000403A	SDC
2-Methylnaphthalene	ND		3860	µg/Kg-dry	10			
Acenaphthene	ND		3860	µg/Kg-dry	10			
Acenaphthylene	ND		3860	µg/Kg-dry	10			
Anthracene	188	J	386	µg/Kg-dry	10			
Benz(a)anthracene	723		386	µg/Kg-dry	10			
Benzo(a)pyrene	680		386	µg/Kg-dry	10			
Benzo(b)fluoranthene	1880		386	µg/Kg-dry	10			
Benzo(g,h,i)perylene	492	J	966	µg/Kg-dry	10			
Benzo(k)fluoranthene	3470		386	µg/Kg-dry	10			
Chrysene	853		386	µg/Kg-dry	10			
Dibenz(a,h)anthracene	ND		966	µg/Kg-dry	10			
Fluoranthene	1900		966	µg/Kg-dry	10			
Fluorene	ND		386	µg/Kg-dry	10			
Indeno(1,2,3-cd)pyrene	358	J	386	µg/Kg-dry	10			
Naphthalene	ND		3860	µg/Kg-dry	10			
Phenanthrene	546		386	µg/Kg-dry	10			
Pyrene	1810		966	µg/Kg-dry	10			
Surr:Terphenyl-d14	265	*	66-113	%REC	10			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

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LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-08A Sample Type: SAMP

Client Sample ID: SMP-G
Alt. Client ID:
Collection Date: 3/15/00 11:30:00 AM
Matrix: SOIL % Moist: 52.00

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		2080	µg/Kg-dry	5	4/4/00 3:43:43 PM	LC-3_000404A	SDC
2-Methylnaphthalene	ND		2080	µg/Kg-dry	5			
Acenaphthene	962	J	2080	µg/Kg-dry	5			
Acenaphthylene	ND		2080	µg/Kg-dry	5			
Anthracene	184	J	208	µg/Kg-dry	5			
Benz(a)anthracene	662		208	µg/Kg-dry	5			
Benzo(a)pyrene	1290		208	µg/Kg-dry	5			
Benzo(b)fluoranthene	1620		208	µg/Kg-dry	5			
Benzo(g,h,i)perylene	933		519	µg/Kg-dry	5			
Benzo(k)fluoranthene	1820		208	µg/Kg-dry	5			
Chrysene	1180		208	µg/Kg-dry	5			
Dibenz(a,h)anthracene	ND		519	µg/Kg-dry	5			
Fluoranthene	1990		519	µg/Kg-dry	5			
Fluorene	ND		208	µg/Kg-dry	5			
Indeno(1,2,3-cd)pyrene	563		208	µg/Kg-dry	5			
Naphthalene	ND		2080	µg/Kg-dry	5			
Phenanthrene	705		208	µg/Kg-dry	5			
Pyrene	1870		519	µg/Kg-dry	5			
Surr:Terphenyl-d14	259	*	66-113	%REC	5			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	SMP-N
Lab Order:	0003202	Alt. Client ID:	
Project:	Kenilworth Park PA/SI	Collection Date:	3/16/00 1:15:00 PM
Lab ID:	0003202-09A Sample Type: SAMP	Matrix:	SOIL % Moist: 45.50

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		1800	µg/Kg-dry	5	4/4/00 4:29:09 PM	LC-3_000404A	SDC
2-Methylnaphthalene	ND		1800	µg/Kg-dry	5			
Acenaphthene	ND		1800	µg/Kg-dry	5			
Acenaphthylene	ND		1800	µg/Kg-dry	5			
Anthracene	40.4	J	180	µg/Kg-dry	5			
Benz(a)anthracene	156	J	180	µg/Kg-dry	5			
Benzo(a)pyrene	240		180	µg/Kg-dry	5			
Benzo(b)fluoranthene	1220		180	µg/Kg-dry	5			
Benzo(g,h,i)perylene	ND		450	µg/Kg-dry	5			
Benzo(k)fluoranthene	1600		180	µg/Kg-dry	5			
Chrysene	286		180	µg/Kg-dry	5			
Dibenz(a,h)anthracene	ND		450	µg/Kg-dry	5			
Fluoranthene	453		450	µg/Kg-dry	5			
Fluorene	ND		180	µg/Kg-dry	5			
Indeno(1,2,3-cd)pyrene	106	J	180	µg/Kg-dry	5			
Naphthalene	ND		1800	µg/Kg-dry	5			
Phenanthrene	152	J	180	µg/Kg-dry	5			
Pyrene	427	J	450	µg/Kg-dry	5			
Surr:Terphenyl-d14	129	*	66-113	%REC	5			

Definitions:			
	ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
	J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
	H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Laboratory Results

Analytical Services Center
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Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-10A **Sample Type:** SAMP

Client Sample ID: SS-2
Alt. Client ID:
Collection Date: 3/17/00 11:50:00 AM
Matrix: SOIL **% Moist:** 25.80

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		1340	µg/Kg-dry	5	4/4/00 5:14:33 PM	LC-3_000404A	SDC
2-Methylnaphthalene	ND		1340	µg/Kg-dry	5			
Acenaphthene	3240		1340	µg/Kg-dry	5			
Acenaphthylene	ND		1340	µg/Kg-dry	5			
Anthracene	137		134	µg/Kg-dry	5			
Benz(a)anthracene	364		134	µg/Kg-dry	5			
Benzo(a)pyrene	388		134	µg/Kg-dry	5			
Benzo(b)fluoranthene	447		134	µg/Kg-dry	5			
Benzo(g,h,i)perylene	108	J	336	µg/Kg-dry	5			
Benzo(k)fluoranthene	308		134	µg/Kg-dry	5			
Chrysene	450		134	µg/Kg-dry	5			
Dibenz(a,h)anthracene	ND		336	µg/Kg-dry	5			
Fluoranthene	915		336	µg/Kg-dry	5			
Fluorene	ND		134	µg/Kg-dry	5			
Indeno(1,2,3-cd)pyrene	197		134	µg/Kg-dry	5			
Naphthalene	ND		1340	µg/Kg-dry	5			
Phenanthrene	414		134	µg/Kg-dry	5			
Pyrene	1110		336	µg/Kg-dry	5			
Surr:Terphenyl-d14	175	*	66-113	%REC	5			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Laboratory Results

Analytical Services Center
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Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-11A **Sample Type:** SAMP

Client Sample ID: SS-1
Alt. Client ID:
Collection Date: 3/17/00 12:00:00 PM
Matrix: SOIL **% Moist:** 35.30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		300	µg/Kg-dry	1	4/4/00 5:59:56 PM	LC-3_000404A	SDC
2-Methylnaphthalene	ND		300	µg/Kg-dry	1			
Acenaphthene	635		300	µg/Kg-dry	1			
Acenaphthylene	ND		300	µg/Kg-dry	1			
Anthracene	34.4		30.0	µg/Kg-dry	1			
Benz(a)anthracene	174		30.0	µg/Kg-dry	1			
Benzo(a)pyrene	369		30.0	µg/Kg-dry	1			
Benzo(b)fluoranthene	285		30.0	µg/Kg-dry	1			
Benzo(g,h,i)perylene	294		75.0	µg/Kg-dry	1			
Benzo(k)fluoranthene	362		30.0	µg/Kg-dry	1			
Chrysene	208		30.0	µg/Kg-dry	1			
Dibenz(a,h)anthracene	188		75.0	µg/Kg-dry	1			
Fluoranthene	257		75.0	µg/Kg-dry	1			
Fluorene	ND		30.0	µg/Kg-dry	1			
Indeno(1,2,3-cd)pyrene	94.5		30.0	µg/Kg-dry	1			
Naphthalene	ND		300	µg/Kg-dry	1			
Phenanthrene	90.8		30.0	µg/Kg-dry	1			
Pyrene	378		75.0	µg/Kg-dry	1			
Surr:Terphenyl-d14	117	*	66-113	%REC	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

Ecology and Environment, Inc.

Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-12A **Sample Type:** SAMP

Client Sample ID: SS-8
Alt. Client ID:
Collection Date: 3/17/00 12:05:00 PM
Matrix: SOIL **% Moist:** 13.70

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		1130	µg/Kg-dry	5	4/4/00 6:45:19 PM	LC-3_000404A	SDC
2-Methylnaphthalene	ND		1130	µg/Kg-dry	5			
Acenaphthene	266	J	1130	µg/Kg-dry	5			
Acenaphthylene	ND		1130	µg/Kg-dry	5			
Anthracene	94.6	J	113	µg/Kg-dry	5			
Benz(a)anthracene	250		113	µg/Kg-dry	5			
Benzo(a)pyrene	286		113	µg/Kg-dry	5			
Benzo(b)fluoranthene	318		113	µg/Kg-dry	5			
Benzo(g,h,i)perylene	110	J	283	µg/Kg-dry	5			
Benzo(k)fluoranthene	252		113	µg/Kg-dry	5			
Chrysene	296		113	µg/Kg-dry	5			
Dibenz(a,h)anthracene	ND		283	µg/Kg-dry	5			
Fluoranthene	668		283	µg/Kg-dry	5			
Fluorene	18.5	J	113	µg/Kg-dry	5			
Indeno(1,2,3-cd)pyrene	118		113	µg/Kg-dry	5			
Naphthalene	ND		1130	µg/Kg-dry	5			
Phenanthrene	379		113	µg/Kg-dry	5			
Pyrene	586		283	µg/Kg-dry	5			
Surr:Terphenyl-d14	149	*	66-113	%REC	5			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-13A **Sample Type:** SAMP

Client Sample ID: SS-7
Alt. Client ID:
Collection Date: 3/17/00 12:10:00 PM
Matrix: SOIL **% Moist:** 25.10

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		2660	µg/Kg-dry	10	4/4/00 7:30:43 PM	LC-3_000404A	SDC
2-Methylnaphthalene	17600		2660	µg/Kg-dry	10			
Acenaphthene	18600		2660	µg/Kg-dry	10			
Acenaphthylene	ND		2660	µg/Kg-dry	10			
Anthracene	917		266	µg/Kg-dry	10			
Benz(a)anthracene	2030		266	µg/Kg-dry	10			
Benzo(a)pyrene	2260		266	µg/Kg-dry	10			
Benzo(b)fluoranthene	2070		266	µg/Kg-dry	10			
Benzo(g,h,i)perylene	444	J	666	µg/Kg-dry	10			
Benzo(k)fluoranthene	1840		266	µg/Kg-dry	10			
Chrysene	2120		266	µg/Kg-dry	10			
Dibenz(a,h)anthracene	ND		666	µg/Kg-dry	10			
Fluoranthene	4980		666	µg/Kg-dry	10			
Fluorene	ND		266	µg/Kg-dry	10			
Indeno(1,2,3-cd)pyrene	619		266	µg/Kg-dry	10			
Naphthalene	ND		2660	µg/Kg-dry	10			
Phenanthrene	2840		266	µg/Kg-dry	10			
Pyrene	5520		666	µg/Kg-dry	10			
Surr:Terphenyl-d14	500	*	66-113	%REC	10			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

Ecology and Environment, Inc.

Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-14A **Sample Type:** SAMP

Client Sample ID: SS-6
Alt. Client ID:
Collection Date: 3/17/00 12:20:00 PM
Matrix: SOIL **% Moist:** 17.70

DETERMINATION OF PAH BY METHOD 8310
1_8310_3550B_S

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
1-Methylnaphthalene	ND		242	µg/Kg-dry	1	4/4/00 8:16:08 PM	LC-3_000404A	SDC
2-Methylnaphthalene	ND		242	µg/Kg-dry	1			
Acenaphthene	ND		242	µg/Kg-dry	1			
Acenaphthylene	ND		242	µg/Kg-dry	1			
Anthracene	34.1		24.2	µg/Kg-dry	1			
Benz(a)anthracene	107		24.2	µg/Kg-dry	1			
Benzo(a)pyrene	469		24.2	µg/Kg-dry	1			
Benzo(b)fluoranthene	384		24.2	µg/Kg-dry	1			
Benzo(g,h,i)perylene	459		60.5	µg/Kg-dry	1			
Benzo(k)fluoranthene	408		24.2	µg/Kg-dry	1			
Chrysene	114		24.2	µg/Kg-dry	1			
Dibenz(a,h)anthracene	ND		60.5	µg/Kg-dry	1			
Fluoranthene	218		60.5	µg/Kg-dry	1			
Fluorene	6.78	J	24.2	µg/Kg-dry	1			
Indeno(1,2,3-cd)pyrene	164		24.2	µg/Kg-dry	1			
Naphthalene	ND		242	µg/Kg-dry	1			
Phenanthrene	133		24.2	µg/Kg-dry	1			
Pyrene	209		60.5	µg/Kg-dry	1			
Surr:Terphenyl-d14	111		66-113	%REC	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

Ecology and Environment, Inc.

Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-15A **Sample Type:** SAMP

Client Sample ID: SS-5
Alt. Client ID:
Collection Date: 3/17/00 12:25:00 PM
Matrix: SOIL **% Moist:** 19.00

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		244	µg/Kg-dry	1	4/4/00 9:01:32 PM	LC-3_000404A	SDC
2-Methylnaphthalene	ND		244	µg/Kg-dry	1			
Acenaphthene	ND		244	µg/Kg-dry	1			
Acenaphthylene	ND		244	µg/Kg-dry	1			
Anthracene	9.16	J	24.4	µg/Kg-dry	1			
Benz(a)anthracene	20.1	J	24.4	µg/Kg-dry	1			
Benzo(a)pyrene	87.5		24.4	µg/Kg-dry	1			
Benzo(b)fluoranthene	43.2		24.4	µg/Kg-dry	1			
Benzo(g,h,i)perylene	11.4	J	60.9	µg/Kg-dry	1			
Benzo(k)fluoranthene	66.3		24.4	µg/Kg-dry	1			
Chrysene	23.8	J	24.4	µg/Kg-dry	1			
Dibenz(a,h)anthracene	ND		60.9	µg/Kg-dry	1			
Fluoranthene	34.4	J	60.9	µg/Kg-dry	1			
Fluorene	ND		24.4	µg/Kg-dry	1			
Indeno(1,2,3-cd)pyrene	11.7	J	24.4	µg/Kg-dry	1			
Naphthalene	ND		244	µg/Kg-dry	1			
Phenanthrene	27.7		24.4	µg/Kg-dry	1			
Pyrene	38.0	J	60.9	µg/Kg-dry	1			
Surr:Terphenyl-d14	87		66-113	%REC	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-16A **Sample Type:** SAMP

Client Sample ID: SS-9
Alt. Client ID:
Collection Date: 3/17/00 12:30:00 PM
Matrix: SOIL **% Moist:** 17.60

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		1200	µg/Kg-dry	5	4/4/00 11:17:46 PM	LC-3_000404A	SDC
2-Methylnaphthalene	ND		1200	µg/Kg-dry	5			
Acenaphthene	11100		1200	µg/Kg-dry	5			
Acenaphthylene	ND		1200	µg/Kg-dry	5			
Anthracene	10.6	J	120	µg/Kg-dry	5			
Benz(a)anthracene	141		120	µg/Kg-dry	5			
Benzo(a)pyrene	167		120	µg/Kg-dry	5			
Benzo(b)fluoranthene	239		120	µg/Kg-dry	5			
Benzo(g,h,i)perylene	ND		300	µg/Kg-dry	5			
Benzo(k)fluoranthene	782		120	µg/Kg-dry	5			
Chrysene	121		120	µg/Kg-dry	5			
Dibenz(a,h)anthracene	ND		300	µg/Kg-dry	5			
Fluoranthene	211	J	300	µg/Kg-dry	5			
Fluorene	ND		120	µg/Kg-dry	5			
Indeno(1,2,3-cd)pyrene	50.7	J	120	µg/Kg-dry	5			
Naphthalene	ND		1200	µg/Kg-dry	5			
Phenanthrene	88.7	J	120	µg/Kg-dry	5			
Pyrene	312		300	µg/Kg-dry	5			
Surr:Terphenyl-d14	132	*	66-113	%REC	5			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-17A **Sample Type:** SAMP

Client Sample ID: SS-10
Alt. Client ID:
Collection Date: 3/17/00 12:40:00 PM
Matrix: SOIL **% Moist:** 12.00

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		1120	µg/Kg-dry	5	4/5/00 12:03:09 AM	LC-3_000404A	SDC
2-Methylnaphthalene	ND		1120	µg/Kg-dry	5			
Acenaphthene	590	J	1120	µg/Kg-dry	5			
Acenaphthylene	ND		1120	µg/Kg-dry	5			
Anthracene	172		112	µg/Kg-dry	5			
Benz(a)anthracene	525		112	µg/Kg-dry	5			
Benzo(a)pyrene	561		112	µg/Kg-dry	5			
Benzo(b)fluoranthene	572		112	µg/Kg-dry	5			
Benzo(g,h,i)perylene	269	J	280	µg/Kg-dry	5			
Benzo(k)fluoranthene	336		112	µg/Kg-dry	5			
Chrysene	582		112	µg/Kg-dry	5			
Dibenz(a,h)anthracene	ND		280	µg/Kg-dry	5			
Fluoranthene	1260		280	µg/Kg-dry	5			
Fluorene	23.4	J	112	µg/Kg-dry	5			
Indeno(1,2,3-cd)pyrene	274		112	µg/Kg-dry	5			
Naphthalene	ND		1120	µg/Kg-dry	5			
Phenanthrene	511		112	µg/Kg-dry	5			
Pyrene	1230		280	µg/Kg-dry	5			
Surr:Terphenyl-d14	218	*	66-113	%REC	5			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-18A **Sample Type:** SAMP

Client Sample ID: SS-11
Alt. Client ID:
Collection Date: 3/17/00 12:50:00 PM
Matrix: SOIL **% Moist:** 12.00

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		1130	µg/Kg-dry	5	4/5/00 12:48:33 AM	LC-3_000404A	SDC
2-Methylnaphthalene	1890		1130	µg/Kg-dry	5			
Acenaphthene	1710		1130	µg/Kg-dry	5			
Acenaphthylene	ND		1130	µg/Kg-dry	5			
Anthracene	602		113	µg/Kg-dry	5			
Benz(a)anthracene	1280		113	µg/Kg-dry	5			
Benzo(a)pyrene	1260		113	µg/Kg-dry	5			
Benzo(b)fluoranthene	1240		113	µg/Kg-dry	5			
Benzo(g,h,i)perylene	777		284	µg/Kg-dry	5			
Benzo(k)fluoranthene	682		113	µg/Kg-dry	5			
Chrysene	1420		113	µg/Kg-dry	5			
Dibenz(a,h)anthracene	63.8	J	284	µg/Kg-dry	5			
Fluoranthene	3420		284	µg/Kg-dry	5			
Fluorene	207		113	µg/Kg-dry	5			
Indeno(1,2,3-cd)pyrene	678		113	µg/Kg-dry	5			
Naphthalene	ND		1130	µg/Kg-dry	5			
Phenanthrene	2150		113	µg/Kg-dry	5			
Pyrene	3460		284	µg/Kg-dry	5			
Surr:Terphenyl-d14	455	*	66-113	%REC	5			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Laboratory Results

Analytical Services Center
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Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-19A **Sample Type:** SAMP

Client Sample ID: SS-14
Alt. Client ID:
Collection Date: 3/17/00 1:00:00 PM
Matrix: SOIL **% Moist:** 17.50

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		239	µg/Kg-dry	1	4/5/00 1:33:58 AM	LC-3_000404A	SDC
2-Methylnaphthalene	ND		239	µg/Kg-dry	1			
Acenaphthene	ND		239	µg/Kg-dry	1			
Acenaphthylene	ND		239	µg/Kg-dry	1			
Anthracene	3.36	J	23.9	µg/Kg-dry	1			
Benz(a)anthracene	8.57	J	23.9	µg/Kg-dry	1			
Benzo(a)pyrene	11.0	J	23.9	µg/Kg-dry	1			
Benzo(b)fluoranthene	9.44	J	23.9	µg/Kg-dry	1			
Benzo(g,h,i)perylene	7.48	J	59.7	µg/Kg-dry	1			
Benzo(k)fluoranthene	9.38	J	23.9	µg/Kg-dry	1			
Chrysene	11.6	J	23.9	µg/Kg-dry	1			
Dibenz(a,h)anthracene	ND		59.7	µg/Kg-dry	1			
Fluoranthene	22.1	J	59.7	µg/Kg-dry	1			
Fluorene	ND		23.9	µg/Kg-dry	1			
Indeno(1,2,3-cd)pyrene	4.30	J	23.9	µg/Kg-dry	1			
Naphthalene	ND		239	µg/Kg-dry	1			
Phenanthrene	8.47	J	23.9	µg/Kg-dry	1			
Pyrene	ND		59.7	µg/Kg-dry	1			
Surr:Terphenyl-d14	91		66-113	%REC	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

Ecology and Environment, Inc.

Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-20A **Sample Type:** SAMP

Client Sample ID: SS-13
Alt. Client ID:
Collection Date: 3/17/00 1:09:00 PM
Matrix: SOIL **% Moist:** 15.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		230	µg/Kg-dry	1	4/5/00 2:19:22 AM	LC-3_000404A	SDC
2-Methylnaphthalene	ND		230	µg/Kg-dry	1			
Acenaphthene	ND		230	µg/Kg-dry	1			
Acenaphthylene	ND		230	µg/Kg-dry	1			
Anthracene	18.4	J	23.0	µg/Kg-dry	1			
Benz(a)anthracene	60.8		23.0	µg/Kg-dry	1			
Benzo(a)pyrene	85.3		23.0	µg/Kg-dry	1			
Benzo(b)fluoranthene	117		23.0	µg/Kg-dry	1			
Benzo(g,h,i)perylene	49.3	J	57.4	µg/Kg-dry	1			
Benzo(k)fluoranthene	58.9		23.0	µg/Kg-dry	1			
Chrysene	80.4		23.0	µg/Kg-dry	1			
Dibenz(a,h)anthracene	ND		57.4	µg/Kg-dry	1			
Fluoranthene	136		57.4	µg/Kg-dry	1			
Fluorene	ND		23.0	µg/Kg-dry	1			
Indeno(1,2,3-cd)pyrene	49.4		23.0	µg/Kg-dry	1			
Naphthalene	ND		230	µg/Kg-dry	1			
Phenanthrene	50.4		23.0	µg/Kg-dry	1			
Pyrene	142		57.4	µg/Kg-dry	1			
Surr:Terphenyl-d14	106		66-113	%REC	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

Ecology and Environment, Inc.

Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-21A **Sample Type:** SAMP

Client Sample ID: SS-18
Alt. Client ID:
Collection Date: 3/17/00 1:15:00 PM
Matrix: SOIL **% Moist:** 18.20

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		242	µg/Kg-dry	1	4/5/00 7:37:34 PM	LC-3_000405A	SDC
2-Methylnaphthalene	ND		242	µg/Kg-dry	1			
Acenaphthene	ND		242	µg/Kg-dry	1			
Acenaphthylene	ND		242	µg/Kg-dry	1			
Anthracene	13.1	J	24.2	µg/Kg-dry	1			
Benz(a)anthracene	38.5		24.2	µg/Kg-dry	1			
Benzo(a)pyrene	36.0		24.2	µg/Kg-dry	1			
Benzo(b)fluoranthene	42.4		24.2	µg/Kg-dry	1			
Benzo(g,h,i)perylene	10.3	J	60.4	µg/Kg-dry	1			
Benzo(k)fluoranthene	24.3		24.2	µg/Kg-dry	1			
Chrysene	47.6		24.2	µg/Kg-dry	1			
Dibenz(a,h)anthracene	ND		60.4	µg/Kg-dry	1			
Fluoranthene	94.5		60.4	µg/Kg-dry	1			
Fluorene	ND		24.2	µg/Kg-dry	1			
Indeno(1,2,3-cd)pyrene	24.4		24.2	µg/Kg-dry	1			
Naphthalene	ND		242	µg/Kg-dry	1			
Phenanthrene	43.1		24.2	µg/Kg-dry	1			
Pyrene	87.8		60.4	µg/Kg-dry	1			
Surr:Terphenyl-d14	78		66-113	%REC	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

Ecology and Environment, Inc.

Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-22A **Sample Type:** SAMP

Client Sample ID: SS-17
Alt. Client ID:
Collection Date: 3/17/00 1:20:00 PM
Matrix: SOIL **% Moist:** 17.70

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		1190	µg/Kg-dry	5	4/5/00 8:23:01 PM	LC-3_000405A	SDC
2-Methylnaphthalene	ND		1190	µg/Kg-dry	5			
Acenaphthene	ND		1190	µg/Kg-dry	5			
Acenaphthylene	ND		1190	µg/Kg-dry	5			
Anthracene	86.4	J	119	µg/Kg-dry	5			
Benz(a)anthracene	240		119	µg/Kg-dry	5			
Benzo(a)pyrene	248		119	µg/Kg-dry	5			
Benzo(b)fluoranthene	261		119	µg/Kg-dry	5			
Benzo(g,h,i)perylene	88.8	J	297	µg/Kg-dry	5			
Benzo(k)fluoranthene	146		119	µg/Kg-dry	5			
Chrysene	296		119	µg/Kg-dry	5			
Dibenz(a,h)anthracene	ND		297	µg/Kg-dry	5			
Fluoranthene	593		297	µg/Kg-dry	5			
Fluorene	ND		119	µg/Kg-dry	5			
Indeno(1,2,3-cd)pyrene	125		119	µg/Kg-dry	5			
Naphthalene	ND		1190	µg/Kg-dry	5			
Phenanthrene	259		119	µg/Kg-dry	5			
Pyrene	613		297	µg/Kg-dry	5			
Surr:Terphenyl-d14	159	*	66-113	%REC	5			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-23A **Sample Type:** SAMP

Client Sample ID: SS-16
Alt. Client ID:
Collection Date: 3/17/00 1:25:00 PM
Matrix: SOIL **% Moist:** 9.56

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		1080	µg/Kg-dry	5	4/5/00 9:08:25 PM	LC-3_000405A	SDC
2-Methylnaphthalene	ND		1080	µg/Kg-dry	5			
Acenaphthene	ND		1080	µg/Kg-dry	5			
Acenaphthylene	ND		1080	µg/Kg-dry	5			
Anthracene	68.1	J	108	µg/Kg-dry	5			
Benz(a)anthracene	321		108	µg/Kg-dry	5			
Benzo(a)pyrene	533		108	µg/Kg-dry	5			
Benzo(b)fluoranthene	383		108	µg/Kg-dry	5			
Benzo(g,h,i)perylene	149	J	269	µg/Kg-dry	5			
Benzo(k)fluoranthene	318		108	µg/Kg-dry	5			
Chrysene	356		108	µg/Kg-dry	5			
Dibenz(a,h)anthracene	152	J	269	µg/Kg-dry	5			
Fluoranthene	583		269	µg/Kg-dry	5			
Fluorene	ND		108	µg/Kg-dry	5			
Indeno(1,2,3-cd)pyrene	144		108	µg/Kg-dry	5			
Naphthalene	ND		1080	µg/Kg-dry	5			
Phenanthrene	238		108	µg/Kg-dry	5			
Pyrene	609		269	µg/Kg-dry	5			
Surr:Terphenyl-d14	192	*	66-113	%REC	5			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

Ecology and Environment, Inc.

Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-24A **Sample Type:** SAMP

Client Sample ID: SS-23
Alt. Client ID:
Collection Date: 3/17/00 1:46:00 PM
Matrix: SOIL **% Moist:** 20.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		246	µg/Kg-dry	1	4/5/00 9:53:47 PM	LC-3_000405A	SDC
2-Methylnaphthalene	ND		246	µg/Kg-dry	1			
Acenaphthene	ND		246	µg/Kg-dry	1			
Acenaphthylene	ND		246	µg/Kg-dry	1			
Anthracene	7.11	J	24.6	µg/Kg-dry	1			
Benz(a)anthracene	19.3	J	24.6	µg/Kg-dry	1			
Benzo(a)pyrene	21.8	J	24.6	µg/Kg-dry	1			
Benzo(b)fluoranthene	55.6		24.6	µg/Kg-dry	1			
Benzo(g,h,i)perylene	12.0	J	61.6	µg/Kg-dry	1			
Benzo(k)fluoranthene	33.9		24.6	µg/Kg-dry	1			
Chrysene	23.7	J	24.6	µg/Kg-dry	1			
Dibenz(a,h)anthracene	ND		61.6	µg/Kg-dry	1			
Fluoranthene	55.2	J	61.6	µg/Kg-dry	1			
Fluorene	ND		24.6	µg/Kg-dry	1			
Indeno(1,2,3-cd)pyrene	12.7	J	24.6	µg/Kg-dry	1			
Naphthalene	ND		246	µg/Kg-dry	1			
Phenanthrene	29.7		24.6	µg/Kg-dry	1			
Pyrene	49.5	J	61.6	µg/Kg-dry	1			
Surr:Terphenyl-d14	64	*	66-113	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-25A **Sample Type:** SAMP

Client Sample ID: SS-22
Alt. Client ID:
Collection Date: 3/17/00 1:55:00 PM
Matrix: SOIL **% Moist:** 14.10

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		1150	µg/Kg-dry	5	4/5/00 10:39:10 PM	LC-3_000405A	SDC
2-Methylnaphthalene	1500		1150	µg/Kg-dry	5			
Acenaphthene	1780		1150	µg/Kg-dry	5			
Acenaphthylene	ND		1150	µg/Kg-dry	5			
Anthracene	438		115	µg/Kg-dry	5			
Benz(a)anthracene	1480		115	µg/Kg-dry	5			
Benzo(a)pyrene	2950		115	µg/Kg-dry	5			
Benzo(b)fluoranthene	1970		115	µg/Kg-dry	5			
Benzo(g,h,i)perylene	2390		289	µg/Kg-dry	5			
Benzo(k)fluoranthene	1740		115	µg/Kg-dry	5			
Chrysene	1640		115	µg/Kg-dry	5			
Dibenz(a,h)anthracene	1470		289	µg/Kg-dry	5			
Fluoranthene	2790		289	µg/Kg-dry	5			
Fluorene	123		115	µg/Kg-dry	5			
Indeno(1,2,3-cd)pyrene	1550		115	µg/Kg-dry	5			
Naphthalene	ND		1150	µg/Kg-dry	5			
Phenanthrene	1050		115	µg/Kg-dry	5			
Pyrene	ND		289	µg/Kg-dry	5			
Surr:Terphenyl-d14	466	*	66-113	%REC	5			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-19
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 2:00:00 PM
Lab ID:	0003202-26A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 15.00

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		1160	µg/Kg-dry	5	4/5/00 11:24:35 PM	LC-3_000405A	SDC
2-Methylnaphthalene	ND		1160	µg/Kg-dry	5			
Acenaphthene	876	J	1160	µg/Kg-dry	5			
Acenaphthylene	ND		1160	µg/Kg-dry	5			
Anthracene	321		116	µg/Kg-dry	5			
Benz(a)anthracene	1190		116	µg/Kg-dry	5			
Benzo(a)pyrene	2050		116	µg/Kg-dry	5			
Benzo(b)fluoranthene	1300		116	µg/Kg-dry	5			
Benzo(g,h,i)perylene	1300		290	µg/Kg-dry	5			
Benzo(k)fluoranthene	1150		116	µg/Kg-dry	5			
Chrysene	1230		116	µg/Kg-dry	5			
Dibenz(a,h)anthracene	803		290	µg/Kg-dry	5			
Fluoranthene	2450		290	µg/Kg-dry	5			
Fluorene	31.0	J	116	µg/Kg-dry	5			
Indeno(1,2,3-cd)pyrene	685		116	µg/Kg-dry	5			
Naphthalene	ND		1160	µg/Kg-dry	5			
Phenanthrene	822		116	µg/Kg-dry	5			
Pyrene	2550		290	µg/Kg-dry	5			
Surr:Terphenyl-d14	356	*	66-113	%REC	5			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	SURT - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-21
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 2:10:00 PM
Lab ID:	0003202-27A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 15.80

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		1180	µg/Kg-dry	5	4/6/00 12:10:01 AM	LC-3_000405A	SDC
2-Methylnaphthalene	ND		1180	µg/Kg-dry	5			
Acenaphthene	634	J	1180	µg/Kg-dry	5			
Acenaphthylene	ND		1180	µg/Kg-dry	5			
Anthracene	230		118	µg/Kg-dry	5			
Benz(a)anthracene	646		118	µg/Kg-dry	5			
Benzo(a)pyrene	760		118	µg/Kg-dry	5			
Benzo(b)fluoranthene	938		118	µg/Kg-dry	5			
Benzo(g,h,i)perylene	321		295	µg/Kg-dry	5			
Benzo(k)fluoranthene	395		118	µg/Kg-dry	5			
Chrysene	786		118	µg/Kg-dry	5			
Dibenz(a,h)anthracene	ND		295	µg/Kg-dry	5			
Fluoranthene	1510		295	µg/Kg-dry	5			
Fluorene	41.7	J	118	µg/Kg-dry	5			
Indeno(1,2,3-cd)pyrene	364		118	µg/Kg-dry	5			
Naphthalene	ND		1180	µg/Kg-dry	5			
Phenanthrene	659		118	µg/Kg-dry	5			
Pyrene	1630		295	µg/Kg-dry	5			
Surr:Terphenyl-d14	272	*	66-113	%REC	5			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-28A **Sample Type:** SAMP

Client Sample ID: SS-24
Alt. Client ID:
Collection Date: 3/17/00 2:19:00 PM
Matrix: SOIL **% Moist:** 17.90

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		1180	µg/Kg-dry	5	4/6/00 12:55:25 AM	LC-3_000405A	SDC
2-Methylnaphthalene	ND		1180	µg/Kg-dry	5			
Acenaphthene	ND		1180	µg/Kg-dry	5			
Acenaphthylene	ND		1180	µg/Kg-dry	5			
Anthracene	25.0	J	118	µg/Kg-dry	5			
Benz(a)anthracene	93.1	J	118	µg/Kg-dry	5			
Benzo(a)pyrene	169		118	µg/Kg-dry	5			
Benzo(b)fluoranthene	142		118	µg/Kg-dry	5			
Benzo(g,h,i)perylene	56.6	J	295	µg/Kg-dry	5			
Benzo(k)fluoranthene	77.0	J	118	µg/Kg-dry	5			
Chrysene	116	J	118	µg/Kg-dry	5			
Dibenz(a,h)anthracene	ND		295	µg/Kg-dry	5			
Fluoranthene	166	J	295	µg/Kg-dry	5			
Fluorene	ND		118	µg/Kg-dry	5			
Indeno(1,2,3-cd)pyrene	87.9	J	118	µg/Kg-dry	5			
Naphthalene	ND		1180	µg/Kg-dry	5			
Phenanthrene	67.8	J	118	µg/Kg-dry	5			
Pyrene	160	J	295	µg/Kg-dry	5			
Surr:Terphenyl-d14	131	*	66-113	%REC	5			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-29A **Sample Type:** SAMP

Client Sample ID: SS-15
Alt. Client ID:
Collection Date: 3/20/00 11:00:00 AM
Matrix: SOIL **% Moist:** 38.20

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		3230	µg/Kg-dry	1	4/6/00 8:52:33 PM	LC-3_000406A	SDC
2-Methylnaphthalene	ND		3230	µg/Kg-dry	1			
Acenaphthene	ND		3230	µg/Kg-dry	1			
Acenaphthylene	ND		3230	µg/Kg-dry	1			
Anthracene	ND		323	µg/Kg-dry	1			
Benz(a)anthracene	69.8	J	323	µg/Kg-dry	1			
Benzo(a)pyrene	1500		323	µg/Kg-dry	1			
Benzo(b)fluoranthene	288	J	323	µg/Kg-dry	1			
Benzo(g,h,i)perylene	ND		807	µg/Kg-dry	1			
Benzo(k)fluoranthene	456		323	µg/Kg-dry	1			
Chrysene	144	J	323	µg/Kg-dry	1			
Dibenz(a,h)anthracene	ND		807	µg/Kg-dry	1			
Fluoranthene	519	J	807	µg/Kg-dry	1			
Fluorene	ND		323	µg/Kg-dry	1			
Indeno(1,2,3-cd)pyrene	ND		323	µg/Kg-dry	1			
Naphthalene	ND		3230	µg/Kg-dry	1			
Phenanthrene	143	J	323	µg/Kg-dry	1			
Pyrene	259	J	807	µg/Kg-dry	1			
Surr:Terphenyl-d14	110		66-113	%REC	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-30A **Sample Type:** SAMP

Client Sample ID: SS-25
Alt. Client ID:
Collection Date: 3/20/00 11:15:00 AM
Matrix: SOIL **% Moist:** 14.90

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		232	µg/Kg-dry	1	4/6/00 9:37:59 PM	LC-3_000406A	SDC
2-Methylnaphthalene	ND		232	µg/Kg-dry	1			
Acenaphthene	ND		232	µg/Kg-dry	1			
Acenaphthylene	ND		232	µg/Kg-dry	1			
Anthracene	ND		23.2	µg/Kg-dry	1			
Benz(a)anthracene	8.85	J	23.2	µg/Kg-dry	1			
Benzo(a)pyrene	17.1	J	23.2	µg/Kg-dry	1			
Benzo(b)fluoranthene	31.2		23.2	µg/Kg-dry	1			
Benzo(g,h,i)perylene	ND		57.9	µg/Kg-dry	1			
Benzo(k)fluoranthene	33.4		23.2	µg/Kg-dry	1			
Chrysene	12.3	J	23.2	µg/Kg-dry	1			
Dibenz(a,h)anthracene	ND		57.9	µg/Kg-dry	1			
Fluoranthene	ND		57.9	µg/Kg-dry	1			
Fluorene	ND		23.2	µg/Kg-dry	1			
Indeno(1,2,3-cd)pyrene	10.2	J	23.2	µg/Kg-dry	1			
Naphthalene	ND		232	µg/Kg-dry	1			
Phenanthrene	4.34	J	23.2	µg/Kg-dry	1			
Pyrene	ND		57.9	µg/Kg-dry	1			
Surr:Terphenyl-d14	98		66-113	%REC	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Analytical Services Center

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-31A **Sample Type:** SAMP

Client Sample ID: SS-4
Alt. Client ID:
Collection Date: 3/20/00 11:35:00 AM
Matrix: SOIL **% Moist:** 36.10

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		3080	µg/Kg-dry	10	4/6/00 4:42:25 AM	LC-3_000405A	SDC
2-Methylnaphthalene	ND		3080	µg/Kg-dry	10			
Acenaphthene	ND		3080	µg/Kg-dry	10			
Acenaphthylene	ND		3080	µg/Kg-dry	10			
Anthracene	131	J	308	µg/Kg-dry	10			
Benz(a)anthracene	396		308	µg/Kg-dry	10			
Benzo(a)pyrene	527		308	µg/Kg-dry	10			
Benzo(b)fluoranthene	587		308	µg/Kg-dry	10			
Benzo(g,h,i)perylene	161	J	770	µg/Kg-dry	10			
Benzo(k)fluoranthene	441		308	µg/Kg-dry	10			
Chrysene	552		308	µg/Kg-dry	10			
Dibenz(a,h)anthracene	ND		770	µg/Kg-dry	10			
Fluoranthene	1200		770	µg/Kg-dry	10			
Fluorene	ND		308	µg/Kg-dry	10			
Indeno(1,2,3-cd)pyrene	262	J	308	µg/Kg-dry	10			
Naphthalene	ND		3080	µg/Kg-dry	10			
Phenanthrene	495		308	µg/Kg-dry	10			
Pyrene	1140		770	µg/Kg-dry	10			
Surr:Terphenyl-d14	188	*	66-113	%REC	10			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-12
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/20/00 11:45:00 AM
Lab ID:	0003202-32A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 26.80

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		1320	µg/Kg-dry	5	4/6/00 10:23:24 PM	LC-3_000406A	SDC
2-Methylnaphthalene	ND		1320	µg/Kg-dry	5			
Acenaphthene	ND		1320	µg/Kg-dry	5			
Acenaphthylene	ND		1320	µg/Kg-dry	5			
Anthracene	68.0	J	132	µg/Kg-dry	5			
Benz(a)anthracene	220		132	µg/Kg-dry	5			
Benzo(a)pyrene	485		132	µg/Kg-dry	5			
Benzo(b)fluoranthene	345		132	µg/Kg-dry	5			
Benzo(g,h,i)perylene	79.4	J	331	µg/Kg-dry	5			
Benzo(k)fluoranthene	432		132	µg/Kg-dry	5			
Chrysene	281		132	µg/Kg-dry	5			
Dibenz(a,h)anthracene	ND		331	µg/Kg-dry	5			
Fluoranthene	519		331	µg/Kg-dry	5			
Fluorene	ND		132	µg/Kg-dry	5			
Indeno(1,2,3-cd)pyrene	101	J	132	µg/Kg-dry	5			
Naphthalene	ND		1320	µg/Kg-dry	5			
Phenanthrene	255		132	µg/Kg-dry	5			
Pyrene	499		331	µg/Kg-dry	5			
Surr:Terphenyl-d14	144	*	66-113	%REC	5			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-33A **Sample Type:** SAMP

Client Sample ID: SS-12DUP
Alt. Client ID:
Collection Date: 3/20/00 11:50:00 AM
Matrix: SOIL **% Moist:** 27.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		2720	µg/Kg-dry	10	4/6/00 6:13:13 AM	LC-3_000405A	SDC
2-Methylnaphthalene	ND		2720	µg/Kg-dry	10			
Acenaphthene	ND		2720	µg/Kg-dry	10			
Acenaphthylene	ND		2720	µg/Kg-dry	10			
Anthracene	71.3	J	272	µg/Kg-dry	10			
Benz(a)anthracene	218	J	272	µg/Kg-dry	10			
Benzo(a)pyrene	253	J	272	µg/Kg-dry	10			
Benzo(b)fluoranthene	284		272	µg/Kg-dry	10			
Benzo(g,h,i)perylene	ND		681	µg/Kg-dry	10			
Benzo(k)fluoranthene	243	J	272	µg/Kg-dry	10			
Chrysene	284		272	µg/Kg-dry	10			
Dibenz(a,h)anthracene	ND		681	µg/Kg-dry	10			
Fluoranthene	556	J	681	µg/Kg-dry	10			
Fluorene	ND		272	µg/Kg-dry	10			
Indeno(1,2,3-cd)pyrene	119	J	272	µg/Kg-dry	10			
Naphthalene	ND		2720	µg/Kg-dry	10			
Phenanthrene	240	J	272	µg/Kg-dry	10			
Pyrene	575	J	681	µg/Kg-dry	10			
Surr:Terphenyl-d14	145	*	66-113	%REC	10			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-34A **Sample Type:** SAMP

Client Sample ID: SS-26
Alt. Client ID:
Collection Date: 3/20/00 12:05:00 PM
Matrix: SOIL **% Moist:** 12.80

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		2290	µg/Kg-dry	10	4/6/00 6:58:35 AM	LC-3_000405A	SDC
2-Methylnaphthalene	ND		2290	µg/Kg-dry	10			
Acenaphthene	885	J	2290	µg/Kg-dry	10			
Acenaphthylene	ND		2290	µg/Kg-dry	10			
Anthracene	334		229	µg/Kg-dry	10			
Benz(a)anthracene	862		229	µg/Kg-dry	10			
Benzo(a)pyrene	1140		229	µg/Kg-dry	10			
Benzo(b)fluoranthene	913		229	µg/Kg-dry	10			
Benzo(g,h,i)perylene	350	J	572	µg/Kg-dry	10			
Benzo(k)fluoranthene	484		229	µg/Kg-dry	10			
Chrysene	1060		229	µg/Kg-dry	10			
Dibenz(a,h)anthracene	ND		572	µg/Kg-dry	10			
Fluoranthene	2110		572	µg/Kg-dry	10			
Fluorene	86.7	J	229	µg/Kg-dry	10			
Indeno(1,2,3-cd)pyrene	467		229	µg/Kg-dry	10			
Naphthalene	ND		2290	µg/Kg-dry	10			
Phenanthrene	1010		229	µg/Kg-dry	10			
Pyrene	ND		572	µg/Kg-dry	10			
Surr:Terphenyl-d14	362	*	66-113	%REC	10			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486

Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Client Sample ID: SS-26DUP
Lab Order: 0003202
Alt. Client ID:
Project: Kenilworth Park PA/SI
Collection Date: 3/20/00 12:10:00 PM
Lab ID: 0003202-35A **Sample Type:** SAMP **Matrix:** SOIL **% Moist:** 11.70

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		2230	µg/Kg-dry	10	4/6/00 7:43:57 AM	LC-3_000405A	SDC
2-Methylnaphthalene	ND		2230	µg/Kg-dry	10			
Acenaphthene	1640	J	2230	µg/Kg-dry	10			
Acenaphthylene	ND		2230	µg/Kg-dry	10			
Anthracene	660		223	µg/Kg-dry	10			
Benz(a)anthracene	1130		223	µg/Kg-dry	10			
Benzo(a)pyrene	1220		223	µg/Kg-dry	10			
Benzo(b)fluoranthene	1120		223	µg/Kg-dry	10			
Benzo(g,h,i)perylene	418	J	558	µg/Kg-dry	10			
Benzo(k)fluoranthene	641		223	µg/Kg-dry	10			
Chrysene	1320		223	µg/Kg-dry	10			
Dibenz(a,h)anthracene	ND		558	µg/Kg-dry	10			
Fluoranthene	3110		558	µg/Kg-dry	10			
Fluorene	281		223	µg/Kg-dry	10			
Indeno(1,2,3-cd)pyrene	507		223	µg/Kg-dry	10			
Naphthalene	ND		2230	µg/Kg-dry	10			
Phenanthrene	2440		223	µg/Kg-dry	10			
Pyrene	3100		558	µg/Kg-dry	10			
Surr:Terphenyl-d14	364	*	66-113	%REC	10			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Client Sample ID: SS-27
Alt. Client ID:
Collection Date: 3/20/00 12:20:00 PM
Lab ID: 0003202-36A **Sample Type:** SAMP **Matrix:** SOIL **% Moist:** 26.60

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		2640	µg/Kg-dry	10	4/6/00 8:29:20 AM	LC-3_000405A	SDC
2-Methylnaphthalene	ND		2640	µg/Kg-dry	10			
Acenaphthene	7140		2640	µg/Kg-dry	10			
Acenaphthylene	ND		2640	µg/Kg-dry	10			
Anthracene	ND		264	µg/Kg-dry	10			
Benz(a)anthracene	51.7	J	264	µg/Kg-dry	10			
Benzo(a)pyrene	114	J	264	µg/Kg-dry	10			
Benzo(b)fluoranthene	115	J	264	µg/Kg-dry	10			
Benzo(g,h,i)perylene	ND		661	µg/Kg-dry	10			
Benzo(k)fluoranthene	197	J	264	µg/Kg-dry	10			
Chrysene	71.7	J	264	µg/Kg-dry	10			
Dibenz(a,h)anthracene	ND		661	µg/Kg-dry	10			
Fluoranthene	218	J	661	µg/Kg-dry	10			
Fluorene	ND		264	µg/Kg-dry	10			
Indeno(1,2,3-cd)pyrene	35.4	J	264	µg/Kg-dry	10			
Naphthalene	ND		2640	µg/Kg-dry	10			
Phenanthrene	111	J	264	µg/Kg-dry	10			
Pyrene	ND		661	µg/Kg-dry	10			
Surr:Terphenyl-d14	109		66-113	%REC	10			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-37A **Sample Type:** SAMP

Client Sample ID: SS-28
Alt. Client ID:
Collection Date: 3/20/00 12:40:00 PM
Matrix: SOIL **% Moist:** 50.30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		3940	µg/Kg-dry	10	4/6/00 9:14:44 AM	LC-3_000405A	SDC
2-Methylnaphthalene	4970		3940	µg/Kg-dry	10			
Acenaphthene	4750		3940	µg/Kg-dry	10			
Acenaphthylene	ND		3940	µg/Kg-dry	10			
Anthracene	50.1	J	394	µg/Kg-dry	10			
Benz(a)anthracene	156	J	394	µg/Kg-dry	10			
Benzo(a)pyrene	197	J	394	µg/Kg-dry	10			
Benzo(b)fluoranthene	290	J	394	µg/Kg-dry	10			
Benzo(g,h,i)perylene	ND		984	µg/Kg-dry	10			
Benzo(k)fluoranthene	248	J	394	µg/Kg-dry	10			
Chrysene	244	J	394	µg/Kg-dry	10			
Dibenz(a,h)anthracene	ND		984	µg/Kg-dry	10			
Fluoranthene	501	J	984	µg/Kg-dry	10			
Fluorene	ND		394	µg/Kg-dry	10			
Indeno(1,2,3-cd)pyrene	116	J	394	µg/Kg-dry	10			
Naphthalene	ND		3940	µg/Kg-dry	10			
Phenanthrene	220	J	394	µg/Kg-dry	10			
Pyrene	523	J	984	µg/Kg-dry	10			
Surr:Terphenyl-d14	133	*	66-113	%REC	10			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-38A **Sample Type:** SAMP

Client Sample ID: SS-29
Alt. Client ID: Background 1
Collection Date: 3/20/00 2:15:00 PM
Matrix: SOIL **% Moist:** 32.60

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		292	µg/Kg-dry	1	4/6/00 11:08:47 PM	LC-3_000406A	SDC
2-Methylnaphthalene	ND		292	µg/Kg-dry	1			
Acenaphthene	ND		292	µg/Kg-dry	1			
Acenaphthylene	ND		292	µg/Kg-dry	1			
Anthracene	16.9	J	29.2	µg/Kg-dry	1			
Benz(a)anthracene	57.9		29.2	µg/Kg-dry	1			
Benzo(a)pyrene	124		29.2	µg/Kg-dry	1			
Benzo(b)fluoranthene	137		29.2	µg/Kg-dry	1			
Benzo(g,h,i)perylene	92.2		72.9	µg/Kg-dry	1			
Benzo(k)fluoranthene	147		29.2	µg/Kg-dry	1			
Chrysene	89.9		29.2	µg/Kg-dry	1			
Dibenz(a,h)anthracene	ND		72.9	µg/Kg-dry	1			
Fluoranthene	153		72.9	µg/Kg-dry	1			
Fluorene	ND		29.2	µg/Kg-dry	1			
Indeno(1,2,3-cd)pyrene	46.8		29.2	µg/Kg-dry	1			
Naphthalene	ND		292	µg/Kg-dry	1			
Phenanthrene	58.6		29.2	µg/Kg-dry	1			
Pyrene	151		72.9	µg/Kg-dry	1			
Surr:Terphenyl-d14	107		66-113	%REC	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-39A **Sample Type:** SAMP

Client Sample ID: SS-30
Alt. Client ID: Background 2
Collection Date: 3/20/00 2:15:00 PM
Matrix: SOIL **% Moist:** 23.00

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		2580	µg/Kg-dry	10	4/6/00 12:16:19 PM	LC-3_000405A	SDC
2-Methylnaphthalene	ND		2580	µg/Kg-dry	10			
Acenaphthene	ND		2580	µg/Kg-dry	10			
Acenaphthylene	ND		2580	µg/Kg-dry	10			
Anthracene	99.8	J	258	µg/Kg-dry	10			
Benz(a)anthracene	240	J	258	µg/Kg-dry	10			
Benzo(a)pyrene	237	J	258	µg/Kg-dry	10			
Benzo(b)fluoranthene	297		258	µg/Kg-dry	10			
Benzo(g,h,i)perylene	94.9	J	644	µg/Kg-dry	10			
Benzo(k)fluoranthene	269		258	µg/Kg-dry	10			
Chrysene	331		258	µg/Kg-dry	10			
Dibenz(a,h)anthracene	ND		644	µg/Kg-dry	10			
Fluoranthene	666		644	µg/Kg-dry	10			
Fluorene	ND		258	µg/Kg-dry	10			
Indeno(1,2,3-cd)pyrene	117	J	258	µg/Kg-dry	10			
Naphthalene	ND		2580	µg/Kg-dry	10			
Phenanthrene	341		258	µg/Kg-dry	10			
Pyrene	621	J	644	µg/Kg-dry	10			
Surr:Terphenyl-d14	241	*	66-113	%REC	10			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-40A **Sample Type:** SAMP

Client Sample ID: SS-31
Alt. Client ID:
Collection Date: 3/20/00 4:00:00 PM
Matrix: SOIL **% Moist:** 23.30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		2550	µg/Kg-dry	10	4/6/00 1:01:41 PM	LC-3_000405A	SDC
2-Methylnaphthalene	ND		2550	µg/Kg-dry	10			
Acenaphthene	10600		2550	µg/Kg-dry	10			
Acenaphthylene	ND		2550	µg/Kg-dry	10			
Anthracene	45.0	J	255	µg/Kg-dry	10			
Benz(a)anthracene	184	J	255	µg/Kg-dry	10			
Benzo(a)pyrene	248	J	255	µg/Kg-dry	10			
Benzo(b)fluoranthene	328		255	µg/Kg-dry	10			
Benzo(g,h,i)perylene	ND		637	µg/Kg-dry	10			
Benzo(k)fluoranthene	923		255	µg/Kg-dry	10			
Chrysene	249	J	255	µg/Kg-dry	10			
Dibenz(a,h)anthracene	ND		637	µg/Kg-dry	10			
Fluoranthene	517	J	637	µg/Kg-dry	10			
Fluorene	ND		255	µg/Kg-dry	10			
Indeno(1,2,3-cd)pyrene	87.3	J	255	µg/Kg-dry	10			
Naphthalene	ND		2550	µg/Kg-dry	10			
Phenanthrene	200	J	255	µg/Kg-dry	10			
Pyrene	452	J	637	µg/Kg-dry	10			
Surr:Terphenyl-d14	152	*	66-113	%REC	10			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-41A Sample Type: SAMP

Client Sample ID: SMP-F
Alt. Client ID:
Collection Date: 3/15/00 2:40:00 PM
Matrix: SOIL
% Moist: 65.30

DETERMINATION OF PAH BY METHOD 8310

1_8310_3550B_S

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
1-Methylnaphthalene	ND		5760	µg/Kg-dry	10	4/5/00 6:06:16 AM	LC-3_000404B	SDC
2-Methylnaphthalene	ND		5760	µg/Kg-dry	10			
Acenaphthene	ND		5760	µg/Kg-dry	10			
Acenaphthylene	ND		5760	µg/Kg-dry	10			
Anthracene	ND		576	µg/Kg-dry	10			
Benz(a)anthracene	165	J	576	µg/Kg-dry	10			
Benzo(a)pyrene	279	J	576	µg/Kg-dry	10			
Benzo(b)fluoranthene	884		576	µg/Kg-dry	10			
Benzo(g,h,i)perylene	ND		1440	µg/Kg-dry	10			
Benzo(k)fluoranthene	1340		576	µg/Kg-dry	10			
Chrysene	275	J	576	µg/Kg-dry	10			
Dibenz(a,h)anthracene	ND		1440	µg/Kg-dry	10			
Fluoranthene	432	J	1440	µg/Kg-dry	10			
Fluorene	ND		576	µg/Kg-dry	10			
Indeno(1,2,3-cd)pyrene	137	J	576	µg/Kg-dry	10			
Naphthalene	ND		5760	µg/Kg-dry	10			
Phenanthrene	123	J	576	µg/Kg-dry	10			
Pyrene	454	J	1440	µg/Kg-dry	10			
Surr:Terphenyl-d14	205	*	66-113	%REC	10			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	SMP-L
Lab Order:	0003202	Alt. Client ID:	
Project:	Kenilworth Park PA/SI	Collection Date:	3/16/00 9:50:00 AM
Lab ID:	0003202-42A Sample Type: SAMP	Matrix:	SOIL % Moist: 44.90

DETERMINATION OF PAH BY METHOD 8310
1_8310_3550B_S

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
1-Methylnaphthalene	ND		3590	µg/Kg-dry	10	4/5/00 8:22:29 AM	LC-3_000404B	SDC
2-Methylnaphthalene	ND		3590	µg/Kg-dry	10			
Acenaphthene	ND		3590	µg/Kg-dry	10			
Acenaphthylene	ND		3590	µg/Kg-dry	10			
Anthracene	32.5	J	359	µg/Kg-dry	10			
Benz(a)anthracene	114	J	359	µg/Kg-dry	10			
Benzo(a)pyrene	132	J	359	µg/Kg-dry	10			
Benzo(b)fluoranthene	287	J	359	µg/Kg-dry	10			
Benzo(g,h,i)perylene	ND		896	µg/Kg-dry	10			
Benzo(k)fluoranthene	523		359	µg/Kg-dry	10			
Chrysene	199	J	359	µg/Kg-dry	10			
Dibenz(a,h)anthracene	ND		896	µg/Kg-dry	10			
Fluoranthene	305	J	896	µg/Kg-dry	10			
Fluorene	ND		359	µg/Kg-dry	10			
Indeno(1,2,3-cd)pyrene	92.7	J	359	µg/Kg-dry	10			
Naphthalene	ND		3590	µg/Kg-dry	10			
Phenanthrene	89.2	J	359	µg/Kg-dry	10			
Pyrene	359	J	896	µg/Kg-dry	10			
Surr:Terphenyl-d14	136	*	66-113	%REC	10			

Definitions:			
	ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
	J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
	H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Laboratory Results

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-43A Sample Type: SAMP

Client Sample ID: SMP-M
Alt. Client ID:
Collection Date: 3/16/00 12:00:00 PM
Matrix: SOIL % Moist: 51.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		4080	µg/Kg-dry	10	4/5/00 9:07:50 AM	LC-3_000404B	SDC
2-Methylnaphthalene	ND		4080	µg/Kg-dry	10			
Acenaphthene	ND		4080	µg/Kg-dry	10			
Acenaphthylene	ND		4080	µg/Kg-dry	10			
Anthracene	99.1	J	408	µg/Kg-dry	10			
Benz(a)anthracene	382	J	408	µg/Kg-dry	10			
Benzo(a)pyrene	323	J	408	µg/Kg-dry	10			
Benzo(b)fluoranthene	627		408	µg/Kg-dry	10			
Benzo(g,h,i)perylene	ND		1020	µg/Kg-dry	10			
Benzo(k)fluoranthene	846		408	µg/Kg-dry	10			
Chrysene	460		408	µg/Kg-dry	10			
Dibenz(a,h)anthracene	ND		1020	µg/Kg-dry	10			
Fluoranthene	913	J	1020	µg/Kg-dry	10			
Fluorene	ND		408	µg/Kg-dry	10			
Indeno(1,2,3-cd)pyrene	215	J	408	µg/Kg-dry	10			
Naphthalene	ND		4080	µg/Kg-dry	10			
Phenanthrene	346	J	408	µg/Kg-dry	10			
Pyrene	1070		1020	µg/Kg-dry	10			
Surr:Terphenyl-d14	198	*	66-113	%REC	10			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-44A **Sample Type:** SAMP

Client Sample ID: SS-32
Alt. Client ID:
Collection Date: 3/21/00 4:00:00 PM
Matrix: SOIL **% Moist:** 17.90

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		239	µg/Kg-dry	1	4/6/00 7:21:44 PM	LC-3_000406A	SDC
2-Methylnaphthalene	248		239	µg/Kg-dry	1			
Acenaphthene	ND		239	µg/Kg-dry	1			
Acenaphthylene	ND		239	µg/Kg-dry	1			
Anthracene	13.7	J	23.9	µg/Kg-dry	1			
Benz(a)anthracene	103		23.9	µg/Kg-dry	1			
Benzo(a)pyrene	113		23.9	µg/Kg-dry	1			
Benzo(b)fluoranthene	164		23.9	µg/Kg-dry	1			
Benzo(g,h,i)perylene	128		59.9	µg/Kg-dry	1			
Benzo(k)fluoranthene	145		23.9	µg/Kg-dry	1			
Chrysene	117		23.9	µg/Kg-dry	1			
Dibenz(a,h)anthracene	ND		59.9	µg/Kg-dry	1			
Fluoranthene	152		59.9	µg/Kg-dry	1			
Fluorene	ND		23.9	µg/Kg-dry	1			
Indeno(1,2,3-cd)pyrene	34.2		23.9	µg/Kg-dry	1			
Naphthalene	ND		239	µg/Kg-dry	1			
Phenanthrene	40.3		23.9	µg/Kg-dry	1			
Pyrene	171		59.9	µg/Kg-dry	1			
Surr:Terphenyl-d14	138	*	66-113	%REC	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-45A **Sample Type:** SAMP

Client Sample ID: SS-33
Alt. Client ID:
Collection Date: 3/21/00 4:10:00 PM
Matrix: SOIL **% Moist:** 21.60

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		249	µg/Kg-dry	1	4/6/00 8:07:08 PM	LC-3_000406A	SDC
2-Methylnaphthalene	ND		249	µg/Kg-dry	1			
Acenaphthene	ND		249	µg/Kg-dry	1			
Acenaphthylene	ND		249	µg/Kg-dry	1			
Anthracene	14.1	J	24.9	µg/Kg-dry	1			
Benz(a)anthracene	65.4		24.9	µg/Kg-dry	1			
Benzo(a)pyrene	99.8		24.9	µg/Kg-dry	1			
Benzo(b)fluoranthene	97.6		24.9	µg/Kg-dry	1			
Benzo(g,h,i)perylene	30.0	J	62.2	µg/Kg-dry	1			
Benzo(k)fluoranthene	109		24.9	µg/Kg-dry	1			
Chrysene	88.0		24.9	µg/Kg-dry	1			
Dibenz(a,h)anthracene	ND		62.2	µg/Kg-dry	1			
Fluoranthene	135		62.2	µg/Kg-dry	1			
Fluorene	ND		24.9	µg/Kg-dry	1			
Indeno(1,2,3-cd)pyrene	26.7		24.9	µg/Kg-dry	1			
Naphthalene	ND		249	µg/Kg-dry	1			
Phenanthrene	46.8		24.9	µg/Kg-dry	1			
Pyrene	140		62.2	µg/Kg-dry	1			
Surr:Terphenyl-d14	101		66-113	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-46A **Sample Type:** SAMP

Client Sample ID: SS-34
Alt. Client ID:
Collection Date: 3/21/00 4:15:00 PM
Matrix: SOIL **% Moist:** 22.10

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
1-Methylnaphthalene	ND		1270	µg/Kg-dry	5	4/5/00 11:23:58 AM	LC-3_000404B	SDC
2-Methylnaphthalene	ND		1270	µg/Kg-dry	5			
Acenaphthene	308	J	1270	µg/Kg-dry	5			
Acenaphthylene	ND		1270	µg/Kg-dry	5			
Anthracene	42.3	J	127	µg/Kg-dry	5			
Benz(a)anthracene	225		127	µg/Kg-dry	5			
Benzo(a)pyrene	254		127	µg/Kg-dry	5			
Benzo(b)fluoranthene	359		127	µg/Kg-dry	5			
Benzo(g,h,i)perylene	73.7	J	318	µg/Kg-dry	5			
Benzo(k)fluoranthene	291		127	µg/Kg-dry	5			
Chrysene	325		127	µg/Kg-dry	5			
Dibenz(a,h)anthracene	ND		318	µg/Kg-dry	5			
Fluoranthene	470		318	µg/Kg-dry	5			
Fluorene	ND		127	µg/Kg-dry	5			
Indeno(1,2,3-cd)pyrene	103	J	127	µg/Kg-dry	5			
Naphthalene	ND		1270	µg/Kg-dry	5			
Phenanthrene	162		127	µg/Kg-dry	5			
Pyrene	395		318	µg/Kg-dry	5			
Surr:Terphenyl-d14	176	*	66-113	%REC	5			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/13/00 6:00:00 PM

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Method Blank

PAH by Method 8310 Test Code: *1_8310_3550B_S* Units: µg/Kg

Sample ID: **MB-200000730** DF: 1 DL_No: 1

Run Batch ID: **LC-3_000403A** SeqNo: **173026** Analysis Date **4/3/00 2:35:15 PM** Prep Batch ID: **200000730** Prep Date: **3/29/00**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
a	1-Methylnaphthalene	ND	195								
A	2-Methylnaphthalene	ND	195								
A	Acenaphthene	ND	195								
A	Acenaphthylene	ND	195								
A	Anthracene	ND	19.5								
A	Benz(a)anthracene	ND	19.5								
A	Benzo(a)pyrene	ND	19.5								
A	Benzo(b)fluoranthene	ND	19.5								
A	Benzo(g,h,i)perylene	ND	48.8								
A	Benzo(k)fluoranthene	ND	19.5								
A	Chrysene	ND	19.5								
A	Dibenz(a,h)anthracene	ND	48.8								
A	Fluoranthene	ND	48.8								
A	Fluorene	ND	19.5								
A	Indeno(1,2,3-cd)pyrene	ND	19.5								
A	Naphthalene	ND	195								
A	Phenanthrene	ND	19.5								
A	Pyrene	ND	48.8								
S	Terphenyl-d14	807.7		976.9		83	66	113			

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; RL -Reporting Limit
J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated; E - Result exceeds Highest Calibration Standard

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Method Blank

PAH by Method 8310 Test Code: *1_8310_3550B_S* Units: µg/Kg

Sample ID: **MB-200000732** DF: 1 DL_No: 1

Run Batch ID: **LC-3_000405A** SeqNo: **174611** Analysis Date **4/5/00 6:06:45 PM** Prep Batch ID: **200000732** Prep Date: **3/29/00**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
a	1-Methylnaphthalene	ND	197								
A	2-Methylnaphthalene	ND	197								
A	Acenaphthene	ND	197								
A	Acenaphthylene	ND	197								
A	Anthracene	ND	19.7								
A	Benz(a)anthracene	ND	19.7								
A	Benzo(a)pyrene	ND	19.7								
A	Benzo(b)fluoranthene	ND	19.7								
A	Benzo(g,h,i)perylene	ND	49.3								
A	Benzo(k)fluoranthene	ND	19.7								
A	Chrysene	ND	19.7								
A	Dibenz(a,h)anthracene	ND	49.3								
A	Fluoranthene	ND	49.3								
A	Fluorene	ND	19.7								
A	Indeno(1,2,3-cd)pyrene	ND	19.7								
A	Naphthalene	ND	197								
A	Phenanthrene	ND	19.7								
A	Pyrene	ND	49.3								
S	Terphenyl-d14	823.5		986.2		84	66	113			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below reporting limits
1 - Represents RSD Limit for Quad Analysis
* - LCS Recovery outside limits
B - Analyte detected in the associated Method Blank
NC - Not Calculated
M - Matrix Spike Recovery outside limits
E - Result exceeds Highest Calibration Standard
RL -Reporting Limit
R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Method Blank

PAH by Method 8310 Test Code: *1_8310_3550B_S* Units: µg/Kg

Sample ID: **MB-200000733** DF: 1 DL_No: 1

Run Batch ID: **LC-3_000404B** SeqNo: **174229** Analysis Date **4/5/00 4:35:29 AM** Prep Batch ID: **200000733** Prep Date: **3/29/00**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
a	1-Methylnaphthalene	ND	197								
A	2-Methylnaphthalene	ND	197								
A	Acenaphthene	ND	197								
A	Acenaphthylene	ND	197								
A	Anthracene	ND	19.7								
A	Benz(a)anthracene	ND	19.7								
A	Benzo(a)pyrene	ND	19.7								
A	Benzo(b)fluoranthene	ND	19.7								
A	Benzo(g,h,i)perylene	ND	49.3								
A	Benzo(k)fluoranthene	ND	19.7								
A	Chrysene	ND	19.7								
A	Dibenz(a,h)anthracene	ND	49.3								
A	Fluoranthene	ND	49.3								
A	Fluorene	ND	19.7								
A	Indeno(1,2,3-cd)pyrene	ND	19.7								
A	Naphthalene	ND	197								
A	Phenanthrene	ND	19.7								
A	Pyrene	ND	49.3								
S	Terphenyl-d14	845.7		985.9		86	66	113			

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated; E - Result exceeds Highest Calibration Standard

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Sample Matrix Spike

PAH by Method 8310 Test Code: *1_8310_3550B_S* Units: **µg/Kg-dry**

Sample ID: **0003202-20AMS** DF: 1 DL_No: 1

Run Batch ID: **LC-3_000404A** SeqNo: **174002** Analysis Date **4/5/00 3:04:44 AM** Prep Batch ID: **200000730** Prep Date: **3/29/00**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Acenaphthene	2239	234	2929	0	76	54	116			
A	Acenaphthylene	2037	234	2929	0	70	54	107			
A	Anthracene	118.2	23.4	137.1	18.39	73	66	107			
A	Benz(a)anthracene	326.6	23.4	292.9	60.77	91	77	106			
A	Benzo(a)pyrene	512.5	23.4	292.9	85.32	146	70	118			M
A	Benzo(b)fluoranthene	449.3	23.4	292.9	116.7	114	73	110			M
A	Benzo(g,h,i)perylene	910.1	58.6	784.9	49.26	110	66	105			M
A	Benzo(k)fluoranthene	418.4	23.4	292.9	58.9	123	72	105			M
A	Chrysene	348.6	23.4	292.9	80.42	92	74	105			
A	Dibenz(a,h)anthracene	893.8	58.6	784.9	0	114	66	96			M
A	Fluoranthene	783.4	58.6	784.9	135.8	83	74	113			
A	Fluorene	228.5	23.4	292.9	0	78	55	107			
A	Indeno(1,2,3-cd)pyrene	338	23.4	292.9	49.37	99	66	98			M
A	Naphthalene	2001	234	2929	0	68	45	114			
A	Phenanthrene	293.6	23.4	292.9	50.37	83	63	115			
A	Pyrene	788.1	58.6	784.9	141.7	82	73	108			
S	Terphenyl-d14	1299		1171	0	111	66	113			

Definitions:
ND - Not Detected at the Reporting Limit
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NC - Not Calculated
M - Matrix Spike Recovery outside limits
E - Result exceeds Highest Calibration Standard
RL -Reporting Limit
R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Sample Matrix Spike Duplicate

PAH by Method 8310 Test Code: *1_8310_3550B_S* Units: µg/Kg-dry

Sample ID: **0003202-20AMSD** DF: 1 DL_No: 1

Run Batch ID: **LC-3_000404A** SeqNo: **174017** Analysis Date **4/5/00 3:50:05 AM** Prep Batch ID: **200000730** Prep Date: **3/29/00**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Acenaphthene	2249	232	2903	0	77	54	116	1.3	35	
A	Acenaphthylene	2064	232	2903	0	71	54	107	2.2	35	
A	Anthracene	142.6	23.2	135.9	18.39	91	66	107	22.7	35	
A	Benz(a)anthracene	379.6	23.2	290.3	60.77	110	77	106	19	35	M
A	Benzo(a)pyrene	592.8	23.2	290.3	85.32	175	70	118	18.1	35	M
A	Benzo(b)fluoranthene	495.6	23.2	290.3	116.7	131	73	110	13.9	35	M
A	Benzo(g,h,i)perylene	1060	58.1	778	49.26	130	66	105	16.9	35	M
A	Benzo(k)fluoranthene	443.7	23.2	290.3	58.9	133	72	105	7.7	35	M
A	Chrysene	407.3	23.2	290.3	80.42	113	74	105	20.6	35	M
A	Dibenz(a,h)anthracene	912.1	58.1	778	0	117	66	96	2.9	35	M
A	Fluoranthene	1028	58.1	778	135.8	115	74	113	32.6	35	M
A	Fluorene	223.8	23.2	290.3	0	77	55	107	1.2	35	
A	Indeno(1,2,3-cd)pyrene	445	23.2	290.3	49.37	136	66	98	32.2	35	M
A	Naphthalene	2029	232	2903	0	70	45	114	2.3	35	
A	Phenanthrene	364	23.2	290.3	50.37	108	63	115	26.2	35	
A	Pyrene	946	58.1	778	141.7	103	73	108	22.6	35	
S	Terphenyl-d14	1399		1161	0	120	66	113	0	35	*

B1166

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated; E - Result exceeds Highest Calibration Standard

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4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Sample Matrix Spike

PAH by Method 8310 Test Code: *1_8310_3550B_S* Units: µg/Kg-dry

Sample ID: **0003202-40AMS** DF: 10 DL_No: 1

Run Batch ID: **LC-3_000405A** SeqNo: **174612** Analysis Date **4/6/00 1:47:03 PM** Prep Batch ID: **200000732** Prep Date: **3/29/00**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Acenaphthene	8766	2570	3213	10590	-57	54	116			M
A	Acenaphthylene	2347	2570	3213	0	73	54	107			J
A	Anthracene	129.5	257	150.4	45.04	56	66	107			JM
A	Benz(a)anthracene	301	257	321.3	184.4	36	77	106			M
A	Benzo(a)pyrene	258.7	257	321.3	248.4	3	70	118			M
A	Benzo(b)fluoranthene	375.7	257	321.3	328.2	15	73	110			M
A	Benzo(g,h,i)perylene	591.3	643	861.2	0	69	66	105			J
A	Benzo(k)fluoranthene	511.3	257	321.3	923.2	-128	72	105			M
A	Chrysene	328.1	257	321.3	249.4	24	74	105			M
A	Dibenz(a,h)anthracene	515.4	643	861.2	0	60	66	96			JM
A	Fluoranthene	887.4	643	861.2	516.7	43	74	113			M
A	Fluorene	253.6	257	321.3	0	79	55	107			J
A	Indeno(1,2,3-cd)pyrene	279.9	257	321.3	87.3	60	66	98			M
A	Naphthalene	2449	2570	3213	0	76	45	114			J
A	Phenanthrene	364.4	257	321.3	199.9	51	63	115			M
A	Pyrene	866.4	643	861.2	452.4	48	73	108			M
S	Terphenyl-d14	1226		1285	0	95	66	113			

B1/7

Definitions:
ND - Not Detected at the Reporting Limit
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* - LCS Recovery outside limits
B - Analyte detected in the associated Method Blank
NC - Not Calculated
M - Matrix Spike Recovery outside limits
E - Result exceeds Highest Calibration Standard
RL -Reporting Limit
R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Sample Matrix Spike Duplicate

PAH by Method 8310 Test Code: *1_8310_3550B_S* Units: µg/Kg-dry

Sample ID: **0003202-40AMSD** DF: 10 DL_No: 1

Run Batch ID: **LC-3_000405A** SeqNo: **174630** Analysis Date **4/6/00 2:32:26 PM** Prep Batch ID: **200000732** Prep Date: **3/29/00**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Acenaphthene	13730	2580	3220	10590	97	54	116	763.5	35	R
A	Acenaphthylene	2687	2580	3220	0	83	54	107	13.3	35	
A	Anthracene	153.4	258	150.7	45.04	72	66	107	24.6	35	J
A	Benz(a)anthracene	366.8	258	322	184.4	57	77	106	43.8	35	MR
A	Benzo(a)pyrene	336.8	258	322	248.4	27	70	118	158.1	35	MR
A	Benzo(b)fluoranthene	490.1	258	322	328.2	50	73	110	109.2	35	MR
A	Benzo(g,h,i)perylene	711.7	644	862.9	0	82	66	105	18.3	35	
A	Benzo(k)fluoranthene	655.2	258	322	923.2	-83	72	105	42.5	35	MR
A	Chrysene	420.1	258	322	249.4	53	74	105	73.6	35	MR
A	Dibenz(a,h)anthracene	561.7	644	862.9	0	65	66	96	8.4	35	JM
A	Fluoranthene	1051	644	862.9	516.7	62	74	113	35.9	35	MR
A	Fluorene	290.8	258	322	0	90	55	107	13.5	35	
A	Indeno(1,2,3-cd)pyrene	333.2	258	322	87.3	76	66	98	24.1	35	
A	Naphthalene	3118	2580	3220	0	97	45	114	23.9	35	
A	Phenanthrene	464	258	322	199.9	82	63	115	46.3	35	R
A	Pyrene	1099	644	862.9	452.4	75	73	108	43.7	35	R
S	Terphenyl-d14	1808		1288	0	140	66	113	0	35	*

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; RL -Reporting Limit
J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated; E - Result exceeds Highest Calibration Standard

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Laboratory Control Spike - generic

PAH by Method 8310 Test Code: *1_8310_3550B_S* Units: µg/Kg

Sample ID: **LCS-200000730** DF: 1 DL_No: 1

Run Batch ID: **LC-3_000403A** SeqNo: **173027** Analysis Date **4/3/00 3:20:39 PM** Prep Batch ID: **200000730** Prep Date: **3/29/00**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Acenaphthene	1832	197	2465	0	74	54	116			
A	Acenaphthylene	1713	197	2465	0	70	54	107			
A	Anthracene	86.63	19.7	115.3	0	75	66	107			
A	Benz(a)anthracene	214.2	19.7	246.5	0	87	77	106			
A	Benzo(a)pyrene	219.1	19.7	246.5	0	89	70	118			
A	Benzo(b)fluoranthene	218.2	19.7	246.5	0	89	73	110			
A	Benzo(g,h,i)perylene	527.8	49.3	660.5	0	80	66	105			
A	Benzo(k)fluoranthene	205	19.7	246.5	0	83	72	105			
A	Chrysene	209.9	19.7	246.5	0	85	74	105			
A	Dibenz(a,h)anthracene	491.9	49.3	660.5	0	74	66	96			
A	Fluoranthene	571.4	49.3	660.5	0	86	74	113			
A	Fluorene	180	19.7	246.5	0	73	55	107			
A	Indeno(1,2,3-cd)pyrene	196.5	19.7	246.5	0	80	66	98			
A	Naphthalene	1717	197	2465	0	70	45	114			
A	Phenanthrene	190.3	19.7	246.5	0	77	63	115			
A	Pyrene	550.1	49.3	660.5	0	83	73	108			
S	Terphenyl-d14	815.1		985.9	0	83	66	113			

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated; E - Result exceeds Highest Calibration Standard

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Laboratory Control Spike - generic

PAH by Method 8310 Test Code: *1_8310_3550B_S* Units: µg/Kg

Sample ID: **LCS-200000732** DF: 1 DL_No: 1

Run Batch ID: **LC-3_000405A** SeqNo: **174629** Analysis Date **4/5/00 6:52:09 PM** Prep Batch ID: **200000732** Prep Date: **3/29/00**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Acenaphthene	1982	197	2468	0	80	54	116			
A	Acenaphthylene	1917	197	2468	0	78	54	107			
A	Anthracene	86.11	19.7	115.5	0	75	66	107			
A	Benz(a)anthracene	204.9	19.7	246.8	0	83	77	106			
A	Benzo(a)pyrene	202.5	19.7	246.8	0	82	70	118			
A	Benzo(b)fluoranthene	211.7	19.7	246.8	0	86	73	110			
A	Benzo(g,h,i)perylene	525.1	49.4	661.4	0	79	66	105			
A	Benzo(k)fluoranthene	198.2	19.7	246.8	0	80	72	105			
A	Chrysene	200.9	19.7	246.8	0	81	74	105			
A	Dibenz(a,h)anthracene	503.5	49.4	661.4	0	76	66	96			
A	Fluoranthene	561.5	49.4	661.4	0	85	74	113			
A	Fluorene	190.6	19.7	246.8	0	77	55	107			
A	Indeno(1,2,3-cd)pyrene	202.9	19.7	246.8	0	82	66	98			
A	Naphthalene	1799	197	2468	0	73	45	114			
A	Phenanthrene	196.4	19.7	246.8	0	80	63	115			
A	Pyrene	540.4	49.4	661.4	0	82	73	108			
S	Terphenyl-d14	807.7		987.2	0	82	66	113			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below reporting limits
1 - Represents RSD Limit for Quad Analysis
* - LCS Recovery outside limits
B - Analyte detected in the associated Method Blank
NC - Not Calculated
M - Matrix Spike Recovery outside limits
E - Result exceeds Highest Calibration Standard
RL -Reporting Limit
R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)

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Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Laboratory Control Spike - generic

PAH by Method 8310 Test Code: *1_8310_3550B_S* Units: µg/Kg

Sample ID: **LCS-200000733** DF: 1 DL_No: 1

Run Batch ID: **LC-3_000404B** SeqNo: **174230** Analysis Date **4/5/00 5:20:53 AM** Prep Batch ID: **200000733** Prep Date: **3/29/00**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Acenaphthene	1795	196	2454	0	73	54	116			
A	Acenaphthylene	1609	196	2454	0	66	54	107			
A	Anthracene	79.84	19.6	114.9	0	70	66	107			
A	Benz(a)anthracene	200.8	19.6	245.4	0	82	77	106			
A	Benzo(a)pyrene	198.8	19.6	245.4	0	81	70	118			
A	Benzo(b)fluoranthene	206.3	19.6	245.4	0	84	73	110			
A	Benzo(g,h,i)perylene	503	49.1	657.7	0	76	66	105			
A	Benzo(k)fluoranthene	195	19.6	245.4	0	79	72	105			
A	Chrysene	198.2	19.6	245.4	0	81	74	105			
A	Dibenz(a,h)anthracene	483.3	49.1	657.7	0	73	66	96			
A	Fluoranthene	539.1	49.1	657.7	0	82	74	113			
A	Fluorene	171.8	19.6	245.4	0	70	55	107			
A	Indeno(1,2,3-cd)pyrene	194	19.6	245.4	0	79	66	98			
A	Naphthalene	1575	196	2454	0	64	45	114			
A	Phenanthrene	181.1	19.6	245.4	0	74	63	115			
A	Pyrene	519.8	49.1	657.7	0	79	73	108			
S	Terphenyl-d14	793.3		981.7	0	81	66	113			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below reporting limits
1 - Represents RSD Limit for Quad Analysis
* - LCS Recovery outside limits
B - Analyte detected in the associated Method Blank
NC - Not Calculated
M - Matrix Spike Recovery outside limits
E - Result exceeds Highest Calibration Standard
RL -Reporting Limit
R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	**SMP-A**
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/15/00 10:50:00 AM
Lab ID:	**0003202-01A** **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 44.30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	5.38		0.916	mg/Kg-dry	1	4/5/00 5:10:18 PM	OPTIMA_000405C	SHT
Barium	78.3		1.83	mg/Kg-dry	1			
Cadmium	0.942		0.458	mg/Kg-dry	1			
Chromium	62.5		0.916	mg/Kg-dry	1			
Lead	80.1		0.458	mg/Kg-dry	1			
Selenium	ND		0.916	mg/Kg-dry	1			
Silver	ND		0.916	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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Laboratory Results

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-02A **Sample Type:** SAMP

Client Sample ID: SMP-B
Alt. Client ID:
Collection Date: 3/15/00 11:00:00 AM
Matrix: SOIL **% Moist:** 50.80

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	6.58		1.95	mg/Kg-dry	1	4/5/00 5:14:03 PM	OPTIMA_000405C	SHT
Barium	108		3.91	mg/Kg-dry	1			
Cadmium	0.994		0.977	mg/Kg-dry	1			
Chromium	45.2		1.95	mg/Kg-dry	1			
Lead	81.3		0.977	mg/Kg-dry	1			
Selenium	ND		1.95	mg/Kg-dry	1			
Silver	ND		1.95	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

Thursday, April 06, 2000 9:26:43 AM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-03A **Sample Type:** SAMP

Client Sample ID: SMP-C
Alt. Client ID:
Collection Date: 3/15/00 11:20:00 AM
Matrix: SOIL **% Moist:** 40.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	6.25		1.38	mg/Kg-dry	1	4/5/00 5:17:49 PM	OPTIMA_000405C	SHT
Barium	89.0		2.75	mg/Kg-dry	1			
Cadmium	1.66		0.688	mg/Kg-dry	1			
Chromium	82.3		1.38	mg/Kg-dry	1			
Lead	105		0.688	mg/Kg-dry	1			
Selenium	ND		1.38	mg/Kg-dry	1			
Silver	ND		1.38	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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Laboratory Results

Analytical Services Center
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Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-04A **Sample Type:** SAMP

Client Sample ID: SMP-E
Alt. Client ID:
Collection Date: 3/15/00 3:10:00 PM
Matrix: SOIL **% Moist:** 48.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	9.19		1.45	mg/Kg-dry	1	4/5/00 5:21:31 PM	OPTIMA_000405C	SHT
Barium	114		2.89	mg/Kg-dry	1			
Cadmium	1.64		0.723	mg/Kg-dry	1			
Chromium	76.5		1.45	mg/Kg-dry	1			
Lead	134		0.723	mg/Kg-dry	1			
Selenium	ND		1.45	mg/Kg-dry	1			
Silver	4.75		1.45	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

Thursday, April 06, 2000 9:26:45 AM

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Laboratory Results

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	**SMP-J**
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/16/00 9:14:00 AM
Lab ID:	**0003202-05A** **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 59.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	9.34		2.09	mg/Kg-dry	1	4/5/00 5:25:09 PM	OPTIMA_000405C	SHT
Barium	152		4.17	mg/Kg-dry	1			
Cadmium	1.89		1.04	mg/Kg-dry	1			
Chromium	82.4		2.09	mg/Kg-dry	1			
Lead	134		1.04	mg/Kg-dry	1			
Selenium	ND		2.09	mg/Kg-dry	1			
Silver	ND		2.09	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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Laboratory Results

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Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-06A **Sample Type:** SAMP

Client Sample ID: SMP-K
Alt. Client ID:
Collection Date: 3/16/00 10:20:00 AM
Matrix: SOIL **% Moist:** 51.10

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	7.53		1.86	mg/Kg-dry	1	4/5/00 5:28:48 PM	OPTIMA_000405C	SHT
Barium	113		3.72	mg/Kg-dry	1			
Cadmium	1.49		0.93	mg/Kg-dry	1			
Chromium	79.1		1.86	mg/Kg-dry	1			
Lead	92.6		0.93	mg/Kg-dry	1			
Selenium	ND		1.86	mg/Kg-dry	1			
Silver	ND		1.86	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

Thursday, April 06, 2000 9:26:47 AM

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Laboratory Results

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-07A **Sample Type:** SAMP

Client Sample ID: SMP-I
Alt. Client ID:
Collection Date: 3/16/00 10:50:00 AM
Matrix: SOIL **% Moist:** 48.50

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	6.87		1.49	mg/Kg-dry	1	4/5/00 5:32:28 PM	OPTIMA_000405C	SHT
Barium	105		2.99	mg/Kg-dry	1			
Cadmium	1.55		0.747	mg/Kg-dry	1			
Chromium	91.0		1.49	mg/Kg-dry	1			
Lead	90.4		0.747	mg/Kg-dry	1			
Selenium	ND		1.49	mg/Kg-dry	1			
Silver	ND		1.49	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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Laboratory Results

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-08A **Sample Type:** SAMP

Client Sample ID: SMP-G
Alt. Client ID:
Collection Date: 3/15/00 11:30:00 AM
Matrix: SOIL **% Moist:** 52.00

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	7.90		1.93	mg/Kg-dry	1	4/5/00 5:43:23 PM	OPTIMA_000405C	SHT
Barium	124		3.86	mg/Kg-dry	1			
Cadmium	1.68		0.965	mg/Kg-dry	1			
Chromium	94.6		1.93	mg/Kg-dry	1			
Lead	93.5		0.965	mg/Kg-dry	1			
Selenium	ND		1.93	mg/Kg-dry	1			
Silver	ND		1.93	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	**SMP-N**
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/16/00 1:15:00 PM
Lab ID:	**0003202-09A** **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 45.50

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	6.23		1.50	mg/Kg-dry	1	4/5/00 5:47:03 PM	OPTIMA_000405C	SHT
Barium	93.5		3.01	mg/Kg-dry	1			
Cadmium	1.37		0.752	mg/Kg-dry	1			
Chromium	84.3		1.50	mg/Kg-dry	1			
Lead	81.7		0.752	mg/Kg-dry	1			
Selenium	ND		1.50	mg/Kg-dry	1			
Silver	ND		1.50	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

Ecology and Environment, Inc.

Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-2
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 11:50:00 AM
Lab ID:	0003202-10A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 25.80

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	6.04		1.01	mg/Kg-dry	1	4/5/00 5:50:44 PM	OPTIMA_000405C	SHT
Barium	353		2.01	mg/Kg-dry	1			
Cadmium	4.68		0.503	mg/Kg-dry	1			
Chromium	151		1.01	mg/Kg-dry	1			
Lead	307		0.503	mg/Kg-dry	1			
Selenium	ND		1.01	mg/Kg-dry	1			
Silver	42.4		1.01	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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Laboratory Results

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Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-1
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 12:00:00 PM
Lab ID:	**0003202-11A** **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 35.30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	3.64		1.36	mg/Kg-dry	1	4/5/00 5:54:25 PM	OPTIMA_000405C	SHT
Barium	96.3		2.71	mg/Kg-dry	1			
Cadmium	ND		0.678	mg/Kg-dry	1			
Chromium	32.9		1.36	mg/Kg-dry	1			
Lead	40.0		0.678	mg/Kg-dry	1			
Selenium	ND		1.36	mg/Kg-dry	1			
Silver	3.43		1.36	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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Laboratory Results

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-12A **Sample Type:** SAMP

Client Sample ID: SS-8
Alt. Client ID:
Collection Date: 3/17/00 12:05:00 PM
Matrix: SOIL **% Moist:** 13.70

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	5.35		0.772	mg/Kg-dry	1	4/5/00 5:58:07 PM	OPTIMA_000405C	SHT
Barium	78.8		1.54	mg/Kg-dry	1			
Cadmium	0.549		0.386	mg/Kg-dry	1			
Chromium	25.7		0.772	mg/Kg-dry	1			
Lead	37.7		0.386	mg/Kg-dry	1			
Selenium	ND		0.772	mg/Kg-dry	1			
Silver	ND		0.772	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

Thursday, April 06, 2000 [illegible] AM

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Laboratory Results

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-13A **Sample Type:** SAMP

Client Sample ID: SS-7
Alt. Client ID:
Collection Date: 3/17/00 12:10:00 PM
Matrix: SOIL **% Moist:** 25.10

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	9.91		1.03	mg/Kg-dry	1	4/5/00 6:01:49 PM	OPTIMA_000405C	SHT
Barium	532		2.05	mg/Kg-dry	1			
Cadmium	7.39		0.514	mg/Kg-dry	1			
Chromium	188		1.03	mg/Kg-dry	1			
Lead	344		0.514	mg/Kg-dry	1			
Selenium	ND		1.03	mg/Kg-dry	1			
Silver	78.5		1.03	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

Thursday, April 06, 2000 9:26:52 AM

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Laboratory Results

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: **0003202-14A** **Sample Type:** SAMP

Client Sample ID: SS-6
Alt. Client ID:
Collection Date: 3/17/00 12:20:00 PM
Matrix: SOIL **% Moist:** 17.70

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	4.59		0.732	mg/Kg-dry	1	4/5/00 6:05:35 PM	OPTIMA_000405C	SHT
Barium	70.9		1.46	mg/Kg-dry	1			
Cadmium	0.999		0.366	mg/Kg-dry	1			
Chromium	40.5		0.732	mg/Kg-dry	1			
Lead	18.1		0.366	mg/Kg-dry	1			
Selenium	ND		0.732	mg/Kg-dry	1			
Silver	ND		0.732	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-15A **Sample Type:** SAMP

Client Sample ID: SS-5
Alt. Client ID:
Collection Date: 3/17/00 12:25:00 PM
Matrix: SOIL **% Moist:** 19.00

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	3.63		0.98	mg/Kg-dry	1	4/5/00 6:09:20 PM	OPTIMA_000405C	SHT
Barium	64.2		1.96	mg/Kg-dry	1			
Cadmium	0.645		0.49	mg/Kg-dry	1			
Chromium	22.7		0.98	mg/Kg-dry	1			
Lead	11.6		0.49	mg/Kg-dry	1			
Selenium	ND		0.98	mg/Kg-dry	1			
Silver	ND		0.98	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

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Thursday, April 06, 2000 9:26:54 AM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-16A **Sample Type:** SAMP

Client Sample ID: SS-9
Alt. Client ID:
Collection Date: 3/17/00 12:30:00 PM
Matrix: SOIL **% Moist:** 17.60

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	9.57		1.05	mg/Kg-dry	1	4/5/00 6:13:11 PM	OPTIMA_000405C	SHT
Barium	100		2.09	mg/Kg-dry	1			
Cadmium	2.72		0.523	mg/Kg-dry	1			
Chromium	78.6		1.05	mg/Kg-dry	1			
Lead	64.9		0.523	mg/Kg-dry	1			
Selenium	ND		1.05	mg/Kg-dry	1			
Silver	12.7		1.05	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-10
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 12:40:00 PM
Lab ID:	0003202-17A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 12.00

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	4.42		1.09	mg/Kg-dry	1	4/5/00 6:16:56 PM	OPTIMA_000405C	SHT
Barium	78.4		2.19	mg/Kg-dry	1			
Cadmium	ND		0.546	mg/Kg-dry	1			
Chromium	35.4		1.09	mg/Kg-dry	1			
Lead	29.9		0.546	mg/Kg-dry	1			
Selenium	ND		1.09	mg/Kg-dry	1			
Silver	ND		1.09	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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Laboratory Results

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-11
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 12:50:00 PM
Lab ID:	0003202-18A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 12.00

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	3.93		0.789	mg/Kg-dry	1	4/5/00 6:28:05 PM	OPTIMA_000405C	SHT
Barium	117		1.58	mg/Kg-dry	1			
Cadmium	0.602		0.395	mg/Kg-dry	1			
Chromium	55.5		0.789	mg/Kg-dry	1			
Lead	29.4		0.395	mg/Kg-dry	1			
Selenium	ND		0.789	mg/Kg-dry	1			
Silver	ND		0.789	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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Laboratory Results

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-14
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 1:00:00 PM
Lab ID:	0003202-19A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 17.50

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	3.97		0.638	mg/Kg-dry	1	4/5/00 6:31:48 PM	OPTIMA_000405C	SHT
Barium	93.4		1.28	mg/Kg-dry	1			
Cadmium	1.04		0.319	mg/Kg-dry	1			
Chromium	26.4		0.638	mg/Kg-dry	1			
Lead	11.9		0.319	mg/Kg-dry	1			
Selenium	ND		0.638	mg/Kg-dry	1			
Silver	ND		0.638	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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Laboratory Results

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-20A **Sample Type:** SAMP

Client Sample ID: SS-13
Alt. Client ID:
Collection Date: 3/17/00 1:09:00 PM
Matrix: SOIL **% Moist:** 15.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	3.79		1.18	mg/Kg-dry	1	4/5/00 6:35:27 PM	OPTIMA_000405C	SHT
Barium	66.2		2.36	mg/Kg-dry	1			
Cadmium	ND		0.591	mg/Kg-dry	1			
Chromium	86.1		1.18	mg/Kg-dry	1			
Lead	11.7		0.591	mg/Kg-dry	1			
Selenium	ND		1.18	mg/Kg-dry	1			
Silver	ND		1.18	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

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Laboratory Results

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-18
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 1:15:00 PM
Lab ID:	0003202-21A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 18.20

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	3.33		1.11	mg/Kg-dry	1	4/5/00 7:45:57 PM	OPTIMA_000405C	SHT
Barium	49.6		2.22	mg/Kg-dry	1			
Cadmium	ND		0.556	mg/Kg-dry	1			
Chromium	7.96		1.11	mg/Kg-dry	1			
Lead	7.51		0.556	mg/Kg-dry	1			
Selenium	ND		1.11	mg/Kg-dry	1			
Silver	ND		1.11	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: **0003202-22A** **Sample Type:** SAMP

Client Sample ID: SS-17
Alt. Client ID:
Collection Date: 3/17/00 1:20:00 PM
Matrix: SOIL **% Moist:** 17.70

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	5.21		1.03	mg/Kg-dry	1	4/5/00 7:49:39 PM	OPTIMA_000405C	SHT
Barium	80.0		2.06	mg/Kg-dry	1			
Cadmium	ND		0.515	mg/Kg-dry	1			
Chromium	22.2		1.03	mg/Kg-dry	1			
Lead	25.5		0.515	mg/Kg-dry	1			
Selenium	ND		1.03	mg/Kg-dry	1			
Silver	ND		1.03	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-16
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 1:25:00 PM
Lab ID:	0003202-23A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 9.56

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	4.27		0.878	mg/Kg-dry	1	4/5/00 7:53:21 PM	OPTIMA_000405C	SHT
Barium	66.0		1.76	mg/Kg-dry	1			
Cadmium	ND		0.439	mg/Kg-dry	1			
Chromium	18.6		0.878	mg/Kg-dry	1			
Lead	22.9		0.439	mg/Kg-dry	1			
Selenium	ND		0.878	mg/Kg-dry	1			
Silver	ND		0.878	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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Laboratory Results

Analytical Services Center
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Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-24A **Sample Type:** SAMP

Client Sample ID: SS-23
Alt. Client ID:
Collection Date: 3/17/00 1:46:00 PM
Matrix: SOIL **% Moist:** 20.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	5.35		0.816	mg/Kg-dry	1	4/5/00 7:57:03 PM	OPTIMA_000405C	SHT
Barium	88.2		1.63	mg/Kg-dry	1			
Cadmium	0.432		0.408	mg/Kg-dry	1			
Chromium	17.5		0.816	mg/Kg-dry	1			
Lead	17.7		0.408	mg/Kg-dry	1			
Selenium	ND		0.816	mg/Kg-dry	1			
Silver	ND		0.816	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-25A **Sample Type:** SAMP

Client Sample ID: SS-22
Alt. Client ID:
Collection Date: 3/17/00 1:55:00 PM
Matrix: SOIL **% Moist:** 14.10

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	4.84		0.647	mg/Kg-dry	1	4/5/00 8:00:49 PM	OPTIMA_000405C	SHT
Barium	88.2		1.29	mg/Kg-dry	1			
Cadmium	0.590		0.323	mg/Kg-dry	1			
Chromium	20.2		0.647	mg/Kg-dry	1			
Lead	27.3		0.323	mg/Kg-dry	1			
Selenium	ND		0.647	mg/Kg-dry	1			
Silver	ND		0.647	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

Thursday, April 06, 2000 9:27:02 AM

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Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-26A **Sample Type:** SAMP

Client Sample ID: SS-19
Alt. Client ID:
Collection Date: 3/17/00 2:00:00 PM
Matrix: SOIL **% Moist:** 15.00

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	6.23		0.949	mg/Kg-dry	1	4/5/00 8:04:32 PM	OPTIMA_000405C	SHT
Barium	84.6		1.90	mg/Kg-dry	1			
Cadmium	ND		0.474	mg/Kg-dry	1			
Chromium	18.5		0.949	mg/Kg-dry	1			
Lead	49.7		0.474	mg/Kg-dry	1			
Selenium	ND		0.949	mg/Kg-dry	1			
Silver	ND		0.949	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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Laboratory Results

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-21
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 2:10:00 PM
Lab ID:	**0003202-27A** **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 15.80

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	5.00		0.825	mg/Kg-dry	1	4/5/00 8:08:18 PM	OPTIMA_000405C	SHT
Barium	113		1.65	mg/Kg-dry	1			
Cadmium	0.663		0.412	mg/Kg-dry	1			
Chromium	20.1		0.825	mg/Kg-dry	1			
Lead	17.9		0.412	mg/Kg-dry	1			
Selenium	ND		0.825	mg/Kg-dry	1			
Silver	ND		0.825	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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Laboratory Results

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-28A **Sample Type:** SAMP

Client Sample ID: SS-24
Alt. Client ID:
Collection Date: 3/17/00 2:19:00 PM
Matrix: SOIL **% Moist:** 17.90

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	3.42		0.725	mg/Kg-dry	1	4/5/00 8:19:19 PM	OPTIMA_000405C	SHT
Barium	65.8		1.45	mg/Kg-dry	1			
Cadmium	ND		0.363	mg/Kg-dry	1			
Chromium	17.2		0.725	mg/Kg-dry	1			
Lead	12.4		0.363	mg/Kg-dry	1			
Selenium	ND		0.725	mg/Kg-dry	1			
Silver	ND		0.725	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-15
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/20/00 11:00:00 AM
Lab ID:	0003202-29A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 38.20

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	7.44		1.12	mg/Kg-dry	1	4/5/00 8:23:04 PM	OPTIMA_000405C	SHT
Barium	41.3		2.25	mg/Kg-dry	1			
Cadmium	1.23		0.562	mg/Kg-dry	1			
Chromium	42.8		1.12	mg/Kg-dry	1			
Lead	252		0.562	mg/Kg-dry	1			
Selenium	ND		1.12	mg/Kg-dry	1			
Silver	ND		1.12	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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4493 Walden Avenue
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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-30A **Sample Type:** SAMP

Client Sample ID: SS-25
Alt. Client ID:
Collection Date: 3/20/00 11:15:00 AM
Matrix: SOIL **% Moist:** 14.90

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	12.2		0.753	mg/Kg-dry	1	4/5/00 8:26:52 PM	OPTIMA_000405C	SHT
Barium	28.3		1.51	mg/Kg-dry	1			
Cadmium	1.36		0.377	mg/Kg-dry	1			
Chromium	48.2		0.753	mg/Kg-dry	1			
Lead	21.6		0.377	mg/Kg-dry	1			
Selenium	ND		0.753	mg/Kg-dry	1			
Silver	ND		0.753	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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Laboratory Results

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Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-4
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/20/00 11:35:00 AM
Lab ID:	0003202-31A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 36.10

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	7.48		1.26	mg/Kg-dry	1	4/5/00 8:30:30 PM	OPTIMA_000405C	SHT
Barium	91.3		2.52	mg/Kg-dry	1			
Cadmium	1.46		0.631	mg/Kg-dry	1			
Chromium	32.0		1.26	mg/Kg-dry	1			
Lead	129		0.631	mg/Kg-dry	1			
Selenium	ND		1.26	mg/Kg-dry	1			
Silver	ND		1.26	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

Thursday, April 06, 2000 9:27:02 AM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-32A **Sample Type:** SAMP

Client Sample ID: SS-12
Alt. Client ID:
Collection Date: 3/20/00 11:45:00 AM
Matrix: SOIL **% Moist:** 26.80

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	6.41		1.16	mg/Kg-dry	1	4/5/00 8:34:08 PM	OPTIMA_000405C	SHT
Barium	96.1		2.32	mg/Kg-dry	1			
Cadmium	1.11		0.579	mg/Kg-dry	1			
Chromium	45.8		1.16	mg/Kg-dry	1			
Lead	76.4		0.579	mg/Kg-dry	1			
Selenium	ND		1.16	mg/Kg-dry	1			
Silver	5.65		1.16	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

Thursday, April 06, 2000 9:27:04 AM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-12DUP
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/20/00 11:50:00 AM
Lab ID:	0003202-33A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 27.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	6.30		0.943	mg/Kg-dry	1	4/5/00 8:37:46 PM	OPTIMA_000405C	SHT
Barium	95.3		1.89	mg/Kg-dry	1			
Cadmium	1.10		0.472	mg/Kg-dry	1			
Chromium	50.9		0.943	mg/Kg-dry	1			
Lead	82.3		0.472	mg/Kg-dry	1			
Selenium	ND		0.943	mg/Kg-dry	1			
Silver	6.71		0.943	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

Thursday, April 06, 2000 9:27:07 AM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-34A **Sample Type:** SAMP

Client Sample ID: SS-26
Alt. Client ID:
Collection Date: 3/20/00 12:05:00 PM
Matrix: SOIL **% Moist:** 12.80

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	4.12		0.659	mg/Kg-dry	1	4/5/00 8:41:34 PM	OPTIMA_000405C	SHT
Barium	86.6		1.32	mg/Kg-dry	1			
Cadmium	0.609		0.33	mg/Kg-dry	1			
Chromium	35.4		0.659	mg/Kg-dry	1			
Lead	22.9		0.33	mg/Kg-dry	1			
Selenium	ND		0.659	mg/Kg-dry	1			
Silver	ND		0.659	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

Thursday, April 06, 2000 9:27:10 AM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-35A **Sample Type:** SAMP

Client Sample ID: SS-26DUP
Alt. Client ID:
Collection Date: 3/20/00 12:10:00 PM
Matrix: SOIL **% Moist:** 11.70

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	4.14		0.928	mg/Kg-dry	1	4/5/00 8:45:15 PM	OPTIMA_000405C	SHT
Barium	87.6		1.86	mg/Kg-dry	1			
Cadmium	0.483		0.464	mg/Kg-dry	1			
Chromium	68.5		0.928	mg/Kg-dry	1			
Lead	25.7		0.464	mg/Kg-dry	1			
Selenium	ND		0.928	mg/Kg-dry	1			
Silver	ND		0.928	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

Thursday, April 06, 2000 9:17:11 AM

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Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-36A **Sample Type:** SAMP

Client Sample ID: SS-27
Alt. Client ID:
Collection Date: 3/20/00 12:20:00 PM
Matrix: SOIL **% Moist:** 26.60

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	5.81		1.05	mg/Kg-dry	1	4/5/00 8:48:55 PM	OPTIMA_000405C	SHT
Barium	90.6		2.10	mg/Kg-dry	1			
Cadmium	1.42		0.524	mg/Kg-dry	1			
Chromium	48.0		1.05	mg/Kg-dry	1			
Lead	63.5		0.524	mg/Kg-dry	1			
Selenium	ND		1.05	mg/Kg-dry	1			
Silver	6.12		1.05	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-37A **Sample Type:** SAMP

Client Sample ID: SS-28
Alt. Client ID:
Collection Date: 3/20/00 12:40:00 PM
Matrix: SOIL **% Moist:** 50.30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	8.87		1.31	mg/Kg-dry	1	4/5/00 8:52:36 PM	OPTIMA_000405C	SHT
Barium	289		2.61	mg/Kg-dry	1			
Cadmium	5.29		0.653	mg/Kg-dry	1			
Chromium	170		1.31	mg/Kg-dry	1			
Lead	237		0.653	mg/Kg-dry	1			
Selenium	ND		1.31	mg/Kg-dry	1			
Silver	37.0		1.31	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

Thursday, April 06, 2000 9:23:12 AM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	**SS-29**
Lab Order:	0003202	**Alt. Client ID:**	Background 1
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/20/00 2:15:00 PM
Lab ID:	**0003202-38A** **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 32.60

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	7.31		0.916	mg/Kg-dry	1	4/5/00 9:03:32 PM	OPTIMA_000405C	SHT
Barium	110		1.83	mg/Kg-dry	1			
Cadmium	1.18		0.458	mg/Kg-dry	1			
Chromium	43.0		0.916	mg/Kg-dry	1			
Lead	113		0.458	mg/Kg-dry	1			
Selenium	ND		0.916	mg/Kg-dry	1			
Silver	ND		0.916	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	**SS-30**
Lab Order:	0003202	**Alt. Client ID:**	Background 2
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/20/00 2:15:00 PM
Lab ID:	**0003202-39A** **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 23.00

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	12.4		0.999	mg/Kg-dry	1	4/5/00 9:07:21 PM	OPTIMA_000405C	SHT
Barium	285		2.00	mg/Kg-dry	1			
Cadmium	1.34		0.5	mg/Kg-dry	1			
Chromium	34.1		0.999	mg/Kg-dry	1			
Lead	189		0.5	mg/Kg-dry	1			
Selenium	ND		0.999	mg/Kg-dry	1			
Silver	1.32		0.999	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-40A **Sample Type:** SAMP

Client Sample ID: SS-31
Alt. Client ID:
Collection Date: 3/20/00 4:00:00 PM
Matrix: SOIL **% Moist:** 23.30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	7.03		1.30	mg/Kg-dry	1	4/5/00 9:11:03 PM	OPTIMA_000405C	SHT
Barium	97.1		2.61	mg/Kg-dry	1			
Cadmium	1.54		0.652	mg/Kg-dry	1			
Chromium	62.4		1.30	mg/Kg-dry	1			
Lead	59.9		0.652	mg/Kg-dry	1			
Selenium	ND		1.30	mg/Kg-dry	1			
Silver	11.7		1.30	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

Thursday, April 06, 2000 9:27:15 AM

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4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SMP-F
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/15/00 2:40:00 PM
Lab ID:	0003202-41A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 65.30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	2.50		2.40	mg/Kg-dry	1	4/5/00 11:46:55 PM	OPTIMA3300_000406A	SHT
Barium	137		4.80	mg/Kg-dry	1			
Cadmium	4.69		1.20	mg/Kg-dry	1			
Chromium	99.5		2.40	mg/Kg-dry	1			
Lead	122		1.20	mg/Kg-dry	1			
Selenium	ND		2.40	mg/Kg-dry	1			
Silver	ND		2.40	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

Thursday, April 06, 2000 9:27:16 AM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SMP-L
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/16/00 9:50:00 AM
Lab ID:	0003202-42A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 44.90

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	9.33		0.976	mg/Kg-dry	1	4/5/00 11:50:26 PM	OPTIMA3300_000406A	SHT
Barium	123		1.95	mg/Kg-dry	1			
Cadmium	5.22		0.488	mg/Kg-dry	1			
Chromium	78.3		0.976	mg/Kg-dry	1			
Lead	177		0.488	mg/Kg-dry	1			
Selenium	ND		0.976	mg/Kg-dry	1			
Silver	ND		0.976	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

Thursday, April 06, 2000 9:23:10 AM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-43A **Sample Type:** SAMP

Client Sample ID: SMP-M
Alt. Client ID:
Collection Date: 3/16/00 12:00:00 PM
Matrix: SOIL **% Moist:** 51.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	ND		1.30	mg/Kg-dry	1	4/5/00 11:53:58 PM	OPTIMA3300_000406A	SHT
Barium	128		2.60	mg/Kg-dry	1			
Cadmium	5.28		0.651	mg/Kg-dry	1			
Chromium	78.1		1.30	mg/Kg-dry	1			
Lead	137		0.651	mg/Kg-dry	1			
Selenium	2.06		1.30	mg/Kg-dry	1			
Silver	ND		1.30	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

Thursday, April 06, 2000 9:27:17 AM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-44A **Sample Type:** SAMP

Client Sample ID: SS-32
Alt. Client ID:
Collection Date: 3/21/00 4:00:00 PM
Matrix: SOIL **% Moist:** 17.90

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	2.97		1.03	mg/Kg-dry	1	4/5/00 11:57:30 PM	OPTIMA3300_000406A	SHT
Barium	141		2.06	mg/Kg-dry	1			
Cadmium	2.66		0.516	mg/Kg-dry	1			
Chromium	27.3		1.03	mg/Kg-dry	1			
Lead	40.0		0.516	mg/Kg-dry	1			
Selenium	ND		1.03	mg/Kg-dry	1			
Silver	ND		1.03	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

Thursday, April 06, 2000 9:27:12 AM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-33
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/21/00 4:10:00 PM
Lab ID:	0003202-45A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 21.60

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	4.20		0.886	mg/Kg-dry	1	4/6/00 12:01:02 AM	OPTIMA3300_000406A	SHT
Barium	127		1.77	mg/Kg-dry	1			
Cadmium	2.95		0.443	mg/Kg-dry	1			
Chromium	29.3		0.886	mg/Kg-dry	1			
Lead	52.3		0.443	mg/Kg-dry	1			
Selenium	ND		0.886	mg/Kg-dry	1			
Silver	ND		0.886	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-34
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/21/00 4:15:00 PM
Lab ID:	0003202-46A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 22.10

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_RCRA_S								
Arsenic	3.34		1.13	mg/Kg-dry	1	4/6/00 12:04:35 AM	OPTIMA3300_000406A	SHT
Barium	208		2.25	mg/Kg-dry	1			
Cadmium	2.83		0.563	mg/Kg-dry	1			
Chromium	29.6		1.13	mg/Kg-dry	1			
Lead	29.3		0.563	mg/Kg-dry	1			
Selenium	ND		1.13	mg/Kg-dry	1			
Silver	ND		1.13	mg/Kg-dry	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Method Blank

Metals, RCRA by ICP Method 6010B Test Code: *1_6010B_RCRA_S* Units: mg/Kg

Sample ID: **MB-200000794** DF: 1 DL_No: 1

Run Batch ID: **OPTIMA_000405C** SeqNo: **173758** Analysis Date **4/5/00 5:02:59 PM** Prep Batch ID: **200000794** Prep Date: **4/4/00**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Arsenic	ND	1								
A	Barium	ND	2								
A	Cadmium	ND	0.5								
A	Chromium	ND	1								
A	Lead	ND	0.5								
A	Selenium	ND	1								
A	Silver	ND	1								

B-1421

143

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated; E - Result exceeds Highest Calibration Standard

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Method Blank

Metals, RCRA by ICP Method 6010B Test Code: *1_6010B_RCRA_S* Units: **mg/Kg**

Sample ID: **MB-200000795** DF: 1 DL_No: 1

Run Batch ID: **OPTIMA_000405C** SeqNo: **173798** Analysis Date **4/5/00 7:38:46 PM** Prep Batch ID: **200000795** Prep Date: **4/4/00**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Arsenic	0.3862	1								J
A	Barium	ND	2								
A	Cadmium	ND	0.5								
A	Chromium	ND	1								
A	Lead	ND	0.5								
A	Selenium	ND	1								
A	Silver	ND	1								

B-1422

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below reporting limits
1 - Represents RSD Limit for Quad Analysis
* - LCS Recovery outside limits
B - Analyte detected in the associated Method Blank
NC - Not Calculated
M - Matrix Spike Recovery outside limits
E - Result exceeds Highest Calibration Standard
RL -Reporting Limit
R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Method Blank

Metals, RCRA by ICP Method 6010B Test Code: *1_6010B_RCRA_S* Units: mg/Kg

Sample ID: **MB-200000796** DF: 1 DL_No: 0

Run Batch ID: **OPTIMA3300_000406A** SeqNo: **173997** Analysis Date **4/5/00 11:01:18 PM** Prep Batch ID: **200000796** Prep Date: **4/4/00**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Arsenic	ND	1								
A	Barium	ND	2								
A	Cadmium	ND	0.5								
A	Chromium	ND	1								
A	Lead	ND	0.5								
A	Selenium	ND	1								
A	Silver	ND	1								

B-1423

145

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated; E - Result exceeds Highest Calibration Standard

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT

Sample Matrix Spike

Metals, RCRA by ICP Method 6010B Test Code: *1_6010B_RCRA_S* Units: **mg/Kg-dry**

Sample ID: **0003202-20AS**

Run Batch ID: **OPTIMA_000405C** SeqNo: **173784** Analysis Date **4/5/00 6:39:07 PM** Prep Batch ID: **200000794** Prep Date: **4/4/00**

	Analyte	Result	PQL	SPK Added	Orig Result	%REC	%RPD
A	Arsenic	9.907	1.18	4.728	3.788	129%	0.0%
A	Barium	330.1	2.36	236.4	66.24	112%	0.0%
A	Cadmium	6.33	0.591	5.91	0.2597	103%	0.0%
A	Chromium	127.8	1.18	23.64	86.07	177%	0.0%
A	Lead	17.95	0.591	2.364	11.71	264%	0.0%
A	Selenium	ND	1.18	1.182	0	0%	0.0%
A	Silver	4.169	1.18	5.91	0	71%	0.0%

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated; E - Result exceeds Highest Calibration Standard

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT

Sample Matrix Spike Duplicate

Metals, RCRA by ICP Method 6010B Test Code: *1_6010B_RCRA_S* Units: mg/Kg-dry

Sample ID: **0003202-20AS1**

Run Batch ID: **OPTIMA_000405C** SeqNo: **173785** Analysis Date **4/5/00 6:42:47 PM** Prep Batch ID: **200000794** Prep Date: **4/4/00**

	Analyte	Result	PQL	SPK Added	Orig Result	%REC	%RPD
A	Arsenic	9.528	1.18	4.728	3.788	121%	6.4%
A	Barium	329.5	2.36	236.4	66.24	111%	0.2%
A	Cadmium	6.394	0.591	5.91	0.2597	104%	1.1%
A	Chromium	119.1	1.18	23.64	86.07	140%	23.4%
A	Lead	14.87	0.591	2.364	11.71	134%	65.6%
A	Selenium	ND	1.18	1.182	0	0%	0.0%
A	Silver	4.219	1.18	5.91	0	71%	1.2%

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated; E - Result exceeds Highest Calibration Standard

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT

Sample Matrix Spike

Metals, RCRA by ICP Method 6010B Test Code: *1_6010B_RCRA_S* Units: **mg/Kg-dry**

Sample ID: **0003202-40AS**

Run Batch ID: **OPTIMA_000405C** SeqNo: **173824** Analysis Date **4/5/00 9:14:45 PM** Prep Batch ID: **200000795** Prep Date: **4/4/00**

	Analyte	Result	PQL	SPK Added	Orig Result	%REC	%RPD
A	Arsenic	12.86	1.3	5.215	7.029	112%	0.0%
A	Barium	325.9	2.61	260.8	97.14	88%	0.0%
A	Cadmium	7.437	0.652	6.519	1.539	90%	0.0%
A	Chromium	57.4	1.3	26.08	62.39	-19%	0.0%
A	Lead	29.35	0.652	2.608	59.91	-1172%	0.0%
A	Selenium	ND	1.3	1.304	0	0%	0.0%
A	Silver	9.452	1.3	6.519	11.7	-35%	0.0%

148

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated; E - Result exceeds Highest Calibration Standard

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT

Sample Matrix Spike Duplicate

Metals, RCRA by ICP Method 6010B Test Code: *1_6010B_RCRA_S* Units: **mg/Kg-dry**

Sample ID: **0003202-40AS1**

Run Batch ID: **OPTIMA_000405C** SeqNo: **173825** Analysis Date **4/5/00 9:18:28 PM** Prep Batch ID: **200000795** Prep Date: **4/4/00**

	Analyte	Result	PQL	SPK Added	Orig Result	%REC	%RPD
A	Arsenic	12.41	1.3	5.215	7.029	103%	8.0%
A	Barium	400	2.61	260.8	97.14	116%	27.9%
A	Cadmium	8.827	0.652	6.519	1.539	112%	21.1%
A	Chromium	127.6	1.3	26.08	62.39	250%	233.2%
A	Lead	99.29	0.652	2.608	59.91	1510%	1586.0%
A	Selenium	ND	1.3	1.304	0	0%	0.0%
A	Silver	24.52	1.3	6.519	11.7	197%	285.2%

146

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; RL -Reporting Limit

J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)

1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated; E - Result exceeds Highest Calibration Standard

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Laboratory Control Spike - generic

Metals, RCRA by ICP Method 6010B Test Code: *1_6010B_RCRA_S* Units: mg/Kg

Sample ID: **LCS-200000794** DF: 1 DL_No: 1

Run Batch ID: **OPTIMA_000405C** SeqNo: **173759** Analysis Date **4/5/00 5:06:34 PM** Prep Batch ID: **200000794** Prep Date: **4/4/00**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Arsenic	99.62	1	100	0	100%	80	120	0.0%		
A	Barium	101.8	2	100	0	102%	80	120	0.0%		
A	Cadmium	99.88	0.5	100	0	100%	80	120	0.0%		
A	Chromium	99.53	1	100	0	100%	80	120	0.0%		
A	Lead	99.57	0.5	100	0	100%	80	120	0.0%		
A	Selenium	97.2	1	100	0	97%	80	120	0.0%		
A	Silver	5.032	1	5	0	101%	80	120	0.0%		

B-1428

LSO

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below reporting limits
1 - Represents RSD Limit for Quad Analysis
* - LCS Recovery outside limits
B - Analyte detected in the associated Method Blank
NC - Not Calculated
M - Matrix Spike Recovery outside limits
E - Result exceeds Highest Calibration Standard
RL -Reporting Limit
R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)

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4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Laboratory Control Spike - generic

Metals, RCRA by ICP Method 6010B Test Code: *1_6010B_RCRA_S* Units: **mg/Kg**

Sample ID: **LCS-200000795** DF: 1 DL_No: 1

Run Batch ID: **OPTIMA_000405C** SeqNo: **173799** Analysis Date **4/5/00 7:42:18 PM** Prep Batch ID: **200000795** Prep Date: **4/4/00**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Arsenic	98.96	1	100	0	99%	80	120	0.0%		
A	Barium	100.3	2	100	0	100%	80	120	0.0%		
A	Cadmium	98.54	0.5	100	0	99%	80	120	0.0%		
A	Chromium	97.56	1	100	0	98%	80	120	0.0%		
A	Lead	98.59	0.5	100	0	99%	80	120	0.0%		
A	Selenium	95.22	1	100	0	95%	80	120	0.0%		
A	Silver	4.927	1	5	0	99%	80	120	0.0%		

B-1429

ESP

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated; E - Result exceeds Highest Calibration Standard

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4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Laboratory Control Spike - generic

Metals, RCRA by ICP Method 6010B Test Code: *1_6010B_RCRA_S* Units: mg/Kg

Sample ID: **LCS-200000796** DF: 1 DL_No: 0

Run Batch ID: **OPTIMA3300_000406A** SeqNo: **173999** Analysis Date **4/5/00 11:05:25 PM** Prep Batch ID: **200000796** Prep Date: **4/4/00**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Arsenic	93.57	1	100	0	94%	80	120	0.0%		
A	Barium	98.34	2	100	0	98%	80	120	0.0%		
A	Cadmium	95.36	0.5	100	0	95%	80	120	0.0%		
A	Chromium	95.25	1	100	0	95%	80	120	0.0%		
A	Lead	95.37	0.5	100	0	95%	80	120	0.0%		
A	Selenium	90.84	1	100	0	91%	80	120	0.0%		
A	Silver	4.775	1	5	0	95%	80	120	0.0%		

B-1430

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Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated; E - Result exceeds Highest Calibration Standard

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NYS ELAP ID#: 10486
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CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SMP-A
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/15/00 10:50:00 AM
Lab ID:	0003202-01A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 44.30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.200		0.0592	mg/Kg-dry	1	4/7/00 9:01:04 PM	LEEMAN_000407E	TS

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/11/00 3:00:01 PM

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Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SMP-B
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/15/00 11:00:00 AM
Lab ID:	0003202-02A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 50.80

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.245		0.0671	mg/Kg-dry	1	4/7/00 9:02:36 PM	LEEMAN_000407E	TS

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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NYS ELAP ID#: 10486

Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SMP-C
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/15/00 11:20:00 AM
Lab ID:	0003202-03A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 40.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.260		0.0554	mg/Kg-dry	1	4/7/00 9:03:49 PM	LEEMAN_000407E	TS

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

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CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SMP-E
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/15/00 3:10:00 PM
Lab ID:	0003202-04A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 48.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.840		0.064	mg/Kg-dry	1	4/7/00 9:05:02 PM	LEEMAN_000407E	TS

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SMP-J
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/16/00 9:14:00 AM
Lab ID:	0003202-05A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 59.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.412		0.0813	mg/Kg-dry	1	4/7/00 9:06:35 PM	LEEMAN_000407E	TS

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/11/00 3:00:01 PM

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CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SMP-K
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/16/00 10:20:00 AM
Lab ID:	0003202-06A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 51.10

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.321		0.0675	mg/Kg-dry	1	4/7/00 9:07:51 PM	LEEMAN_000407E	TS

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/11/00 3:00:01 PM

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CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SMP-I
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/16/00 10:50:00 AM
Lab ID:	0003202-07A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 48.50

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.311		0.0641	mg/Kg-dry	1	4/7/00 9:09:05 PM	LEEMAN_000407E	TS

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SMP-G
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/15/00 11:30:00 AM
Lab ID:	0003202-08A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 52.00

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.320		0.0688	mg/Kg-dry	1	4/7/00 9:10:30 PM	LEEMAN_000407E	TS

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

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CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SMP-N
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/16/00 1:15:00 PM
Lab ID:	0003202-09A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 45.50

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.249		0.0606	mg/Kg-dry	1	4/7/00 9:14:45 PM	LEEMAN_000407E	TS

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/11/00 3:00:01 PM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-10A **Sample Type:** SAMP

Client Sample ID: SS-2
Alt. Client ID:
Collection Date: 3/17/00 11:50:00 AM
Matrix: SOIL **% Moist:** 25.80

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	5.17		0.445	mg/Kg-dry	10	4/7/00 9:44:26 PM	LEEMAN_000407E	TS

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/11/00 3:00:01 PM

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Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-1
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 12:00:00 PM
Lab ID:	0003202-11A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 35.30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.656		0.051	mg/Kg-dry	1	4/7/00 9:17:14 PM	LEEMAN_000407E	TS

Definitions:	ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
	J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
	H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/11/00 3:00:01 PM

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Laboratory Results

NYS ELAP ID#: 10486
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CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-8
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 12:05:00 PM
Lab ID:	0003202-12A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 13.70

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.377		0.0382	mg/Kg-dry	1	4/7/00 9:18:28 PM	LEEMAN_000407E	TS

Definitions:	ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
	J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
	H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/11/00 3:00:01 PM

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Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-7
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 12:10:00 PM
Lab ID:	0003202-13A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 25.10

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	7.50		0.441	mg/Kg-dry	10	4/7/00 9:47:03 PM	LEEMAN_000407E	TS

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/11/00 3:00:01 PM

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CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-6
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 12:20:00 PM
Lab ID:	0003202-14A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 17.70

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.0621		0.0401	mg/Kg-dry	1	4/7/00 9:21:17 PM	LEEMAN_000407E	TS

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/11/00 3:00:01 PM

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CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-5
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 12:25:00 PM
Lab ID:	0003202-15A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 19.00

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.0547		0.0407	mg/Kg-dry	1	4/7/00 9:22:40 PM	LEEMAN_000407E	TS

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/11/00 3:00:01 PM

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NYS ELAP ID#: 10486
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CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-9
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 12:30:00 PM
Lab ID:	**0003202-16A** **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 17.60

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	6.25		0.4	mg/Kg-dry	10	4/7/00 9:48:54 PM	LEEMAN_000407E	TS

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

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CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-10
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 12:40:00 PM
Lab ID:	0003202-17A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 12.00

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.171		0.0375	mg/Kg-dry	1	4/7/00 9:26:02 PM	LEEMAN_000407E	TS

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-11
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 12:50:00 PM
Lab ID:	0003202-18A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 12.00

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.125		0.0375	mg/Kg-dry	1	4/7/00 9:28:26 PM	LEEMAN_000407E	TS

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/11/00 3:00:01 PM

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CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-14
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 1:00:00 PM
Lab ID:	0003202-19A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 17.50

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.0538		0.04	mg/Kg-dry	1	4/7/00 9:32:29 PM	LEEMAN_000407E	TS

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-13
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 1:09:00 PM
Lab ID:	0003202-20A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 15.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.0702		0.039	mg/Kg-dry	1	4/7/00 9:33:48 PM	LEEMAN_000407E	TS

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-18
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 1:15:00 PM
Lab ID:	0003202-21A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 18.20

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A								
1_7471A_HG_S								
Mercury	ND		0.0403	mg/Kg-dry	1	4/7/00 10:35:48 PM	LEEMAN_000407D	TS

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-17
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 1:20:00 PM
Lab ID:	0003202-22A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 17.70

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.0549		0.0401	mg/Kg-dry	1	4/7/00 10:37:05 PM	LEEMAN_000407D	TS

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-16
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 1:25:00 PM
Lab ID:	0003202-23A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 9.56

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A								
1_7471A_HG_S								
Mercury	0.0616		0.0365	mg/Kg-dry	1	4/7/00 10:38:28 PM	LEEMAN_000407D	TS

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-23
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 1:46:00 PM
Lab ID:	0003202-24A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 20.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A								
1_7471A_HG_S								
Mercury	0.0462		0.0415	mg/Kg-dry	1	4/7/00 10:39:51 PM	LEEMAN_000407D	TS

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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CLIENT:	E and E Washington D.C. Office	Client Sample ID:	SS-22
Lab Order:	0003202	Alt. Client ID:	
Project:	Kenilworth Park PA/SI	Collection Date:	3/17/00 1:55:00 PM
Lab ID:	0003202-25A Sample Type: SAMP	Matrix:	SOIL % Moist: 14.10

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.0923		0.0384	mg/Kg-dry	1	4/7/00 10:41:04 PM	LEEMAN_000407D	TS

Definitions:			
	ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
	J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
	H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-19
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 2:00:00 PM
Lab ID:	0003202-26A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 15.00

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	1.33		0.0388	mg/Kg-dry	1	4/7/00 10:42:29 PM	LEEMAN_000407D	TS

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-21
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 2:10:00 PM
Lab ID:	0003202-27A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 15.80

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.0536		0.0392	mg/Kg-dry	1	4/7/00 10:43:45 PM	LEEMAN_000407D	TS

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-24
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 2:19:00 PM
Lab ID:	0003202-28A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 17.90

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.0431		0.0402	mg/Kg-dry	1	4/7/00 10:45:39 PM	LEEMAN_000407D	TS

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-15
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/20/00 11:00:00 AM
Lab ID:	0003202-29A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 38.20

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	1.20		0.0534	mg/Kg-dry	1	4/7/00 10:49:26 PM	LEEMAN_000407D	TS

Definitions:	ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
	J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
	H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-25
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/20/00 11:15:00 AM
Lab ID:	0003202-30A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 14.90

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.227		0.0388	mg/Kg-dry	1	4/7/00 10:50:53 PM	LEEMAN_000407D	TS

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-4
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/20/00 11:35:00 AM
Lab ID:	0003202-31A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 36.10

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.261		0.0516	mg/Kg-dry	1	4/7/00 10:52:27 PM	LEEMAN_000407D	TS

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-12
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/20/00 11:45:00 AM
Lab ID:	0003202-32A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 26.80

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.876		0.0451	mg/Kg-dry	1	4/7/00 10:54:00 PM	LEEMAN_000407D	TS

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-12DUP
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/20/00 11:50:00 AM
Lab ID:	0003202-33A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 27.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	1.06		0.0455	mg/Kg-dry	1	4/7/00 10:55:14 PM	LEEMAN_000407D	TS

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

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Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-26
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/20/00 12:05:00 PM
Lab ID:	0003202-34A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 12.80

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.0757		0.0378	mg/Kg-dry	1	4/7/00 10:56:52 PM	LEEMAN_000407D	TS

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-26DUP
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/20/00 12:10:00 PM
Lab ID:	0003202-35A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 11.70

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.0864		0.0374	mg/Kg-dry	1	4/7/00 10:58:06 PM	LEEMAN_000407D	TS

Definitions:	ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
	J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
	H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-27
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/20/00 12:20:00 PM
Lab ID:	0003202-36A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 26.60

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	1.14		0.045	mg/Kg-dry	1	4/7/00 10:59:19 PM	LEEMAN_000407D	TS

Definitions:	ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
	J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
	H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-28
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/20/00 12:40:00 PM
Lab ID:	0003202-37A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 50.30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	7.77		0.664	mg/Kg-dry	10	4/8/00 4:43:20 PM	LEEMAN_000408A	TS

Definitions:	ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
	J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
	H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-29
Lab Order:	0003202	**Alt. Client ID:**	Background 1
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/20/00 2:15:00 PM
Lab ID:	0003202-38A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 32.60

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.415		0.049	mg/Kg-dry	1	4/7/00 11:02:52 PM	LEEMAN_000407D	TS

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-30
Lab Order:	0003202	**Alt. Client ID:**	Background 2
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/20/00 2:15:00 PM
Lab ID:	0003202-39A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 23.00

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.901		0.0429	mg/Kg-dry	1	4/7/00 11:06:59 PM	LEEMAN_000407D	TS

Definitions:	ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
	J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
	H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-31
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/20/00 4:00:00 PM
Lab ID:	0003202-40A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 23.30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	2.17		0.043	mg/Kg-dry	1	4/7/00 11:08:27 PM	LEEMAN_000407D	TS

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SMP-F
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/15/00 2:40:00 PM
Lab ID:	0003202-41A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 65.30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.580		0.0951	mg/Kg-dry	1	4/8/00 5:09:55 PM	LEEMAN_000408A	TS

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

Ecology and Environment, Inc.

Analytical Services Center

4493 Walden Avenue
Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SMP-L
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/16/00 9:50:00 AM
Lab ID:	0003202-42A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 44.90

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.456		0.0599	mg/Kg-dry	1	4/8/00 5:14:06 PM	LEEMAN_000408A	TS

Definitions:			
	ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
	J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
	H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/11/00 3:00:01 PM

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Laboratory Results

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Lancaster, New York 14086-

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SMP-M
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/16/00 12:00:00 PM
Lab ID:	0003202-43A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 51.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.569		0.0679	mg/Kg-dry	1	4/8/00 5:17:10 PM	LEEMAN_000408A	TS

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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Analytical Services Center

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Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-32
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/21/00 4:00:00 PM
Lab ID:	0003202-44A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 17.90

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.291		0.0402	mg/Kg-dry	1	4/8/00 5:18:26 PM	LEEMAN_000408A	TS

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/11/00 3:00:01 PM

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Laboratory Results

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Lancaster, New York 14086-

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-33
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/21/00 4:10:00 PM
Lab ID:	0003202-45A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 21.60

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.381		0.0421	mg/Kg-dry	1	4/8/00 5:19:52 PM	LEEMAN_000408A	TS

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/11/00 3:00:01 PM

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Laboratory Results

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Lancaster, New York 14086-

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-34
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/21/00 4:15:00 PM
Lab ID:	0003202-46A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 22.10

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.311		0.0424	mg/Kg-dry	1	4/8/00 5:21:08 PM	LEEMAN_000408A	TS

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/11/00 3:00:01 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Method Blank

Mercury Analysis in Soil by Method 7471A Test Code: *1_7471A_HG_S* Units: mg/Kg

Sample ID: **CK6PBS** DF: 1 DL_No: 1

Run Batch ID: LEEMAN_000407E SeqNo: 177569 Analysis Date: 4/7/00 8:57:59 PM Prep Batch ID: 000406293 Prep Date: 4/6/00

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Mercury	ND	0.033								

B-1477

168

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below reporting limits
1 - Represents RSD Limit for Quad Analysis
* - LCS Recovery outside limits
B - Analyte detected in the associated Method Blank
NC - Not Calculated
M - Matrix Spike Recovery outside limits
E - Result exceeds Highest Calibration Standard
RL -Reporting Limit
R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Method Blank

Mercury Analysis in Soil by Method 7471A Test Code: *1_7471A_HG_S* Units: mg/Kg

Sample ID: **CK6PBS** DF: 1 DL_No: 1

Run Batch ID: LEEMAN_000407D SeqNo: 177521 Analysis Date: 4/7/00 10:32:54 PM Prep Batch ID: 000406294 Prep Date: 4/6/00

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Mercury	ND	0.033								

B-1478

2 of 2

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below reporting limits
1 - Represents RSD Limit for Quad Analysis
* - LCS Recovery outside limits
B - Analyte detected in the associated Method Blank
NC - Not Calculated
M - Matrix Spike Recovery outside limits
E - Result exceeds Highest Calibration Standard
RL -Reporting Limit
R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Method Blank

Mercury Analysis in Soil by Method 7471A Test Code: *1_7471A_HG_S* Units: mg/Kg

Sample ID: **MB-200000870** DF: 1 DL_No: 1

Run Batch ID: LEEMAN_000408A SeqNo: 177801 Analysis Date: 4/8/00 4:40:37 PM Prep Batch ID: 200000870 Prep Date: 4/6/00

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Mercury	ND	0.033								

B-1479

2 J 1

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated; E - Result exceeds Highest Calibration Standard

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Laboratory Results

YS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Sample Matrix Spike

Mercury Analysis in Soil by Method 7471A Test Code: *1_7471A_HG_S* Units: mg/Kg-dry

Sample ID: **0003202-20AS**

Run Batch ID: LEEMAN_000407E SeqNo: 177595 Analysis Date: 4/7/00 9:35:14 PM Prep Batch ID: 000406293 Prep Date: 4/6/00

	Analyte	Result	PQL	SPK Added	Orig Result	%REC	%RPD
A	Mercury	0.502	0.039	0.3936	0.07018	110	

B-1480

2 of 2

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated; E - Result exceeds Highest Calibration Standard

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YS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Sample Matrix Spike Duplicate

Mercury Analysis in Soil by Method 7471A Test Code: *1_7471A_HG_S* Units: mg/Kg-dry

Sample ID: **0003202-20AS1**

Run Batch ID: **LEEMAN_000407E** SeqNo: **177596** Analysis Date: **4/7/00 9:37:08 PM** Prep Batch ID: **000406293** Prep Date: **4/6/00**

Analyte		Result	PQL	SPK Added	Orig Result	%REC	%RPD
A	Mercury	0.54	0.039	0.3936	0.07018	119	8.4

B-1481

2 of 3

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated; E - Result exceeds Highest Calibration Standard

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Lancaster, New York 14086-

Laboratory Results

YS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Sample Matrix Spike

Mercury Analysis in Soil by Method 7471A Test Code: *1_7471A_HG_S* Units: mg/Kg-dry

Sample ID: **0003202-40AS**

Run Batch ID: LEEMAN_000407D SeqNo: 177547 Analysis Date: 4/7/00 11:10:12 PM Prep Batch ID: 000406294 Prep Date: 4/6/00

	Analyte	Result	PQL	SPK Added	Orig Result	%REC	%RPD
A	Mercury	2.568	0.043	0.4342	2.169	92	

B-1482

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated; E - Result exceeds Highest Calibration Standard

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Laboratory Results

YS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT

Sample Matrix Spike Duplicate

Mercury Analysis in Soil by Method 7471A Test Code: *1_7471A_HG_S* Units: mg/Kg-dry

Sample ID: **0003202-40AS1**

Run Batch ID: LEEMAN_000407D SeqNo: 177548 Analysis Date: 4/7/00 11:11:29 PM Prep Batch ID: 000406294 Prep Date: 4/6/00

Analyte		Result	PQL	SPK Added	Orig Result	%REC	%RPD
A	Mercury	0.9099	0.043	0.4342	2.169	-290	385.4

B-1483

2 of 5

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; RL -Reporting Limit

J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)

1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated; E - Result exceeds Highest Calibration Standard

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Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Laboratory Control Spike - generic

Mercury Analysis in Soil by Method 7471A Test Code: *1_7471A_HG_S* Units: mg/Kg

Sample ID: **CK3LCSS** DF: 1 DL_No: 1

Run Batch ID: LEEMAN_000407E SeqNo: 177570 Analysis Date: 4/7/00 8:59:35 PM Prep Batch ID: 000406293 Prep Date: 4/6/00

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Mercury	1.57	0.033	1.29	0	122	61	139			

B-1484

2 of 6

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below reporting limits
1 - Represents RSD Limit for Quad Analysis
* - LCS Recovery outside limits
B - Analyte detected in the associated Method Blank
NC - Not Calculated
M - Matrix Spike Recovery outside limits
E - Result exceeds Highest Calibration Standard
RL -Reporting Limit
R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Laboratory Control Spike - generic

Mercury Analysis in Soil by Method 7471A Test Code: *1_7471A_HG_S* Units: mg/Kg

Sample ID: **CK3LCSS** DF: 1 DL_No: 1

Run Batch ID: **LEEMAN_000407D** SeqNo: **177522** Analysis Date: **4/7/00 10:34:32 PM** Prep Batch ID: **000406294** Prep Date: **4/6/00**

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Mercury	1.405	0.033	1.29	0	109	61	139			

B-1485

2 of 2

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below reporting limits
1 - Represents RSD Limit for Quad Analysis
* - LCS Recovery outside limits
B - Analyte detected in the associated Method Blank
NC - Not Calculated
M - Matrix Spike Recovery outside limits
E - Result exceeds Highest Calibration Standard
RL -Reporting Limit
R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Laboratory Control Spike - generic

Mercury Analysis in Soil by Method 7471A Test Code: *1_7471A_HG_S* Units: mg/Kg

Sample ID: **LCS-200000870** DF: 1 DL_No: 1

Run Batch ID: LEEMAN_000408A SeqNo: 177802 Analysis Date: 4/8/00 4:42:05 PM Prep Batch ID: 200000870 Prep Date: 4/6/00

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Mercury	1.277	0.0495	1.29	0	99	61	139			

B-1486

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Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated; E - Result exceeds Highest Calibration Standard

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Laboratory Results

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Lancaster, New York 14086-

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SMP-A
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/15/00 10:50:00 AM
Lab ID:	0003202-01A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE PMOIST								
Percent Moisture	44.3		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:	ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
	J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
	H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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Laboratory Results

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: **0003202-02A** **Sample Type:** SAMP

Client Sample ID: SMP-B
Alt. Client ID:
Collection Date: 3/15/00 11:00:00 AM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	50.8		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-03A **Sample Type:** SAMP

Client Sample ID: SMP-C
Alt. Client ID:
Collection Date: 3/15/00 11:20:00 AM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	40.4		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-04A **Sample Type:** SAMP

Client Sample ID: SMP-E
Alt. Client ID:
Collection Date: 3/15/00 3:10:00 PM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	48.4		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

Ecology and Environment, Inc.

Laboratory Results

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4493 Walden Avenue
Lancaster, New York 14086-

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SMP-J
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/16/00 9:14:00 AM
Lab ID:	0003202-05A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	59.4		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:	ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
	J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
	H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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Laboratory Results

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SMP-K
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/16/00 10:20:00 AM
Lab ID:	0003202-06A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	51.1		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:	ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
	J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
	H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-07A **Sample Type:** SAMP

Client Sample ID: SMP-I
Alt. Client ID:
Collection Date: 3/16/00 10:50:00 AM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE PMOIST								
Percent Moisture	48.5		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-08A **Sample Type:** SAMP

Client Sample ID: SMP-G
Alt. Client ID:
Collection Date: 3/15/00 11:30:00 AM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	52.0		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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NYS ELAP ID#: 10486

Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SMP-N
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/16/00 1:15:00 PM
Lab ID:	0003202-09A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	45.5		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:	ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
	J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
	H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-10A **Sample Type:** SAMP

Client Sample ID: SS-2
Alt. Client ID:
Collection Date: 3/17/00 11:50:00 AM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	25.8		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-11A **Sample Type:** SAMP

Client Sample ID: SS-1
Alt. Client ID:
Collection Date: 3/17/00 12:00:00 PM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE PMOIST								
Percent Moisture	35.3		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-8
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 12:05:00 PM
Lab ID:	0003202-12A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	13.7		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:	ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
	J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
	H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-7
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 12:10:00 PM
Lab ID:	0003202-13A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	25.1		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:	ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
	J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
	H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-14A **Sample Type:** SAMP

Client Sample ID: SS-6
Alt. Client ID:
Collection Date: 3/17/00 12:20:00 PM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	17.7		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486

Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-5
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 12:25:00 PM
Lab ID:	0003202-15A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	19.0		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-16A **Sample Type:** SAMP

Client Sample ID: SS-9
Alt. Client ID:
Collection Date: 3/17/00 12:30:00 PM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	17.6		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-10
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 12:40:00 PM
Lab ID:	0003202-17A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	12.0		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:	ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
	J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
	H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-18A **Sample Type:** SAMP

Client Sample ID: SS-11
Alt. Client ID:
Collection Date: 3/17/00 12:50:00 PM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	12.0		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-14
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 1:00:00 PM
Lab ID:	0003202-19A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	17.5		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-13
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 1:09:00 PM
Lab ID:	0003202-20A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	15.4		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-18
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 1:15:00 PM
Lab ID:	0003202-21A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	18.2		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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NYS ELAP ID#: 10486
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CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-17
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 1:20:00 PM
Lab ID:	0003202-22A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	17.7		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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Laboratory Results

NYS ELAP ID#: 10486
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CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-16
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 1:25:00 PM
Lab ID:	0003202-23A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	9.56		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:	ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
	J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
	H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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NYS ELAP ID#: 10486

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CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-23
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 1:46:00 PM
Lab ID:	0003202-24A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	20.4		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

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NYS ELAP ID#: 10486
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CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-22
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 1:55:00 PM
Lab ID:	0003202-25A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	14.1		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:	ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
	J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
	H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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NYS ELAP ID#: 10486
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CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-19
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 2:00:00 PM
Lab ID:	0003202-26A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	15.0		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:	ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
	J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
	H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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NYS ELAP ID#: 10486
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CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	**SS-21**
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 2:10:00 PM
Lab ID:	0003202-27A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	15.8		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:	ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
	J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
	H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-24
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/17/00 2:19:00 PM
Lab ID:	0003202-28A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	17.9		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

Ecology and Environment, Inc.

Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-15
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/20/00 11:00:00 AM
Lab ID:	0003202-29A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	38.2		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:	ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
	J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
	H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

Ecology and Environment, Inc.

Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-30A **Sample Type:** SAMP

Client Sample ID: SS-25
Alt. Client ID:
Collection Date: 3/20/00 11:15:00 AM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	14.9		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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Analytical Services Center

4493 Walden Avenue
Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-4
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/20/00 11:35:00 AM
Lab ID:	0003202-31A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	36.1		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:	ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
	J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
	H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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Lancaster, New York 14086-

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-32A **Sample Type:** SAMP

Client Sample ID: SS-12
Alt. Client ID:
Collection Date: 3/20/00 11:45:00 AM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	26.8		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-33A **Sample Type:** SAMP

Client Sample ID: SS-12DUP
Alt. Client ID:
Collection Date: 3/20/00 11:50:00 AM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	27.4		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-26
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/20/00 12:05:00 PM
Lab ID:	0003202-34A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	12.8		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-35A **Sample Type:** SAMP

Client Sample ID: SS-26DUP
Alt. Client ID:
Collection Date: 3/20/00 12:10:00 PM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	11.7		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Client Sample ID: SS-27
Lab Order: 0003202
Alt. Client ID:
Project: Kenilworth Park PA/SI
Collection Date: 3/20/00 12:20:00 PM
Lab ID: 0003202-36A **Sample Type:** SAMP
Matrix: SOIL
% Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	26.6		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-37A **Sample Type:** SAMP

Client Sample ID: SS-28
Alt. Client ID:
Collection Date: 3/20/00 12:40:00 PM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE PMOIST								
Percent Moisture	50.3		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
Limit - Reporting Limit
N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-29
Lab Order:	0003202	**Alt. Client ID:**	Background 1
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/20/00 2:15:00 PM
Lab ID:	0003202-38A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	32.6		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-30
Lab Order:	0003202	**Alt. Client ID:**	Background 2
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/20/00 2:15:00 PM
Lab ID:	0003202-39A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	23.0		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:	ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
	J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
	H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0003202
Project: Kenilworth Park PA/SI
Lab ID: 0003202-40A **Sample Type:** SAMP

Client Sample ID: SS-31
Alt. Client ID:
Collection Date: 3/20/00 4:00:00 PM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	23.3		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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Laboratory Results

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Lancaster, New York 14086-

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SMP-F
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/15/00 2:40:00 PM
Lab ID:	0003202-41A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	65.3		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:	ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
	J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
	H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Client Sample ID: SMP-L
Lab Order: 0003202
Alt. Client ID:
Project: Kenilworth Park PA/SI
Collection Date: 3/16/00 9:50:00 AM
Lab ID: 0003202-42A **Sample Type:** SAMP
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	44.9		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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Analytical Services Center

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Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486

Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SMP-M
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/16/00 12:00:00 PM
Lab ID:	0003202-43A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	51.4		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:	ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
	J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
	H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-32
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/21/00 4:00:00 PM
Lab ID:	0003202-44A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	17.9		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486

Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Client Sample ID: SS-33
Lab Order: 0003202
Alt. Client ID:
Project: Kenilworth Park PA/SI
Collection Date: 3/21/00 4:10:00 PM
Lab ID: 0003202-45A **Sample Type:** SAMP
Matrix: SOIL
% Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	21.6		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	SS-34
Lab Order:	0003202	**Alt. Client ID:**	
Project:	Kenilworth Park PA/SI	**Collection Date:**	3/21/00 4:15:00 PM
Lab ID:	0003202-46A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	22.1		0.1	wt%	1	3/31/00	WC_PMOIST_000331A	DMR

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	Limit - Reporting Limit
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.2 - 4/4/00 12:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Sample Duplicate

Percent Moisture Test Code: *PMOIST* Units: wt%

Sample ID: **0003202-03A** DF: 1 DL_No: 1

Run Batch ID: **WC_PMOIST_000331A** SeqNo: **171974** Analysis Date: **3/31/00** Prep Batch ID: **000331141R** Prep Date: **3/31/00**

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Percent Moisture	39.76	0.1	0	40.36	0%			1.5%	35	

B-1533

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below reporting limits
1 - Represents RSD Limit for Quad Analysis
* - LCS Recovery outside limits
B - Analyte detected in the associated Method Blank
NC - Not Calculated
M - Matrix Spike Recovery outside limits
E - Result exceeds Highest Calibration Standard
RL -Reporting Limit
R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)

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Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Sample Duplicate

Percent Moisture Test Code: *PMOIST* Units: wt%

Sample ID: **0003202-22A** DF: 1 DL_No: 1

Run Batch ID: **WC_PMOIST_000331A** SeqNo: **171994** Analysis Date: **3/31/00** Prep Batch ID: **000331141R** Prep Date: **3/31/00**

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Percent Moisture	18.3	0.1	0	17.73	0%			3.2%	35	

B-1534

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below reporting limits
1 - Represents RSD Limit for Quad Analysis
* - LCS Recovery outside limits
B - Analyte detected in the associated Method Blank
NC - Not Calculated
M - Matrix Spike Recovery outside limits
E - Result exceeds Highest Calibration Standard
RL -Reporting Limit
R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0003202
Project: Kenilworth Park PA/SI

QC SUMMARY REPORT
Sample Duplicate

Percent Moisture Test Code: *PMOIST* Units: wt%

Sample ID: **0003202-41A** DF: 1 DL_No: 1

Run Batch ID: **WC_PMOIST_000331A** SeqNo: **172014** Analysis Date: **3/31/00** Prep Batch ID: **000331141R** Prep Date: **3/31/00**

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Percent Moisture	65.96	0.1	0	65.34	0%			1.0%	35	

B-1535

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated; E - Result exceeds Highest Calibration Standard

C Site Survey Data

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Project:	Kenilworth Park Landfill RIFS
Location:	District of Columbia
Type of survey:	GPS - Sample locations
Equipment used:	Trimble Pathfinder pro XRS
Surveyor:	N. Gahr
Date of survey:	10/06/01
Coordinate System:	US State Plane 1983
Zone:	Virginia North 4501
Datum:	NAD 1983 (conus)

ID	Easting (ft)	Northing (ft)	Description
1	11922723.350	7016542.508	NE1
2	11922793.997	7016279.198	NE3
3	11922933.236	7016261.920	NE4
4	11922926.140	7016509.878	NE2
5	11922948.975	7016845.505	WA1
6	11923054.095	7016562.840	WA2
7	11923178.084	7015980.326	WA4
8	11923133.593	7015607.779	WA5
9	11922572.803	7015910.204	OL3
10	11922628.241	7016254.684	OL2
11	11922597.294	7016439.793	OL1
12	11922364.678	7015419.727	OL5
13	11921753.159	7015663.099	NL3
14	11921898.836	7015971.075	NL2
15	11922041.458	7016278.246	NL1
17	11922406.079	7015604.566	MW08
18	11922616.655	7016204.509	MW09

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D Monitoring Well Borehole Logs

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DRILLING LOG FOR MW-12

Project Name KENILWORTH PARK LANDFILL RI/FS

Site Location KENILWORTH PARK N.E.
WASHINGTON D.C.

Date Started/Finished 06/18/01 / 06/18/01

Drilling Company BADGER DRILLING, MARSHALL VA.

Driller's Name JIM DAVIS

Geologist's Name HUSSEIN ALDIS

Geologist's Signature Hussein Aldis

Rig Type (s) CANTERRA CT250 HSA

Drilling Method (s) HSA

Bit Size (s) 8" Auger Size (s) 6¼" I.D.

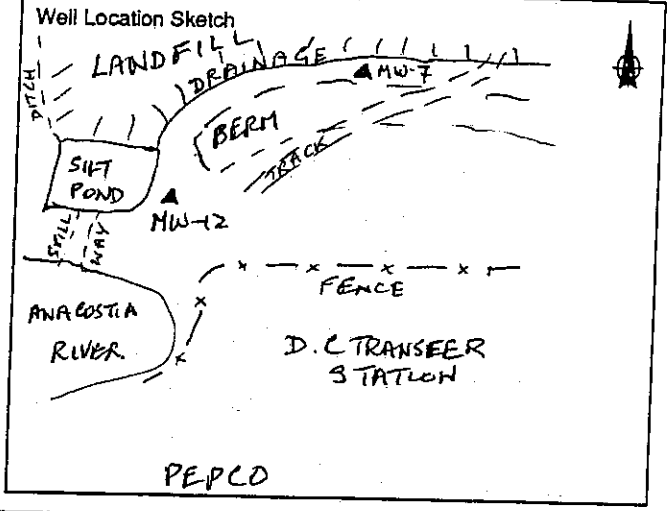
Auger/Split Spoon Refusal N/A

Total Depth of Borehole is 20 ft

Total Depth of Corehole is 22 ft.

Water Level (TOIC)		
Date	Time	Level(Feet)
06/18/01	1031	? 13 FEET BGS
06/18/01	1340	14.3 BGS

Well Location Sketch



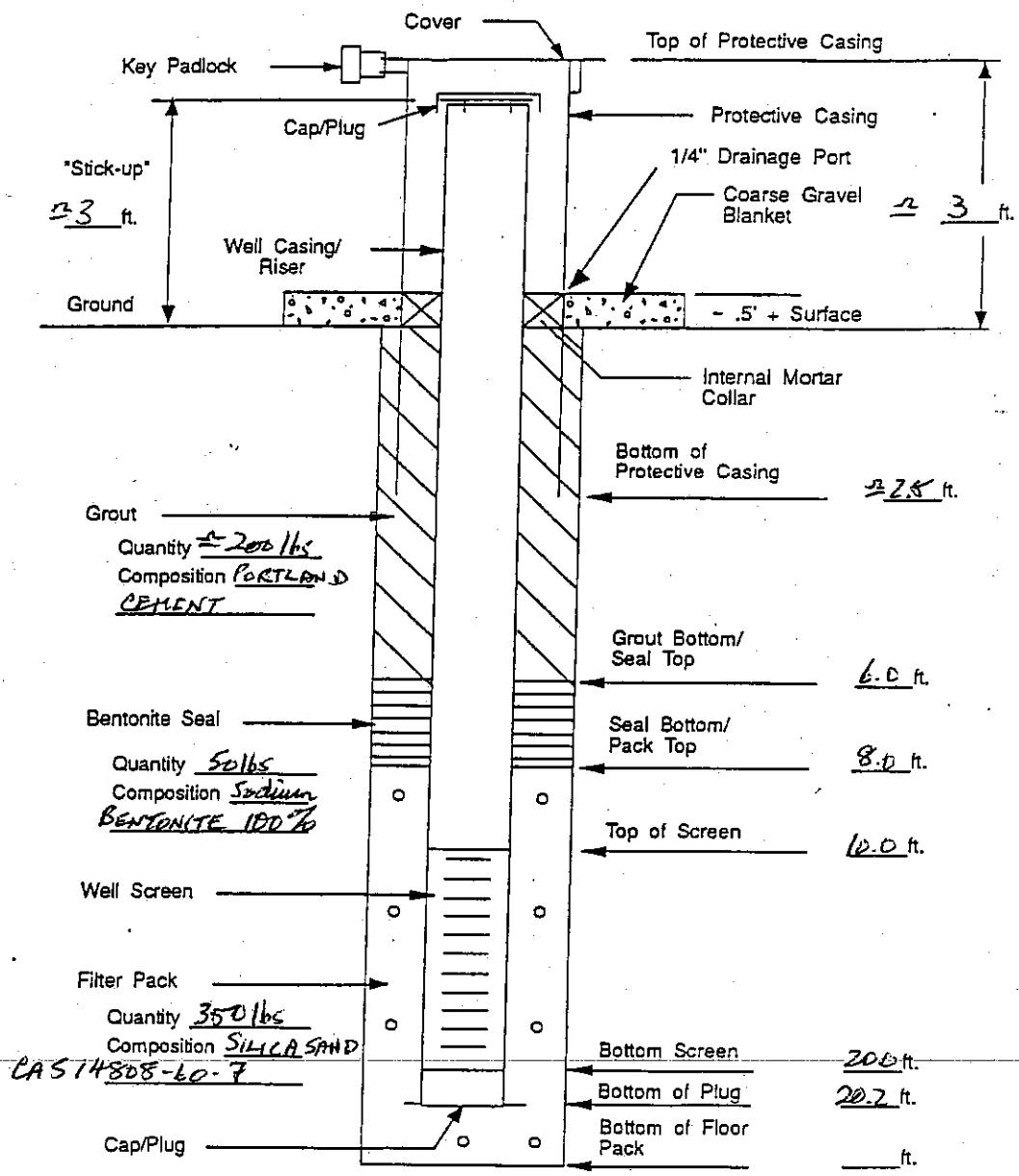
Depth(Feet)	Sample Number	Blows on Sampler	Soil Components CL SL S GR	Rock Profile	Penetration Times	Run Number	Core Recovery	RQD	Fracture Sketch	HNu/OVA (ppm)	Comments
1			SL-CL-S								BROWN SILT LOAM, SOME GRAVEL AND WASTE (fill) INCREASING CLAY WITH DEPTH TO 6.5 FT (CAP)
2											
3			LANDFILL CAP								
4											
5											
6											
7			MIXED WASTES								LANDFILL RUBBLE BLACK SILTY SANDY ASH WITH WOOD LEATHER, BALL POINT, TRASH, PLASTIC etc. O_2 20.9% Explosimeter 0 ppm.
8											
9											
10											
11											
12											
13											
14				DRILLER'S ESTIMATE							

Depth(feet)	Sample Number	Blows on Sampler		Soil Components CL SL S GR	Rock Profile	Penetration Times	Run Number	Core Recovery	RQD	Fracture Sketch	HNu/OVA (ppm)	Comments
16												Soft wet
17		2	3	0%								No
18		3	4	Recovery								Recovery
19												
20												
21		1	2	CL-SL	75%							Soft, wet
22		2	2	BROWN silty clay	Recovery T.D. 22							plastic clay
23												Set well
24												bottom
25												at 20 feet.
26												
27												
28												
29												
30												
31												
32												
33												
34												
35												
36												
37												
38												
39												
40												
41												
42												
43												
44												

Page:

Well Construction Log: MW-12
Site ID Number: KENILWORTH PARK SOUTH LANDFILL
Well Number: 13
Today's Date: 06/18/01

WELL CONSTRUCTION



DRILLING LOG FOR MW-13

Project Name KENILWORTH PARK LANDFILL RI/FS

Site Location KENILWORTH PARK NE. WASHINGTON D.C.

Date Started/Finished 06/18/01 – 06/18/01

Drilling Company BADGER DRILLING, MARSHALL VA.

Driller's Name JIM DAVIS

Geologist's Name HUSSEIN ALDIS

Geologist's Signature Hussein Aldis

Rig Type (s) CANTERRA CT250

Drilling Method (s) HSA

Bit Size (s) 8" Auger Size (s) 6¼" I.D.

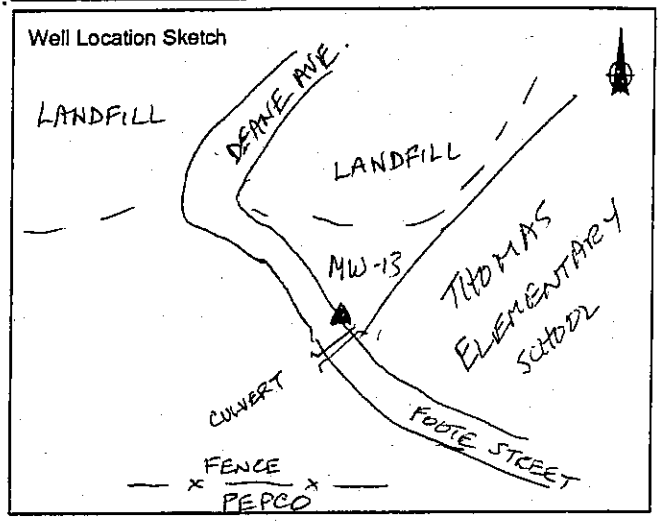
Auger/Split Spoon Refusal N/A.

Total Depth of Borehole Is

Total Depth of Corehole Is

Water Level (TOIC)		
Date	Time	Level(Feet)
06/18/01	1400	≈ 13' bgs
06/21/01	0942	13.1 ft

Well Location Sketch



Depth(Feet)	Sample Number	Blows on Sampler	Soil Components CL SL S GR	Rock Profile	Penetration Times	Run Number	Core Recovery	RQD	Fracture Sketch	HNu/OVA (ppm)	Comments
1			S, GR FILL								GRAVEL, SAND COBBLES (FILL)
2											
3											
4											
5											
6			S (GR) BLACK FILL								GREY SAND w. GRAVEL
7			CL, S, GR								(Smell of diesel)
8			Plastic, wood, metal								6-14 FILL
9											Explos^R 0ppm
10			6-15								O2 21.4 %
11											
12											
13											
14											

Depth(feet)	Sample Number	Blows on Sampler		Soil Components CL SL S GR	Rock Profile	Penetration Times	Run Number	Core Recovery	RQD	Fracture Sketch	HNu/OVA (ppm)	Comments
16		3	9	S/GR				25-30 %				Sand, gravel
17		9	10	(FILL)								cinders, glass (fill)
18												
19				▼								WET AT ▼ 19'
20												
21		2	4	S/GR C (SL)				90%				Wet sand/GR CLAY, SILTY
22		5	5		T.D							LIGHT BROWN PLASTIC
23												
24												
25												
26												
27												
28												
29												
30												
31												
32												
33												
34												
35												
36												
37												
38												
39												
40												
41												
42												
43												
44												

Page:

Well Construction Log: MW-13

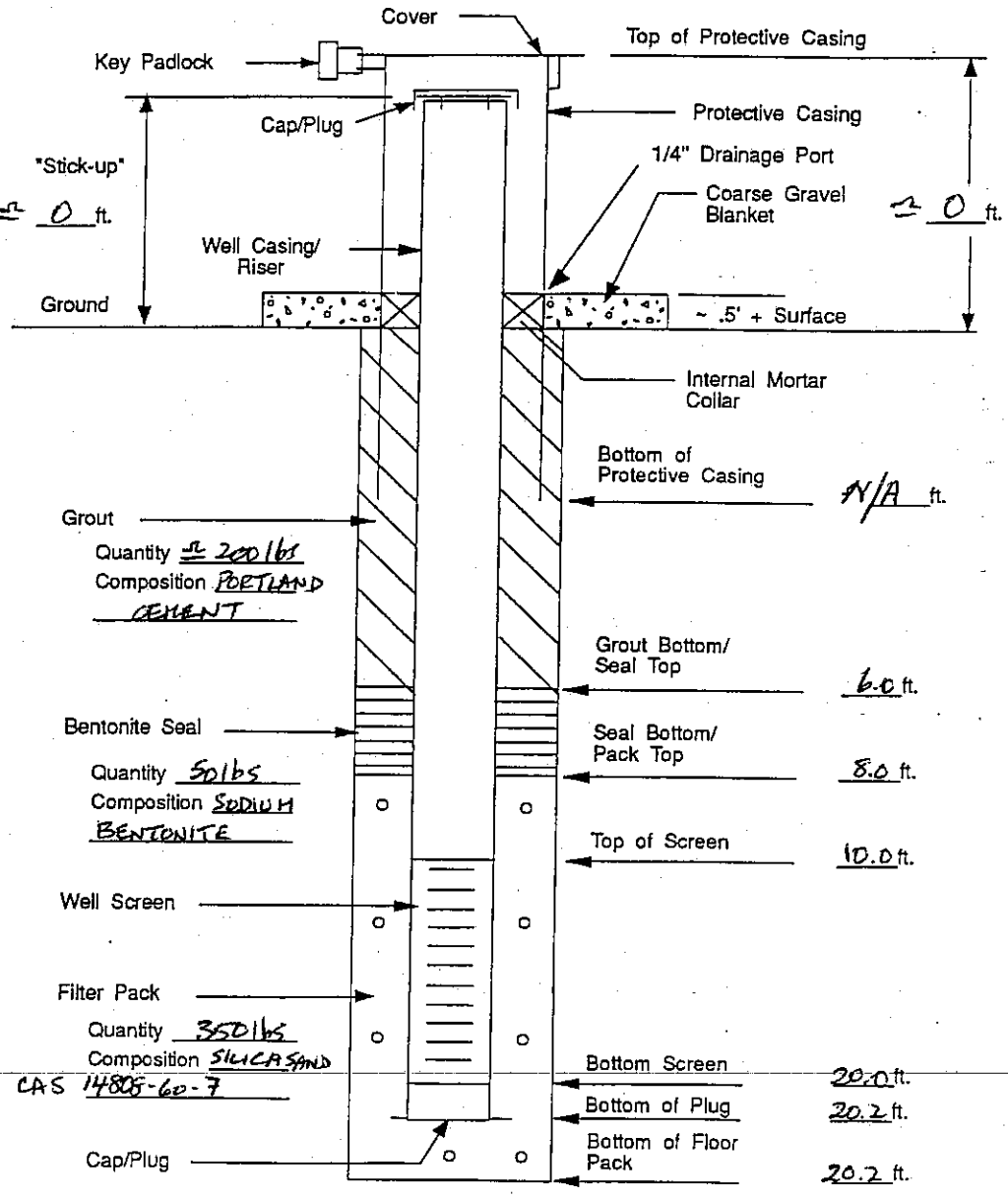
Site ID Number: KENILWORTH PARK SOUTH LANDFILL

Well Number: 13

Today's Date: 06/21/01

WELL CONSTRUCTION

FLUSH MOUNTED



E Slug Test Data

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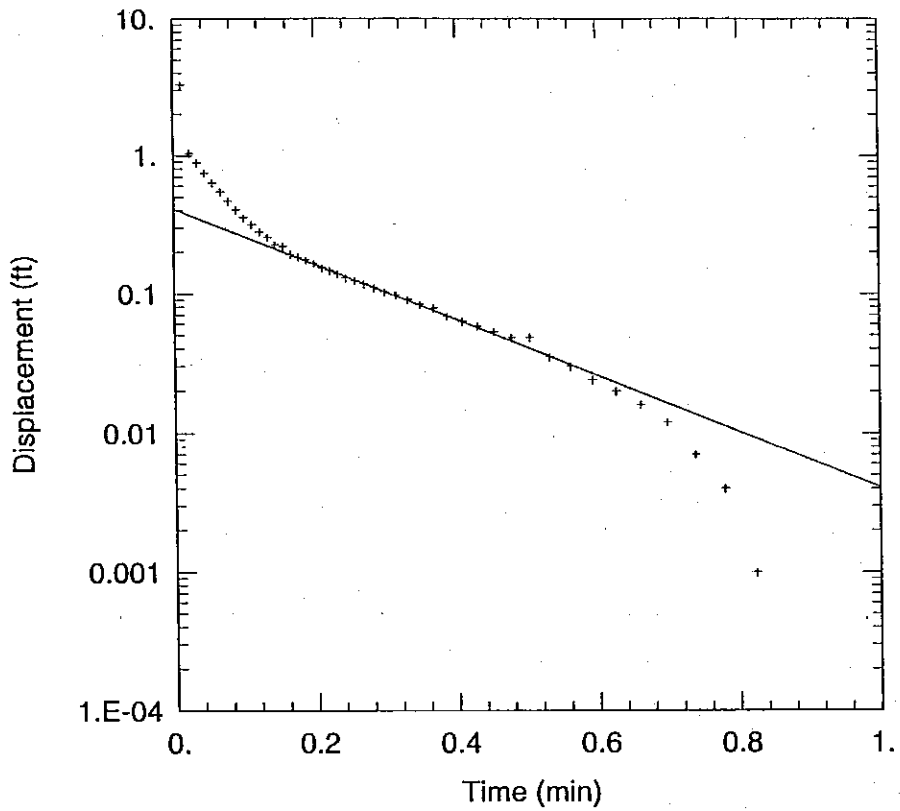


MW12 - RISING HEAD SLUG TEST

Data Set: A:\AQT\KLMW12.AQT
Date: 10/09/01 Time: 16:18:00

PROJECT INFORMATION

Company: Ecology & Environment, Inc.
Client: National Park Service
Project: Kenilworth Park Landfill
Test Location: N.E. Washington, D.C.
Test Well: KL-MW12
Test Date: 06/29/01

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.003174 cm/sec
y0 = 0.4084 ft

AQUIFER DATA

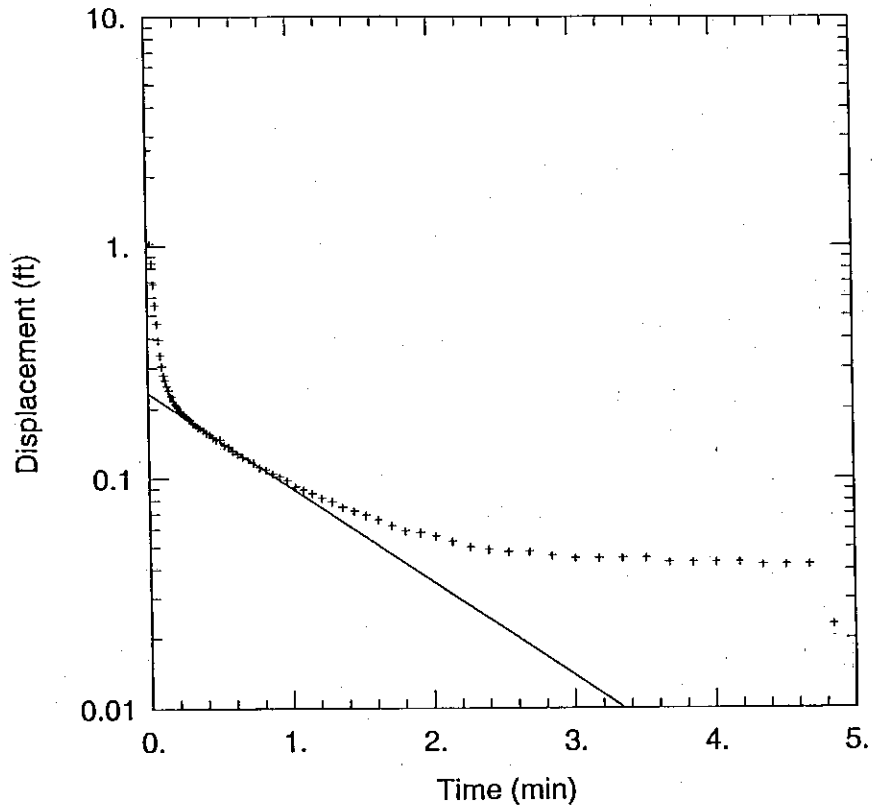
Saturated Thickness: 10. ft

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Initial Displacement: 5.08 ft
Casing Radius: 0.083 ft
Screen Length: 10. ft

Water Column Height: 5.59 ft
Wellbore Radius: 0.125 ft
Gravel Pack Porosity: 0.35



MW13 - RISING HEAD SLUG TEST

Data Set: A:\AQT\KLMW13.AQT
Date: 10/09/01 Time: 16:20:20

PROJECT INFORMATION

Company: Ecology & Environment, Inc.
Client: National Park Service
Project: Kenilworth Park Landfill
Test Location: N.E. Washington, D.C.
Test Well: KL-MW13
Test Date: 06/29/01

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.0006591 cm/sec
y0 = 0.2326 ft

AQUIFER DATA

Saturated Thickness: 10. ft

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Initial Displacement: 5.08 ft
Casing Radius: 0.083 ft
Screen Length: 10. ft

Water Column Height: 6. ft
Wellbore Radius: 0.125 ft
Gravel Pack Porosity: 0.35

In-Situ Inc. Hermit 3000

Report generated: 08/27/01 18:59:18
Report from file: C:\Win-Situ\Data\SN45464 2000-06-29 115602 SLUG 12 .b
in
DataMgr Version 3.69

Serial number: 00045464
Firmware Version 7.10
Unit name: Hermit 3000

Test name: SLUG 12

Test defined on: 06/29/00 11:55:34
Test started on: 06/29/00 11:56:02
Test stopped on: 06/29/00 12:00:01
Test extracted on: 06/29/00 14:05:42

Data gathered using Logarithmic testing
  Maximum time between data points: 0.1667 Minutes.
  Number of data samples: 74

TOTAL DATA SAMPLES 74

Channel number [1]
  Measurement type: Pressure
  Channel name: Probe #1
  Linearity: 0.0222000
  Scale: 9.9758000
  Offset: -0.1172000
  Warmup: 50
  Specific gravity: 1.000
  Mode: TOC
  User-defined reference: 0.000 Feet H2O
  Referenced on: test start
  Pressure head at reference: 5.604 Feet H2O

Channel number [0]
  Measurement type: Barometric Pressure
  Channel name: Barometric
  Linearity: 0.0000000
  Scale: 0.0000000
  Offset: 0.0000000
  Warmup: 50

Date	Time	ET (min)	Chan[1] Feet H2O	Chan[0] Inches Hg	
06/29/00	11:56:02		0.0000	0.000	30.375
06/29/00	11:56:02		0.0110	3.283	30.375
06/29/00	11:56:03		0.0220	1.039	30.377
06/29/00	11:56:03		0.0330	0.888	30.377
06/29/00	11:56:04		0.0440	0.750	30.375
06/29/00	11:56:05		0.0550	0.635	30.375
06/29/00	11:56:05		0.0660	0.544	30.375
06/29/00	11:56:06		0.0770	0.469	30.377
06/29/00	11:56:07		0.0880	0.406	30.373
06/29/00	11:56:07		0.0990	0.357	30.377
06/29/00	11:56:08		0.1100	0.315	30.375
06/29/00	11:56:09		0.1210	0.281	30.375

In-Situ Inc. Hermit 3000

Report generated: 08/27/01 19:03:14
Report from file: C:\Win-Situ\Data\SN45464 2000-06-29 120320 SLUG 12_DUPP .b
in
DataMgr Version 3.69

Serial number: 00045464
Firmware Version 7.10
Unit name: Hermit 3000

Test name: SLUG 12_DUPP

Test defined on: 06/29/00 12:01:31
Test started on: 06/29/00 12:03:20
Test stopped on: 06/29/00 12:07:42
Test extracted on: 06/29/00 14:06:38

Data gathered using Logarithmic testing
Maximum time between data points: 0.1667 Minutes.
Number of data samples: 77

TOTAL DATA SAMPLES 77

Channel number [1]
Measurement type: Pressure
Channel name: Probe #1
Linearity: 0.0222000
Scale: 9.9758000
Offset: -0.1172000
Warmup: 50
Specific gravity: 1.000
Mode: TOC
User-defined reference: 0.000 Feet H2O
Referenced on: test start
Pressure head at reference: 5.618 Feet H2O

Channel number [0]
Measurement type: Barometric Pressure
Channel name: Barometric
Linearity: 0.0000000
Scale: 0.0000000
Offset: 0.0000000
Warmup: 50

Date	Time	ET (min)	Chan[1] Feet H2O	Chan[0] Inches Hg	
06/29/00	12:03:20		0.0000	0.000	30.373
06/29/00	12:03:20		0.0110	0.910	30.375
06/29/00	12:03:21		0.0220	0.908	30.371
06/29/00	12:03:21		0.0330	0.776	30.373
06/29/00	12:03:22		0.0440	0.675	30.373
06/29/00	12:03:23		0.0550	0.590	30.373
06/29/00	12:03:23		0.0660	0.511	30.373
06/29/00	12:03:24		0.0770	0.455	30.373
06/29/00	12:03:25		0.0880	0.409	30.373
06/29/00	12:03:25		0.0990	0.383	30.371
06/29/00	12:03:26		0.1100	0.335	30.373
06/29/00	12:03:27		0.1210	0.307	30.373

06/29/00	12:07:20	4.0127	-0.022	30.379
06/29/00	12:07:30	4.1793	-0.022	30.379
06/29/00	12:07:40	4.3460	-0.023	30.377

In-Situ Inc. Hermit 3000

Report generated: 08/27/01 19:03:48
Report from file: C:\Win-Situ\Data\SN45464 2000-06-29 124918 SLUG 13 .b
in
DataMgr Version 3.69

Serial number: 00045464
Firmware Version 7.10
Unit name: Hermit 3000

Test name: SLUG 13

Test defined on: 06/29/00 12:47:33
Test started on: 06/29/00 12:49:18
Test stopped on: 06/29/00 12:54:21
Test extracted on: 06/29/00 14:08:04

Data gathered using Logarithmic testing
  Maximum time between data points: 0.1667 Minutes.
  Number of data samples: 81

TOTAL DATA SAMPLES 81

Channel number [1]
  Measurement type: Pressure
  Channel name: Probe #1
  Linearity: 0.0222000
  Scale: 9.9758000
  Offset: -0.1172000
  Warmup: 50
  Specific gravity: 1.000
  Mode: TOC
  User-defined reference: 0.000 Feet H2O
  Referenced on: test start
  Pressure head at reference: 6.064 Feet H2O

Channel number [0]
  Measurement type: Barometric Pressure
  Channel name: Barometric
  Linearity: 0.0000000
  Scale: 0.0000000
  Offset: 0.0000000
  Warmup: 50

Date	Time	ET (min)	Chan[1] Feet H2O	Chan[0] Inches Hg	
06/29/00	12:49:18		0.0000	0.000	30.355
06/29/00	12:49:18		0.0110	2.607	30.355
06/29/00	12:49:19		0.0220	1.028	30.355
06/29/00	12:49:19		0.0330	0.844	30.355
06/29/00	12:49:20		0.0440	0.684	30.355
06/29/00	12:49:21		0.0550	0.556	30.355
06/29/00	12:49:21		0.0660	0.464	30.355
06/29/00	12:49:22		0.0770	0.395	30.355
06/29/00	12:49:23		0.0880	0.340	30.355
06/29/00	12:49:23		0.0990	0.305	30.355
06/29/00	12:49:24		0.1100	0.279	30.355
06/29/00	12:49:25		0.1210	0.266	30.355

06/29/00	12:53:18	4.0127	0.043	30.357
06/29/00	12:53:28	4.1793	0.043	30.359
06/29/00	12:53:38	4.3460	0.042	30.357
06/29/00	12:53:48	4.5127	0.042	30.357
06/29/00	12:53:58	4.6793	0.042	30.359
06/29/00	12:54:08	4.8460	0.023	30.357
06/29/00	12:54:18	5.0127	-0.122	30.359

06/29/00	12:57:40	0.1320	0.223	30.359
06/29/00	12:57:41	0.1430	0.215	30.359
06/29/00	12:57:42	0.1540	0.207	30.361
06/29/00	12:57:42	0.1650	0.202	30.359
06/29/00	12:57:43	0.1760	0.197	30.359
06/29/00	12:57:44	0.1870	0.193	30.361
06/29/00	12:57:44	0.1980	0.189	30.361
06/29/00	12:57:45	0.2090	0.186	30.361
06/29/00	12:57:46	0.2200	0.183	30.359
06/29/00	12:57:46	0.2310	0.179	30.359
06/29/00	12:57:47	0.2427	0.176	30.361
06/29/00	12:57:48	0.2552	0.173	30.361
06/29/00	12:57:49	0.2683	0.170	30.361
06/29/00	12:57:49	0.2823	0.167	30.359
06/29/00	12:57:50	0.2972	0.164	30.363
06/29/00	12:57:51	0.3128	0.161	30.361
06/29/00	12:57:52	0.3295	0.160	30.359
06/29/00	12:57:53	0.3472	0.157	30.361
06/29/00	12:57:54	0.3658	0.154	30.359
06/29/00	12:57:56	0.3857	0.151	30.361
06/29/00	12:57:57	0.4067	0.147	30.361
06/29/00	12:57:58	0.4288	0.145	30.359
06/29/00	12:58:00	0.4523	0.143	30.359
06/29/00	12:58:01	0.4772	0.138	30.359
06/29/00	12:58:03	0.5035	0.138	30.359
06/29/00	12:58:04	0.5315	0.130	30.359
06/29/00	12:58:06	0.5612	0.127	30.361
06/29/00	12:58:08	0.5925	0.124	30.361
06/29/00	12:58:10	0.6257	0.121	30.363
06/29/00	12:58:12	0.6608	0.117	30.361
06/29/00	12:58:14	0.6982	0.115	30.361
06/29/00	12:58:17	0.7377	0.111	30.361
06/29/00	12:58:19	0.7795	0.108	30.363
06/29/00	12:58:22	0.8238	0.105	30.361
06/29/00	12:58:25	0.8708	0.102	30.361
06/29/00	12:58:28	0.9207	0.099	30.361
06/29/00	12:58:31	0.9733	0.094	30.359
06/29/00	12:58:34	1.0292	0.089	30.361
06/29/00	12:58:38	1.0883	0.086	30.361
06/29/00	12:58:42	1.1510	0.084	30.361
06/29/00	12:58:46	1.2173	0.082	30.361
06/29/00	12:58:50	1.2877	0.078	30.361
06/29/00	12:58:54	1.3622	0.075	30.361
06/29/00	12:58:59	1.4412	0.073	30.361
06/29/00	12:59:04	1.5248	0.071	30.361
06/29/00	12:59:09	1.6133	0.068	30.361
06/29/00	12:59:15	1.7072	0.066	30.361
06/29/00	12:59:21	1.8065	0.063	30.361
06/29/00	12:59:27	1.9118	0.062	30.361
06/29/00	12:59:34	2.0233	0.060	30.361
06/29/00	12:59:41	2.1415	0.058	30.363
06/29/00	12:59:49	2.2667	0.055	30.363
06/29/00	12:59:56	2.3992	0.053	30.359
06/29/00	13:00:05	2.5397	0.052	30.363
06/29/00	13:00:14	2.6885	0.052	30.361
06/29/00	13:00:23	2.8460	0.055	30.336
06/29/00	13:00:33	3.0127	0.053	30.347
06/29/00	13:00:43	3.1793	0.053	30.357
06/29/00	13:00:53	3.3460	0.053	30.363
06/29/00	13:01:03	3.5127	0.052	30.369
06/29/00	13:01:13	3.6793	0.052	30.375
06/29/00	13:01:23	3.8460	0.048	30.373

F

Tidal Test Data

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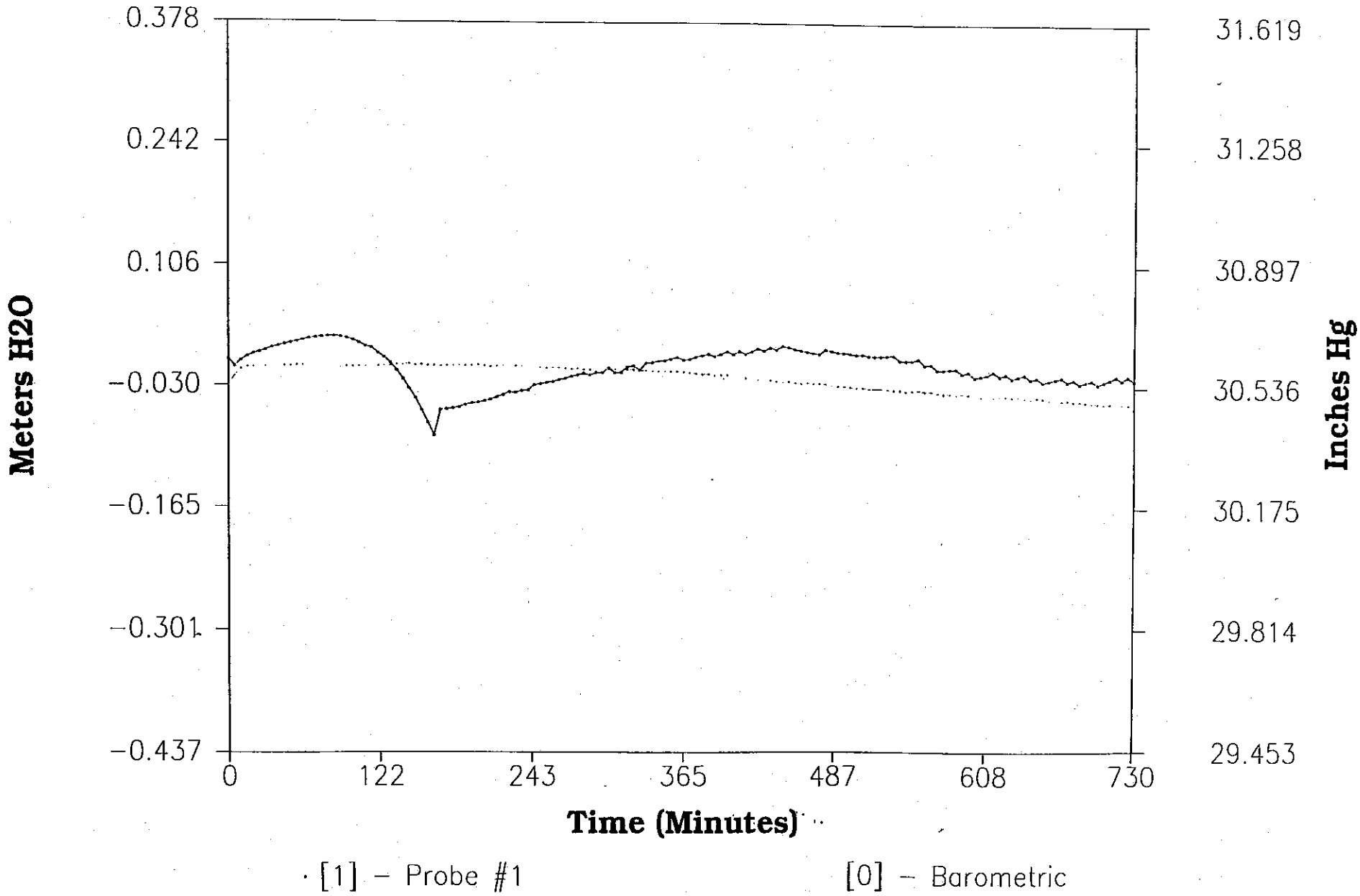
MW06


0.378
0.242
0.106
−0.030
−0.165
−0.301
−0.437
Meters H2O
31.619
31.258
30.897
30.536
30.175
29.814
29.453
Inches Hg
0
122
243
365
487
608
730
Time (Minutes)
[1] – Probe #1
[0] – Barometric

:n-Situ inc. Hermit 3000

Report generated: 10/30/01 19:38:38
Report from file: G:\National Park Service\Kenilworth_RIFS\Slug_Tidal_Test_Data\SN45464 2000-06-28 035440 062801 .bin
DataMgr Version 3.69

Serial number: 00045464
Firmware Version 7.10
Unit name: Hermit 3000

Test name: 062801

Test defined on: 06/28/00 03:54:19
Test started on: 06/28/00 03:54:40
Test stopped on: 06/28/00 16:05:28
Test extracted on: 06/28/00 18:14:45

Data gathered using Linear testing
Time between data points: 5.0000 Minutes.
Number of data samples: 147

TOTAL DATA SAMPLES 147

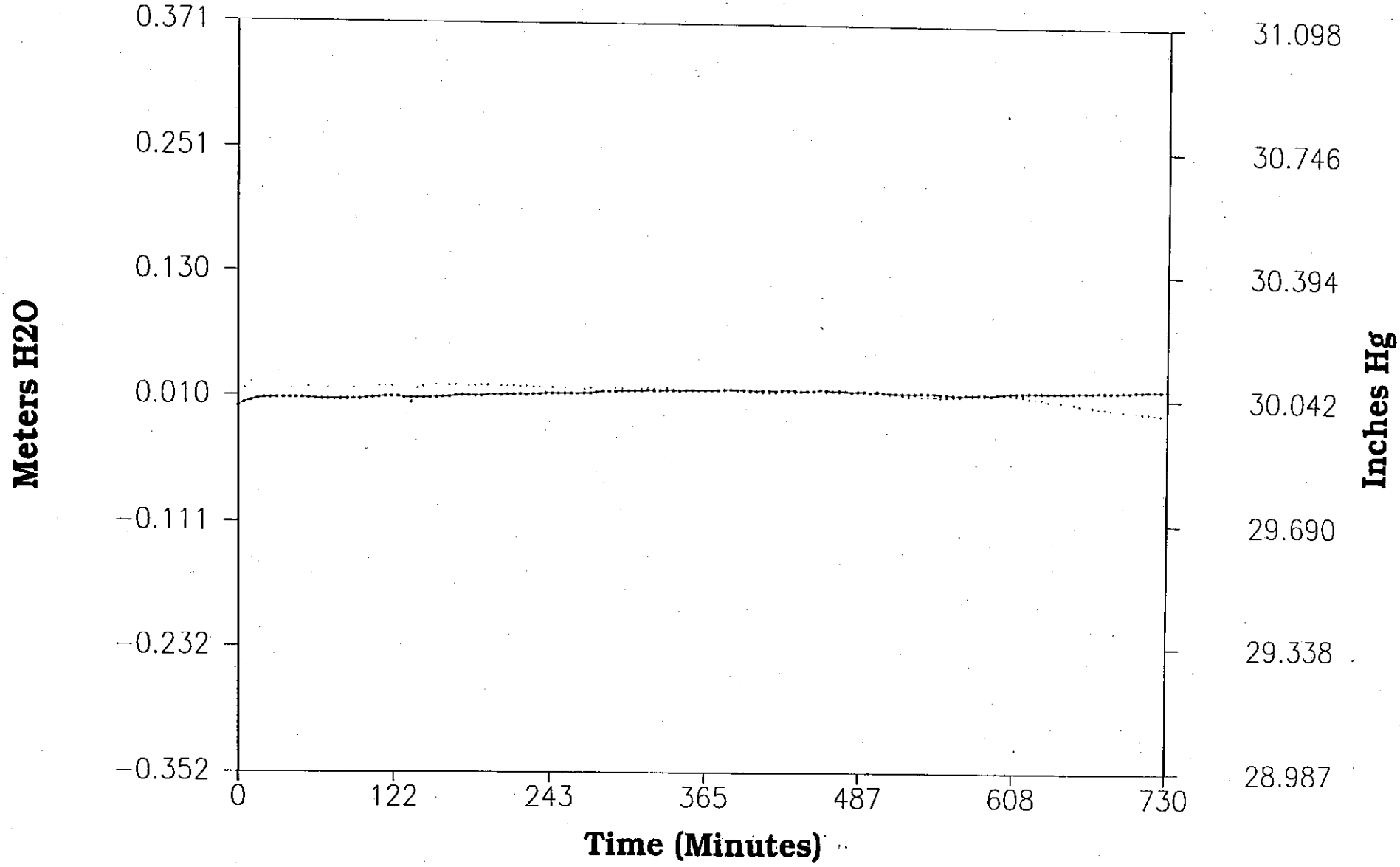
Channel number [1]
Measurement type: Pressure
Channel name: Probe #1
Linearity: 0.0222000
Scale: 9.9758000
Offset: -0.1172000
Warmup: 50
Specific gravity: 1.000
Mode: TOC
User-defined reference: 0.000 Feet H2O
Referenced on: test start
Pressure head at reference: 3.934 Feet H2O

Channel number [0]
Measurement type: Barometric Pressure
Channel name: Barometric
Linearity: 0.0000000
Scale: 0.0000000
Offset: 0.0000000
Warmup: 50

Date	Time	ET (min)	Chan[1] Feet H2O	Chan[0] Inches Hg
06/28/00	03:54:40	0.0000	0.000	30.536
06/28/00	03:59:40	5.0000	-0.026	30.564
06/28/00	04:04:40	10.0000	-0.004	30.585
06/28/00	04:09:40	15.0000	0.010	30.591
06/28/00	04:14:40	20.0000	0.020	30.591
06/28/00	04:19:40	25.0000	0.027	30.595
06/28/00	04:24:40	30.0000	0.035	30.593
06/28/00	04:29:40	35.0000	0.043	30.595
06/28/00	04:34:40	40.0000	0.049	30.593
06/28/00	04:39:40	45.0000	0.056	30.595
06/28/00	04:44:40	50.0000	0.060	30.595
06/28/00	04:49:40	55.0000	0.066	30.597
06/28/00	04:54:40	60.0000	0.072	30.597
06/28/00	04:59:40	65.0000	0.078	30.597
06/28/00	05:04:40	70.0000	0.081	30.597

06/28/00 10:29:40	395.0000	0.023	30.571
06/28/00 10:34:40	400.0000	0.033	30.571
06/28/00 10:39:40	405.0000	0.023	30.566
06/28/00 10:44:40	410.0000	0.035	30.569
06/28/00 10:49:40	415.0000	0.024	30.562
06/28/00 10:54:40	420.0000	0.033	30.560
06/28/00 10:59:40	425.0000	0.045	30.558
06/28/00 11:04:40	430.0000	0.036	30.558
06/28/00 11:09:40	435.0000	0.047	30.556
06/28/00 11:14:40	440.0000	0.040	30.552
06/28/00 11:19:40	445.0000	0.053	30.550
06/28/00 11:24:40	450.0000	0.049	30.552
06/28/00 11:29:40	455.0000	0.042	30.548
06/28/00 11:34:40	460.0000	0.037	30.546
06/28/00 11:39:40	465.0000	0.033	30.548
06/28/00 11:44:40	470.0000	0.029	30.546
06/28/00 11:49:40	475.0000	0.024	30.546
06/28/00 11:54:40	480.0000	0.040	30.544
06/28/00 11:59:40	485.0000	0.036	30.540
06/28/00 12:04:40	490.0000	0.030	30.538
06/28/00 12:09:40	495.0000	0.029	30.538
06/28/00 12:14:40	500.0000	0.026	30.536
06/28/00 12:19:40	505.0000	0.022	30.534
06/28/00 12:24:40	510.0000	0.023	30.534
06/28/00 12:29:40	515.0000	0.017	30.530
06/28/00 12:34:40	520.0000	0.016	30.530
06/28/00 12:39:40	525.0000	0.016	30.530
06/28/00 12:44:40	530.0000	0.017	30.528
06/28/00 12:49:40	535.0000	0.019	30.526
06/28/00 12:54:40	540.0000	0.000	30.526
06/28/00 12:59:40	545.0000	-0.001	30.522
06/28/00 13:04:40	550.0000	-0.001	30.524
06/28/00 13:09:40	555.0000	0.006	30.526
06/28/00 13:14:40	560.0000	-0.016	30.522
06/28/00 13:19:40	565.0000	-0.014	30.522
06/28/00 13:24:40	570.0000	-0.035	30.518
06/28/00 13:29:40	575.0000	-0.035	30.516
06/28/00 13:34:40	580.0000	-0.032	30.516
06/28/00 13:39:40	585.0000	-0.030	30.514
06/28/00 13:44:40	590.0000	-0.047	30.516
06/28/00 13:49:40	595.0000	-0.042	30.514
06/28/00 13:54:40	600.0000	-0.060	30.511
06/28/00 13:59:40	605.0000	-0.056	30.507
06/28/00 14:04:40	610.0000	-0.052	30.507
06/28/00 14:09:40	615.0000	-0.040	30.507
06/28/00 14:14:40	620.0000	-0.056	30.509
06/28/00 14:19:40	625.0000	-0.049	30.509
06/28/00 14:24:40	630.0000	-0.063	30.507
06/28/00 14:29:40	635.0000	-0.056	30.509
06/28/00 14:34:40	640.0000	-0.050	30.505
06/28/00 14:39:40	645.0000	-0.066	30.503
06/28/00 14:44:40	650.0000	-0.060	30.505
06/28/00 14:49:40	655.0000	-0.076	30.503
06/28/00 14:54:40	660.0000	-0.071	30.499
06/28/00 14:59:40	665.0000	-0.065	30.499
06/28/00 15:04:40	670.0000	-0.059	30.497
06/28/00 15:09:40	675.0000	-0.075	30.499
06/28/00 15:14:40	680.0000	-0.068	30.495
06/28/00 15:19:40	685.0000	-0.082	30.495
06/28/00 15:24:40	690.0000	-0.075	30.493
06/28/00 15:29:40	695.0000	-0.069	30.491
06/28/00 15:34:40	700.0000	-0.083	30.489
06/28/00 15:39:40	705.0000	-0.075	30.487
06/28/00 15:44:40	710.0000	-0.066	30.489

MW10


0.371
0.251
0.130
0.010
−0.111
−0.232
−0.352
Meters H2O
31.098
30.746
30.394
30.042
29.690
29.338
28.987
Inches Hg
0
122
243
365
487
608
730
Time (Minutes)
[1] – Probe #1
[0] – Barometric

.n-Situ Inc. Hermit 3000

Report generated: 10/30/01 19:42:41
Report from file: G:\National Park Service\Kenilworth_RIFS\Slug_Tidal_Test_Data\SN45438 2001-06-28 042316 062801-10 .bin
DataMgr Version 3.69

Serial number: 00045438
Firmware Version 7.10
Unit name: HERMIT 3000

Test name: 062801-10

Test defined on: 06/28/01 04:22:56
Test started on: 06/28/01 04:23:16
Test stopped on: 06/28/01 16:37:47
Test extracted on: 06/28/01 17:49:30

Data gathered using Linear testing
Time between data points: 5.0000 Minutes.
Number of data samples: 147

TOTAL DATA SAMPLES 147

Channel number [1]
Measurement type: Pressure
Channel name: Probe #1
Linearity: 0.0256000
Scale: 10.0121000
Offset: -0.1549000
Warmup: 50
Specific gravity: 1.000
Mode: TOC
User-defined reference: 0.000 Meters H2O
Referenced on: test start
Pressure head at reference: 2.360 Meters H2O

Channel number [0]
Measurement type: Barometric Pressure
Channel name: Barometric
Linearity: 0.0000000
Scale: 0.0000000
Offset: 0.0000000
Warmup: 50

Date	Time	ET (min)	Chan[1] Meters H2O	Chan[0] Inches Hg		
06/28/01	04:23:16	0.0000	0.000	30.039		
06/28/01	04:28:16	5.0000	0.003	30.062		
06/28/01	04:33:16	10.0000	0.005	30.080		
06/28/01	04:38:16	15.0000	0.006	30.078		
06/28/01	04:43:16	20.0000	0.007	30.078		
06/28/01	04:48:16	25.0000	0.007	30.074		
06/28/01	04:53:16	30.0000	0.007	30.072		
06/28/01	04:58:16	35.0000	0.007	30.072		
06/28/01	05:03:16	40.0000	0.007	30.074		
06/28/01	05:08:16	45.0000	0.007	30.072		
06/28/01	05:13:16	50.0000	0.007	30.072		
06/28/01	05:18:16	55.0000	0.007	30.068		
06/28/01	05:23:16	60.0000	0.007	30.066		
06/28/01	05:28:16	65.0000	0.006	30.064		
06/28/01	05:33:16	70.0000	0.006	30.064		

06/28/01 10:58:16	395.0000	0.017	30.062
06/28/01 11:03:16	400.0000	0.017	30.057
06/28/01 11:08:16	405.0000	0.016	30.057
06/28/01 11:13:16	410.0000	0.017	30.057
06/28/01 11:18:16	415.0000	0.017	30.057
06/28/01 11:23:16	420.0000	0.016	30.057
06/28/01 11:28:16	425.0000	0.017	30.060
06/28/01 11:33:16	430.0000	0.017	30.060
06/28/01 11:38:16	435.0000	0.017	30.060
06/28/01 11:43:16	440.0000	0.016	30.064
06/28/01 11:48:16	445.0000	0.017	30.064
06/28/01 11:53:16	450.0000	0.017	30.064
06/28/01 11:58:16	455.0000	0.018	30.064
06/28/01 12:03:16	460.0000	0.018	30.060
06/28/01 12:08:16	465.0000	0.017	30.062
06/28/01 12:13:16	470.0000	0.017	30.060
06/28/01 12:18:16	475.0000	0.017	30.062
06/28/01 12:23:16	480.0000	0.016	30.060
06/28/01 12:28:16	485.0000	0.016	30.062
06/28/01 12:33:16	490.0000	0.016	30.060
06/28/01 12:38:16	495.0000	0.015	30.062
06/28/01 12:43:16	500.0000	0.017	30.057
06/28/01 12:48:16	505.0000	0.015	30.057
06/28/01 12:53:16	510.0000	0.015	30.055
06/28/01 12:58:16	515.0000	0.015	30.055
06/28/01 13:03:16	520.0000	0.015	30.051
06/28/01 13:08:16	525.0000	0.015	30.049
06/28/01 13:13:16	530.0000	0.015	30.053
06/28/01 13:18:16	535.0000	0.015	30.049
06/28/01 13:23:16	540.0000	0.015	30.049
06/28/01 13:28:16	545.0000	0.015	30.049
06/28/01 13:33:16	550.0000	0.014	30.047
06/28/01 13:38:16	555.0000	0.014	30.049
06/28/01 13:43:16	560.0000	0.014	30.049
06/28/01 13:48:16	565.0000	0.013	30.049
06/28/01 13:53:16	570.0000	0.014	30.053
06/28/01 13:58:16	575.0000	0.014	30.051
06/28/01 14:03:16	580.0000	0.014	30.051
06/28/01 14:08:16	585.0000	0.014	30.051
06/28/01 14:13:16	590.0000	0.014	30.053
06/28/01 14:18:16	595.0000	0.015	30.055
06/28/01 14:23:16	600.0000	0.015	30.055
06/28/01 14:28:16	605.0000	0.015	30.053
06/28/01 14:33:16	610.0000	0.016	30.053
06/28/01 14:38:16	615.0000	0.016	30.051
06/28/01 14:43:16	620.0000	0.016	30.047
06/28/01 14:48:16	625.0000	0.016	30.045
06/28/01 14:53:16	630.0000	0.016	30.045
06/28/01 14:58:16	635.0000	0.016	30.039
06/28/01 15:03:16	640.0000	0.016	30.039
06/28/01 15:08:16	645.0000	0.016	30.037
06/28/01 15:13:16	650.0000	0.016	30.033
06/28/01 15:18:16	655.0000	0.017	30.033
06/28/01 15:23:16	660.0000	0.017	30.029
06/28/01 15:28:16	665.0000	0.017	30.027
06/28/01 15:33:16	670.0000	0.017	30.025
06/28/01 15:38:16	675.0000	0.018	30.021
06/28/01 15:43:16	680.0000	0.018	30.021
06/28/01 15:48:16	685.0000	0.018	30.019
06/28/01 15:53:16	690.0000	0.018	30.017
06/28/01 15:58:16	695.0000	0.018	30.015
06/28/01 16:03:16	700.0000	0.018	30.013
06/28/01 16:08:16	705.0000	0.019	30.013
06/28/01 16:13:16	710.0000	0.019	30.009

Washington, D.C.
Tide Predictions (High and Low Waters) June, 2001
NOAA, National Ocean Service

Daylight Saving Time

Day	Time	Ht.	Time	Ht.	Time	Ht.	Time	Ht.
1 F	449am H	3.3	1157am L	0.2	515pm H	3.1		
2 Sa	1211am L	0.2	544am H	3.4	1256pm L	0.2	613pm H	3.1
3 Su	103am L	0.2	636am H	3.5	152pm L	0.1	706pm H	3.0
4 M	153am L	0.2	725am H	3.6	244pm L	0.0	757pm H	3.0
5 Tu	241am L	0.2	811am H	3.6	334pm L	0.0	845pm H	3.0
6 W	327am L	0.3	855am H	3.6	421pm L	0.1	931pm H	3.0
7 Th	411am L	0.3	938am H	3.5	505pm L	0.2	1016pm H	2.9
8 F	453am L	0.4	1020am H	3.4	547pm L	0.3	1100pm H	2.9
9 Sa	533am L	0.5	1101am H	3.2	626pm L	0.4	1143pm H	2.9
10 Su	613am L	0.6	1143am H	3.1	704pm L	0.4		
11 M	1227am H	2.8	653am L	0.6	1226pm H	3.0	740pm L	0.5
12 Tu	111am H	2.8	737am L	0.7	112pm H	2.9	815pm L	0.5
13 W	158am H	2.8	827am L	0.7	203pm H	2.8	854pm L	0.5
14 Th	247am H	2.8	922am L	0.7	258pm H	2.8	937pm L	0.5
15 F	337am H	2.9	1024am L	0.7	355pm H	2.7	1024pm L	0.5
16 Sa	426am H	3.0	1127am L	0.7	452pm H	2.7	1115pm L	0.5
17 Su	514am H	3.1	1228pm L	0.6	546pm H	2.7		
18 M	1208am L	0.4	601am H	3.2	126pm L	0.5	637pm H	2.7
19 Tu	103am L	0.4	646am H	3.4	220pm L	0.3	727pm H	2.8
20 W	158am L	0.4	732am H	3.5	311pm L	0.2	815pm H	2.8
21 Th	253am L	0.4	819am H	3.5	402pm L	0.1	903pm H	2.9
22 F	347am L	0.3	907am H	3.6	451pm L	0.1	952pm H	3.0
23 Sa	442am L	0.3	957am H	3.5	540pm L	0.1	1042pm H	3.0
24 Su	538am L	0.3	1050am H	3.5	629pm L	0.0	1134pm H	3.1
25 M	635am L	0.3	1145am H	3.4	719pm L	0.1		
26 Tu	1230am H	3.1	734am L	0.3	1245pm H	3.3	810pm L	0.1
27 W	128am H	3.1	834am L	0.3	147pm H	3.1	902pm L	0.1
28 Th	229am H	3.2	936am L	0.3	252pm H	3.0	955pm L	0.1
29 F	329am H	3.3	1038am L	0.3	356pm H	3.0	1049pm L	0.1
30 Sa	427am H	3.3	1139am L	0.2	456pm H	2.9	1143pm L	0.2

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G Human Health Calculations

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Table G-1
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
KENILWORTH PARK SOUTH LANDFILL SITE

Scenario Timeframe: Current
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: On Site

CAS Number	Chemical	(1) Minimum Concentration Detected	Minimum Qualifier	(1) Maximum Concentration Detected	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Contract Required Quantitation Limit	(2) Concentration Used for Screening	(3) Background/ Reference Value	(4) Screening Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	(5) Rationale for Contaminant Deletion or Selection
7429-90-5	Aluminum	6,990		10,700		mg/kg	SU-NE-2	4/4	40	10,700	11,000	7800 n	N/A	N/A	NO	BKG
7440-36-0	Antimony	0.478	J	1.14		mg/kg	SU-NE-3	3/4	12	1	1.2	3.1 n	N/A	N/A	NO	BSL
7440-38-2	Arsenic	0.84		16		mg/kg	(1998) SS-19	54/54	2	16	12.4	0.43 c	N/A	N/A	YES	ASL
7440-39-3	Barium	17		860		mg/kg	(1998) SS-21	54/54	40	860	285	1600 n	N/A	N/A	NO	ASL
7440-41-7	Beryllium	0.63		0.884		mg/kg	SU-NE-1	4/4	1	1	1.6	16 n	N/A	N/A	NO	BSL
7440-43-9	Cadmium	0.284	J	8.73		mg/kg	SU-NE-3	46/54	1	9	4.3	7.8 n	N/A	N/A	YES	ASL
7440-70-2	Calcium	4,080		12,100		mg/kg	SU-NE-2	4/4	1000	12,100	2600	----	N/A	N/A	NO	NUT
7440-47-3	Chromium	7.96		394		mg/kg	SU-NE-3	54/54	2	394	43	12000 n	N/A	N/A	NO	BSL
7440-48-4	Cobalt	7.59		14.3		mg/kg	SU-NE-2	4/4	10	14	29	160 n	N/A	N/A	NO	BSL
7440-50-8	Copper	28.8		406		mg/kg	SU-NE-3	4/4	5	406	43	310 n	N/A	N/A	YES	ASL
7439-89-6	Iron	16,400		21,700		mg/kg	SU-NE-3	4/4	20	21,700	54000	5500 n	N/A	N/A	NO	BKG
7439-92-1	Lead	7.51		940		mg/kg	(1998) SS-21	54/54	0.6	940	189	400 (6)	N/A	N/A	YES	ASL
7439-95-4	Magnesium	1,620		6,960		mg/kg	SU-NE-2	4/4	1000	6,960	1800	----	N/A	N/A	NO	NUT
7439-96-5	Manganese	258		486		mg/kg	SU-NE-2	4/4	3	486	640	1100 n	N/A	N/A	NO	BSL
7439-97-6	Mercury	0.034		7.77		mg/kg	SS-28	43	0.1	8	2.7	2.3 n	N/A	N/A	YES	ASL
7440-02-0	Nickel	21		39		mg/kg	SU-NE-2	4/4	8	39	27	160 n	N/A	N/A	NO	BSL
7440-09-7	Potassium	464		1,810		mg/kg	SU-NE-2	4/4	1000	1,810	1400	----	N/A	N/A	NO	NUT
7782-49-2	Selenium	1.3		3.75		mg/kg	SU-NE-2	20/54	1	4	1.7	39 n	N/A	N/A	NO	BSL
7440-22-4	Silver	3.43		79.3		mg/kg	SU-NE-3	15/54	2	79	2.7	39 n	N/A	N/A	YES	ASL
7440-23-5	Sodium	50.9	J	97.7	J	mg/kg	SU-NE-3	4/4	1000	98	89	----	N/A	N/A	NO	NUT
7440-62-2	Vanadium	46.2		105		mg/kg	SU-NE-3	4/4	10	105	60	7.8 n	N/A	N/A	YES	ASL
7440-66-5	Zinc	63.7		831		mg/kg	SU-NE-3	4/4	4	831	290	2300 n	N/A	N/A	NO	BSL
11097-69-1	Aroclor 1254	742		3,160		µg/kg	SU-NE-3	3/4	3.3	3,160	79.5	160 c	N/A	N/A	YES	ASL
11096-82-5	Aroclor 1260	119		2,510		µg/kg	SU-NE-3	4/4	3.3	2,510	610	320 c	N/A	N/A	YES	ASL
83-32-9	Acenaphthene	46	J	42,600		µg/kg	SU-NE-3	28/54	330	42,600	308	470000 n	N/A	N/A	NO	BSL
208-96-8	Acenaphthylene	45	J	6,500	J	µg/kg	(1998) SS-16	2/54	330	6,500	210	470000 ne	N/A	N/A	NO	BSL
120-12-7	Anthracene	3.36	J	26,000		µg/kg	(1998) SS-16	44/54	330	26,000	200	2300000 n	N/A	N/A	NO	BSL
56-55-3	Benz[a]anthracene	8.57	J	29,000		µg/kg	(1998) SS-16	50/54	330	29,000	860	220 c	N/A	N/A	YES	ASL
50-32-8	Benzo[a]pyrene	11	J	20,000	J	µg/kg	(1998) SS-16	51/54	330	20,000	900	22 c	N/A	N/A	YES	ASL
205-99-2	Benzo[b]fluoranthene	9.44	J	13,000	J	µg/kg	(1998) SS-16	52/54	330	13,000	820	220 c	N/A	N/A	YES	ASL
191-24-2	Benzo[g,h,i]perylene	7.48	J	4,200		µg/kg	(1998) SS-20	43/54	330	4,200	460	----	N/A	N/A	NO	NTX
207-08-9	Benzo[k]fluoranthene	9.38	J	21,000	J	µg/kg	(1998) SS-16	50/54	330	21,000	900	2200 c	N/A	N/A	YES	ASL
218-01-9	Chrysene	11.6	J	25,000		µg/kg	(1998) SS-16	52/54	330	25,000	930	22000 c	N/A	N/A	YES	ASL
53-70-3	Dibenz[a,h]anthracene	63.8	J	1,470		µg/kg	SS-22	10/54	330	1,470	140	22 c	N/A	N/A	YES	ASL
206-44-0	Fluoranthene	22.1	J	72,000		µg/kg	(1998) SS-16	52/54	330	72,000	1300	310000 n	N/A	N/A	NO	BSL
86-73-7	Fluorene	6.78	J	15,000		µg/kg	(1998) SS-16	22/54	330	15,000	37	310000 n	N/A	N/A	NO	BSL
193-39-5	Indeno[1,2,3-cd]pyrene	4.3	J	7,600	J	µg/kg	(1998) SS-16	45/54	330	7,600	370	220 c	N/A	N/A	YES	ASL
91-57-6	2-Methylnaphthalene	38	J	17,600		µg/kg	SS-7	11/54	330	17,600	248	310000 n	N/A	N/A	NO	BSL
91-20-3	Naphthalene	38	J	1,600		µg/kg	(1998) SS-16	8/54	330	1,600	35	160000 n	N/A	N/A	NO	BSL
85-01-8	Phenanthrene	4.34	J	80,000		µg/kg	(1998) SS-16	52/54	330	80,000	660	230000 ne	N/A	N/A	NO	BSL
129-00-0	Pyrene	38	J	57,000		µg/kg	(1998) SS-16	47/54	330	57,000	1700	230000 n	N/A	N/A	NO	BSL
106-47-8	4-Chloroaniline	56	J	260	J	µg/kg	(1998) SS-22	2/27	330	260	NT	5500000 n	N/A	N/A	NO	BSL
117-81-7	Bis(2-ethylhexyl)phthalate	46	J	2,000		µg/kg	(1998) SS-16	15/27	330	2,000	NT	46000 c	N/A	N/A	NO	BSL
85-68-7	Butyl benzyl phthalate	41	J	260	J	µg/kg	(1998) SS-20	6	330	260	NT	1600000 n	N/A	N/A	NO	BSL
117-84-0	Di-n-octylphthalate	80	J	80	J	µg/kg	(1998) SS-17	1/27	330	80	NT	160000 n	N/A	N/A	NO	BSL
108-95-2	Phenol	120	J	120	J	µg/kg	(1998) SS-16	1/27	330	120	NT	23000000 n	N/A	N/A	NO	BSL
95-48-7	2-Methylphenol	64	J	64	J	µg/kg	(1998) SS-16	1/27	330	64	NT	390000 n	N/A	N/A	NO	BSL
106-44-5	4-Methylphenol	200	J	200	J	µg/kg	(1998) SS-16	1/27	330	200	NT	39000 n	N/A	N/A	NO	BSL
105-67-9	2,4-Dimethylphenol	64	J	64	J	µg/kg	(1998) SS-16	1/27	330	64	NT	160000 n	N/A	N/A	NO	BSL
132-64-9	Dibenzofuran	48	J	9,800	J	µg/kg	(1998) SS-16	11/27	330	9800	NT	----	N/A	N/A	NO	NTX

(1) Minimum/maximum detected concentration.
(2) Maximum concentration used as the screening value.
(3) Concentrations shown are maximums reported in background samples (SS-29, SS-30, SS-32, SS-33, SS-34, SU-BK-1 through SU-BK-9, and SS-01 through SS-17.)
(4) Risk-Based Concentrations for Residential Soil (EPA 2006), adjusted for noncancer effects to HI of 0.1.
(5) Rationale Codes Selection Reason: Frequent Detection (FD)
Above Screening Levels (ASL)
Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)
(6) Recommended screening value for lead in residential soil (EPA 1994c)

Definitions: N/A = Not Applicable
ND = Not detected
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
B = For organic compound, also detected in an associated blank
B = For inorganic analyte, reported value is below Contract Required Detection Limit.
J = Estimated Value
H = Analytical bias is high
L = Analytical Bias is low
P = For pesticides, variance between columns is > 25%; lower value is reported.
c = Carcinogenic
n = Non-Carcinogenic

Table G-2
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
KENILWORTH PARK SOUTH LANDFILL SITE

Scenario Timeframe: Current
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: On Site

CAS Number	Chemical	(1) Minimum Concentration Detected	Minimum Qualifier	(1) Maximum Concentration Detected	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Contract Required Quantitation Limit	(2) Concentration Used for Screening	(3) Background/ Reference Value	(4) Screening Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	(5) Rationale for Contaminant Deletion or Selection
7429-90-5	Aluminum	1,900		13,000		mg/kg	SED-13	12/12	40	13,000	1,600	7800 n	N/A	N/A	YES	ASL
7440-36-0	Antimony	1.9		4.4		mg/kg	SED-3	10/12	12	4	1.4	3.1 n	N/A	N/A	YES	ASL
7440-38-2	Arsenic	1.4		12		mg/kg	SED-3	21/21	2	12	6.58	0.43 c	N/A	N/A	YES	ASL
7440-39-3	Barium	35		480		mg/kg	SD-2	21/21	40	480	108	1600 n	N/A	N/A	NO	BSL
7440-41-7	Beryllium	0.66		1.4		mg/kg	SED-10	5/12	1	1	ND	16 n	N/A	N/A	NO	BSL
7440-43-9	Cadmium	0.83		27		mg/kg	SED-3	20/21	1	27	1	7.8 n	N/A	N/A	YES	ASL
7440-70-2	Calcium	2,200		5,200		mg/kg	SED-3	12/12	1000	5,200	2,200	----	N/A	N/A	NO	NUT
7440-47-3	Chromium	13		89.0		mg/kg	SD-2	21/21	2	89	62.5	12000 n	N/A	N/A	NO	BSL
7440-48-4	Cobalt	4.9		17		mg/kg	SED-11	11/12	10	17	6.4	160 n	N/A	N/A	NO	BSL
7440-50-8	Copper	20		110		mg/kg	SED-10	12/12	5	110	17	310 n	N/A	N/A	NO	BSL
7439-89-6	Iron	9,600		32,000		mg/kg	SED-13	12/12	20	32,000	17,000	5500 n	N/A	N/A	YES	ASL
7439-92-1	Lead	31		520		mg/kg	SD-2	21/21	0.6	520	81.3	400 (6)	N/A	N/A	YES	ASL
7439-95-4	Magnesium	1,300		4,800		mg/kg	SED-13	12/12	1000	4,800	1,500	----	N/A	N/A	NO	NUT
7439-96-5	Manganese	55		970		mg/kg	SED-11	12/12	3	970	120	160 n	N/A	N/A	YES	ASL
7439-97-6	Mercury	0.045		1.8		mg/kg	SD-4	20/21	0.1	2	0.245	2.3 n	N/A	N/A	NO	BSL
7440-02-0	Nickel	15		52		mg/kg	SED-10	12/12	8	52	93	160 n	N/A	N/A	NO	BSL
7440-09-7	Potassium	310		11,000		mg/kg	SED-9	12/12	1000	11,000	330	----	N/A	N/A	NO	NUT
7782-49-2	Selenium	0		0		mg/kg		0	1	0	ND	39 n	N/A	N/A	NO	BSL
7440-22-4	Silver	1.6		7.6		mg/kg	SD-2	4/21	2	8	ND	39 n	N/A	N/A	NO	BSL
7440-23-5	Sodium	330		330		mg/kg	SED-10	1/12	1000	330	ND	----	N/A	N/A	NO	NUT
7440-62-2	Vanadium	17		85		mg/kg	SED-10	12/12	10	85	22	7.8 n	N/A	N/A	YES	ASL
7440-66-5	Zinc	83		560		mg/kg	SED-3	12/12	4	560	110	2300 n	N/A	N/A	NO	BSL
53469-21-9	Aroclor 1242	29		250		µg/kg	SED-3	14/16	3.3	250	68	320 n	N/A	N/A	NO	BSL
11097-69-1	Aroclor 1254	68.5		250		µg/kg	SED-3	15/16	3.3	250	278	160 c	N/A	N/A	YES	ASL
11096-82-5	Aroclor 1260	36		250		µg/kg	SED-3	15/16	3.3	250	194	320 c	N/A	N/A	NO	BSL
309-00-2	Aldrin	4.3	J	35		µg/kg	SED-10	5/12	1.7	35	ND	38 c	N/A	N/A	NO	BSL
57-74-9	alpha-Chlordane	3.5	J	58		µg/kg	SED-3	12/12	3.3	58	7.2	1800 c	N/A	N/A	NO	BSL
57-74-9	gamma-Chlordane	1.3	J	72		µg/kg	SED-3	12/12	3.3	72	7.6	1800 c	N/A	N/A	NO	BSL
72-54-8	4,4'-DDD	4	J	41	J	µg/kg	SED-3	10/12	3.3	41	7.5	2700 c	N/A	N/A	NO	BSL
72-55-9	4,4'-DDE	3.3	J	15	J	µg/kg	SED-3	11/12	3.3	15	14	1900 c	N/A	N/A	NO	BSL
50-29-3	4,4'-DDT	5.1	J	14	J	µg/kg	SED-3	6/12	3.3	14	16	1900 c	N/A	N/A	NO	BSL
60-57-1	Dieldrin	2.8	J	4	J	µg/kg	SED-5	2/12	1.7	4	ND	40 c	N/A	N/A	NO	BSL
72-20-8	Endrin	14	J	14	J	µg/kg	SED-10	1/12	3.3	14	ND	2300 n	N/A	N/A	NO	BSL
1024-57-3	Heptachlor epoxide	8	J	18	J	µg/kg	SED-10	4/12	1.7	18	ND	70 c	N/A	N/A	NO	BSL
72-43-5	Methoxychlor	24	J	55	J	µg/kg	SED-3	6/12	17	55	ND	39000 n	N/A	N/A	NO	BSL
83-32-9	Acenaphthene	49	J	180	J	µg/kg	SED-4	5/21	330	180	ND	470000 n	N/A	N/A	NO	BSL
208-96-8	Acenaphthylene	51	J	150	J	µg/kg	SED-14	2/21	330	150	ND	470000 ne	N/A	N/A	NO	BSL
120-12-7	Anthracene	30	J	360	J	µg/kg	SED-4	13/13	330	360	181	2300000 n	N/A	N/A	NO	BSL
56-55-3	Benz[a]anthracene	98	J	920		µg/kg	SED-14	21/21	330	920	603	220 c	N/A	N/A	YES	ASL
50-32-8	Benzo[a]pyrene	129	J	930		µg/kg	SED-4	21/21	330	930	1,030	22 c	N/A	N/A	YES	ASL
205-99-2	Benzo[b]fluoranthene	193	J	1,000		µg/kg	SED-8	21/21	330	1,000	1,470	220 c	N/A	N/A	YES	ASL
191-24-2	Benzo[g,h,i]perylene	76	J	750		µg/kg	SED-8	18/21	330	750	445	----	N/A	N/A	NO	NTX
207-08-9	Benzo[k]fluoranthene	119	J	1,100		µg/kg	SED-4	21/21	330	1,100	1,320	2200 c	N/A	N/A	NO	BSL
218-01-9	Chrysene	163	J	1,200		µg/kg	SED-8	21/21	330	1,200	1,060	22000 c	N/A	N/A	NO	BSL
53-70-3	Dibenz[a,h]anthracene	47	J	240	J	µg/kg	SED-14	6/21	330	240	ND	22 c	N/A	N/A	YES	ASL
206-44-0	Fluoranthene	305	J	2,000		µg/kg	SED-8	21/21	330	2,000	2,150	310000 n	N/A	N/A	NO	BSL
86-73-7	Fluorene	51	J	180	J	µg/kg	SED-4	5/21	330	180	ND	310000 n	N/A	N/A	NO	BSL
193-39-5	Indeno[1,2,3-cd]pyrene	36	J	1,500		µg/kg	SED-8	17/21	330	1,500	671	220 c	N/A	N/A	YES	ASL
91-57-6	2-Methylnaphthalene	51	J	110	J	µg/kg	SED-4	4/21	330	110	ND	310000 n	N/A	N/A	NO	BSL
91-20-3	Naphthalene	54	J	200	J	µg/kg	SED-4	3/21	330	200	ND	160000 n	N/A	N/A	NO	BSL
85-01-8	Phenanthrene	89	J	1,900		µg/kg	SED-4	21/21	330	1,900	643	230000 ne	N/A	N/A	NO	BSL
129-00-0	Pyrene	296	J	2,800		µg/kg	SED-4	21/21	330	2,800	1,920	230000 n	N/A	N/A	NO	BSL
65-85-0	Benzoic acid	190	J	1,100		µg/kg	SED-7	3/17	330	1,100	ND	3100000 n	N/A	N/A	NO	BSL
100-51-6	Benzyl alcohol	49	J	49	J	µg/kg	SED-5	1/187	330	49	ND	39000000 n	N/A	N/A	NO	BSL
117-81-7	Bis(2-ethylhexyl)phthalate	47	J	3,400		µg/kg	SED-8	14/17	330	3,400	ND	46000 c	N/A	N/A	NO	BSL
85-68-7	Butyl benzyl phthalate	76	J	190	J	µg/kg	SD-1	4/17	330	190	ND	1600000 n	N/A	N/A	NO	BSL
117-84-0	Di-n-octylphthalate	160	J	160	J	µg/kg	SED-2	1/17	330	160	ND	160000 n	N/A	N/A	NO	BSL
106-44-5	4-Methylphenol	56		640		µg/kg	SED-7	2/17	330	640	ND	39000 n	N/A	N/A	NO	BSL
132-64-9	Dibenzofuran	49		130		µg/kg	SED-4	4/17	330	130	ND	---- n	N/A	N/A	NO	NTX
67-64-1	Acetone	5.4	J	92		µg/kg	SED-7	8/12	10	92	6.7	70000 n	N/A	N/A	NO	BSL
78-93-3	2-Butanone	2.4	J	35		µg/kg	SED-9	5/12	10	35	ND	4700000 n	N/A	N/A	NO	BSL
108-88-3	Toluene	3.3	J	3.5	J	µg/kg	SED-9	3/12	10	3.5	ND	6300000 n	N/A	N/A	NO	BSL

(1) Minimum/maximum detected concentration.
(2) Maximum concentration used as the screening value.
(3) Concentrations shown are maximums reported in background samples (SMP-A, SMP-B, SED-1, SED-12, and SU-BK-10)
(4) Risk-Based Concentrations for Residential Soil (EPA 2006), adjusted for noncancer effects to HI of 0.1.
(5) Rationale Codes Selection Reason: Frequent Detection (FD)
Above Screening Levels (ASL)
Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)
(6) Recommended screening value for lead in residential soil (EPA 1994c)

Definitions:
N/A = Not Applicable
ND = Not detected
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
B = For organic compound, also detected in an associated blank
B = For inorganic analyte, reported value is below Contract Required Detection Limit.
J = Estimated Value
H = Analytical bias is high
L = Analytical Bias is low
P = For pesticides, variance between columns is > 25%; lower value is reported.
c = Carcinogenic
n = Non-Carcinogenic

Table G-3
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
KENILWORTH PARK SOUTH LANDFILL SITE

Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil
Exposure Point: On Site

CAS Number	Chemical	Minimum (1) Concentration Detected	Minimum Qualifier	Maximum (1) Concentration Detected	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Required Quantitation Limit	Concentration (2) Used for Screening	Background/ (3) Reference Value	Screening (4) Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
7429-90-5	Aluminum	2100		31,800		mg/kg	SS-AR-4	36/36	40	31,800	11,000	7800 n	N/A	N/A	YES	ASL
7440-36-0	Antimony	0.591	J	62.3		mg/kg	SS-WA-3	30/36	12	62.3	1.2	3.1 n	N/A	N/A	YES	ASL
7440-38-2	Arsenic	1.2		43		mg/kg	BH14	40/44	2	43	12.4	0.43 c	N/A	N/A	YES	ASL
7440-39-3	Barium	30		5000		mg/kg	SS-WA-3	44/44	40	5000	285	1600 n	N/A	N/A	YES	ASL
7440-41-7	Beryllium	0.2	J	1.95		mg/kg	SS-NE-1	23/36	1	1.95	1.6	16 n	N/A	N/A	NO	BSL
7440-43-9	Cadmium	0.252	J	190		mg/kg	GS-5	37/44	1	190	4.3	7.8 n	N/A	N/A	YES	ASL
7440-70-2	Calcium	770		45800		mg/kg	SS-WA-1	36/36	1000	45800	2600	----	N/A	N/A	NO	NUT
7440-47-3	Chromium	9.7		295		mg/kg	SS-WA-3	44/44	2	295	43	12000 n	N/A	N/A	NO	BSL
7440-48-4	Cobalt	2.9		22		mg/kg	SS-WA-3	31/36	10	22	29	160 n	N/A	N/A	NO	BSL
7440-50-8	Copper	15		2400		mg/kg	MW-10	36/36	5	2400	43	310 n	N/A	N/A	YES	ASL
7439-89-6	Iron	10000		286000		mg/kg	SS-WA-3	36/36	20	286000	54000	5500 n	N/A	N/A	YES	ASL
7439-92-1	Lead	2.8		10500		mg/kg	SS-WA-3	44/44	0.6	10500	189	400 (6)	N/A	N/A	YES	ASL
7439-95-4	Magnesium	300		8800		mg/kg	BH1	36/36	1000	8800	1800	----	N/A	N/A	NO	NUT
7439-96-5	Manganese	120		1570		mg/kg	SS-WA-3	36/36	3	1570	640	160 n	N/A	N/A	YES	ASL
7439-97-6	Mercury	0.04		3.7		mg/kg	GS-8	34/44	0.1	3.7	2.7	2.3 n	N/A	N/A	YES	ASL
7440-02-0	Nickel	9.2		232		mg/kg	SS-AR-4	35/36	8	232	27	160 n	N/A	N/A	YES	ASL
7440-09-7	Potassium	350		4800		mg/kg	BH1	36/36	1000	4800	1400	----	N/A	N/A	NO	NUT
7782-49-2	Selenium	1.84		87		mg/kg	BH1	18/44	1	87	1.7	39 n	N/A	N/A	YES	ASL
7440-22-4	Silver	0.599	J	110		mg/kg	GS-6	14/44	2	110	2.7	39 n	N/A	N/A	YES	ASL
7440-23-5	Sodium	64.6	J	8480		mg/kg	SS-AR-4	27/36	1000	8480	89	----	N/A	N/A	NO	NUT
7440-28-0	Thallium	1.34		9.07		mg/kg	SS-AR-6	5/36	1	9.07	ND	0.55 n	N/A	N/A	YES	ASL
7440-62-2	Vanadium	16		662		mg/kg	SS-AR-4	36/36	10	662	60	7.8 n	N/A	N/A	YES	ASL
7440-66-5	Zinc	9.3		10000		mg/kg	BH16	36/36	4	10000	290	2300 n	N/A	N/A	YES	ASL
53469-21-9	Aroclor 1242	43		2000		µg/kg	BH17	12/36	3.3	2000	ND	320 n	N/A	N/A	YES	ASL
11097-69-1	Aroclor 1254	7	J	220		µg/kg	BH12	21/36	3.3	220	79.5	160 c	N/A	N/A	YES	ASL
11096-82-5	Aroclor 1260	7	J	110	J	µg/kg	BH16	23/36	3.3	110	610	320 c	N/A	N/A	NO	BSL
309-00-2	Aldrin	3.4		3.4		µg/kg	BH11	1/21	1.7	3.4	ND	38 c	N/A	N/A	NO	BSL
57-74-9	alpha-Chlordane	0.6	J	9.3	J	µg/kg	BH17	8/21	3.3	9.3	ND	1800 c	N/A	N/A	NO	BSL
57-74-9	gamma-Chlordane	0.45	J	40		µg/kg	BH17	8/21	3.3	40	ND	1800 c	N/A	N/A	NO	BSL
72-54-8	4,4'-DDD	0.55	J	85		µg/kg	BH12	7/21	3.3	85	ND	2700 c	N/A	N/A	NO	BSL
72-55-9	4,4'-DDE	0.81	J	39		µg/kg	BH16	7/21	3.3	39	33	1900 c	N/A	N/A	NO	BSL
50-29-3	4,4'-DDT	0.94	J	18		µg/kg	BH14	6/21	3.3	18	120	1900 c	N/A	N/A	NO	BSL
60-57-1	Dieldrin	0.49	J	1.4	J	µg/kg	MW11	3/21	1.7	1.4	7.8	40 c	N/A	N/A	NO	BSL
72-20-8	Endrin	1.2	J	1.2	J	µg/kg	BH11	1/21	3.3	1.2	ND	2300 n	N/A	N/A	NO	BSL
76-44-8	Heptachlor	1.1	J	1.1		µg/kg	BH11	1/21	1.7	1.1	ND	140 c	N/A	N/A	NO	BSL
1024-57-3	Heptachlor epoxide	3.6		19		µg/kg	BH14	4/21	1.7	19	ND	70 c	N/A	N/A	NO	BSL
72-43-5	Methoxychlor	7.9	J	24	J	µg/kg	BH14	4/21	17	24	ND	39000 n	N/A	N/A	NO	BSL
83-32-9	Acenaphthene	51	J	16200		µg/kg	SS-WA-2	18/44	330	16200	308	470000 n	N/A	N/A	NO	BSL
208-96-8	Acenaphthylene	30.7	J	7400	J	µg/kg	MW10	16/44	330	7400	210	470000 ne	N/A	N/A	NO	BSL
120-12-7	Anthracene	1.23	J	9600		µg/kg	MW10	30/44	330	9600	200	2300000 n	N/A	N/A	NO	BSL
56-55-3	Benz[a]anthracene	5.95	J	8800		µg/kg	BH10	39/44/44	330	8800	860	220 c	N/A	N/A	YES	ASL
50-32-8	Benzo[a]pyrene	8.82	J	7900		µg/kg	BH10	38/44	330	7900	900	22 c	N/A	N/A	YES	ASL
205-99-2	Benzo[b]fluoranthene	9.25	J	6370		µg/kg	SS-WA-2	39/44	330	6370	820	220 c	N/A	N/A	YES	ASL
191-24-2	Benzo[g,h,i]perylene	5.39	J	7300		µg/kg	BH10	35/44	330	7300	460	----	N/A	N/A	NO	NTX
207-08-9	Benzo[k]fluoranthene	5.61	J	5700		µg/kg	BH10	37/44	330	5700	900	2200 c	N/A	N/A	YES	ASL
218-01-9	Chrysene	6.24	J	8300		µg/kg	BH10	39/44	330	8300	930	22000 c	N/A	N/A	NO	BSL
53-70-3	Dibenz[a,h]anthracene	27.1	J	2500	J	µg/kg	BH10	18/44	330	2500	140	22 c	N/A	N/A	YES	ASL
206-44-0	Fluoranthene	24.3	J	24400		µg/kg	SS-WA-2	41/44	330	24400	1300	310000 n	N/A	N/A	NO	BSL
86-73-7	Fluorene	13.7	J	9900		µg/kg	MW10	19/44	330	9900	37	310000 n	N/A	N/A	NO	BSL
193-39-5	Indeno[1,2,3-cd]pyrene	4.9	J	13000		µg/kg	BH10	36/44	330	13000	370	220 c	N/A	N/A	YES	ASL
91-57-6	2-Methylnaphthalene	42	J	13000		µg/kg	MW10	10/44	330	13000	248	310000 n	N/A	N/A	NO	BSL
91-20-3	Naphthalene	42	J	38000		µg/kg	MW10	13/44	330	38000	35	160000 n	N/A	N/A	NO	BSL
85-01-8	Phenanthrene	6.06	J	31000		µg/kg	MW10	39/44	330	31000	660	230000 ne	N/A	N/A	NO	BSL
129-00-0	Pyrene	19.1	J	19900		µg/kg	SS-WA-2	40/44	330	19900	1700	230000 n	N/A	N/A	NO	BSL
65-85-0	Benzoic acid	130	J	430	J	µg/kg	GS-6	3/44	330	200	NT	3100000 n	N/A	N/A	NO	BSL
117-81-7	Bis(2-ethylhexyl)phthalate	44	J	11000		µg/kg	BH16	17/44	330	11000	NT	46000 c	N/A	N/A	NO	BSL
85-68-7	Butyl benzyl phthalate	51	J	340	J	µg/kg	BH16	7/44	330	340	NT	1600000 n	N/A	N/A	NO	BSL
84-74-2	Di-n-butyl phthalate	54	J	230	J	µg/kg	BH16	4/44	330	230	NT	780000 n	N/A	N/A	NO	BSL
84-66-2	Diethyl phthalate	61	J	550		µg/kg	BH14	5/44	330	550	NT	6300000 n	N/A	N/A	NO	BSL
131-11-3	Dimethyl phthalate	71	J	93	J	µg/kg	BH14	2/44	330	93	NT	78000000 n	N/A	N/A	NO	BSL
117-84-0	Di-n-octylphthalate	44	J	44	J	µg/kg	MW9	1/44	330	44	NT	160000 n	N/A	N/A	NO	BSL
541-73-1	1,3-Dichlorobenzene	97	J	97	J	µg/kg	GS-6	1/44	330	97	NT	230000 n	N/A	N/A	NO	BSL
106-46-7	1,4-Dichlorobenzene	56	J	56	J	µg/kg	BH16	1/44	330	56	NT	27000 c	N/A	N/A	NO	BSL
120-82-1	1,2,4-Trichlorobenzene	1200		1200		µg/kg	GS-6	1/44	330	1200	NT	78000 n	N/A	N/A	NO	BSL
108-95-2	Phenol	53	J	180	J	µg/kg	BH16	5/44	330	180	NT	4700000 n	N/A	N/A	NO	BSL
106-44-5	4-Methylphenol	46	J	1600		µg/kg	BH16	5/44	330	1600	NT	39000 n	N/A	N/A	NO	BSL
105-67-9	2,4-Dimethylphenol	64	J	120	J	µg/kg	MW10	2/44	330	120	NT	160000 n	N/A	N/A	NO	BSL
132-64-9	Dibenzofuran	42	J	7100	J	µg/kg	MW10	9/44	330	7100	NT	---- n	N/A	N/A	NO	NTX
67-64-1	Acetone	6.6	J	24		µg/kg	BH18	11/21	10	24	NT	780000 n	N/A	N/A	NO	BSL
71-43-2	Benzene	1.8	J	74		µg/kg	MW10	2/21	10	74	NT	12000 c	N/A	N/A	NO	BSL
78-93-3	2-Butanone	9.3	J	31		µg/kg	BH2	3/21	10	31	NT	4700000 n	N/A	N/A	NO	BSL
75-15-0	Carbon disulfide	1.2	J	1.2	J	µg/kg	BH8	1/21	10	1.2	NT	780000 n	N/A	N/A	NO	BSL
78-87-5	1,2-Dichloropropane	6.7	J	6.7		µg/kg	BH12	1/21	10	6.7	NT	9400 c	N/A	N/A	NO	BSL
100-41-4	Ethylbenzene	280		280		µg/kg	MW10	1/21	10	280	NT	780000 n	N/A	N/A	NO	BSL
591-78-6	2-Hexanone	67	J	67		µg/kg	MW10	1/21	10	67	NT	310000 n	N/A	N/A	NO	BSL
75-09-2	Methylene chloride	1.2	J	1.2	J	µg/kg	MW10	2/21	10	1.2	NT	85000 c	N/A	N/A	NO	BSL
108-88-3	Toluene	180		180		µg/kg	MW10	1/21	10	180	NT	6.30E+06 n	N/A	N/A	NO	BSL
1330-20-7	Xylenes	2200		2200		µg/kg	MW10	1/21	10	2200	NT	16000000 n	N/A	N/A	NO	BSL
79-34-5	1, 1, 2, 2-Tetrachloroethane	1.4	J	1.4	J	µg/kg	BH12	1/21	10	1.4	NT	3200 c	N/A	N/A	NO	BSL
127-18-4	Tetrachloroethlene	5.6	J	5.6	J	µg/kg	BH17	1/21	10	5.6	NT	1200 c	N/A	N/A	NO	BSL
79-01-6	Trichloroethene	1.4	J	1.9	J	µg/kg	BH11	6/21	10	1.9	NT	1600 c	N/A	N/A	NO	BSL
75-01-4	Vinyl chloride	2.6	J	4.4	J	µg/kg	BH8	3/21	10	4.4	NT	90 c	N/A	N/A	NO	BSL

(1) Minimum/maximum detected concentration.
(2) Maximum concentration used as the screening value.
(3) Concentrations shown are maximums reported in background samples (SS-29, SS-30, SS-32, SS-33, SS-34, SU-BK-1 through SU-BK-9, and SS-01 through SS-17.)
(4) Risk-Based Concentrations for Residential Soil (EPA 2006), adjusted for noncancer effects to HI of 0.1.
(5) Rationale Codes Selection Reason: Frequent Detection (FD)
Above Screening Levels (ASL)
Deletion Reason: Infrequent Detection (IFD)
Background Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)
(6) Recommended screening value for lead in residential soil (EPA 1994c)

Definitions: N/A = Not Applicable
ND = Not detected
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
B = For organic compound, also detected in an associated blank
B = For inorganic analyte, reported value is below Contract Required Detection Limit.
J = Estimated Value
H = Analytical bias is high
L = Analytical Bias is low
P = For pesticides, variance between columns is > 25%; lower value is reported.
c = Carcinogenic
n = Non-Carcinogenic

TABLE G-4
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
KENILWORTH PARK SOUTH LANDFILL SITE

Scenario Timeframe: Current/Future
Medium: Surface Soil/Sediment
Exposure Medium: Surface Soil/Sediment
Exposure Point: On Site

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Aluminum	mg/kg	7460	8694	13000		mg/kg	8694	95% UCL-N	95% UCL-N < Max	N/A	N/A	N/A
Antimony	mg/kg	2.00	2.52	4.4		mg/kg	2.52	95% UCL-N	95% UCL-N < Max	N/A	N/A	N/A
Arsenic	mg/kg	4.93	N/A	16		mg/kg	5.98	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Barium	mg/kg	131	N/A	860		mg/kg	150	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Cadmium	mg/kg	2.63	N/A	27		mg/kg	3.60	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Copper	mg/kg	97.6	N/A	406		mg/kg	160	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Iron	mg/kg	21731	24527	32000		mg/kg	24527	95% UCL-N	95% UCL-N < Max	N/A	N/A	N/A
Lead	mg/kg	106	N/A	910		mg/kg	141	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Manganese	mg/kg	360	N/A	970		mg/kg	555	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Mercury, soluble salts	mg/kg	0.839	N/A	7.77		mg/kg	1.43	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Nickel, soluble salts	mg/kg	29	N/A	52		mg/kg	34.9	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Selenium	mg/kg	1.07	N/A	3.72		mg/kg	1.22	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Silver	mg/kg	6.65	N/A	79.3		mg/kg	6.86	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Thallium	mg/kg	0.653	N/A	ND		mg/kg	0.789	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Vanadium	mg/kg	52	62.5	105		mg/kg	62.5	95% UCL-N	95% UCL-N < Max	N/A	N/A	N/A
Zinc	mg/kg	290	N/A	831		mg/kg	464	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Aroclor 1242	mg/kg	0.104	N/A	0.354		mg/kg	0.201	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Aroclor 1254	mg/kg	0.418	N/A	3.16		mg/kg	1.15	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Aroclor 1260	mg/kg	0.342	N/A	2.51		mg/kg	0.784	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Benz[a]anthracene	mg/kg	0.839	N/A	29		mg/kg	0.925	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Benzo[a]pyrene	mg/kg	0.847	N/A	20	J	mg/kg	0.996	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Benzo[b]fluoranthene	mg/kg	0.778	N/A	13	J	mg/kg	0.982	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Benzo[k]fluoranthene	mg/kg	0.840	N/A	21	J	mg/kg	0.925	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Chyrsene	mg/kg	0.880	N/A	25		mg/kg	1.020	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Dibenz[a,h]anthracene	mg/kg	0.335	N/A	1.47		mg/kg	0.430	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Indeno[1,2,3-cd]pyrene	mg/kg	0.391	N/A	7.6	J	mg/kg	0.521	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A

Key: CT = Central Tendency; EPC = Exposure point concentration; Max = Maximum detected; N/A = Not applicable; RME = Reasonable maximum exposure; UCL = Upper confidence limit.

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

TABLE G-5
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
KENILWORTH PARK SOUTH LANDFILL SITE

Scenario Timeframe: Future
Medium: Surface Soil / Sediment / Subsurface Soil
Exposure Medium: Surface Soil / Sediment / Subsurface Soil
Exposure Point: On Site

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Aluminum	mg/kg	8549	N/A	31800		mg/kg	10028	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Antimony	mg/kg	6.68	N/A	62.3		mg/kg	9.66	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Arsenic	mg/kg	5.77	N/A	43		mg/kg	6.71	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Barium	mg/kg	244	N/A	5000		mg/kg	243	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Cadmium	mg/kg	4.81	N/A	190		mg/kg	4.7	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Copper	mg/kg	222	N/A	2400		mg/kg	327	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Iron	mg/kg	41713	N/A	286000		mg/kg	48856	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Lead	mg/kg	424	N/A	10500		mg/kg	484	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Manganese	mg/kg	436	N/A	1570		mg/kg	531	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Mercury, soluble salts	mg/kg	0.628	N/A	7.77		mg/kg	0.776	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Nickel, soluble salts	mg/kg	36.1	N/A	232		mg/kg	49.5	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Selenium	mg/kg	2.74	N/A	87		mg/kg	2.36	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Silver	mg/kg	6.05	N/A	102.5		mg/kg	5.15	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Thallium	mg/kg	1.08	N/A	8.085		mg/kg	1.14	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Vanadium	mg/kg	60	N/A	662		mg/kg	64.2	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Zinc	mg/kg	645	N/A	10000		mg/kg	971	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Aroclor 1242	mg/kg	0.167	N/A	2		mg/kg	0.238	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Aroclor 1254	mg/kg	0.197	N/A	3.16		mg/kg	0.27	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Aroclor 1260	mg/kg	0.156	N/A	2.51		mg/kg	0.189	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Benz[a]anthracene	mg/kg	0.811	N/A	29		mg/kg	0.831	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Benzo[a]pyrene	mg/kg	0.807	N/A	20	J	mg/kg	0.889	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Benzo[b]fluoranthene	mg/kg	0.730	N/A	13	J	mg/kg	0.891	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Benzo[k]fluoranthene	mg/kg	0.736	N/A	21	J	mg/kg	0.797	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Chrysene	mg/kg	0.850	N/A	25		mg/kg	0.95	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Dibenz[a,h]anthracene	mg/kg	0.322	N/A	2.5	J	mg/kg	0.4	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A
Indeno[1,2,3-cd]pyrene	mg/kg	0.476	N/A	13		mg/kg	0.505	95% UCL-T	95% UCL-T < Max	N/A	N/A	N/A

Key: CT = Central Tendency; EPC = Exposure point concentration; Max = Maximum detected; N/A = Not applicable; RME = Reasonable maximum exposure; UCL = Upper confidence limit.

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

Table G-6

VALUES USED FOR DAILY INTAKE CALCULATIONS

KENILWORTH PARK SOUTH LANDFILL SITE

Scenario Timeframe: Current/Future
Medium: Surface Soil / Sediment
Exposure Medium: Surface Soil / Sediment
Exposure Point: On-Site
Receptor Population: Site Visitor
Receptor Age: Child/Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical Concentration in Soil	mg/kg	See Table G-4	EPA 1992b	--	--	CS x CF3 x EF x FS x [(IR-Sc x EDc/BWc)+(IR-Sa x EDa/BWa)] /AT
	CF3	Conversion Factor 3	kg/mg	1.00E-06	--	--	--	
	EF	Exposure Frequency	days/yr	350	EPA 1991a	--	--	
	FS	Fraction Soil Contact at Site	unitless	0.5	(1)	--	--	
	IR-Sc	Soil Ingestion Rate, Child	mg/day	200	EPA 1991a	--	--	
	IR-Sa	Soil Ingestion Rate, Adult	mg/day	100	EPA 1991a	--	--	
	EDc	Exposure Duration, Child	yrs	6	EPA 1991a	--	--	
	EDa	Exposure Duration, Adult	yrs	24	EPA 1991a	--	--	
	BWc	Body Weight, Child	kg	15	EPA 1991a	--	--	
	BWa	Body Weight, Adult	kg	70	EPA 1991a	--	--	
	AT-C	Averaging Time (Cancer)	days	25550	EPA 1989	--	--	
Dermal	CS	Chemical Concentration in Soil	mg/kg	See Table G-4	EPA 1992b	--	--	CS x CF3 x DABS x EF x FS x [(SAc x SSAFc x EDc/BWc)+(SAa x SSAFa x EDa/BWa)] /AT
	CF3	Conversion Factor 3	kg/mg	1.00E-06	--	--	--	
	DABS	Dermal Absorption Factor	unitless	Chemical-specific (2)	EPA 2000, 1995	--	--	
	EF	Exposure Frequency	days/yr	350	EPA 1991a	--	--	
	FS	Fraction Soil Contact at Site	unitless	0.5	(1)	--	--	
	SAc	Skin Surface Area, Child	cm^2/day	2,800	EPA 2000	--	--	
	SAa	Skin Surface Area, Adult	cm^2/day	5,700	EPA 2000	--	--	
	SSAFc	Adherence Factor, Child	mg/cm^2	0.2	EPA 2000	--	--	
	SSAFa	Adherence Factor, Adult	mg/cm^2	0.07	EPA 2000	--	--	
	EDc	Exposure Duration, Child	yrs	6	EPA 1991a	--	--	
	EDa	Exposure Duration, Adult	yrs	24	EPA 1991a	--	--	
	BWc	Body Weight, Child	kg	15	EPA 1991a	--	--	
	BWa	Body Weight, Adult	kg	70	EPA 1991a	--	--	
	AT-C	Averaging Time (Cancer)	days	25550	EPA 1989	--	--	

(1) Professional judgment.

(2) DABS values used: 0.03 for Arsenic, 0.001 for Cadmium and other inorganics, 0.14 for PCBs, 0.13 for PAHs.

Sources:

EPA 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual, Part A OERR. EPA/540/1-89/002.

EPA 1991a: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

EPA 1992b: Supplemental Guidance to RAGS: Calculating the Concentration Term, Publication 9285.7-081.

EPA 1995a: Assessing Dermal Exposure from Soil. EPA Region 3. EPA/903-K-95-003

EPA 1997a: Exposure Factors Handbook. ORD. EPA/600/P-95/002F

EPA 2000b: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim Guidance.

Table G-7

VALUES USED FOR DAILY INTAKE CALCULATIONS

KENILWORTH PARK SOUTH LANDFILL SITE

Scenario Timeframe: Current/Future
Medium: Surface Soil / Sediment
Exposure Medium: Airborne Particulates
Exposure Point: On-Site
Receptor Population: Site Visitor
Receptor Age: Child/Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Dust Inhalation	CS	Chemical Concentration in Soil	mg/kg	See Table G-4	EPA 1992b	--	--	CS x (1/PEF) x EF x [(INc x ETc x EDc/BWc)+(INa x ETa x EDa/BWa)] /AT
	PEF	Particulate Emissions Factor	m^3/kg	3.38E+08	EPA 1996, (1)	--	--	
	EF	Exposure Frequency	days/yr	350	EPA 1991a	--	--	
	INc	Inhalation Rate, Child	m^3/hr	1.2	EPA 1997a	--	--	
	INa	Inhalation Rate, Adult	m^3/hr	1.6	EPA 1997a	--	--	
	ETc	Exposure Time, Child	hrs	2	(2)	--	--	
	ETa	Exposure Time, Adult	hrs	2	(2)	--	--	
	EDc	Exposure Duration, Child	yrs	6	EPA 1991a	--	--	
	EDa	Exposure Duration, Adult	yrs	24	EPA 1991a	--	--	
	BWc	Body Weight, Child	kg	15	EPA 1991a	--	--	
	BWa	Body Weight, Adult	kg	70	EPA 1991a	--	--	
	AT-C	Averaging Time (Cancer)	days	25550	EPA 1989	--	--	

(1) See Table G-12 for PEF calculation. Equations and input values were obtained from EPA 1996, Equation 5 and Exhibit 11.

(2) Professional judgment.

Sources:

EPA 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual, Part A OERR. EPA/540/1-89/002.

EPA 1991a: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

EPA 1992b: Supplemental Guidance to RAGS: Calculating the Concentration Term, Publication 9285.7-081.

EPA 1996: Soil Screening Guidance: Users Guide, Publication 9355.4-23.

EPA 1997a: Exposure Factors Handbook. ORD. EPA/600/P-95/002F

Table G-8a

VALUES USED FOR DAILY INTAKE CALCULATIONS

KENILWORTH PARK SOUTH LANDFILL SITE

Scenario Timeframe: Current/Future
Medium: Surface Soil / Sediment
Exposure Medium: Surface Soil / Sediment
Exposure Point: On-Site
Receptor Population: Site Visitor
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical Concentration in Soil	mg/kg	See Table G-4	EPA 1992b	--	--	CS x CF3 x EF x FS x IR-Sa x EDa/(BWa x AT)
	CF3	Conversion Factor 3	kg/mg	1.00E-06	--	--	--	
	EF	Exposure Frequency	days/yr	350	EPA 1991a, 2002b	--	--	
	FS	Fraction Soil Contact at Site	unitless	0.5	(1)	--	--	
	IR-Sa	Soil Ingestion Rate, Adult	mg/day	100	EPA 1991a, 2002b	--	--	
	EDa	Exposure Duration, Adult	yrs	30	EPA 1991a	--	--	
	BWa	Body Weight, Adult	kg	70	EPA 1991a, 2002b	--	--	
	AT-N	Averaging Time (Noncancer)	days	10950	EPA 1989	--	--	
Dermal	CS	Chemical Concentration in Soil	mg/kg	See Table G-4	EPA 1992b	--	--	CS x CF3 x DABS x EF x FS x SAa x SSAFa x EDa/(BWa x AT)
	CF3	Conversion Factor 3	kg/mg	1.00E-06	--	--	--	
	DABS	Dermal Absorption Factor	unitless	Chemical-specific (2)	EPA 2004	--	--	
	EF	Exposure Frequency	days/yr	350	EPA 1991a, 2002b	--	--	
	FS	Fraction Soil Contact at Site	unitless	0.5	(1)	--	--	
	SAa	Skin Surface Area, Adult	cm^2/day	5,700	EPA 2002b, 2003	--	--	
	SSAFa	Adherence Factor, Adult	mg/cm^2	0.07	EPA 2003, 2004	--	--	
	EDa	Exposure Duration, Adult	yrs	30	EPA 1991a	--	--	
	BWa	Body Weight, Adult	kg	70	EPA 1991a, 2002b	--	--	
	AT-N	Averaging Time (Noncancer)	days	10950	EPA 1989	--	--	

(1) Professional judgment.

(2) DABS values used: 0.03 for Arsenic, 0.001 for Cadmium, 0.01 other inorganics, 0.14 for PCBs, 0.13 for PAHs, 0.04 for Chlordane, 0.1 for Dieldrin.

Sources:

EPA 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual, Part A OERR. EPA/540/1-89/002.

EPA 1991a: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

EPA 1992b: Supplemental Guidance to RAGS: Calculating the Concentration Term, Publication 9285.7-081.

EPA 1997a: Exposure Factors Handbook. ORD. EPA/600/P-95/002F

EPA 2002b: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER. 9355.4-24

EPA 2003: Updated Dermal Exposure Assessment Guidance. EPA Region 3.

EPA 2004: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual (Part E, Supplemental Guidance for Dermal Risk Assessment).

Table G-8b

VALUES USED FOR DAILY INTAKE CALCULATIONS

KENILWORTH PARK SOUTH LANDFILL SITE

Scenario Timeframe: Current/Future
Medium: Surface Soil / Sediment
Exposure Medium: Surface Soil / Sediment
Exposure Point: On-Site
Receptor Population: Site Visitor
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical Concentration in Soil	mg/kg	See Table G-4	EPA 1992b	--	--	CS x CF3 x EF x FS x IR-Sc x EDc / (BWc x AT)
	CF3	Conversion Factor 3	kg/mg	1.00E-06	--	--	--	
	EF	Exposure Frequency	days/yr	350	EPA 1991a	--	--	
	FS	Fraction Soil Contact at Site	unitless	0.5	(1)	--	--	
	IR-Sc	Soil Ingestion Rate, Child	mg/day	200	EPA 1991a	--	--	
	EDc	Exposure Duration, Child	yrs	6	EPA 1991a	--	--	
	BWc	Body Weight, Child	kg	15	EPA 1991a	--	--	
	AT-N	Averaging Time (Noncancer)	days	2190	EPA 1989	--	--	
Dermal	CS	Chemical Concentration in Soil	mg/kg	See Table G-4	EPA 1992b	--	--	CS x CF3 x DABS x EF x FS x SAc x SSAFc x EDc / (BWc x AT)
	CF3	Conversion Factor 3	kg/mg	1.00E-06	--	--	--	
	DABS	Dermal Absorption Factor	unitless	Chemical-specific (2)	EPA 2000, 1995	--	--	
	EF	Exposure Frequency	days/yr	350	EPA 1991a	--	--	
	FS	Fraction Soil Contact at Site	unitless	0.5	(1)	--	--	
	SAc	Skin Surface Area, Child	cm^2/day	2,800	EPA 2000	--	--	
	SSAFc	Adherence Factor, Child	mg/cm^2	0.2	EPA 2000	--	--	
	EDc	Exposure Duration, Child	yrs	6	EPA 1991a	--	--	
	BWc	Body Weight, Child	kg	15	EPA 1991a	--	--	
	AT-N	Averaging Time (Noncancer)	days	2190	EPA 1989	--	--	

(1) Professional judgment.

(2) DABS values used: 0.03 for Arsenic, 0.001 for Cadmium and other inorganics, 0.14 for PCBs, 0.13 for PAHs.

Sources:

EPA 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual, Part A OERR. EPA/540/1-89/002.

EPA 1991a: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

EPA 1992b: Supplemental Guidance to RAGS: Calculating the Concentration Term, Publication 9285.7-081.

EPA 1995a: Assessing Dermal Exposure from Soil. EPA Region 3. EPA/903-K-95-003

EPA 1997a: Exposure Factors Handbook. ORD. EPA/600/P-95/002F

EPA 2000b: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim Guidance.

Table G-9a

VALUES USED FOR DAILY INTAKE CALCULATIONS

KENILWORTH PARK SOUTH LANDFILL SITE

Scenario Timeframe: Current/Future
Medium: Surface Soil / Sediment
Exposure Medium: Airborne Particulates
Exposure Point: On-Site
Receptor Population: Site Visitor
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Dust Inhalation	CS	Chemical Concentration in Soil	mg/kg	See Table G-4	EPA 1992b	--	--	CS x (1/PEF) x EF x INa x ETa x EDa/(BWa x AT)
	PEF	Particulate Emissions Factor	m^3/kg	3.38E+08	EPA 2002b, (1)	--	--	
	EF	Exposure Frequency	days/yr	350	EPA 1991a, 2002b	--	--	
	INa	Inhalation Rate, Adult	m^3/hr	1.6	EPA 1997a	--	--	
	ETa	Exposure Time, Adult	hrs	2	(2)	--	--	
	EDa	Exposure Duration, Adult	yrs	30	EPA 1991a	--	--	
	BWa	Body Weight, Adult	kg	70	EPA 1991a, 2002b	--	--	
	AT-N	Averaging Time (Noncancer)	days	10950	EPA 1989	--	--	

(1) See Table G-12 for PEF calculation. Equations and input values were obtained from EPA 1996, Equation 5 and Exhibit 11.

(2) Professional judgment.

Sources:

EPA 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual, Part A OERR. EPA/540/1-89/002.

EPA 1991a: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

EPA 1992b: Supplemental Guidance to RAGS: Calculating the Concentration Term, Publication 9285.7-081.

EPA 1996: Soil Screening Guidance: Users Guide. Publication 9355.4-23.

EPA 1997a: Exposure Factors Handbook. ORD. EPA/600/P-95/002F

Table G-9b

VALUES USED FOR DAILY INTAKE CALCULATIONS

KENILWORTH PARK SOUTH LANDFILL SITE

Scenario Timeframe: Current/Future
Medium: Surface Soil / Sediment
Exposure Medium: Airborne Particulates
Exposure Point: On-Site
Receptor Population: Site Visitor
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Dust Inhalation	CS	Chemical Concentration in Soil	mg/kg	See Table G-4	EPA 1992b	--	--	CS x (1/PEF) x EF x INc x ETc x EDc / (BWc x AT)
	PEF	Particulate Emissions Factor	m^3/kg	3.38E+08	EPA 1996, (1)	--	--	
	EF	Exposure Frequency	days/yr	350	EPA 1991a	--	--	
	INc	Inhalation Rate, Child	m^3/hr	1.2	EPA 1997a	--	--	
	ETc	Exposure Time, Child	hrs	2	(2)	--	--	
	EDc	Exposure Duration, Child	yrs	6	EPA 1991a	--	--	
	BWc	Body Weight, Child	kg	15	EPA 1991a	--	--	
	AT-N	Averaging Time (Noncancer)	days	2190	EPA 1989	--	--	

(1) See Table G-12 for PEF calculation. Equations and input values were obtained from EPA 1996, Equation 5 and Exhibit 11.

(2) Professional judgment.

Sources:

EPA 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual, Part A OERR. EPA/540/1-89/002.

EPA 1991a: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

EPA 1992b: Supplemental Guidance to RAGS: Calculation the Concentration Term, Publication 9285.7-81.

EPA 1996: Soil Screening Guidance: Users Guide, Publication 9355.4-23.

EPA 1997a: Exposure Factors Handbook. ORD. EPA/600/P-95/002F

TableG-10

VALUES USED FOR DAILY INTAKE CALCULATIONS

KENILWORTH PARK SOUTH LANDFILL SITE

Scenario Timeframe: Future
Medium: Surface Soil / Sediment / Subsurface Soil
Exposure Medium: Surface Soil / Sediment / Subsurface Soil
Exposure Point: On-Site
Receptor Population: Utility/Construction Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical Concentration in Soil	mg/kg	See Table G-5	EPA 1992b	--	--	CS x CF3 x EF x IR-Sa x EDa / (BWa x AT)
	CF3	Conversion Factor 3	kg/mg	1.00E-06	--	--	--	
	EF	Exposure Frequency	days/yr	260	(1)	--	--	
	IR-S	Soil Ingestion Rate	mg/day	480	EPA 1991a	--	--	
	ED	Exposure Duration	yrs	0.173	(1)	--	--	
	BW	Body Weight	kg	70	EPA 1991a	--	--	
	AT-C	Averaging Time (Cancer)	days	25550	EPA 1989	--	--	
	AT-N	Averaging Time (Noncancer)	days	63	EPA 1989, (1)	--	--	
Dermal	CS	Chemical Concentration in Soil	mg/kg	See Table G-5	EPA 1992b	--	--	CS x CF3 x DABS x EF x SA a x SSAFa x ED a/ (BWa x AT)
	CF3	Conversion Factor 3	kg/mg	1.00E-06	--	--	--	
	DABS	Dermal Absorption Factor	unitless	Chemical-specific (2)	EPA 2000, 1995	--	--	
	EF	Exposure Frequency	days/yr	260	(1)	--	--	
	SA	Skin Surface Area	cm^2/day	3,300	EPA 2000	--	--	
	SSAF	Adherence Factor	mg/cm^2	0.9	EPA 2000	--	--	
	ED	Exposure Duration	yrs	0.173	(1)	--	--	
	BW	Body Weight	kg	70	EPA 1991a	--	--	
	AT-C	Averaging Time (Cancer)	days	25550	EPA 1989	--	--	
	AT-N	Averaging Time (Noncancer)	days	63	EPA 1989, (1)	--	--	

(1) Professional judgment. Excavation activities were assumed to occur during 5-day work week over a period of 9 weeks (i. e. for 45 out of 63 days). Over a year, 5 days/week is equal to 260 days/year.

(2) DABS values used: 0.03 for Arsenic, 0.001 for Cadmium and other inorganics, 0.14 for PCBs, 0.13 for PAHs.

Sources:

EPA 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual, Part A OERR. EPA/540/1-89/002.

EPA 1991a: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

EPA 1992b: Supplemental Guidance to RAGS: Calculating the Concentration Term, Publication 9285.7-081.

EPA 1995a: Assessing Dermal Exposure from Soil. EPA Region 3. EPA/903-K-95-003

EPA 1997a: Exposure Factors Handbook. ORD. EPA/600/P-95/002F

EPA 2000b: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim Guidance.

Table G-11

VALUES USED FOR DAILY INTAKE CALCULATIONS

KENILWORTH PARK SOUTH LANDFILL SITE

Scenario Timeframe: Future
Medium: Surface Soil / Sediment / Subsurface Soil
Exposure Medium: Airborne Particulates
Exposure Point: On-Site
Receptor Population: Utility/Construction Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Dust Inhalation	CS	Chemical Concentration in Soil	mg/kg	See Table G-5	EPA 1992b	--	--	CS x (1/PEFc) x EF x IN x ED / (BW x AT)
	PEFc	Particulate Emissions Factor for Construction	m^3/kg	2.17E+06	EPA 1995, 1991b (1)	--	--	
	EF	Exposure Frequency	days/yr	260	(2)	--	--	
	IN	Inhalation Rate	m^3/day	20	EPA 1997a	--	--	
	ED	Exposure Duration	yrs	0.173	(2)	--	--	
	BW	Body Weight	kg	70	EPA 1991a	--	--	
	AT-C	Averaging Time (Cancer)	days	25550	EPA 1989	--	--	
	AT-N	Averaging Time (Noncancer)	days	63	EPA 1989, (1)	--	--	

(1) See Table G-13 for construction PEF calculation, using particulate emission rate from construction site measurements from EPA 1995 along with box model equations and input values obtained from EPA 1991b.

(2) Professional judgment. Excavation activities were assumed to occur during 5-day work week over a period of 9 weeks (i. e. for 45 out of 63 days). Over a year, 5 days/week is equal to 260 days/year.

Sources:

EPA 1989: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual, Part A OERR. EPA/540/1-89/002.

EPA 1991a: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

EPA 1991b: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Exposure Manual (Part B, Development of Risk-Based Preliminary Remediation Goals) Interim. Publication 9285.7-01B.

EPA 1992b: Supplemental Guidance to RAGS: Calculating the Concentration Term, Publication 9285.7-081.

EPA 1995b: Compilation of Air Pollutant Emission Factors - Volume I: Stationary Point and Area Sources (AP-42).

EPA 1997a: Exposure Factors Handbook. ORD. EPA/600/P-95/002F

Table G-12

CALCULATION OF STANDARD PARTICULATE EMISSION FACTOR (PEF)

KENILWORTH PARK SOUTH LANDFILL SITE

Equation:

$$PEF = \frac{Q/C \times 3600\ s/hr}{0.036 \times (1-V) \times (Um/Ut)^3 \times F(x)}$$

Parameter Code	Parameter Definition	Value	Units	Source
PEF	Particulate Emission Factor	3.38E+08	m^3/kg	Calculated
Q/C	Inverse of mean concentration at center of 30-acre-square source (Philadelphia)	46.59	g/m^2-s per kg/m^3	EPA 1996
0.036	Respirable Fraction	0.036	g/m2-hr	EPA 1996
V	Fraction of Vegetative Cover	0	unitless	EPA 1996
Um	Mean Annual Wind Speed	4.69	m/s	EPA 1996
Ut	Equivalent Threshold of Wind Speed at 7 m	11.32	m/s	EPA 1996
F(x)	Function Dependent on Um/Ut	0.194	unitless	EPA 1996

Source: Soil Screening Guidance: Users Guide (EPA 1996), Equation 5 and Exhibit 11.

Table G-13

CALCULATION OF CONSTRUCTION PARTICULATE EMISSION FACTOR (PEFc)

KENILWORTH PARK SOUTH LANDFILL SITE

Equation:

$$PEFc = \frac{LS \times V \times DH \times 3600\ s/hr}{A} \times \frac{1000}{RPE}$$

where:

$$RPE = \frac{0.45 \times 1.2\ tons/acre\text{-}month \times 907{,}184\ g/ton}{4047\ acres/m2 \times 730\ hr/month}$$

Parameter Code	Parameter Definition	Value	Units	Source
PEFc	Particulate Emission Factor	2.17E+06	m^3/kg	EPA 1991, (1)
LS	Width of Contaminated Area	45	m	EPA 1991, (1)
V	Wind Speed in Mixing Zone	2.25	m/s	EPA 1991, (1)
DH	Diffusion Height	2	m	EPA 1991, (1)
A	Area of Contaminant Source	2025	m^2	EPA 1991, (1)
RPE	Respirable Particulate Emissions (a)	0.166	g/m^2-hr	EPA 1995 (2)

(1) Input values for Box Model variables (LS, V, DH, and A) are from PEF calculation shown in EPA's Risk Assessment Guidance for Superfund: Volume 1 - Human Health Evaluation Manual (Part B, Development of Risk-based Preliminary Remediation Goals) (EPA 1991a).

(2) RPE estimated from measured total suspended particulate (TSP) emission rates at heavy construction sites from EPA's Compilation of Air Pollutant Emission Factors - Volume I: Stationary Point and Area Sources (AP-42) (EPA 1995b) , conservatively assuming respirable dust to be 45% of TSP emissions:

TABLE G-14
NON-CANCER TOXICITY DATA--ORAL/DERMAL
KENILWORTH PARK SOUTH LANDFILL SITE

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Oral to Dermal Adjustment Factor [1]	Adjusted Dermal RfD[2]	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD:Target Organ	Dates of RfD Target Organ (MM/DD/YY)[3]
Inorganics										
Aluminum	Chronic	1.0E+00	(mg/kg-day)	0.1	1.0E-01	(mg/kg-day)	Offspring, nervous system	100	NCEA	6/20/1994
	Subchronic	1.0E+00	(mg/kg-day)	0.1	1.0E-01	(mg/kg-day)	Offspring, nervous system	100	NCEA (chronic)	6/20/1994
Antimony	Chronic	4.0E-04	(mg/kg-day)	0.15	6.0E-05	(mg/kg-day)	Whole body, blood	1000	IRIS	5/3/2006
	Subchronic	4.0E-04	(mg/kg-day)	0.15	6.0E-05	(mg/kg-day)	Whole body, blood	1000	HEAST	7/1/1997
Arsenic	Chronic	3.0E-04	(mg/kg-day)	1	3.0E-04	(mg/kg-day)	Skin	3	IRIS	5/3/2006
	Subchronic	3.0E-04	(mg/kg-day)	1	3.0E-04	(mg/kg-day)	Skin	3	HEAST	7/1/1997
Barium	Chronic	2.0E-01	(mg/kg-day)	0.07	1.4E-02	(mg/kg-day)	Cardiovascular system, kidney	3	IRIS	11/28/2006
	Subchronic	2.0E-01	(mg/kg-day)	0.07	1.4E-02	(mg/kg-day)	Cardiovascular system, kidney	3	IRIS	11/28/2006
Cadmium	Chronic	1.0E-03	(mg/kg-day)	0.025	2.5E-05	(mg/kg-day)	Kidneys	10	IRIS	5/3/2006
	Subchronic	1.0E-03	(mg/kg-day)	0.025	2.5E-05	(mg/kg-day)	Kidneys	10	IRIS (chronic)	5/3/2006
Copper	Chronic	3.7E-02	(mg/kg-day)	N/A	N/A	(mg/kg-day)	GI system	1	HEAST	7/1/1997
	Subchronic	3.7E-02	(mg/kg-day)	N/A	N/A	(mg/kg-day)	GI system	1	HEAST	7/1/1997
Iron	Chronic	3.0E-01	(mg/kg-day)	0.1	3.0E-02	(mg/kg-day)	Various organs	1	NCEA	1/5/1999
	Subchronic	3.0E-01	(mg/kg-day)	0.1	3.0E-02	(mg/kg-day)	Various organs	1	NCEA (chronic)	1/5/1999
Lead	N/A	N/A	(mg/kg-day)	1	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
Manganese	Chronic	1.4E-01	(mg/kg-day)	0.04	5.6E-03	(mg/kg-day)	Central nervous system	1	IRIS	5/3/2006
	Subchronic	1.4E-01	(mg/kg-day)	0.04	5.6E-03	(mg/kg-day)	Central nervous system	1	HEAST	7/1/1997
Mercury, soluble salts	Chronic	3.0E-04	(mg/kg-day)	0.07	2.1E-05	(mg/kg-day)	Immune system	1000	IRIS (4)	5/3/2006
	Subchronic	3.0E-04	(mg/kg-day)	0.07	2.1E-05	(mg/kg-day)	Immune system	1000	HEAST (4)	7/1/1997
Nickel, soluble salts	Chronic	2.0E-02	(mg/kg-day)	0.04	8.0E-04	(mg/kg-day)	Whole body, organs	300	IRIS	5/3/2006
	Subchronic	2.0E-02	(mg/kg-day)	0.04	8.0E-04	(mg/kg-day)	Whole body, major organs	300	HEAST	3/31/1993
Selenium	Chronic	5.0E-03	(mg/kg-day)	1	5.0E-03	(mg/kg-day)	Whole body	3	IRIS	5/3/2006
	Subchronic	5.0E-03	(mg/kg-day)	1	5.0E-03	(mg/kg-day)	Whole body	3	HEAST	7/1/1997
Silver	Chronic	5.0E-03	(mg/kg-day)	0.04	2.0E-04	(mg/kg-day)	Skin	3	IRIS	5/3/2006
	Subchronic	5.0E-03	(mg/kg-day)	0.04	2.0E-04	(mg/kg-day)	Skin	3	HEAST	7/1/1997
Thallium	Chronic	7.0E-05	(mg/kg-day)	1	7.0E-05	(mg/kg-day)	Liver, blood	3000	IRIS (5)	5/3/2006
	Subchronic	7.0E-04	(mg/kg-day)	1	7.0E-04	(mg/kg-day)	Liver, blood, hair	300	HEAST (5)	7/1/1997
Vanadium	Chronic	1.0E-03	(mg/kg-day)	0.026	2.6E-05	(mg/kg-day)	None reported	N/A	Reg 3	10/31/2006
	Subchronic	1.0E-03	(mg/kg-day)	0.026	2.6E-05	(mg/kg-day)	None reported	N/A	Reg 3	10/31/2006
Zinc	Chronic	3.0E-01	(mg/kg-day)	1	3.0E-01	(mg/kg-day)	Blood	3	IRIS	5/3/2006
	Subchronic	3.0E-01	(mg/kg-day)	1	3.0E-01	(mg/kg-day)	Blood	3	HEAST	7/1/1997
Polyychlorinated Biphenyls										
Aroclor 1242	Chronic	N/A	(mg/kg-day)	1	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
	Subchronic	N/A	(mg/kg-day)	1	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
Aroclor 1254	Chronic	2.0E-05	(mg/kg-day)	1	2.0E-05	(mg/kg-day)	Immune system, various	300	IRIS	9/1/2001
	Subchronic	5.0E-05	(mg/kg-day)	1	5.0E-05	(mg/kg-day)	Immune system	100	HEAST	7/1/1997
Aroclor 1260	Chronic	N/A	(mg/kg-day)	1	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
	Subchronic	N/A	(mg/kg-day)	1	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
Semivolatile Organic Chemicals										
Benz[a]anthracene	Chronic	N/A	(mg/kg-day)	1	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
	Subchronic	N/A	(mg/kg-day)	1	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
Benzo[a]pyrene	Chronic	N/A	(mg/kg-day)	1	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
	Subchronic	N/A	(mg/kg-day)	1	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
Benzo[b]fluoranthene	Chronic	N/A	(mg/kg-day)	1	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
	Subchronic	N/A	(mg/kg-day)	1	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
Benzo[k]fluoranthene	Chronic	N/A	(mg/kg-day)	1	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
	Subchronic	N/A	(mg/kg-day)	1	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
Chrysene	Chronic	N/A	(mg/kg-day)	1	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
	Subchronic	N/A	(mg/kg-day)	1	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
Dibenz[a,h]anthracene	Chronic	N/A	(mg/kg-day)	1	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
	Subchronic	N/A	(mg/kg-day)	1	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
Indeno[1,2,3-cd]pyrene	Chronic	N/A	(mg/kg-day)	1	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
	Subchronic	N/A	(mg/kg-day)	1	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A

IRIS = Integrated Risk Information System.
HEAST = Health Effects Assessment Summary Tables.
NCEA = National Center for Environmental Assessment.
N/A = Not Applicable or Not Available.
RfD = Reference Dose.

(1) Refer to Risk Assessment Guidance for Superfund, Part E (EPA 2004).
Values are based on current EPA recommendations (EPA 1995a, EPA 2003, EPA 2004)
(2) Dermal RfD = Oral RfD x Oral-to-dermal adjustment factor.
(3) For IRIS values, the date IRIS was searched.
For HEAST values, the date of HEAST.
For NCEA values, the date of the article provided by NCEA.
For Reg 3 values, the date of the RBC table.
(4) RfD of mercuric chloride used for mercury.
(5) RfD of thallium chloride, adjusted for molecular weight, used for thallium.

TABLE G-15
NON-CANCER TOXICITY DATA--INHALATION
KENILWORTH PARK SOUTH LANDFILL SITE

Chemical of Potential Concern	Chronic/ Subchronic	Value Inhalation RfC	Units	Adjusted Inhalation RfD (1)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfC:RfD: Target Organ	Dates of RfD Target Organ (MM/DD/YY)(2)
Inorganics									
Aluminum	Chronic	5.0E-03	mg/m^3	1.4E-03	(mg/kg-day)	Nervous system	300	NCEA	08/13/99
	Subchronic	5.0E-02	mg/m^3	1.4E-02	(mg/kg-day)	Nervous system	30	NCEA (10 x chronic)	08/13/99
Antimony	Chronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
	Subchronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
Arsenic	Chronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
	Subchronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
Barium	Chronic	5.0E-04	mg/m^3	1.4E-04	(mg/kg-day)	Fetus	1000	HEAST, t. 2	07/01/97
	Subchronic	5.0E-03	mg/m^3	1.4E-03	(mg/kg-day)	Fetus	100	HEAST, t. 2	07/01/97
Cadmium	Chronic	N/A	mg/m^3	5.7E-05	(mg/kg-day)	Kidneys	N/A	Reg 3	10/31/06
	Subchronic	N/A	mg/m^3	1.1E+01	(mg/kg-day)	Kidneys	N/A	Reg 3	10/31/06
Copper	Chronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
	Subchronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
Iron	Chronic	N/A	mg/m3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
	Subchronic	N/A	mg/m3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
Lead	N/A	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
Manganese	Chronic	5.0E-05	mg/m^3	1.4E-05	(mg/kg-day)	Nervous system	1000	IRIS	09/01/01
	Subchronic	5.0E-04	mg/m^3	1.4E-04	(mg/kg-day)	Nervous system	100	IRIS (10 x chronic)	09/01/01
Mercury, soluble salts	Chronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
	Subchronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
Nickel, soluble salts	Chronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
	Subchronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
Selenium	Chronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
	Subchronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
Silver	Chronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
	Subchronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
Thallium	Chronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
	Subchronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
Vanadium	Chronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
	Subchronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
Zinc	Chronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
	Subchronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
Polyychlorinated Biphenyls									
Aroclor 1242	Chronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
	Subchronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
Aroclor 1254	Chronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
	Subchronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
Aroclor 1260	Chronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
	Subchronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
Semivolatile Organic Chemicals									
Benz[a]anthracene	Chronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
	Subchronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
Benzo[a]pyrene	Chronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
	Subchronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
Benzo[b]fluoranthene	Chronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
	Subchronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
Benzo[k]fluoranthene	Chronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
	Subchronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
Chrysene	Chronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
	Subchronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
Dibenz[a,h]anthracene	Chronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
	Subchronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
Indeno[1,2,3-cd]pyrene	Chronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A
	Subchronic	N/A	mg/m^3	N/A	(mg/kg-day)	N/A	N/A	N/A	N/A

IRIS = Integrated Risk Information System.
HEAST = Health Effects Assessment Summary Tables.
NCEA = National Center for Environmental Assessment.
Reg 3 = EPA Region 3 Risk-Based Concentration (RBC) Table.
N/A = Not Applicable or Not Available.
RfC = Reference Concentration.
RfD = Reference dose.

(1) Inhalation RfD = (RfC x 20 m^3/day) / 70 kg
(2) For IRIS values, the date IRIS was searched.
For HEAST values, the date of HEAST.
For NCEA values, the date of the article provided by NCEA.
For Reg 3 values, the date of the RBC Table.
(3) RfD of mercuric chloride used for mercury.
(4) RfD of thallium chloride, adjusted for molecular weight, used for thallium.

TABLE G-16
CANCER TOXICITY DATA--ORAL/DERMAL
KENILWORTH PARK SOUTH LANDFILL SITE

Chemical of Potential Concern	Oral Cancer Slope Factor	Oral to Dermal Adjustment Factor	Adjusted Dermal Cancer Slope Factor (1)	Units	Weight of Evidence/ Cancer Guideline Description	Source	Date (2) (MM/DD/YY)
Inorganics							
Aluminum	N/A	0.01	N/A	$(mg/kg\text{-}day)^{-1}$	N/A	N/A	N/A
Antimony	N/A	0.15	N/A	$(mg/kg\text{-}day)^{-1}$	N/A	N/A	N/A
Arsenic	1.5	1	1.5	$(mg/kg\text{-}day)^{-1}$	A	IRIS	9/1/2001
Barium	N/A	0.07	N/A	$(mg/kg\text{-}day)^{-1}$	D	IRIS	9/1/2001
Cadmium	N/A	0.025	N/A	$(mg/kg\text{-}day)^{-1}$	B1	IRIS	9/1/2001
Copper	N/A	N/A	N/A	$(mg/kg\text{-}day)^{-1}$	D	IRIS	9/1/2001
Iron	N/A	0.01	N/A	$(mg/kg\text{-}day)^{-1}$	N/A	N/A	N/A
Lead	N/A	1	N/A	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	9/1/2001
Manganese	N/A	0.04	N/A	$(mg/kg\text{-}day)^{-1}$	D	IRIS	9/1/2001
Mercury, soluble salts	N/A	0.07	N/A	$(mg/kg\text{-}day)^{-1}$	C	IRIS	9/1/2001
Nickel, soluble salts	N/A	0.04	N/A	$(mg/kg\text{-}day)^{-1}$	N/A	N/A	N/A
Selenium	N/A	1	N/A	$(mg/kg\text{-}day)^{-1}$	D	IRIS	9/1/2001
Silver	N/A	0.04	N/A	$(mg/kg\text{-}day)^{-1}$	D	IRIS	9/1/2001
Thallium	N/A	1	N/A	$(mg/kg\text{-}day)^{-1}$	D	IRIS	9/1/2001
Vanadium	N/A	0.026	N/A	$(mg/kg\text{-}day)^{-1}$	N/A	N/A	N/A
Zinc	N/A	1	N/A	$(mg/kg\text{-}day)^{-1}$	D	IRIS	9/1/2001
Polychlorinated Biphenyls							
Aroclor 1242	2	1	2	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	9/1/2001
Aroclor 1254	2	1	2	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	9/1/2001
Aroclor 1260	2	1	2	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	9/1/2001
Semivolatile Organic Chemicals							
Benz[a]anthracene	0.73	1	0.73	$(mg/kg\text{-}day)^{-1}$	B2	NCEA	7/1/1993
Benzo[a]pyrene	7.3	1	7.3	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	9/1/2001
Benzo[b]fluoranthene	0.73	1	0.73	$(mg/kg\text{-}day)^{-1}$	B2	NCEA	7/1/1993
Benzo[k]fluoranthene	0.073	1	0.073	$(mg/kg\text{-}day)^{-1}$	B2	NCEA	7/1/1993
Chyrsene	0.0073	1	0.0073	$(mg/kg\text{-}day)^{-1}$	B2	NCEA	7/1/1993
Dibenz[a,h]anthracene	7.3	1	7.3	$(mg/kg\text{-}day)^{-1}$	B2	NCEA	7/1/1993
Indeno[1,2,3-cd]pyrene	0.73	1	0.73	$(mg/kg\text{-}day)^{-1}$	B2	NCEA	7/1/1993

IRIS = Integrated Risk Information System.
HEAST = Health Effects Assessment Summary Tables.
NCEA = National Center for Environmental Assessment.

N/A = Not Applicable or Not Available.
SF = Slope Factor

(1) Adjustment Factor applied to Unit Risk to calculate Inhalation Slope Factor
= 70kg x 1/20m3/day x 1000ug/mg
(2) For IRIS values, the date IRIS was searched.
For HEAST values, the date of HEAST.
For NCEA values, the date of article provided by NCEA.

EPA Group:
A-Human carcinogen
B1-Probable human carcinogen-indicates that limited human data are available.
B2-Probable human carcinogen-indicates sufficient evidence in animals and inadequate or no evidence in humans
C-Possible human carcinogen
D-Not classifiable as a human carcinogen
E-Evidence of noncarcinogenicity

Weight of Evidence:
Known/Likely
Cannot be Determined
Not Likely

TABLE G-17
CANCER TOXICITY DATA--Inhalation
KENILWORTH PARK SOUTH LANDFILL SITE

Chemical of Potential Concern	Unit Risk	Units	Adjustment (1)	Inhalation Cancer Slope Factor	Units	Weight of Evidence/Cancer Guideline Description	Source	Date (MM/DD/YY)
Inorganics								
Aluminum	N/A	$\mu g/m^3$	N/A	N/A	$(mg/kg\text{-}day)^{-1}$	N/A	N/A	N/A
Antimony	N/A	$\mu g/m^3$	N/A	N/A	$(mg/kg\text{-}day)^{-1}$	N/A	N/A	N/A
Arsenic	4.3E-03	$\mu g/m^3$	3500	15.0	$(mg/kg\text{-}day)^{-1}$	A	IRIS	9/1/2001
Barium	N/A	$\mu g/m^3$	N/A	N/A	$(mg/kg\text{-}day)^{-1}$	D	IRIS	9/1/2001
Cadmium	1.8E-03	$\mu g/m^3$	3500	6.3	$(mg/kg\text{-}day)^{-1}$	B1	IRIS	9/1/2001
Copper	N/A	$\mu g/m^3$	N/A	N/A	$(mg/kg\text{-}day)^{-1}$	D	IRIS	9/1/2001
Iron	N/A	$\mu g/m^3$	N/A	N/A	$(mg/kg\text{-}day)^{-1}$	N/A	N/A	N/A
Lead	N/A	$\mu g/m^3$	N/A	N/A	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	9/1/2001
Manganese	N/A	$\mu g/m^3$	N/A	N/A	$(mg/kg\text{-}day)^{-1}$	D	IRIS	9/1/2001
Mercury, soluble salts	N/A	$\mu g/m^3$	N/A	N/A	$(mg/kg\text{-}day)^{-1}$	C	IRIS	9/1/2001
Nickel, soluble salts	N/A	$\mu g/m^3$	N/A	N/A	$(mg/kg\text{-}day)^{-1}$	N/A	N/A	N/A
Selenium	N/A	$\mu g/m^3$	N/A	N/A	$(mg/kg\text{-}day)^{-1}$	D	IRIS	9/1/2001
Silver	N/A	$\mu g/m^3$	N/A	N/A	$(mg/kg\text{-}day)^{-1}$	D	IRIS	9/1/2001
Thallium	N/A	$\mu g/m^3$	N/A	N/A	$(mg/kg\text{-}day)^{-1}$	D	IRIS	9/1/2001
Vanadium	N/A	$\mu g/m^3$	N/A	N/A	$(mg/kg\text{-}day)^{-1}$	N/A	N/A	N/A
Zinc	N/A	$\mu g/m^3$	N/A	N/A	$(mg/kg\text{-}day)^{-1}$	D	IRIS	9/1/2001
Polychlorinated Biphenyls								
Aroclor 1242	N/A	$\mu g/m^3$	N/A	2	$(mg/kg\text{-}day)^{-1}$	B2	IRIS (oral)	9/1/2001
Aroclor 1254	N/A	$\mu g/m^3$	N/A	2	$(mg/kg\text{-}day)^{-1}$	B2	IRIS (oral)	9/1/2001
Aroclor 1260	N/A	$\mu g/m^3$	N/A	2	$(mg/kg\text{-}day)^{-1}$	B2	IRIS (oral)	9/1/2001
Semivolatile Organic Chemicals								
Benz[a]anthracene	N/A	$\mu g/m^3$	N/A	0.73	(mg/kg-day)-1	B2	NCEA (oral)	10/1/2004
Benzo[a]pyrene	N/A	$\mu g/m^3$	N/A	7.3	(mg/kg-day)-1	B2	IRIS (oral)	10/1/2004
Benzo[b]fluoranthene	N/A	$\mu g/m^3$	N/A	0.73	(mg/kg-day)-1	B2	NCEA (oral)	10/1/2004
Benzo[k]fluoranthene	N/A	$\mu g/m^3$	N/A	0.073	(mg/kg-day)-1	B2	NCEA (oral)	10/1/2004
Chyrsene	N/A	$\mu g/m^3$	N/A	0.0073	(mg/kg-day)-1	B2	NCEA (oral)	10/1/2004
Dibenz[a,h]anthracene	N/A	$\mu g/m^3$	N/A	7.3	(mg/kg-day)-1	B2	NCEA (oral)	10/1/2004
Indeno[1,2,3-cd]pyrene	N/A	$\mu g/m^3$	N/A	0.73	$(mg/kg\text{-}day)^{-1}$	B2	NCEA (oral)	10/1/2004

IRIS = Integrated Risk Information System.
HEAST = Health Effects Assessment Summary Tables.
NCEA = National Center for Environmental Assessment.
Reg 9 = EPA Region 9 Preliminary Remediation Goals (PRGs) Table.
N/A = Not Applicable or Not Available.
SF = Slope Factor.

(1) Adjustment Factor applied to Unit Risk to calculate Inhalation Slope Factor
= 70kg x 1/20m3/day x 1000ug/mg
(2) For IRIS values, the date IRIS was searched.
For HEAST values, the date of HEAST.
for NCEA values, the date of article provided by NCEA.
For Reg 9 values, the date of the PRG Table.

EPA Group:
A-Human carcinogen
B1-Probable human carcinogen-indicates that limited human data are available.
B2-Probable human carcinogen-indicates sufficient evidence in animals and inadequate or no evidence in humans
C-Possible human carcinogen
D-Not classifiable as a human carcinogen
E-Evidence of noncarcinogenicity

Weight of Evidence:
Known/Likely
Cannot be Determined
Not Likely

Table G-18
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
KENILWORTH PARK SOUTH LANDFILL SITE

Scenario Timeframe: Current/Future
Medium: Surface Soil / Sediment
Exposure Medium: Surface Soil / Sediment
Exposure Point: On-Site
Receptor Population: Site Visitor
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Chronic Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	8694	mg/kg	8694	mg/kg	M	5.95E-03	mg/kg-day	1.0E+00	mg/kg-day	N/A	N/A	6.0E-03
	Antimony	2.52	mg/kg	2.52	mg/kg	M	1.73E-06	mg/kg-day	4.0E-04	mg/kg-day	N/A	N/A	4.3E-03
	Arsenic	5.98	mg/kg	5.98	mg/kg	M	4.10E-06	mg/kg-day	3.0E-04	mg/kg-day	N/A	N/A	1.4E-02
	Barium	150	mg/kg	150	mg/kg	M	1.03E-04	mg/kg-day	2.0E-01	mg/kg-day	N/A	N/A	5.1E-04
	Cadmium	3.6	mg/kg	3.6	mg/kg	M	2.47E-06	mg/kg-day	1.0E-03	mg/kg-day	N/A	N/A	2.5E-03
	Copper	160	mg/kg	160	mg/kg	M	1.10E-04	mg/kg-day	3.7E-02	mg/kg-day	N/A	N/A	3.0E-03
	Iron	24527	mg/kg	24527	mg/kg	M	1.68E-02	mg/kg-day	3.0E-01	mg/kg-day	N/A	N/A	5.6E-02
	Lead	141	mg/kg	141	mg/kg	M	9.66E-05	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Manganese	555	mg/kg	555	mg/kg	M	3.80E-04	mg/kg-day	1.4E-01	mg/kg-day	N/A	N/A	2.7E-03
	Mercury, soluble salts	1.43	mg/kg	1.43	mg/kg	M	9.79E-07	mg/kg-day	3.0E-04	mg/kg-day	N/A	N/A	3.3E-03
	Nickel, soluble salts	34.9	mg/kg	34.9	mg/kg	M	2.39E-05	mg/kg-day	2.0E-02	mg/kg-day	N/A	N/A	1.2E-03
	Selenium	1.22	mg/kg	1.22	mg/kg	M	8.36E-07	mg/kg-day	5.0E-03	mg/kg-day	N/A	N/A	1.7E-04
	Silver	6.86	mg/kg	6.86	mg/kg	M	4.70E-06	mg/kg-day	5.0E-03	mg/kg-day	N/A	N/A	9.4E-04
	Thallium	0.789	mg/kg	0.789	mg/kg	M	5.40E-07	mg/kg-day	7.0E-05	mg/kg-day	N/A	N/A	7.7E-03
	Vanadium	62.5	mg/kg	62.5	mg/kg	M	4.28E-05	mg/kg-day	1.0E-03	mg/kg-day	N/A	N/A	4.3E-02
	Zinc	464	mg/kg	464	mg/kg	M	3.18E-04	mg/kg-day	3.0E-01	mg/kg-day	N/A	N/A	1.1E-03
	Aroclor 1242	0.201	mg/kg	0.201	mg/kg	M	1.38E-07	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Aroclor 1254	1.15	mg/kg	1.15	mg/kg	M	7.88E-07	mg/kg-day	2.0E-05	mg/kg-day	N/A	N/A	3.9E-02
	Aroclor 1260	0.784	mg/kg	0.784	mg/kg	M	5.37E-07	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Benz[a]anthracene	0.925	mg/kg	0.925	mg/kg	M	6.34E-07	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Benzo[a]pyrene	0.996	mg/kg	0.996	mg/kg	M	6.82E-07	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Benzo[b]fluoranthene	0.982	mg/kg	0.982	mg/kg	M	6.73E-07	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Benzo[k]fluoranthene	0.925	mg/kg	0.925	mg/kg	M	6.34E-07	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Chyrsene	1.02	mg/kg	1.02	mg/kg	M	6.99E-07	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Dibenz[a,h]anthracene	0.43	mg/kg	0.43	mg/kg	M	2.95E-07	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Indeno[1,2,3-cd]pyrene	0.521	mg/kg	0.521	mg/kg	M	3.57E-07	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	(Subtotal)												**1.9E-01**
Dermal	Aluminum	8694	mg/kg	8694	mg/kg	M	2.38E-05	mg/kg-day	1.0E-01	mg/kg-day	N/A	N/A	2.4E-04
	Antimony	2.52	mg/kg	2.52	mg/kg	M	6.89E-09	mg/kg-day	6.0E-05	mg/kg-day	N/A	N/A	1.1E-04
	Arsenic	5.98	mg/kg	5.98	mg/kg	M	4.90E-07	mg/kg-day	3.0E-04	mg/kg-day	N/A	N/A	1.6E-03
	Barium	150	mg/kg	150	mg/kg	M	4.10E-07	mg/kg-day	1.4E-02	mg/kg-day	N/A	N/A	2.9E-05
	Cadmium	3.6	mg/kg	3.6	mg/kg	M	9.84E-09	mg/kg-day	2.5E-05	mg/kg-day	N/A	N/A	3.9E-04
	Copper	160	mg/kg	160	mg/kg	M	4.37E-07	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Iron	24527	mg/kg	24527	mg/kg	M	6.70E-05	mg/kg-day	3.0E-02	mg/kg-day	N/A	N/A	2.2E-03
	Lead	141	mg/kg	141	mg/kg	M	3.85E-07	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Manganese	555	mg/kg	555	mg/kg	M	1.52E-06	mg/kg-day	5.6E-03	mg/kg-day	N/A	N/A	2.7E-04
	Mercury, soluble salts	1.43	mg/kg	1.43	mg/kg	M	3.91E-09	mg/kg-day	2.1E-05	mg/kg-day	N/A	N/A	1.9E-04
	Nickel, soluble salts	34.9	mg/kg	34.9	mg/kg	M	9.54E-08	mg/kg-day	8.0E-04	mg/kg-day	N/A	N/A	1.2E-04
	Selenium	1.22	mg/kg	1.22	mg/kg	M	3.33E-09	mg/kg-day	5.0E-03	mg/kg-day	N/A	N/A	6.7E-07
	Silver	6.86	mg/kg	6.86	mg/kg	M	1.87E-08	mg/kg-day	2.0E-04	mg/kg-day	N/A	N/A	9.4E-05
	Thallium	0.789	mg/kg	0.789	mg/kg	M	2.16E-09	mg/kg-day	7.0E-05	mg/kg-day	N/A	N/A	3.1E-05
	Vanadium	62.5	mg/kg	62.5	mg/kg	M	1.71E-07	mg/kg-day	2.6E-05	mg/kg-day	N/A	N/A	6.6E-03
	Zinc	464	mg/kg	464	mg/kg	M	1.27E-06	mg/kg-day	3.0E-01	mg/kg-day	N/A	N/A	4.2E-06
	Aroclor 1242	0.201	mg/kg	0.201	mg/kg	M	7.69E-08	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Aroclor 1254	1.15	mg/kg	1.15	mg/kg	M	4.40E-07	mg/kg-day	2.0E-05	mg/kg-day	N/A	N/A	2.2E-02
	Aroclor 1260	0.784	mg/kg	0.784	mg/kg	M	3.00E-07	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Benz[a]anthracene	0.925	mg/kg	0.925	mg/kg	M	3.29E-07	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Benzo[a]pyrene	0.996	mg/kg	0.996	mg/kg	M	3.54E-07	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Benzo[b]fluoranthene	0.982	mg/kg	0.982	mg/kg	M	3.49E-07	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Benzo[k]fluoranthene	0.925	mg/kg	0.925	mg/kg	M	3.29E-07	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Chrysene	1.02	mg/kg	1.02	mg/kg	M	3.62E-07	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Dibenz[a,h]anthracene	0.43	mg/kg	0.43	mg/kg	M	1.53E-07	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Indeno[1,2,3-cd]pyrene	0.521	mg/kg	0.521	mg/kg	M	1.85E-07	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	(Subtotal)												**3.4E-02**

EPC = Exposure Point Concentration
M = Medium-Specific.

Table G-19
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
KENILWORTH PARK SOUTH LANDFILL SITE

Scenario Timeframe: Current/Future
Medium: Surface Soil / Sediment
Exposure Medium: Airborne Dust
Exposure Point: On-Site
Receptor Population: Site Visitor
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Chronic Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Aluminum	8694	mg/kg	8694	mg/kg	M	1.13E-06	mg/kg-day	1.4E-03	mg/kg-day	N/A	N/A	7.9E-04
	Antimony	2.52	mg/kg	2.52	mg/kg	M	3.27E-10	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Arsenic	5.98	mg/kg	5.98	mg/kg	M	7.76E-10	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Barium	150	mg/kg	150	mg/kg	M	1.95E-08	mg/kg-day	1.4E-04	mg/kg-day	N/A	N/A	1.4E-04
	Cadmium	3.6	mg/kg	3.6	mg/kg	M	4.67E-10	mg/kg-day	5.7E-05	mg/kg-day	N/A	N/A	8.2E-06
	Copper	160	mg/kg	160	mg/kg	M	2.08E-08	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Iron	24527	mg/kg	24527	mg/kg	M	3.18E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Lead	141	mg/kg	141	mg/kg	M	1.83E-08	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Manganese	555	mg/kg	555	mg/kg	M	7.20E-08	mg/kg-day	1.4E-05	mg/kg-day	N/A	N/A	5.0E-03
	Mercury, soluble salts	1.43	mg/kg	1.43	mg/kg	M	1.85E-10	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Nickel, soluble salts	34.9	mg/kg	34.9	mg/kg	M	4.53E-09	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Selenium	1.22	mg/kg	1.22	mg/kg	M	1.58E-10	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Silver	6.86	mg/kg	6.86	mg/kg	M	8.90E-10	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Thallium	0.789	mg/kg	0.789	mg/kg	M	1.02E-10	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Vanadium	62.5	mg/kg	62.5	mg/kg	M	8.11E-09	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Zinc	464	mg/kg	464	mg/kg	M	6.02E-08	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Aroclor 1242	0.201	mg/kg	0.201	mg/kg	M	2.61E-11	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Aroclor 1254	1.15	mg/kg	1.15	mg/kg	M	1.49E-10	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Aroclor 1260	0.784	mg/kg	0.784	mg/kg	M	1.02E-10	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Benz[a]anthracene	0.925	mg/kg	0.925	mg/kg	M	1.20E-10	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Benzo[a]pyrene	0.996	mg/kg	0.996	mg/kg	M	1.29E-10	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Benzo[b]fluoranthene	0.982	mg/kg	0.982	mg/kg	M	1.27E-10	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Benzo[k]fluoranthene	0.925	mg/kg	0.925	mg/kg	M	1.20E-10	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Chrysene	1.02	mg/kg	1.02	mg/kg	M	1.32E-10	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Dibenz[a,h]anthracene	0.43	mg/kg	0.43	mg/kg	M	5.58E-11	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Indeno[1,2,3-cd]pyrene	0.521	mg/kg	0.521	mg/kg	M	6.76E-11	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	(Subtotal)												**6.0E-03**

Total Hazard Index Across All Soil Exposure Routes/Pathways **2.2E-01**

EPC = Exposure Point Concentration
M = Medium-Specific.

Table G-20
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
KENILWORTH PARK SOUTH LANDFILL SITE

Scenario Timeframe: Current/Future
Medium: Surface Soil / Sediment
Exposure Medium: Surface Soil / Sediment
Exposure Point: On-Site
Receptor Population: Site Visitor
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Subchronic Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	8694	mg/kg	8694	mg/kg	M	5.56E-02	mg/kg-day	1.0E+00	mg/kg-day	N/A	N/A	5.6E-02
	Antimony	2.52	mg/kg	2.52	mg/kg	M	1.61E-05	mg/kg-day	4.0E-04	mg/kg-day	N/A	N/A	4.0E-02
	Arsenic	5.98	mg/kg	5.98	mg/kg	M	3.82E-05	mg/kg-day	3.0E-04	mg/kg-day	N/A	N/A	1.3E-01
	Barium	150	mg/kg	150	mg/kg	M	9.59E-04	mg/kg-day	2.0E-01	mg/kg-day	N/A	N/A	4.8E-03
	Cadmium	3.6	mg/kg	3.6	mg/kg	M	2.30E-05	mg/kg-day	1.0E-03	mg/kg-day	N/A	N/A	2.3E-02
	Copper	160	mg/kg	160	mg/kg	M	1.02E-03	mg/kg-day	3.7E-02	mg/kg-day	N/A	N/A	2.8E-02
	Iron	24527	mg/kg	24527	mg/kg	M	1.57E-01	mg/kg-day	3.0E-01	mg/kg-day	N/A	N/A	5.2E-01
	Lead	141	mg/kg	141	mg/kg	M	9.01E-04	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Manganese	555	mg/kg	555	mg/kg	M	3.55E-03	mg/kg-day	1.4E-01	mg/kg-day	N/A	N/A	2.5E-02
	Mercury, soluble salts	1.43	mg/kg	1.43	mg/kg	M	9.14E-06	mg/kg-day	3.0E-04	mg/kg-day	N/A	N/A	3.0E-02
	Nickel, soluble salts	34.9	mg/kg	34.9	mg/kg	M	2.23E-04	mg/kg-day	2.0E-02	mg/kg-day	N/A	N/A	1.1E-02
	Selenium	1.22	mg/kg	1.22	mg/kg	M	7.80E-06	mg/kg-day	5.0E-03	mg/kg-day	N/A	N/A	1.6E-03
	Silver	6.86	mg/kg	6.86	mg/kg	M	4.39E-05	mg/kg-day	5.0E-03	mg/kg-day	N/A	N/A	8.8E-03
	Thallium	0.789	mg/kg	0.789	mg/kg	M	5.04E-06	mg/kg-day	7.0E-04	mg/kg-day	N/A	N/A	7.2E-03
	Vanadium	62.5	mg/kg	62.5	mg/kg	M	4.00E-04	mg/kg-day	1.0E-03	mg/kg-day	N/A	N/A	4.0E-01
	Zinc	464	mg/kg	464	mg/kg	M	2.97E-03	mg/kg-day	3.0E-01	mg/kg-day	N/A	N/A	9.9E-03
	Aroclor 1242	0.201	mg/kg	0.201	mg/kg	M	1.28E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Aroclor 1254	1.15	mg/kg	1.15	mg/kg	M	7.35E-06	mg/kg-day	5.0E-05	mg/kg-day	N/A	N/A	1.5E-01
	Aroclor 1260	0.784	mg/kg	0.784	mg/kg	M	5.01E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Benz[a]anthracene	0.925	mg/kg	0.925	mg/kg	M	5.91E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Benzo[a]pyrene	0.996	mg/kg	0.996	mg/kg	M	6.37E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Benzo[b]fluoranthene	0.982	mg/kg	0.982	mg/kg	M	6.28E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Benzo[k]fluoranthene	0.925	mg/kg	0.925	mg/kg	M	5.91E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Chrysene	1.02	mg/kg	1.02	mg/kg	M	6.52E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Dibenz[a,h]anthracene	0.43	mg/kg	0.43	mg/kg	M	2.75E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Indeno[1,2,3-cd]pyrene	0.521	mg/kg	0.521	mg/kg	M	3.33E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	(Subtotal)												**1.4E+00**
Dermal	Aluminum	8694	mg/kg	8694	mg/kg	M	1.56E-04	mg/kg-day	1.0E-01	mg/kg-day	N/A	N/A	1.6E-03
	Antimony	2.52	mg/kg	2.52	mg/kg	M	4.51E-08	mg/kg-day	6.0E-05	mg/kg-day	N/A	N/A	7.5E-04
	Arsenic	5.98	mg/kg	5.98	mg/kg	M	3.21E-06	mg/kg-day	3.0E-04	mg/kg-day	N/A	N/A	1.1E-02
	Barium	150	mg/kg	150	mg/kg	M	2.68E-06	mg/kg-day	1.4E-02	mg/kg-day	N/A	N/A	1.9E-04
	Cadmium	3.6	mg/kg	3.6	mg/kg	M	6.44E-08	mg/kg-day	2.5E-05	mg/kg-day	N/A	N/A	2.6E-03
	Copper	160	mg/kg	160	mg/kg	M	2.86E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Iron	24527	mg/kg	24527	mg/kg	M	4.39E-04	mg/kg-day	3.0E-02	mg/kg-day	N/A	N/A	1.5E-02
	Lead	141	mg/kg	141	mg/kg	M	2.52E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Manganese	555	mg/kg	555	mg/kg	M	9.93E-06	mg/kg-day	5.6E-03	mg/kg-day	N/A	N/A	1.8E-03
	Mercury, soluble salts	1.43	mg/kg	1.43	mg/kg	M	2.56E-08	mg/kg-day	2.1E-05	mg/kg-day	N/A	N/A	1.2E-03
	Nickel, soluble salts	34.9	mg/kg	34.9	mg/kg	M	6.25E-07	mg/kg-day	8.0E-04	mg/kg-day	N/A	N/A	7.8E-04
	Selenium	1.22	mg/kg	1.22	mg/kg	M	2.18E-08	mg/kg-day	5.0E-03	mg/kg-day	N/A	N/A	4.4E-06
	Silver	6.86	mg/kg	6.86	mg/kg	M	1.23E-07	mg/kg-day	2.0E-04	mg/kg-day	N/A	N/A	6.1E-04
	Thallium	0.789	mg/kg	0.789	mg/kg	M	1.41E-08	mg/kg-day	7.0E-04	mg/kg-day	N/A	N/A	2.0E-05
	Vanadium	62.5	mg/kg	62.5	mg/kg	M	1.12E-06	mg/kg-day	2.6E-05	mg/kg-day	N/A	N/A	4.3E-02
	Zinc	464	mg/kg	464	mg/kg	M	8.31E-06	mg/kg-day	3.0E-01	mg/kg-day	N/A	N/A	2.8E-05
	Aroclor 1242	0.201	mg/kg	0.201	mg/kg	M	5.04E-07	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Aroclor 1254	1.15	mg/kg	1.15	mg/kg	M	2.88E-06	mg/kg-day	5.0E-05	mg/kg-day	N/A	N/A	5.8E-02
	Aroclor 1260	0.784	mg/kg	0.784	mg/kg	M	1.96E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Benz[a]anthracene	0.925	mg/kg	0.925	mg/kg	M	2.15E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Benzo[a]pyrene	0.996	mg/kg	0.996	mg/kg	M	2.32E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Benzo[b]fluoranthene	0.982	mg/kg	0.982	mg/kg	M	2.29E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Benzo[k]fluoranthene	0.925	mg/kg	0.925	mg/kg	M	2.15E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Chrysene	1.02	mg/kg	1.02	mg/kg	M	2.37E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Dibenz[a,h]anthracene	0.43	mg/kg	0.43	mg/kg	M	1.00E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Indeno[1,2,3-cd]pyrene	0.521	mg/kg	0.521	mg/kg	M	1.21E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	(Subtotal)												**1.4E-01**

EPC = Exposure Point Concentration
M = Medium-Specific.

Table G-21
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
KENILWORTH PARK SOUTH LANDFILL SITE

Scenario Timeframe: Current/Future
Medium: Surface Soil / Sediment
Exposure Medium: Airborne Dust
Exposure Point: On-Site
Receptor Population: Site Visitor
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Subchronic Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Aluminum	8694	mg/kg	8694	mg/kg	M	3.95E-06	mg/kg-day	1.4E-02	mg/kg-day	N/A	N/A	2.8E-04
	Antimony	2.52	mg/kg	2.52	mg/kg	M	1.14E-09	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Arsenic	5.98	mg/kg	5.98	mg/kg	M	2.72E-09	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Barium	150	mg/kg	150	mg/kg	M	6.82E-08	mg/kg-day	1.4E-04	mg/kg-day	N/A	N/A	4.9E-04
	Cadmium	3.6	mg/kg	3.6	mg/kg	M	1.64E-09	mg/kg-day	5.7E-05	mg/kg-day	N/A	N/A	2.9E-05
	Copper	160	mg/kg	160	mg/kg	M	7.27E-08	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Iron	24527	mg/kg	24527	mg/kg	M	1.11E-05	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Lead	141	mg/kg	141	mg/kg	M	6.41E-08	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Manganese	555	mg/kg	555	mg/kg	M	2.52E-07	mg/kg-day	1.4E-04	mg/kg-day	N/A	N/A	1.8E-03
	Mercury, soluble salts	1.43	mg/kg	1.43	mg/kg	M	6.50E-10	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Nickel, soluble salts	34.9	mg/kg	34.9	mg/kg	M	1.59E-08	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Selenium	1.22	mg/kg	1.22	mg/kg	M	5.54E-10	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Silver	6.86	mg/kg	6.86	mg/kg	M	3.12E-09	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Thallium	0.789	mg/kg	0.789	mg/kg	M	3.58E-10	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Vanadium	62.5	mg/kg	62.5	mg/kg	M	2.84E-08	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Zinc	464	mg/kg	464	mg/kg	M	2.11E-07	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Aroclor 1242	0.201	mg/kg	0.201	mg/kg	M	9.13E-11	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Aroclor 1254	1.15	mg/kg	1.15	mg/kg	M	5.22E-10	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Aroclor 1260	0.784	mg/kg	0.784	mg/kg	M	3.56E-10	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Benz[a]anthracene	0.925	mg/kg	0.925	mg/kg	M	4.20E-10	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Benzo[a]pyrene	0.996	mg/kg	0.996	mg/kg	M	4.53E-10	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Benzo[b]fluoranthene	0.982	mg/kg	0.982	mg/kg	M	4.46E-10	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Benzo[k]fluoranthene	0.925	mg/kg	0.925	mg/kg	M	4.20E-10	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Chrysene	1.02	mg/kg	1.02	mg/kg	M	4.63E-10	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Dibenz[a,h]anthracene	0.43	mg/kg	0.43	mg/kg	M	1.95E-10	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Indeno[1,2,3-cd]pyrene	0.521	mg/kg	0.521	mg/kg	M	2.37E-10	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	(Subtotal)												**2.6E-03**

Total Hazard Index Across All Soil Exposure Routes/Pathways **1.6E+00**

EPC = Exposure Point Concentration
M = Medium-Specific.

Table G-22
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
KENILWORTH PARK SOUTH LANDFILL SITE

Scenario Timeframe: Future
Medium: Surface Soil / Sediment / Subsurface Soil
Exposure Medium: Surface Soil / Sediment / Subsurface Soil
Exposure Point: On-Site
Receptor Population: Utility/Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Subchronic Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	10028	mg/kg	10028	mg/kg	M	4.91E-02	mg/kg-day	1.0E+00	mg/kg-day	N/A	N/A	4.9E-02
	Antimony	9.66	mg/kg	9.66	mg/kg	M	4.73E-05	mg/kg-day	4.0E-04	mg/kg-day	N/A	N/A	1.2E-01
	Arsenic	6.71	mg/kg	6.71	mg/kg	M	3.29E-05	mg/kg-day	3.0E-04	mg/kg-day	N/A	N/A	1.1E-01
	Barium	243	mg/kg	243	mg/kg	M	1.19E-03	mg/kg-day	2.0E-01	mg/kg-day	N/A	N/A	5.9E-03
	Cadmium	4.7	mg/kg	4.7	mg/kg	M	2.30E-05	mg/kg-day	1.0E-03	mg/kg-day	N/A	N/A	2.3E-02
	Copper	327	mg/kg	327	mg/kg	M	1.60E-03	mg/kg-day	3.7E-02	mg/kg-day	N/A	N/A	4.3E-02
	Iron	48856	mg/kg	48856	mg/kg	M	2.39E-01	mg/kg-day	3.0E-01	mg/kg-day	N/A	N/A	8.0E-01
	Lead	484	mg/kg	484	mg/kg	M	2.37E-03	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Manganese	531	mg/kg	531	mg/kg	M	2.60E-03	mg/kg-day	1.4E-01	mg/kg-day	N/A	N/A	1.9E-02
	Mercury, soluble salts	0.776	mg/kg	0.776	mg/kg	M	3.80E-06	mg/kg-day	3.0E-04	mg/kg-day	N/A	N/A	1.3E-02
	Nickel, soluble salts	49.5	mg/kg	49.5	mg/kg	M	2.42E-04	mg/kg-day	2.0E-02	mg/kg-day	N/A	N/A	1.2E-02
	Selenium	2.36	mg/kg	2.36	mg/kg	M	1.16E-05	mg/kg-day	5.0E-03	mg/kg-day	N/A	N/A	2.3E-03
	Silver	5.15	mg/kg	5.15	mg/kg	M	2.52E-05	mg/kg-day	5.0E-03	mg/kg-day	N/A	N/A	5.0E-03
	Thallium	1.14	mg/kg	1.14	mg/kg	M	5.58E-06	mg/kg-day	7.0E-04	mg/kg-day	N/A	N/A	8.0E-03
	Vanadium	64.2	mg/kg	64.2	mg/kg	M	3.14E-04	mg/kg-day	1.0E-03	mg/kg-day	N/A	N/A	3.1E-01
	Zinc	971	mg/kg	971	mg/kg	M	4.75E-03	mg/kg-day	3.0E-01	mg/kg-day	N/A	N/A	1.6E-02
	Aroclor 1242	0.238	mg/kg	0.238	mg/kg	M	1.17E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Aroclor 1254	0.27	mg/kg	0.27	mg/kg	M	1.32E-06	mg/kg-day	5.0E-05	mg/kg-day	N/A	N/A	2.6E-02
	Aroclor 1260	0.189	mg/kg	0.189	mg/kg	M	9.25E-07	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Benz[a]anthracene	0.831	mg/kg	0.831	mg/kg	M	4.07E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Benzo[a]pyrene	0.889	mg/kg	0.889	mg/kg	M	4.35E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Benzo[b]fluoranthene	0.891	mg/kg	0.891	mg/kg	M	4.36E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Benzo[k]fluoranthene	0.797	mg/kg	0.797	mg/kg	M	3.90E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Chrysene	0.95	mg/kg	0.95	mg/kg	M	4.65E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Dibenz[a,h]anthracene	0.4	mg/kg	0.4	mg/kg	M	1.96E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Indeno[1,2,3-cd]pyrene	0.505	mg/kg	0.505	mg/kg	M	2.47E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	(Subtotal)												**1.6E+00**
Dermal	Aluminum	10028	mg/kg	10028	mg/kg	M	3.04E-04	mg/kg-day	1.0E-01	mg/kg-day	N/A	N/A	3.0E-03
	Antimony	9.66	mg/kg	9.66	mg/kg	M	2.93E-07	mg/kg-day	6.0E-05	mg/kg-day	N/A	N/A	4.9E-03
	Arsenic	6.71	mg/kg	6.71	mg/kg	M	6.10E-06	mg/kg-day	3.0E-04	mg/kg-day	N/A	N/A	2.0E-02
	Barium	243	mg/kg	243	mg/kg	M	7.36E-06	mg/kg-day	1.4E-02	mg/kg-day	N/A	N/A	5.3E-04
	Cadmium	4.7	mg/kg	4.7	mg/kg	M	1.42E-07	mg/kg-day	2.5E-05	mg/kg-day	N/A	N/A	5.7E-03
	Copper	327	mg/kg	327	mg/kg	M	9.91E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Iron	48856	mg/kg	48856	mg/kg	M	1.48E-03	mg/kg-day	3.0E-02	mg/kg-day	N/A	N/A	4.9E-02
	Lead	484	mg/kg	484	mg/kg	M	1.47E-05	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Manganese	531	mg/kg	531	mg/kg	M	1.61E-05	mg/kg-day	5.6E-03	mg/kg-day	N/A	N/A	2.9E-03
	Mercury, soluble salts	0.776	mg/kg	0.776	mg/kg	M	2.35E-08	mg/kg-day	2.1E-05	mg/kg-day	N/A	N/A	1.1E-03
	Nickel, soluble salts	49.5	mg/kg	49.5	mg/kg	M	1.50E-06	mg/kg-day	8.0E-04	mg/kg-day	N/A	N/A	1.9E-03
	Selenium	2.36	mg/kg	2.36	mg/kg	M	7.15E-08	mg/kg-day	5.0E-03	mg/kg-day	N/A	N/A	1.4E-05
	Silver	5.15	mg/kg	5.15	mg/kg	M	1.56E-07	mg/kg-day	2.0E-04	mg/kg-day	N/A	N/A	7.8E-04
	Thallium	1.14	mg/kg	1.14	mg/kg	M	3.45E-08	mg/kg-day	7.0E-04	mg/kg-day	N/A	N/A	4.9E-05
	Vanadium	64.2	mg/kg	64.2	mg/kg	M	1.94E-06	mg/kg-day	2.6E-05	mg/kg-day	N/A	N/A	7.5E-02
	Zinc	971	mg/kg	971	mg/kg	M	2.94E-05	mg/kg-day	3.0E-01	mg/kg-day	N/A	N/A	9.8E-05
	Aroclor 1242	0.238	mg/kg	0.238	mg/kg	M	1.01E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Aroclor 1254	0.27	mg/kg	0.27	mg/kg	M	1.15E-06	mg/kg-day	5.0E-05	mg/kg-day	N/A	N/A	2.3E-02
	Aroclor 1260	0.189	mg/kg	0.189	mg/kg	M	8.02E-07	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Benz[a]anthracene	0.831	mg/kg	0.831	mg/kg	M	3.27E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Benzo[a]pyrene	0.889	mg/kg	0.889	mg/kg	M	3.50E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Benzo[b]fluoranthene	0.891	mg/kg	0.891	mg/kg	M	3.51E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Benzo[k]fluoranthene	0.797	mg/kg	0.797	mg/kg	M	3.14E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Chrysene	0.95	mg/kg	0.95	mg/kg	M	3.74E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Dibenz[a,h]anthracene	0.4	mg/kg	0.4	mg/kg	M	1.58E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Indeno[1,2,3-cd]pyrene	0.505	mg/kg	0.505	mg/kg	M	1.99E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	(Subtotal)												**1.9E-01**

EPC = Exposure Point Concentration
M = Medium-Specific.

Table G-23
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
KENILWORTH PARK SOUTH LANDFILL SITE

Scenario Timeframe: Future
Medium: Surface Soil / Sediment / Subsurface Soil
Exposure Medium: Airborne Dust
Exposure Point: On-Site
Receptor Population: Utility/Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Subchronic Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Aluminum	10028	mg/kg	10028	mg/kg	M	9.43E-04	mg/kg-day	1.4E-02	mg/kg-day	N/A	N/A	6.6E-02
	Antimony	9.66	mg/kg	9.66	mg/kg	M	9.09E-07	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Arsenic	6.71	mg/kg	6.71	mg/kg	M	6.31E-07	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Barium	243	mg/kg	243	mg/kg	M	2.29E-05	mg/kg-day	1.4E-04	mg/kg-day	N/A	N/A	1.6E-01
	Cadmium	4.7	mg/kg	4.7	mg/kg	M	4.42E-07	mg/kg-day	5.7E-05	mg/kg-day	N/A	N/A	7.8E-03
	Copper	327	mg/kg	327	mg/kg	M	3.08E-05	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Iron	48856	mg/kg	48856	mg/kg	M	4.60E-03	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Lead	484	mg/kg	484	mg/kg	M	4.55E-05	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Manganese	531	mg/kg	531	mg/kg	M	4.99E-05	mg/kg-day	1.4E-04	mg/kg-day	N/A	N/A	3.5E-01
	Mercury, soluble salts	0.776	mg/kg	0.776	mg/kg	M	7.30E-08	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Nickel, soluble salts	49.5	mg/kg	49.5	mg/kg	M	4.66E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Selenium	2.36	mg/kg	2.36	mg/kg	M	2.22E-07	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Silver	5.15	mg/kg	5.15	mg/kg	M	4.84E-07	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Thallium	1.14	mg/kg	1.14	mg/kg	M	1.07E-07	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Vanadium	64.2	mg/kg	64.2	mg/kg	M	6.04E-06	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Zinc	971	mg/kg	971	mg/kg	M	9.13E-05	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Aroclor 1242	0.238	mg/kg	0.238	mg/kg	M	2.24E-08	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Aroclor 1254	0.27	mg/kg	0.27	mg/kg	M	2.54E-08	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Aroclor 1260	0.189	mg/kg	0.189	mg/kg	M	1.78E-08	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Benz[a]anthracene	0.831	mg/kg	0.831	mg/kg	M	7.82E-08	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Benzo[a]pyrene	0.889	mg/kg	0.889	mg/kg	M	8.36E-08	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Benzo[b]fluoranthene	0.891	mg/kg	0.891	mg/kg	M	8.38E-08	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Benzo[k]fluoranthene	0.797	mg/kg	0.797	mg/kg	M	7.50E-08	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Chyrsene	0.95	mg/kg	0.95	mg/kg	M	8.94E-08	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Dibenz[a,h]anthracene	0.4	mg/kg	0.4	mg/kg	M	3.76E-08	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	Indeno[1,2,3-cd]pyrene	0.505	mg/kg	0.505	mg/kg	M	4.75E-08	mg/kg-day	--	mg/kg-day	N/A	N/A	--
	(Subtotal)												**5.9E-01**

Total Hazard Index Across All Soil Exposure Routes/Pathways **2.3E+00**

EPC = Exposure Point Concentration
M = Medium-Specific.

Table G-24
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
KENILWORTH PARK SOUTH LANDFILL SITE

Scenario Timeframe: Current/Future
Medium: Surface Soil / Sediment
Exposure Medium: Surface Soil / Sediment
Exposure Point: On-Site
Receptor Population: Site Visitor
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Aluminum	8694	mg/kg	8694	mg/kg	M	6.81E-03	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Antimony	2.52	mg/kg	2.52	mg/kg	M	1.97E-06	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Arsenic	5.98	mg/kg	5.98	mg/kg	M	4.68E-06	mg/kg-day	1.50E+00	(mg/kg-day) $^{-1}$	7.0E-06
	Barium	150	mg/kg	150	mg/kg	M	1.17E-04	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Cadmium	3.6	mg/kg	3.6	mg/kg	M	2.82E-06	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Copper	160	mg/kg	160	mg/kg	M	1.25E-04	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Iron	24527	mg/kg	24527	mg/kg	M	1.92E-02	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Lead	141	mg/kg	141	mg/kg	M	1.10E-04	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Manganese	555	mg/kg	555	mg/kg	M	4.34E-04	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Mercury, soluble salts	1.43	mg/kg	1.43	mg/kg	M	1.12E-06	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Nickel, soluble salts	34.9	mg/kg	34.9	mg/kg	M	2.73E-05	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Selenium	1.22	mg/kg	1.22	mg/kg	M	9.55E-07	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Silver	6.86	mg/kg	6.86	mg/kg	M	5.37E-06	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Thallium	0.789	mg/kg	0.789	mg/kg	M	6.18E-07	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Vanadium	62.5	mg/kg	62.5	mg/kg	M	4.89E-05	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Zinc	464	mg/kg	464	mg/kg	M	3.63E-04	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Aroclor 1242	0.201	mg/kg	0.201	mg/kg	M	1.57E-07	mg/kg-day	2.00E+00	(mg/kg-day) $^{-1}$	3.1E-07
	Aroclor 1254	1.15	mg/kg	1.15	mg/kg	M	9.00E-07	mg/kg-day	2.00E+00	(mg/kg-day) $^{-1}$	1.8E-06
	Aroclor 1260	0.784	mg/kg	0.784	mg/kg	M	6.14E-07	mg/kg-day	2.00E+00	(mg/kg-day) $^{-1}$	1.2E-06
	Benz[a]anthracene	0.925	mg/kg	0.925	mg/kg	M	7.24E-07	mg/kg-day	7.30E-01	(mg/kg-day) $^{-1}$	5.3E-07
	Benzo[a]pyrene	0.996	mg/kg	0.996	mg/kg	M	7.80E-07	mg/kg-day	7.30E+00	(mg/kg-day) $^{-1}$	5.7E-06
	Benzo[b]fluoranthene	0.982	mg/kg	0.982	mg/kg	M	7.69E-07	mg/kg-day	7.30E-01	(mg/kg-day) $^{-1}$	5.6E-07
	Benzo[k]fluoranthene	0.925	mg/kg	0.925	mg/kg	M	7.24E-07	mg/kg-day	7.30E-02	(mg/kg-day) $^{-1}$	5.3E-08
	Chrysene	1.02	mg/kg	1.02	mg/kg	M	7.98E-07	mg/kg-day	7.30E-03	(mg/kg-day) $^{-1}$	5.8E-09
	Dibenz[a,h]anthracene	0.43	mg/kg	0.43	mg/kg	M	3.37E-07	mg/kg-day	7.30E+00	(mg/kg-day) $^{-1}$	2.5E-06
	Indeno[1,2,3-cd]pyrene	0.521	mg/kg	0.521	mg/kg	M	4.08E-07	mg/kg-day	7.30E-01	(mg/kg-day) $^{-1}$	3.0E-07
	(Subtotal)										**2.0E-05**
Dermal	Aluminum	8694	mg/kg	8694	mg/kg	M	2.15E-05	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Antimony	2.52	mg/kg	2.52	mg/kg	M	6.23E-09	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Arsenic	5.98	mg/kg	5.98	mg/kg	M	4.43E-07	mg/kg-day	1.50E+00	(mg/kg-day) $^{-1}$	6.7E-07
	Barium	150	mg/kg	150	mg/kg	M	3.71E-07	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Cadmium	3.6	mg/kg	3.6	mg/kg	M	8.90E-09	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Copper	160	mg/kg	160	mg/kg	M	3.95E-07	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Iron	24527	mg/kg	24527	mg/kg	M	6.06E-05	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Lead	141	mg/kg	141	mg/kg	M	3.48E-07	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Manganese	555	mg/kg	555	mg/kg	M	1.37E-06	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Mercury, soluble salts	1.43	mg/kg	1.43	mg/kg	M	3.53E-09	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Nickel, soluble salts	34.9	mg/kg	34.9	mg/kg	M	8.62E-08	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Selenium	1.22	mg/kg	1.22	mg/kg	M	3.01E-09	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Silver	6.86	mg/kg	6.86	mg/kg	M	1.70E-08	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Thallium	0.789	mg/kg	0.789	mg/kg	M	1.95E-09	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Vanadium	62.5	mg/kg	62.5	mg/kg	M	1.54E-07	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Zinc	464	mg/kg	464	mg/kg	M	1.15E-06	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Aroclor 1242	0.201	mg/kg	0.201	mg/kg	M	6.95E-08	mg/kg-day	2.00E+00	(mg/kg-day) $^{-1}$	1.4E-07
	Aroclor 1254	1.15	mg/kg	1.15	mg/kg	M	3.98E-07	mg/kg-day	2.00E+00	(mg/kg-day) $^{-1}$	8.0E-07
	Aroclor 1260	0.784	mg/kg	0.784	mg/kg	M	2.71E-07	mg/kg-day	2.00E+00	(mg/kg-day) $^{-1}$	5.4E-07
	Benz[a]anthracene	0.925	mg/kg	0.925	mg/kg	M	2.97E-07	mg/kg-day	7.30E-01	(mg/kg-day) $^{-1}$	2.2E-07
	Benzo[a]pyrene	0.996	mg/kg	0.996	mg/kg	M	3.20E-07	mg/kg-day	7.30E+00	(mg/kg-day) $^{-1}$	2.3E-06
	Benzo[b]fluoranthene	0.982	mg/kg	0.982	mg/kg	M	3.15E-07	mg/kg-day	7.30E-01	(mg/kg-day) $^{-1}$	2.3E-07
	Benzo[k]fluoranthene	0.925	mg/kg	0.925	mg/kg	M	2.97E-07	mg/kg-day	7.30E-02	(mg/kg-day) $^{-1}$	2.2E-08
	Chrysene	1.02	mg/kg	1.02	mg/kg	M	3.28E-07	mg/kg-day	7.30E-03	(mg/kg-day) $^{-1}$	2.4E-09
	Dibenz[a,h]anthracene	0.43	mg/kg	0.43	mg/kg	M	1.38E-07	mg/kg-day	7.30E+00	(mg/kg-day) $^{-1}$	1.0E-06
	Indeno[1,2,3-cd]pyrene	0.521	mg/kg	0.521	mg/kg	M	1.67E-07	mg/kg-day	7.30E-01	(mg/kg-day) $^{-1}$	1.2E-07
	(Subtotal)										**6.1E-06**

EPC = Exposure Point Concentration
M = Medium-Specific.

Table G-25
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
KENILWORTH PARK SOUTH LANDFILL SITE

Scenario Timeframe: Current/Future
Medium: Surface Soil / Sediment
Exposure Medium: Airborne Dust
Exposure Point: On-Site
Receptor Population: Site Visitor
Receptor Age: Child/Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Aluminum	8694	mg/kg	8694	mg/kg	M	7.26E-07	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Antimony	2.52	mg/kg	2.52	mg/kg	M	2.10E-10	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Arsenic	5.98	mg/kg	5.98	mg/kg	M	4.99E-10	mg/kg-day	1.50E+01	(mg/kg-day) $^{-1}$	7.5E-09
	Barium	150	mg/kg	150	mg/kg	M	1.25E-08	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Cadmium	3.6	mg/kg	3.6	mg/kg	M	3.00E-10	mg/kg-day	6.30E+00	(mg/kg-day) $^{-1}$	1.9E-09
	Copper	160	mg/kg	160	mg/kg	M	1.34E-08	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Iron	24527	mg/kg	24527	mg/kg	M	2.05E-06	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Lead	141	mg/kg	141	mg/kg	M	1.18E-08	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Manganese	555	mg/kg	555	mg/kg	M	4.63E-08	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Mercury, soluble salts	1.43	mg/kg	1.43	mg/kg	M	1.19E-10	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Nickel, soluble salts	34.9	mg/kg	34.9	mg/kg	M	2.91E-09	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Selenium	1.22	mg/kg	1.22	mg/kg	M	1.02E-10	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Silver	6.86	mg/kg	6.86	mg/kg	M	5.72E-10	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Thallium	0.789	mg/kg	0.789	mg/kg	M	6.58E-11	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Vanadium	62.5	mg/kg	62.5	mg/kg	M	5.22E-09	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Zinc	464	mg/kg	464	mg/kg	M	3.87E-08	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Aroclor 1242	0.201	mg/kg	0.201	mg/kg	M	1.68E-11	mg/kg-day	2.00E+00	(mg/kg-day) $^{-1}$	3.4E-11
	Aroclor 1254	1.15	mg/kg	1.15	mg/kg	M	9.60E-11	mg/kg-day	2.00E+00	(mg/kg-day) $^{-1}$	1.9E-10
	Aroclor 1260	0.784	mg/kg	0.784	mg/kg	M	6.54E-11	mg/kg-day	2.00E+00	(mg/kg-day) $^{-1}$	1.3E-10
	Benz[a]anthracene	0.925	mg/kg	0.925	mg/kg	M	7.72E-11	mg/kg-day	7.30E-01	(mg/kg-day) $^{-1}$	5.6E-11
	Benzo[a]pyrene	0.996	mg/kg	0.996	mg/kg	M	8.31E-11	mg/kg-day	7.30E+00	(mg/kg-day) $^{-1}$	6.1E-10
	Benzo[b]fluoranthene	0.982	mg/kg	0.982	mg/kg	M	8.19E-11	mg/kg-day	7.30E-01	(mg/kg-day) $^{-1}$	6.0E-11
	Benzo[k]fluoranthene	0.925	mg/kg	0.925	mg/kg	M	7.72E-11	mg/kg-day	7.30E-02	(mg/kg-day) $^{-1}$	5.6E-12
	Chrysene	1.02	mg/kg	1.02	mg/kg	M	8.51E-11	mg/kg-day	7.30E-03	(mg/kg-day) $^{-1}$	6.2E-13
	Dibenz[a,h]anthracene	0.43	mg/kg	0.43	mg/kg	M	3.59E-11	mg/kg-day	7.30E+00	(mg/kg-day) $^{-1}$	2.6E-10
	Indeno[1,2,3-cd]pyrene	0.521	mg/kg	0.521	mg/kg	M	4.35E-11	mg/kg-day	7.30E-01	(mg/kg-day) $^{-1}$	3.2E-11
	(Subtotal)										**1.1E-08**

Total Cancer Risk Across All Soil Exposure Routes/Pathways **2.6E-05**

EPC = Exposure Point Concentration
M = Medium-Specific.

Table G-26
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
KENILWORTH PARK SOUTH LANDFILL SITE

Scenario Timeframe: Future
Medium: Surface Soil / Sediment / Subsurface Soil
Exposure Medium: Surface Soil / Sediment / Subsurface Soil
Exposure Point: On-Site
Receptor Population: Utility/Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Aluminum	10028	mg/kg	10028	mg/kg	M	1.21E-04	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Antimony	9.66	mg/kg	9.66	mg/kg	M	1.17E-07	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Arsenic	6.71	mg/kg	6.71	mg/kg	M	8.10E-08	mg/kg-day	1.50E+00	(mg/kg-day) $^{-1}$	1.2E-07
	Barium	243	mg/kg	243	mg/kg	M	2.93E-06	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Cadmium	4.7	mg/kg	4.7	mg/kg	M	5.67E-08	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Copper	327	mg/kg	327	mg/kg	M	3.95E-06	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Iron	48856	mg/kg	48856	mg/kg	M	5.90E-04	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Lead	484	mg/kg	484	mg/kg	M	5.84E-06	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Manganese	531	mg/kg	531	mg/kg	M	6.41E-06	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Mercury, soluble salts	0.776	mg/kg	0.776	mg/kg	M	9.37E-09	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Nickel, soluble salts	49.5	mg/kg	49.5	mg/kg	M	5.98E-07	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Selenium	2.36	mg/kg	2.36	mg/kg	M	2.85E-08	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Silver	5.15	mg/kg	5.15	mg/kg	M	6.22E-08	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Thallium	1.14	mg/kg	1.14	mg/kg	M	1.38E-08	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Vanadium	64.2	mg/kg	64.2	mg/kg	M	7.75E-07	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Zinc	971	mg/kg	971	mg/kg	M	1.17E-05	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Aroclor 1242	0.238	mg/kg	0.238	mg/kg	M	2.87E-09	mg/kg-day	2.00E+00	(mg/kg-day) $^{-1}$	5.7E-09
	Aroclor 1254	0.27	mg/kg	0.27	mg/kg	M	3.26E-09	mg/kg-day	2.00E+00	(mg/kg-day) $^{-1}$	6.5E-09
	Aroclor 1260	0.189	mg/kg	0.189	mg/kg	M	2.28E-09	mg/kg-day	2.00E+00	(mg/kg-day) $^{-1}$	4.6E-09
	Benz[a]anthracene	0.831	mg/kg	0.831	mg/kg	M	1.00E-08	mg/kg-day	7.30E-01	(mg/kg-day) $^{-1}$	7.3E-09
	Benzo[a]pyrene	0.889	mg/kg	0.889	mg/kg	M	1.07E-08	mg/kg-day	7.30E+00	(mg/kg-day) $^{-1}$	7.8E-08
	Benzo[b]fluoranthene	0.891	mg/kg	0.891	mg/kg	M	1.08E-08	mg/kg-day	7.30E-01	(mg/kg-day) $^{-1}$	7.9E-09
	Benzo[k]fluoranthene	0.797	mg/kg	0.797	mg/kg	M	9.62E-09	mg/kg-day	7.30E-02	(mg/kg-day) $^{-1}$	7.0E-10
	Chrysene	0.95	mg/kg	0.95	mg/kg	M	1.15E-08	mg/kg-day	7.30E-03	(mg/kg-day) $^{-1}$	8.4E-11
	Dibenz[a,h]anthracene	0.4	mg/kg	0.4	mg/kg	M	4.83E-09	mg/kg-day	7.30E+00	(mg/kg-day) $^{-1}$	3.5E-08
	Indeno[1,2,3-cd]pyrene	0.505	mg/kg	0.505	mg/kg	M	6.10E-09	mg/kg-day	7.30E-01	(mg/kg-day) $^{-1}$	4.5E-09
	(Subtotal)										**2.7E-07**
Dermal	Aluminum	10028	mg/kg	10028	mg/kg	M	7.49E-07	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Antimony	9.66	mg/kg	9.66	mg/kg	M	7.22E-10	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Arsenic	6.71	mg/kg	6.71	mg/kg	M	1.50E-08	mg/kg-day	1.50E+00	(mg/kg-day) $^{-1}$	2.3E-08
	Barium	243	mg/kg	243	mg/kg	M	1.82E-08	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Cadmium	4.7	mg/kg	4.7	mg/kg	M	3.51E-10	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Copper	327	mg/kg	327	mg/kg	M	2.44E-08	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Iron	48856	mg/kg	48856	mg/kg	M	3.65E-06	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Lead	484	mg/kg	484	mg/kg	M	3.62E-08	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Manganese	531	mg/kg	531	mg/kg	M	3.97E-08	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Mercury, soluble salts	0.776	mg/kg	0.776	mg/kg	M	5.80E-11	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Nickel, soluble salts	49.5	mg/kg	49.5	mg/kg	M	3.70E-09	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Selenium	2.36	mg/kg	2.36	mg/kg	M	1.76E-10	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Silver	5.15	mg/kg	5.15	mg/kg	M	3.85E-10	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Thallium	1.14	mg/kg	1.14	mg/kg	M	8.52E-11	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Vanadium	64.2	mg/kg	64.2	mg/kg	M	4.80E-09	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Zinc	971	mg/kg	971	mg/kg	M	7.25E-08	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Aroclor 1242	0.238	mg/kg	0.238	mg/kg	M	2.49E-09	mg/kg-day	2.00E+00	(mg/kg-day) $^{-1}$	5.0E-09
	Aroclor 1254	0.27	mg/kg	0.27	mg/kg	M	2.82E-09	mg/kg-day	2.00E+00	(mg/kg-day) $^{-1}$	5.6E-09
	Aroclor 1260	0.189	mg/kg	0.189	mg/kg	M	1.98E-09	mg/kg-day	2.00E+00	(mg/kg-day) $^{-1}$	4.0E-09
	Benz[a]anthracene	0.831	mg/kg	0.831	mg/kg	M	8.07E-09	mg/kg-day	7.30E-01	(mg/kg-day) $^{-1}$	5.9E-09
	Benzo[a]pyrene	0.889	mg/kg	0.889	mg/kg	M	8.63E-09	mg/kg-day	7.30E+00	(mg/kg-day) $^{-1}$	6.3E-08
	Benzo[b]fluoranthene	0.891	mg/kg	0.891	mg/kg	M	8.65E-09	mg/kg-day	7.30E-01	(mg/kg-day) $^{-1}$	6.3E-09
	Benzo[k]fluoranthene	0.797	mg/kg	0.797	mg/kg	M	7.74E-09	mg/kg-day	7.30E-02	(mg/kg-day) $^{-1}$	5.6E-10
	Chrysene	0.95	mg/kg	0.95	mg/kg	M	9.22E-09	mg/kg-day	7.30E-03	(mg/kg-day) $^{-1}$	6.7E-11
	Dibenz[a,h]anthracene	0.4	mg/kg	0.4	mg/kg	M	3.88E-09	mg/kg-day	7.30E+00	(mg/kg-day) $^{-1}$	2.8E-08
	Indeno[1,2,3-cd]pyrene	0.505	mg/kg	0.505	mg/kg	M	4.90E-09	mg/kg-day	7.30E-01	(mg/kg-day) $^{-1}$	3.6E-09
	(Subtotal)										**1.4E-07**

EPC = Exposure Point Concentration
M = Medium-Specific.

Table G-27
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
KENILWORTH PARK SOUTH LANDFILL SITE

Scenario Timeframe: Future
Medium: Surface Soil / Sediment / Subsurface Soil
Exposure Medium: Airborne Dust
Exposure Point: On-Site
Receptor Population: Utility/Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Aluminum	10028	mg/kg	10028	mg/kg	M	2.33E-06	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Antimony	9.66	mg/kg	9.66	mg/kg	M	2.24E-09	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Arsenic	6.71	mg/kg	6.71	mg/kg	M	1.56E-09	mg/kg-day	1.50E+01	(mg/kg-day) $^{-1}$	2.3E-08
	Barium	243	mg/kg	243	mg/kg	M	5.64E-08	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Cadmium	4.7	mg/kg	4.7	mg/kg	M	1.09E-09	mg/kg-day	6.30E+00	(mg/kg-day) $^{-1}$	6.9E-09
	Copper	327	mg/kg	327	mg/kg	M	7.58E-08	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Iron	48856	mg/kg	48856	mg/kg	M	1.13E-05	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Lead	484	mg/kg	484	mg/kg	M	1.12E-07	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Manganese	531	mg/kg	531	mg/kg	M	1.23E-07	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Mercury, soluble salts	0.776	mg/kg	0.776	mg/kg	M	1.80E-10	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Nickel, soluble salts	49.5	mg/kg	49.5	mg/kg	M	1.15E-08	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Selenium	2.36	mg/kg	2.36	mg/kg	M	5.47E-10	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Silver	5.15	mg/kg	5.15	mg/kg	M	1.19E-09	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Thallium	1.14	mg/kg	1.14	mg/kg	M	2.64E-10	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Vanadium	64.2	mg/kg	64.2	mg/kg	M	1.49E-08	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Zinc	971	mg/kg	971	mg/kg	M	2.25E-07	mg/kg-day	--	(mg/kg-day) $^{-1}$	--
	Aroclor 1242	0.238	mg/kg	0.238	mg/kg	M	5.52E-11	mg/kg-day	2.00E+00	(mg/kg-day) $^{-1}$	1.1E-10
	Aroclor 1254	0.27	mg/kg	0.27	mg/kg	M	6.26E-11	mg/kg-day	2.00E+00	(mg/kg-day) $^{-1}$	1.3E-10
	Aroclor 1260	0.189	mg/kg	0.189	mg/kg	M	4.38E-11	mg/kg-day	2.00E+00	(mg/kg-day) $^{-1}$	8.8E-11
	Benz[a]anthracene	0.831	mg/kg	0.831	mg/kg	M	1.93E-10	mg/kg-day	7.30E-01	(mg/kg-day) $^{-1}$	1.4E-10
	Benzo[a]pyrene	0.889	mg/kg	0.889	mg/kg	M	2.06E-10	mg/kg-day	7.30E+00	(mg/kg-day) $^{-1}$	1.5E-09
	Benzo[b]fluoranthene	0.891	mg/kg	0.891	mg/kg	M	2.07E-10	mg/kg-day	7.30E-01	(mg/kg-day) $^{-1}$	1.5E-10
	Benzo[k]fluoranthene	0.797	mg/kg	0.797	mg/kg	M	1.85E-10	mg/kg-day	7.30E-02	(mg/kg-day) $^{-1}$	1.3E-11
	Chrysene	0.95	mg/kg	0.95	mg/kg	M	2.20E-10	mg/kg-day	7.30E-03	(mg/kg-day) $^{-1}$	1.6E-12
	Dibenz[a,h]anthracene	0.4	mg/kg	0.4	mg/kg	M	9.28E-11	mg/kg-day	7.30E+00	(mg/kg-day) $^{-1}$	6.8E-10
	Indeno[1,2,3-cd]pyrene	0.505	mg/kg	0.505	mg/kg	M	1.17E-10	mg/kg-day	7.30E-01	(mg/kg-day) $^{-1}$	8.6E-11
	(Subtotal)										**3.3E-08**

Total Cancer Risk Across All Soil Exposure Routes/Pathways **4.5E-07**

EPC = Exposure Point Concentration
M = Medium-Specific.

Table G-28: Calculations of Preliminary Remediation Goals Using the Adult Lead Model

U.S. EPA Technical Review Workgroup for Lead, Adult Lead Committee

Version date 05/19/03

Exposure Variable	PRG Equation[1] 1*	PRG Equation[1] 2**	Description of Exposure Variable	Units	Values for Non-Residential Exposure Scenario: Using Equation 1, GSDi = Hom	Using Equation 1, GSDi = Het	Using Equation 2, GSDi = Hom	Using Equation 2, GSDi = Het
$PbB_{fetal,\ 0.95}$	X	X	95th percentile PbB in fetus	ug/dL	10	10	10	10
$R_{fetal/maternal}$	X	X	Fetal/maternal PbB ratio	--	0.9	0.9	0.9	0.9
BKSF	X	X	Biokinetic Slope Factor	ug/dL per ug/day	0.4	0.4	0.4	0.4
GSD_i	X	X	Geometric standard deviation PbB	--	2.1	2.3	2.1	2.3
PbB_0	X	X	Baseline PbB	ug/dL	1.5	1.7	1.5	1.7
IR_S	X		Soil ingestion rate (including soil-derived indoor dust)	g/day	0.330	0.330	--	--
IR_{S+D}		X	Total ingestion rate of outdoor soil and indoor dust	g/day	--	--	0.330	0.330
W_S		X	Weighting factor; fraction of IR_{S+D} ingested as outdoor soil	--	--	--	1.0	1.0
K_{SD}		X	Mass fraction of soil in dust	--	--	--	0.7	0.7
$AF_{S,\ D}$	X	X	Absorption fraction (same for soil and dust)	--	0.12	0.12	0.12	0.12
$EF_{S,\ D}$	X	X	Exposure frequency (same for soil and dust)	days/yr	90	90	90	90
$AT_{S,\ D}$	X	X	Averaging time (same for soil and dust)	days/yr	365	365	365	365
PRG			**Preliminary Remediation Goal**	**ppm**	**455**	**288**	**455**	**288**

[1] Equation 1 does not apportion exposure between soil and dust ingestion (excludes W_S, K_{SD}).
When $IR_S = IR_{S+D}$ and $W_S = 1.0$, the equations yield the same PRG.

***Equation 1, based on Eq. 4 in USEPA (1996).**

$$PRG = \frac{([PbB_{95}fetal/(R*(GSD_i^{1.645})])-PbB_0)*AT_{S,D}}{BKSF*(IR_{S+D}*AF_{S,D}*EF_{S,D})}$$

****Equation 2, alternate approach based on Eq. 4 and Eq. A-19 in USEPA (1996).**

$$PRG = \frac{([PbB_{fetal,0.95}/(R*(GSD_i^{1.645})])-PbB_0)*AT_{S,D}}{BKSF*([(IR_{S+D})*AF_S*EF_S*W_S]+[K_{SD}*(IR_{S+D})*(1-W_S)*AF_D*EF_D])}$$

Source: U.S. EPA (1996). Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil

Table G-28. Calculation of Exposure Point Concentrations for Surface Soil/Sediment

Date	Sample	ALUMINUM	L ALUMINUM	ANTIMONY	L ANTIMONY	ARSENIC	L ARSENIC	BARIUM	L BARIUM	CADMIUM	L CADMIUM	COPPER	L COPPER
2000	SS-1	NT		NT		3.64	1.292	96.3	4.567	*0.339*	-1.082	NT	
2000	SS-2	NT		NT		6.04	1.798	353	5.866	4.68	1.543	NT	
2000	SS-4	NT		NT		7.48	2.012	91.3	4.514	1.46	0.378	NT	
2000	SS-5	NT		NT		3.63	1.289	64.2	4.162	0.645	-0.439	NT	
2000	SS-6	NT		NT		4.59	1.524	70.9	4.261	0.999	-0.001	NT	
2000	SS-7	NT		NT		9.91	2.294	532	6.277	7.39	2.000	NT	
2000	SS-8	NT		NT		5.35	1.677	78.8	4.367	0.549	-0.600	NT	
2000	SS-9	NT		NT		9.57	2.259	100	4.605	2.72	1.001	NT	
2000	SS-10	NT		NT		4.42	1.486	78.4	4.362	*0.273*	-1.298	NT	
2000	SS-11	NT		NT		3.93	1.369	117	4.762	0.602	-0.507	NT	
2000	SS-12/D	NT		NT		6.355	1.849	95.7	4.561	1.105	0.100	NT	
2000	SS-13	NT		NT		3.79	1.332	66.2	4.193	*0.2955*	-1.219	NT	
2000	SS-14	NT		NT		3.97	1.379	93.4	4.537	1.04	0.039	NT	
2000	SS-15	NT		NT		7.44	2.007	41.3	3.721	1.23	0.207	NT	
2000	SS-16	NT		NT		4.27	1.452	66	4.190	*0.2195*	-1.516	NT	
2000	SS-17	NT		NT		5.21	1.651	80	4.382	*0.255*	-1.366	NT	
2000	SS-18	NT		NT		3.33	1.203	49.6	3.904	*0.278*	-1.280	NT	
2000	SS-19	NT		NT		6.23	1.829	84.6	4.438	*0.237*	-1.440	NT	
2000	SS-21	NT		NT		5	1.609	113	4.727	0.663	-0.411	NT	
2000	SS-22	NT		NT		4.84	1.577	88.2	4.480	0.59	-0.528	NT	
2000	SS-23	NT		NT		5.35	1.677	88.2	4.480	0.432	-0.839	NT	
2000	SS-24	NT		NT		3.42	1.230	65.8	4.187	*0.1815*	-1.706	NT	
2000	SS-25	NT		NT		12.2	2.501	28.3	3.343	1.36	0.307	NT	
2000	SS-26/D	NT		NT		4.13	1.418	87.1	4.467	0.546	-0.605	NT	
2000	SS-27	NT		NT		5.81	1.760	90.6	4.506	1.42	0.351	NT	
2000	SS-28	NT		NT		8.87	2.183	289	5.666	5.29	1.666	NT	
2000	SS-31	NT		NT		7.03	1.950	97.1	4.576	1.54	0.432	NT	
1998	SS-1	NT		NT		2	0.693	54	3.989	2.8	1.030	NT	
1998	SS-2	NT		NT		0.94	-0.062	54	3.989	3.4	1.224	NT	
1998	SS-3	NT		NT		0.84	-0.174	120	4.787	3.2	1.163	NT	
1998	SS-4	NT		NT		0.96	-0.041	120	4.787	2.3	0.833	NT	
1998	SS-5	NT		NT		1	0.000	20	2.996	0.75	-0.288	NT	
1998	SS-6	NT		NT		1.6	0.470	94	4.543	1.2	0.182	NT	
1998	SS-7	NT		NT		1.9	0.642	68	4.220	2.1	0.742	NT	
1998	SS-8	NT		NT		1.9	0.642	68	4.220	2.8	1.030	NT	
1998	SS-9	NT		NT		2.7	0.993	80	4.382	3.5	1.253	NT	
1998	SS-10	NT		NT		1.1	0.095	41	3.714	1.6	0.470	NT	
1998	SS-11	NT		NT		0.94	-0.062	99	4.595	2	0.693	NT	
1998	SS-12	NT		NT		0.98	-0.020	28	3.332	1.4	0.336	NT	
1998	SS-13	NT		NT		2.1	0.742	57	4.043	3.4	1.224	NT	
1998	SS-14	NT		NT		3	1.099	17	2.833	2.8	1.030	NT	
1998	SS-15	NT		NT		3.4	1.224	74	4.304	2.6	0.956	NT	
1998	SS-16	NT		NT		6.9	1.932	180	5.193	2.2	0.788	NT	
1998	SS-17	NT		NT		2.4	0.875	79	4.369	2.7	0.993	NT	
1998	SS-18	NT		NT		3.6	1.281	360	5.886	4.9	1.589	NT	
1998	SS-19	NT		NT		**16**	2.773	87	4.466	2.6	0.956	NT	
1998	SS-20	NT		NT		2	0.693	63	4.143	2.4	0.875	NT	
1998	SS-21/D	NT		NT		5.6	1.723	**680**	6.522	5.85	1.766	NT	
1998	SS-22	NT		NT		4	1.386	320	5.768	6.4	1.856	NT	
1998	SS-23	NT		NT		1.7	0.531	140	4.942	1.8	0.588	NT	
2001	KWS-SU-NE-1	7400	8.909	0.57	-0.562	4.39	1.479	263	5.572	3.56	1.270	171	5.142
2001	KWS-SU-NE-2	10700	9.278	*0.525*	-0.644	1.91	0.647	82.4	4.412	0.284	-1.259	28.8	3.360
2001	KWS-SU-NE-3	8660	9.066	1.03	0.030	6.4	1.856	505	6.225	8.73	2.167	**406**	6.006
2001	KWS-SU-NE-4/D	7300	8.896	0.809	-0.212	5.545	1.713	369.5	5.912	5.67	1.735	260	5.561
1999	SED-2	1900	7.550	*0.7*	-0.357	2.9	1.065	35	3.555	*0.35*	-1.050	20	2.996
1999	SED-3	8900	9.094	**4.4**	1.482	12	2.485	200	5.298	**27**	3.296	100	4.605
1999	SED-4	2000	7.601	*0.7*	-0.357	2.4	0.875	36	3.584	0.97	-0.030	51	3.932
1999	SED-5	7500	8.923	2.4	0.875	6	1.792	83	4.419	1.2	0.182	38	3.638
1999	SED-6	3500	8.161	2.1	0.742	5.1	1.629	56	4.025	1.5	0.405	43	3.761
1999	SED-7	3000	8.006	1.9	0.642	3	1.099	44	3.784	0.98	-0.020	43	3.761
1999	SED-8	6500	8.780	3.2	1.163	6.8	1.917	140	4.942	2.1	0.742	70	4.248
1999	SED-9	8700	9.071	2.8	1.030	6.6	1.887	120	4.787	1.5	0.405	58	4.060
1999	SED-10	12000	9.393	3.3	1.194	8.9	2.186	110	4.700	2.4	0.875	110	4.700
1999	SED-11	7300	8.896	2.6	0.956	7.4	2.001	100	4.605	1.9	0.642	87	4.466
1999	SED-13	**13000**	9.473	2.7	0.993	5.5	1.705	80	4.382	1	0.000	42	3.738
1999	SED-14	11000	9.306	2.3	0.833	5.7	1.740	91	4.511	0.83	-0.186	34	3.526
2000	SMP-E	NT		NT		9.19	2.218	114	4.736	1.64	0.495	NT	
2000	SMP-F	NT		NT		2.5	0.916	137	4.920	4.69	1.545	NT	
2000	SMP-J	NT		NT		9.34	2.234	152	5.024	1.89	0.637	NT	
2000	SMP-L	NT		NT		9.33	2.233	123	4.812	5.22	1.652	NT	
1998	SD-1	NT		NT		11	2.398	140	4.942	4.8	1.569	NT	
1998	SD-2	NT		NT		6.5	1.872	480	6.174	6.7	1.902	NT	
1998	SD-3	NT		NT		4	1.386	110	4.700	3.1	1.131	NT	
1998	SD-4/D	NT		NT		1.5	0.405	99	4.595	4	1.386	NT	
1998	SD-5	NT		NT		2.5	0.916	110	4.700	4.5	1.504	NT	
Number of observations		16	16	16	16	75	75	75	75	75	75	16	16
Data frequency distribution		Normal		Normal		Lognormal		Lognormal		Lognormal		Lognormal	
Mean (M)		7460		2.00		4.93		131		2.63		98	
Standard deviation (S)		3432		1.17		3.08		126		3.44		103	
t-value (t)		1.753		1.753									
95% UCL-normal		8964		2.52									
Mean Lognormal (ML)			8.775		0.488		1.383		4.579		0.473		4.219
Standard deviation Lognormal(SL)			0.611		0.711		0.699		0.723		1.031		0.821
H-statistic (H)							1.983		2.002		2.296		2.441
95% UCL-lognormal							5.98		150		3.60		160
maximum detected		13000		4.4		16		680		27		406	
Exposure point concentration		**8694**		**2.52**		**5.98**		**150**		**3.6**		**160**	
		Key at end of Table.											

Table G-28. Calculation of Exposure Point Concentrations for Surface Soil/Sediment

Date	Sample	IRON	L IRON	LEAD	L LEAD	MANGANESE	L MANGANESE	MERCURY	L MERCURY	NICKEL	L NICKEL	SELENIUM	L SELENIUM
2000	SS-1	NT		40	3.689	NT		0.656	-0.422	NT		*0.68*	-0.386
2000	SS-2	NT		307	5.727	NT		5.17	1.643	NT		*0.505*	-0.683
2000	SS-4	NT		129	4.860	NT		0.261	-1.343	NT		*0.63*	-0.462
2000	SS-5	NT		11.6	2.451	NT		0.0547	-2.906	NT		*0.49*	-0.713
2000	SS-6	NT		18.1	2.896	NT		0.0621	-2.779	NT		*0.366*	-1.005
2000	SS-7	NT		344	5.841	NT		7.5	2.015	NT		*0.515*	-0.664
2000	SS-8	NT		37.7	3.630	NT		0.377	-0.976	NT		*0.386*	-0.952
2000	SS-9	NT		64.9	4.173	NT		6.25	1.833	NT		*0.525*	-0.644
2000	SS-10	NT		29.9	3.398	NT		0.171	-1.766	NT		*0.545*	-0.607
2000	SS-11	NT		29.4	3.381	NT		0.125	-2.079	NT		*0.3945*	-0.930
2000	SS-12/D	NT		79.35	4.374	NT		0.968	-0.033	NT		*0.52575*	-0.643
2000	SS-13	NT		11.7	2.460	NT		0.0702	-2.656	NT		*0.59*	-0.528
2000	SS-14	NT		11.9	2.477	NT		0.0538	-2.922	NT		*0.319*	-1.143
2000	SS-15	NT		252	5.529	NT		1.2	0.182	NT		*0.56*	-0.580
2000	SS-16	NT		22.9	3.131	NT		0.0616	-2.787	NT		*0.439*	-0.823
2000	SS-17	NT		25.5	3.239	NT		0.0549	-2.902	NT		*0.515*	-0.664
2000	SS-18	NT		7.51	2.016	NT		*0.0215*	-3.840	NT		*0.555*	-0.589
2000	SS-19	NT		49.7	3.906	NT		1.33	0.285	NT		*0.4745*	-0.745
2000	SS-21	NT		17.9	2.885	NT		0.0536	-2.926	NT		*0.4125*	-0.886
2000	SS-22	NT		27.3	3.307	NT		0.0923	-2.383	NT		*0.3235*	-1.129
2000	SS-23	NT		17.7	2.874	NT		0.0462	-3.075	NT		*0.408*	-0.896
2000	SS-24	NT		12.4	2.518	NT		0.0431	-3.144	NT		*0.3625*	-1.015
2000	SS-25	NT		21.6	3.073	NT		0.227	-1.483	NT		*0.3765*	-0.977
2000	SS-26/D	NT		24.3	3.190	NT		0.08105	-2.513	NT		*0.39675*	-0.924
2000	SS-27	NT		63.5	4.151	NT		1.14	0.131	NT		*0.525*	-0.644
2000	SS-28	NT		237	5.468	NT		**7.77**	2.050	NT		*0.655*	-0.423
2000	SS-31	NT		59.9	4.093	NT		2.17	0.775	NT		*0.65*	-0.431
1998	SS-1	NT		45	3.807	NT		0.08	-2.526	NT		2.8	1.030
1998	SS-2	NT		13	2.565	NT		*0.02*	-3.912	NT		2	0.693
1998	SS-3	NT		44	3.784	NT		*0.02*	-3.912	NT		1.5	0.405
1998	SS-4	NT		29	3.367	NT		*0.017*	-4.075	NT		*0.55*	-0.598
1998	SS-5	NT		9.2	2.219	NT		*0.014*	-4.269	NT		*0.55*	-0.598
1998	SS-6	NT		30	3.401	NT		0.066	-2.718	NT		*0.55*	-0.598
1998	SS-7	NT		20	2.996	NT		*0.0165*	-4.104	NT		1.9	0.642
1998	SS-8	NT		24	3.178	NT		0.056	-2.882	NT		3.2	1.163
1998	SS-9	NT		56	4.025	NT		0.67	-0.400	NT		1.3	0.262
1998	SS-10	NT		18	2.890	NT		*0.017*	-4.075	NT		*0.55*	-0.598
1998	SS-11	NT		63	4.143	NT		0.068	-2.688	NT		*0.55*	-0.598
1998	SS-12	NT		17	2.833	NT		0.045	-3.101	NT		*0.55*	-0.598
1998	SS-13	NT		24	3.178	NT		0.034	-3.381	NT		1.9	0.642
1998	SS-14	NT		8.3	2.116	NT		*0.0175*	-4.046	NT		1.4	0.336
1998	SS-15	NT		120	4.787	NT		0.09	-2.408	NT		1.9	0.642
1998	SS-16	NT		81	4.394	NT		0.07	-2.659	NT		3.3	1.194
1998	SS-17	NT		46	3.829	NT		1.9	0.642	NT		1.5	0.405
1998	SS-18	NT		300	5.704	NT		*0.018*	-4.017	NT		1.6	0.470
1998	SS-19	NT		11	2.398	NT		*0.0205*	-3.887	NT		1.9	0.642
1998	SS-20	NT		32	3.466	NT		0.043	-3.147	NT		3.2	1.163
1998	SS-21/D	NT		**910**	6.813	NT		0.929	-0.074	NT		2.5	0.916
1998	SS-22	NT		230	5.438	NT		*0.0175*	-4.046	NT		1.3	0.262
1998	SS-23	NT		82	4.407	NT		0.045	-3.101	NT		*0.55*	-0.598
2001	KWS-SU-NE-1	20400	9.923	192	5.257	295	5.687	3.05	1.115	24.3	3.190	2.91	1.068
2001	KWS-SU-NE-2	21700	9.985	28.7	3.357	486	6.186	0.0578	-2.851	39	3.664	**3.72**	1.314
2001	KWS-SU-NE-3	21700	9.985	366	5.903	267	5.587	7.45	2.008	31.4	3.447	1.58	0.457
2001	KWS-SU-NE-4/D	17300	9.758	269	5.595	261.5	5.566	5.785	1.755	26.3	3.270	2.63	0.967
1999	SED-2	14000	9.547	32	3.466	330	5.799	*0.02*	-3.912	20	2.996	*0.7*	-0.357
1999	SED-3	26000	10.166	300	5.704	170	5.136	0.28	-1.273	44	3.784	*1.55*	0.438
1999	SED-4	9600	9.170	98	4.585	55	4.007	0.05	-2.996	20	2.996	*0.7*	-0.357
1999	SED-5	15000	9.616	88	4.477	320	5.768	0.18	-1.715	25	3.219	*0.55*	-0.598
1999	SED-6	19000	9.852	74	4.304	180	5.193	0.045	-3.101	25	3.219	*0.75*	-0.288
1999	SED-7	15000	9.616	64	4.159	230	5.438	0.094	-2.364	25	3.219	*0.8*	-0.223
1999	SED-8	26000	10.166	89	4.489	310	5.737	0.16	-1.833	36	3.584	*1.1*	0.095
1999	SED-9	27000	10.204	78	4.357	710	6.565	0.12	-2.120	30	3.401	*1.15*	0.140
1999	SED-10	30000	10.309	120	4.787	600	6.397	0.12	-2.120	**52**	3.951	*1.15*	0.140
1999	SED-11	26000	10.166	98	4.585	**970**	6.877	0.12	-2.120	39	3.664	*1.2*	0.182
1999	SED-13	**32000**	10.373	31	3.434	420	6.040	0.069	-2.674	18	2.890	*0.85*	-0.163
1999	SED-14	27000	10.204	63	4.143	150	5.011	0.1	-2.303	15	2.708	*0.7*	-0.357
2000	SMP-E	NT		134	4.898	NT		0.84	-0.174	NT		*0.725*	-0.322
2000	SMP-F	NT		122	4.804	NT		0.58	-0.545	NT		*1.2*	0.182
2000	SMP-J	NT		134	4.898	NT		0.412	-0.887	NT		*1.045*	0.044
2000	SMP-L	NT		177	5.176	NT		0.456	-0.785	NT		*0.488*	-0.717
1998	SD-1	NT		500	6.215	NT		0.87	-0.139	NT		*1.05*	0.049
1998	SD-2	NT		520	6.254	NT		0.58	-0.545	NT		*1.15*	0.140
1998	SD-3	NT		97	4.575	NT		0.16	-1.833	NT		*0.65*	-0.431
1998	SD-4/D	NT		40.5	3.701	NT		0.943	-0.059	NT		*0.725*	-0.322
1998	SD-5	NT		49	3.892	NT		0.098	-2.323	NT		*0.8*	-0.223
Number of observations		16	16	75	75	16	16	75	75	16	16	75	75
Data frequency distribution		Normal		Lognormal		Lognormal		Lognormal		Lognormal		Lognormal	
Mean (M)		21731		105.74		360		0.84		29.38		1.07	
Standard deviation (S)		6379		146.05		234		1.83		10.21		0.82	
t-value (t)		1.753											
95% UCL-normal		24527											
Mean Lognormal (ML)			9.940		4.020		5.687		-1.821		3.325		-0.167
Standard deviation Lognormal(SL)			0.329		1.116		0.683		1.756		0.343		0.655
H-statistic (H)					2.383		2.259		3.104		1.905		1.95
95% UCL-lognormal					141		555		1.43		34.9		1.22
maximum detected		32000		910		970		7.77		52		3.72	
Exposure point concentration		**24527**		**141**		**555**		**1.43**		**34.9**		**1.22**	
		Key at end of Table.											

Table G-28. Calculation of Exposure Point Concentrations for Surface Soil/Sediment

Date	Sample	SILVER	L SILVER	THALLIUM	L THALLIUM	VANADIUM	L VANADIUM	ZINC	L ZINC	PCB 1242	L PCB 1242	PCB 1254	L PCB 1254	PCB 1260
2000	SS-1	3.43	1.233	NT		NT		NT		NT		NT		NT
2000	SS-2	42.4	3.747	NT		NT		NT		NT		NT		NT
2000	SS-4	*0.63*	-0.462	NT		NT		NT		NT		NT		NT
2000	SS-5	*0.49*	-0.713	NT		NT		NT		NT		NT		NT
2000	SS-6	*0.366*	-1.005	NT		NT		NT		NT		NT		NT
2000	SS-7	78.5	4.363	NT		NT		NT		NT		NT		NT
2000	SS-8	*0.386*	-0.952	NT		NT		NT		NT		NT		NT
2000	SS-9	12.7	2.542	NT		NT		NT		NT		NT		NT
2000	SS-10	*0.545*	-0.607	NT		NT		NT		NT		NT		NT
2000	SS-11	*0.3945*	-0.930	NT		NT		NT		NT		NT		NT
2000	SS-12/D	6.18	1.821	NT		NT		NT		NT		NT		NT
2000	SS-13	*0.59*	-0.528	NT		NT		NT		NT		NT		NT
2000	SS-14	*0.319*	-1.143	NT		NT		NT		NT		NT		NT
2000	SS-15	*0.56*	-0.580	NT		NT		NT		NT		NT		NT
2000	SS-16	*0.439*	-0.823	NT		NT		NT		NT		NT		NT
2000	SS-17	*0.515*	-0.664	NT		NT		NT		NT		NT		NT
2000	SS-18	*0.555*	-0.589	NT		NT		NT		NT		NT		NT
2000	SS-19	*0.4745*	-0.745	NT		NT		NT		NT		NT		NT
2000	SS-21	*0.4125*	-0.886	NT		NT		NT		NT		NT		NT
2000	SS-22	*0.3235*	-1.129	NT		NT		NT		NT		NT		NT
2000	SS-23	*0.408*	-0.896	NT		NT		NT		NT		NT		NT
2000	SS-24	*0.3625*	-1.015	NT		NT		NT		NT		NT		NT
2000	SS-25	*0.3765*	-0.977	NT		NT		NT		NT		NT		NT
2000	SS-26/D	*0.39675*	-0.924	NT		NT		NT		NT		NT		NT
2000	SS-27	6.12	1.812	NT		NT		NT		NT		NT		NT
2000	SS-28	37	3.611	NT		NT		NT		NT		NT		NT
2000	SS-31	11.7	2.460	NT		NT		NT		NT		NT		NT
1998	SS-1	*0.55*	-0.598	NT		NT		NT		NT		NT		NT
1998	SS-2	*0.65*	-0.431	NT		NT		NT		NT		NT		NT
1998	SS-3	*0.7*	-0.357	NT		NT		NT		NT		NT		NT
1998	SS-4	*0.55*	-0.598	NT		NT		NT		NT		NT		NT
1998	SS-5	*0.55*	-0.598	NT		NT		NT		NT		NT		NT
1998	SS-6	*0.55*	-0.598	NT		NT		NT		NT		NT		NT
1998	SS-7	*0.55*	-0.598	NT		NT		NT		NT		NT		NT
1998	SS-8	*0.55*	-0.598	NT		NT		NT		NT		NT		NT
1998	SS-9	5.9	1.775	NT		NT		NT		NT		NT		NT
1998	SS-10	*0.55*	-0.598	NT		NT		NT		NT		NT		NT
1998	SS-11	*0.55*	-0.598	NT		NT		NT		NT		NT		NT
1998	SS-12	*0.55*	-0.598	NT		NT		NT		NT		NT		NT
1998	SS-13	*0.55*	-0.598	NT		NT		NT		NT		NT		NT
1998	SS-14	*0.6*	-0.511	NT		NT		NT		NT		NT		NT
1998	SS-15	*0.55*	-0.598	NT		NT		NT		NT		NT		NT
1998	SS-16	*0.6*	-0.511	NT		NT		NT		NT		NT		NT
1998	SS-17	*0.55*	-0.598	NT		NT		NT		NT		NT		NT
1998	SS-18	21	3.045	NT		NT		NT		NT		NT		NT
1998	SS-19	*0.7*	-0.357	NT		NT		NT		NT		NT		NT
1998	SS-20	*0.55*	-0.598	NT		NT		NT		NT		NT		NT
1998	SS-21/D	18	2.890	NT		NT		NT		NT		NT		NT
1998	SS-22	37	3.611	NT		NT		NT		NT		NT		NT
1998	SS-23	*0.55*	-0.598	NT		NT		NT		NT		NT		NT
2001	KWS-SU-NE-1	29	3.367	*0.655*	-0.423	55.4	4.015	390	5.966	*0.1275*	-2.060	0.742	-0.298	1.3
2001	KWS-SU-NE-2	*0.525*	-0.644	*0.525*	-0.644	46.2	3.833	63.7	4.154	*0.01085*	-4.524	*0.01085*	-4.524	0.119
2001	KWS-SU-NE-3	**79.3**	4.373	*0.725*	-0.322	**105**	4.654	**831**	6.723	*0.2765*	-1.286	**3.16**	1.151	**2.51**
2001	KWS-SU-NE-4/D	58.75	4.073	*0.5825*	-0.540	57.2	4.047	579	6.361	*0.18525*	-1.686	2.015	0.701	1.22
1999	SED-2	*0.7*	-0.357	*0.7*	-0.357	21	3.045	130	4.868	0.063	-2.765	0.072	-2.631	0.051
1999	SED-3	*1.55*	0.438	*1.55*	0.438	72	4.277	560	6.328	0.26	-1.347	0.25	-1.386	0.25
1999	SED-4	*0.7*	-0.357	*0.7*	-0.357	17	2.833	180	5.193	0.029	-3.540	0.12	-2.120	0.089
1999	SED-5	*0.55*	-0.598	*0.55*	-0.598	66	4.190	140	4.942	*0.009*	-4.711	*0.009*	-4.711	*0.009*
1999	SED-6	*0.75*	-0.288	*0.38*	-0.968	28	3.332	200	5.298	0.058	-2.847	0.14	-1.966	0.044
1999	SED-7	1.8	0.588	*0.39*	-0.942	25	3.219	190	5.247	0.048	-3.037	0.12	-2.120	0.055
1999	SED-8	*1.1*	0.095	*0.55*	-0.598	44	3.784	330	5.799	0.11	-2.207	0.17	-1.772	0.11
1999	SED-9	*1.15*	0.140	*0.6*	-0.511	52	3.951	220	5.394	0.091	-2.397	0.15	-1.897	0.093
1999	SED-10	*1.15*	0.140	*1.15*	0.140	85	4.443	360	5.886	0.091	-2.397	0.13	-2.040	0.12
1999	SED-11	*1.2*	0.182	*0.6*	-0.511	57	4.043	290	5.670	0.12	-2.120	0.16	-1.833	0.12
1999	SED-13	*0.85*	-0.163	*0.43*	-0.844	62	4.127	83	4.419	0.034	-3.381	0.097	-2.333	0.082
1999	SED-14	*0.7*	-0.357	*0.36*	-1.022	41	3.714	92	4.522	0.073	-2.617	0.15	-1.897	0.036
2000	SMP-E	4.75	1.558	NT		NT		NT		0.0546	-2.908	0.0685	-2.681	0.0596
2000	SMP-F	*1.2*	0.182	NT		NT		NT		0.0522	-2.953	0.137	-1.988	0.084
2000	SMP-J	*1.045*	0.044	NT		NT		NT		*0.02455*	-3.707	0.0905	-2.402	0.0763
2000	SMP-L	*0.488*	-0.717	NT		NT		NT		**0.354**	-1.038	0.571	-0.560	0.409
1998	SD-1	*1.05*	0.049	NT		NT		NT		NT		NT		NT
1998	SD-2	7.6	2.028	NT		NT		NT		NT		NT		NT
1998	SD-3	1.6	0.470	NT		NT		NT		NT		NT		NT
1998	SD-4/D	*0.725*	-0.322	NT		NT		NT		NT		NT		NT
1998	SD-5	*0.8*	-0.223	NT		NT		NT		NT		NT		NT
Number of observations		75	75	16	16	16	16	16	16	20	20	20	20	20
Data frequency distribution		Lognormal		Lognormal		Normal		Lognormal		Lognormal		Lognormal		Logn
Mean (M)		6.65		0.653		52.1		289.92		0.104		0.418		0.342
Standard deviation (S)		16.13		0.304		23.6		213.24		0.095		0.785		0.627
t-value (t)						1.753								
95% UCL-normal						62.5								
Mean Lognormal (ML)			0.273		-0.504		3.844		5.423		-2.676		-1.865	
Standard deviation Lognormal(SL)			1.519		0.384		0.507		0.738		0.989		1.399	
H-statistic (H)			2.821		1.94				2.329		2.572		3.187	
95% UCL-lognormal			6.86		0.789				464		0.201		1.15	
maximum detected		79.3		*ND*		105		831		0.354		3.16		2.51
Exposure point concentration		**6.86**		**0.789**		**62.5**		**464**		**0.201**		**1.15**		**0.784**
		Key at end of Table.												

Table G-28. Calculation of Exposure Point Concentrations for Surface Soil/Sediment

Date	Sample	L PCB 1260	BENZO(A) ANTHRACENE	L BENZO(A) ANTHRACENE	BENZO(A) PYRENE	L BENZO(A) PYRENE	BENZO(B) FLUORANTHENE	L BENZO(B) FLUORANTHENE	BENZO(K) FLUORANTHENE
2000	SS-1		0.174	-1.749	0.369	-0.997	0.285	-1.255	0.362
2000	SS-2		0.364	-1.011	0.388	-0.947	0.447	-0.805	0.308
2000	SS-4		0.396	-0.926	0.527	-0.641	0.587	-0.533	0.441
2000	SS-5		0.0201	-3.907	0.0875	-2.436	0.0432	-3.142	0.0663
2000	SS-6		0.107	-2.235	0.469	-0.757	0.384	-0.957	0.408
2000	SS-7		2.03	0.708	2.26	0.815	2.07	0.728	1.84
2000	SS-8		0.25	-1.386	0.286	-1.252	0.318	-1.146	0.252
2000	SS-9		0.141	-1.959	0.167	-1.790	0.239	-1.431	0.782
2000	SS-10		0.525	-0.644	0.561	-0.578	0.572	-0.559	0.336
2000	SS-11		1	0.247	1	0.231	1	0.215	1
2000	SS-12/D		0.219	-1.519	0.369	-0.997	0.3145	-1.157	0.3375
2000	SS-13		0.0608	-2.800	0.0853	-2.462	0.117	-2.146	0.0589
2000	SS-14		0.00857	-4.759	0.011	-4.510	0.00944	-4.663	0.00938
2000	SS-15		0.0698	-2.662	1.5	0.405	0.288	-1.245	0.456
2000	SS-16		0.321	-1.136	0.533	-0.629	0.383	-0.960	0.318
2000	SS-17		0.24	-1.427	0.248	-1.394	0.261	-1.343	0.146
2000	SS-18		0.0385	-3.257	0.036	-3.324	0.0424	-3.161	0.0243
2000	SS-19		1.19	0.174	2.05	0.718	1.3	0.262	1.15
2000	SS-21		0.646	-0.437	0.76	-0.274	0.938	-0.064	0.395
2000	SS-22		1.48	0.392	2.95	1.082	1.97	0.678	1.74
2000	SS-23		0.0193	-3.948	0.0218	-3.826	0.0556	-2.890	0.0339
2000	SS-24		0.0931	-2.374	0.169	-1.778	0.142	-1.952	0.077
2000	SS-25		0.00885	-4.727	0.0171	-4.069	0.0312	-3.467	0.0334
2000	SS-26/D		0.996	-0.004	1.18	0.166	1.0165	0.016	0.5625
2000	SS-27		0.0517	-2.962	0.114	-2.172	0.115	-2.163	0.197
2000	SS-28		0.156	-1.858	0.197	-1.625	0.29	-1.238	0.248
2000	SS-31		0.184	-1.693	0.248	-1.394	0.328	-1.115	0.923
1998	SS-1		0.58	-0.545	0.49	-0.713	0.51	-0.673	0.69
1998	SS-2		0.06	-2.813	0.058	-2.847	0.07	-2.659	0.051
1998	SS-3		0.56	-0.580	0.47	-0.755	0.49	-0.713	0.57
1998	SS-4		0.63	-0.462	0.55	-0.598	1	0.095	*0.19*
1998	SS-5		0.092	-2.386	0.082	-2.501	0.098	-2.323	0.079
1998	SS-6		0.77	-0.261	0.59	-0.528	0.71	-0.342	0.6
1998	SS-7		0.16	-1.833	0.15	-1.897	0.14	-1.966	0.19
1998	SS-8		0.52	-0.654	0.43	-0.844	0.42	-0.868	0.46
1998	SS-9		0.16	-1.833	0.18	-1.715	0.18	-1.715	0.17
1998	SS-10		0.32	-1.139	0.25	-1.386	0.28	-1.273	0.25
1998	SS-11		0.82	-0.198	0.64	-0.446	0.71	-0.342	0.64
1998	SS-12		0.36	-1.022	0.29	-1.238	0.25	-1.386	0.34
1998	SS-13		0.15	-1.897	0.13	-2.040	0.16	-1.833	0.13
1998	SS-14		*0.195*	-1.635	*0.195*	-1.635	*0.195*	-1.635	*0.195*
1998	SS-15		0.41	-0.892	0.36	-1.022	0.42	-0.868	0.4
1998	SS-16		**29**	3.367	**20**	2.996	**13**	2.565	**21**
1998	SS-17		0.2	-1.609	0.17	-1.772	0.21	-1.561	0.21
1998	SS-18		0.25	-1.386	0.24	-1.427	0.31	-1.171	0.29
1998	SS-19		*0.225*	-1.492	*0.225*	-1.492	*0.225*	-1.492	*0.225*
1998	SS-20		5	1.629	8	2.041	8	2.054	10
1998	SS-21/D		1	0.072	1	-0.157	1	-0.062	1
1998	SS-22		0.14	-1.966	*0.195*	-1.635	0.19	-1.661	0.19
1998	SS-23		1	0.095	0.92	-0.083	2	0.693	*0.185*
2001	KWS-SU-NE-1	0.262	0.0501	-2.994	0.463	-0.770	0.598	-0.514	0.266
2001	KWS-SU-NE-2	-2.129	0.0409	-3.197	0.382	-0.962	0.347	-1.058	0.216
2001	KWS-SU-NE-3	0.920	*0.108*	-2.226	0.509	-0.675	0.493	-0.707	0.129
2001	KWS-SU-NE-4/D	0.199	*0.0985*	-2.318	0.0997	-2.306	0.134	-2.010	0.06885
1999	SED-2	-2.976	0.17	-1.772	0.28	-1.273	0.47	-0.755	0.47
1999	SED-3	-1.386	0.19	-1.661	0.33	-1.109	0.45	-0.799	0.43
1999	SED-4	-2.419	0.74	-0.301	0.93	-0.073	0.96	-0.041	1.1
1999	SED-5	-4.711	0.15	-1.897	0.23	-1.470	0.29	-1.238	0.25
1999	SED-6	-3.124	0.6	-0.511	0.66	-0.416	0.58	-0.545	0.56
1999	SED-7	-2.900	0.42	-0.868	0.49	-0.713	0.5	-0.693	0.48
1999	SED-8	-2.207	0.75	-0.288	0.87	-0.139	1	0.000	0.94
1999	SED-9	-2.375	0.51	-0.673	0.67	-0.400	0.77	-0.261	0.62
1999	SED-10	-2.120	0.24	-1.427	0.48	-0.734	0.81	-0.211	0.78
1999	SED-11	-2.120	0.53	-0.635	0.75	-0.288	0.84	-0.174	0.74
1999	SED-13	-2.501	0.58	-0.545	0.54	-0.616	0.43	-0.844	0.44
1999	SED-14	-3.324	0.92	-0.083	0.85	-0.163	0.79	-0.236	0.74
2000	SMP-E	-2.820	0.0983	-2.320	0.129	-2.048	0.193	-1.645	0.119
2000	SMP-F	-2.477	0.165	-1.802	0.279	-1.277	0.884	-0.123	1.34
2000	SMP-J	-2.573	0.159	-1.839	0.235	-1.448	0.446	-0.807	0.481
2000	SMP-L	-0.894	0.114	-2.172	0.132	-2.025	0.287	-1.248	0.523
1998	SD-1		0.46	-0.777	0.48	-0.734	0.77	-0.261	0.53
1998	SD-2		0.27	-1.309	0.31	-1.171	0.41	-0.892	0.3
1998	SD-3		0.51	-0.673	0.4	-0.916	0.39	-0.942	0.37
1998	SD-4/D		0.645	-0.439	0.58	-0.545	0.675	-0.393	0.5
1998	SD-5		0.43	-0.844	0.41	-0.892	0.61	-0.494	0.39
Number of observations		20	75	75	75	75	75	75	75
Data frequency distribution		ormal	Lognormal		Lognormal		Lognormal		Logn
Mean (M)			0.84		0.85		0.78		0.84
Standard deviation (S)			3.36		2.44		1.71		2.63
t-value (t)									
95% UCL-normal									
Mean Lognormal (ML)		-2.084		-1.345		-1.057		-0.954	
Standard deviation Lognormal(SL)		1.337		1.319		1.193		1.118	
H-statistic (H)		3.088		2.593		2.46		2.385	
95% UCL-lognormal		0.784		0.925		0.996		0.982	
maximum detected			29		20		13		21
Exposure point concentration			**0.925**		**0.996**		**0.982**		**0.925**
			Key at end of Table.						

Table G-28. Calculation of Exposure Point Concentrations for Surface Soil/Sediment

Date	Sample	L BENZO(K) FLUORANTHENE	CHRYSENE	L CHRYSENE	DIBENZ(A,H) ANTHRACENE	L DIBENZ(A,H) ANTHRACENE	INDENO(1,2,3-CD)PYRENE	L INDENO(1,2,3-CD)PYRENE
2000	SS-1	-1.016	0.208	-1.570	0.188	-1.671	0.0945	-2.359
2000	SS-2	-1.178	0.450	-0.799	*0.168*	-1.784	0.197	-1.625
2000	SS-4	-0.819	0.552	-0.594	*0.385*	-0.955	0.262	-1.339
2000	SS-5	-2.714	0.024	-3.738	*0.03045*	-3.492	0.0117	-4.448
2000	SS-6	-0.896	0.114	-2.172	*0.03025*	-3.498	0.164	-1.808
2000	SS-7	0.610	2.120	0.751	*0.333*	-1.100	0.619	-0.480
2000	SS-8	-1.378	0.296	-1.217	*0.1415*	-1.955	0.118	-2.137
2000	SS-9	-0.246	0.121	-2.112	*0.15*	-1.897	0.0507	-2.982
2000	SS-10	-1.091	0.582	-0.541	*0.14*	-1.966	0.274	-1.295
2000	SS-11	-0.383	1.400	0.336	0.0638	-2.752	0.678	-0.389
2000	SS-12/D	-1.086	0.284	-1.259	*0.253*	-1.374	0.11	-2.207
2000	SS-13	-2.832	0.080	-2.521	*0.0287*	-3.551	0.0494	-3.008
2000	SS-14	-4.669	0.012	-4.457	*0.02985*	-3.512	0.0043	-5.449
2000	SS-15	-0.785	0.114	-2.172	*0.4035*	-0.908	*0.1615*	-1.823
2000	SS-16	-1.146	0.356	-1.033	0.152	-1.884	0.144	-1.938
2000	SS-17	-1.924	0.296	-1.217	*0.1485*	-1.907	0.125	-2.079
2000	SS-18	-3.717	0.048	-3.045	*0.0302*	-3.500	0.0244	-3.713
2000	SS-19	0.140	1.230	0.207	0.803	-0.219	0.685	-0.378
2000	SS-21	-0.929	0.786	-0.241	*0.1475*	-1.914	0.364	-1.011
2000	SS-22	0.554	1.640	0.495	**1.47**	0.385	**1.55**	0.438
2000	SS-23	-3.384	0.024	-3.742	*0.0308*	-3.480	0.0127	-4.366
2000	SS-24	-2.564	0.116	-2.154	*0.1475*	-1.914	0.0879	-2.432
2000	SS-25	-3.399	*0.02895*	-3.542	*0.02895*	-3.542	0.0102	-4.585
2000	SS-26/D	-0.575	1.320	0.278	*0.2825*	-1.264	0.487	-0.719
2000	SS-27	-1.625	0.072	-2.635	*0.3305*	-1.107	0.0354	-3.341
2000	SS-28	-1.394	0.244	-1.411	*0.492*	-0.709	0.116	-2.154
2000	SS-31	-0.080	0.249	-1.390	*0.3185*	-1.144	0.0873	-2.438
1998	SS-1	-0.371	0.620	-0.478	0.11	-2.207	0.095	-2.354
1998	SS-2	-2.976	0.070	-2.659	*0.215*	-1.537	*0.215*	-1.537
1998	SS-3	-0.562	0.520	-0.654	*0.215*	-1.537	0.098	-2.323
1998	SS-4	-1.661	0.610	-0.494	*0.19*	-1.661	0.12	-2.120
1998	SS-5	-2.538	0.100	-2.303	*0.185*	-1.687	0.046	-3.079
1998	SS-6	-0.511	0.240	-1.427	*0.18*	-1.715	0.1	-2.303
1998	SS-7	-1.661	0.160	-1.833	*0.18*	-1.715	*0.18*	-1.715
1998	SS-8	-0.777	0.500	-0.693	*0.18*	-1.715	0.096	-2.343
1998	SS-9	-1.772	0.190	-1.661	*0.18*	-1.715	0.046	-3.079
1998	SS-10	-1.386	0.320	-1.139	*0.19*	-1.661	0.095	-2.354
1998	SS-11	-0.446	0.840	-0.174	*0.185*	-1.687	0.19	-1.661
1998	SS-12	-1.079	0.360	-1.022	*0.18*	-1.715	0.079	-2.538
1998	SS-13	-2.040	0.150	-1.897	*0.19*	-1.661	*0.19*	-1.661
1998	SS-14	-1.635	0.055	-2.900	*0.195*	-1.635	*0.195*	-1.635
1998	SS-15	-0.916	0.420	-0.868	*0.185*	-1.687	0.062	-2.781
1998	SS-16	3.045	25.000	3.219	*0.19*	-1.661	**7.6**	2.028
1998	SS-17	-1.561	0.210	-1.561	*0.185*	-1.687	*0.185*	-1.687
1998	SS-18	-1.238	0.260	-1.347	*0.2*	-1.609	0.074	-2.604
1998	SS-19	-1.492	*0.225*	-1.492	*0.225*	-1.492	*0.225*	-1.492
1998	SS-20	2.303	6.500	1.872	*0.9*	-0.105	2	0.588
1998	SS-21/D	-0.051	1.400	0.336	*0.19*	-1.661	0.1235	-2.092
1998	SS-22	-1.661	0.170	-1.772	*0.195*	-1.635	*0.195*	-1.635
1998	SS-23	-1.687	1.000	0.000	*0.17*	-1.772	0.12	-2.120
2001	KWS-SU-NE-1	-1.324	0.446	-0.807	0.0868	-2.444	0.318	-1.146
2001	KWS-SU-NE-2	-1.532	0.356	-1.033	0.117	-2.146	0.197	-1.625
2001	KWS-SU-NE-3	-2.048	0.436	-0.830	0.942	-0.060	0.25	-1.386
2001	KWS-SU-NE-4/D	-2.676	*0.0985*	-2.318	0.642	-0.443	*0.0985*	-2.318
1999	SED-2	-0.755	0.330	-1.109	0.047	-3.058	*0.23*	-1.470
1999	SED-3	-0.844	0.340	-1.079	*0.5*	-0.693	*0.5*	-0.693
1999	SED-4	0.095	0.910	-0.094	0.13	-2.040	0.11	-2.207
1999	SED-5	-1.386	0.220	-1.514	*0.175*	-1.743	0.036	-3.324
1999	SED-6	-0.580	0.780	-0.248	0.23	-1.470	1.2	0.182
1999	SED-7	-0.734	0.600	-0.511	*1.15*	0.140	0.64	-0.446
1999	SED-8	-0.062	1.200	0.182	*1.85*	0.615	1.5	0.405
1999	SED-9	-0.478	0.770	-0.261	*1.9*	0.642	0.98	-0.020
1999	SED-10	-0.248	0.460	-0.777	*0.38*	-0.968	*0.38*	-0.968
1999	SED-11	-0.301	0.900	-0.105	*2*	0.693	1.2	0.182
1999	SED-13	-0.821	0.600	-0.511	0.19	-1.661	0.92	-0.083
1999	SED-14	-0.301	0.960	-0.041	0.24	-1.427	0.86	-0.151
2000	SMP-E	-2.129	*0.04795*	-3.038	*0.04795*	-3.038	0.0875	-2.436
2000	SMP-F	0.293	*0.72*	-0.329	*0.72*	-0.329	0.137	-1.988
2000	SMP-J	-0.732	0.272	-1.302	*0.3065*	-1.183	0.146	-1.924
2000	SMP-L	-0.648	0.199	-1.614	*0.448*	-0.803	0.0927	-2.378
1998	SD-1	-0.635	0.610	-0.494	*0.32*	-1.139	0.091	-2.397
1998	SD-2	-1.204	0.310	-1.171	*0.365*	-1.008	*0.365*	-1.008
1998	SD-3	-0.994	0.520	-0.654	0.1	-2.303	0.13	-2.040
1998	SD-4/D	-0.693	0.790	-0.236	*0.24*	-1.427	0.1725	-1.757
1998	SD-5	-0.942	0.440	-0.821	*0.265*	-1.328	0.062	-2.781
Number of observations		75	75	75	75	75	75	75
Data frequency distribution		ormal	Lognormal		Lognormal		Lognormal	
Mean (M)			0.88		0.335		0.391	
Standard deviation (S)			2.94		0.414		0.925	
t-value (t)								
95% UCL-normal								
Mean Lognormal (ML)		-1.105		-1.109		-1.579		-1.818
Standard deviation Lognormal(SL)		1.177		1.244		0.979		1.261
H-statistic (H)		2.444		2.444		2.238		2.529
95% UCL-lognormal		0.925		1.019		0.430		0.521
maximum detected			25		1.47		7.6	
Exposure point concentration			**1.02**		**0.43**		**0.521**	

95% UCL-lognormal = EXP(ML + [0.5 x SL^2]+ [SL x H / $(n-1)^{1/2}$])

95% UCL-normal = M + [t x S / $(n)^{1/2}$]

NT = not tested.

NDE = not detected and eliminated because quantitation lin
times greater than the maximum detected concentration.
Values in italics are one half of the reported SQL for a non-

Table G-29. Calculation of Exposure Point Concentrations for Surface Soil / Sediment / Subsurface Soi

Date	Sample	ALUMINUM	L ALUMINUM	ANTIMONY	L ANTIMONY	ARSENIC	L ARSENIC	BARIUM	L BARIUM	CADMIUM	L CADMIUM	COPPER	L COPPER	IRON	L IRON	LEAD	L LEAD	MANGANESE	L MANGANESE
2000	SS-1	NT		NT		3.64	1.292	96.3	4.567	*0.339*	-1.082	NT		NT		40	3.689	NT	
2000	SS-2	NT		NT		6.04	1.798	353	5.866	4.68	1.543	NT		NT		307	5.727	NT	
2000	SS-4	NT		NT		7.48	2.012	91.3	4.514	1.46	0.378	NT		NT		129	4.860	NT	
2000	SS-5	NT		NT		3.63	1.289	64.2	4.162	0.645	-0.439	NT		NT		11.6	2.451	NT	
2000	SS-6	NT		NT		4.59	1.524	70.9	4.261	0.999	-0.001	NT		NT		18.1	2.896	NT	
2000	SS-7	NT		NT		9.91	2.294	532	6.277	7.39	2.000	NT		NT		344	5.841	NT	
2000	SS-8	NT		NT		5.35	1.677	78.8	4.367	0.549	-0.600	NT		NT		37.7	3.630	NT	
2000	SS-9	NT		NT		9.57	2.259	100	4.605	2.72	1.001	NT		NT		64.9	4.173	NT	
2000	SS-10	NT		NT		4.42	1.486	78.4	4.362	*0.273*	-1.298	NT		NT		29.9	3.398	NT	
2000	SS-11	NT		NT		3.93	1.369	117	4.762	0.602	-0.507	NT		NT		29.4	3.381	NT	
2000	SS-12/D	NT		NT		6.355	1.849	95.7	4.561	1.105	0.100	NT		NT		79.35	4.374	NT	
2000	SS-13	NT		NT		3.79	1.332	66.2	4.193	*0.2955*	-1.219	NT		NT		11.7	2.460	NT	
2000	SS-14	NT		NT		3.97	1.379	93.4	4.537	1.04	0.039	NT		NT		11.9	2.477	NT	
2000	SS-15	NT		NT		7.44	2.007	41.3	3.721	1.23	0.207	NT		NT		252	5.529	NT	
2000	SS-16	NT		NT		4.27	1.452	66	4.190	*0.2195*	-1.516	NT		NT		22.9	3.131	NT	
2000	SS-17	NT		NT		5.21	1.651	80	4.382	*0.255*	-1.366	NT		NT		25.5	3.239	NT	
2000	SS-18	NT		NT		3.33	1.203	49.6	3.904	*0.278*	-1.280	NT		NT		7.51	2.016	NT	
2000	SS-19	NT		NT		6.23	1.829	84.6	4.438	*0.237*	-1.440	NT		NT		49.7	3.906	NT	
2000	SS-21	NT		NT		5	1.609	113	4.727	0.663	-0.411	NT		NT		17.9	2.885	NT	
2000	SS-22	NT		NT		4.84	1.577	88.2	4.480	0.59	-0.528	NT		NT		27.3	3.307	NT	
2000	SS-23	NT		NT		5.35	1.677	88.2	4.480	0.432	-0.839	NT		NT		17.7	2.874	NT	
2000	SS-24	NT		NT		3.42	1.230	65.8	4.187	*0.1815*	-1.706	NT		NT		12.4	2.518	NT	
2000	SS-25	NT		NT		12.2	2.501	28.3	3.343	1.36	0.307	NT		NT		21.6	3.073	NT	
2000	SS-26/D	NT		NT		4.13	1.418	87.1	4.467	0.546	-0.605	NT		NT		24.3	3.190	NT	
2000	SS-27	NT		NT		5.81	1.760	90.6	4.506	1.42	0.351	NT		NT		63.5	4.151	NT	
2000	SS-28	NT		NT		8.87	2.183	289	5.666	5.29	1.666	NT		NT		237	5.468	NT	
2000	SS-31	NT		NT		7.03	1.950	97.1	4.576	1.54	0.432	NT		NT		59.9	4.093	NT	
1998	SS-1	NT		NT		2	0.693	54	3.989	2.8	1.030	NT		NT		45	3.807	NT	
1998	SS-2	NT		NT		0.94	-0.062	54	3.989	3.4	1.224	NT		NT		13	2.565	NT	
1998	SS-3	NT		NT		0.84	-0.174	120	4.787	3.2	1.163	NT		NT		44	3.784	NT	
1998	SS-4	NT		NT		0.96	-0.041	120	4.787	2.3	0.833	NT		NT		29	3.367	NT	
1998	SS-5	NT		NT		1	0.000	20	2.996	0.75	-0.288	NT		NT		9.2	2.219	NT	
1998	SS-6	NT		NT		1.6	0.470	94	4.543	1.2	0.182	NT		NT		30	3.401	NT	
1998	SS-7	NT		NT		1.9	0.642	68	4.220	2.1	0.742	NT		NT		20	2.996	NT	
1998	SS-8	NT		NT		1.9	0.642	68	4.220	2.8	1.030	NT		NT		24	3.178	NT	
1998	SS-9	NT		NT		2.7	0.993	80	4.382	3.5	1.253	NT		NT		56	4.025	NT	
1998	SS-10	NT		NT		1.1	0.095	41	3.714	1.6	0.470	NT		NT		18	2.890	NT	
1998	SS-11	NT		NT		0.94	-0.062	99	4.595	2	0.693	NT		NT		63	4.143	NT	
1998	SS-12	NT		NT		0.98	-0.020	28	3.332	1.4	0.336	NT		NT		17	2.833	NT	
1998	SS-13	NT		NT		2.1	0.742	57	4.043	3.4	1.224	NT		NT		24	3.178	NT	
1998	SS-14	NT		NT		3	1.099	17	2.833	2.8	1.030	NT		NT		8.3	2.116	NT	
1998	SS-15	NT		NT		3.4	1.224	74	4.304	2.6	0.956	NT		NT		120	4.787	NT	
1998	SS-16	NT		NT		6.9	1.932	180	5.193	2.2	0.788	NT		NT		81	4.394	NT	
1998	SS-17	NT		NT		2.4	0.875	79	4.369	2.7	0.993	NT		NT		46	3.829	NT	
1998	SS-18	NT		NT		3.6	1.281	360	5.886	4.9	1.589	NT		NT		300	5.704	NT	
1998	SS-19	NT		NT		16	2.773	87	4.466	2.6	0.956	NT		NT		11	2.398	NT	
1998	SS-20	NT		NT		2	0.693	63	4.143	2.4	0.875	NT		NT		32	3.466	NT	
1998	SS-21/D	NT		NT		5.6	1.723	680	6.522	5.85	1.766	NT		NT		910	6.813	NT	
1998	SS-22	NT		NT		4	1.386	320	5.768	6.4	1.856	NT		NT		230	5.438	NT	
1998	SS-23	NT		NT		1.7	0.531	140	4.942	1.8	0.588	NT		NT		82	4.407	NT	
2001	KWS-SU-NE-1	7400	8.909	0.57	-0.562	4.39	1.479	263	5.572	3.56	1.270	171	5.142	20400	9.923	192	5.257	295	5.687
2001	KWS-SU-NE-2	10700	9.278	*0.525*	-0.644	1.91	0.647	82.4	4.412	0.284	-1.259	28.8	3.360	21700	9.985	28.7	3.357	486	6.186
2001	KWS-SU-NE-3	8660	9.066	1.03	0.030	6.4	1.856	505	6.225	8.73	2.167	406	6.006	21700	9.985	366	5.903	267	5.587
2001	KWS-SU-NE-4/D	7300	8.896	0.809	-0.212	5.545	1.713	369.5	5.912	5.67	1.735	260	5.561	17300	9.758	269	5.595	261.5	5.566
1999	SED-2	1900	7.550	*0.7*	-0.357	2.9	1.065	35	3.555	*0.35*	-1.050	20	2.996	14000	9.547	32	3.466	330	5.799
1999	SED-3	8900	9.094	4.4	1.482	12	2.485	200	5.298	27	3.296	100	4.605	26000	10.166	300	5.704	170	5.136
1999	SED-4	2000	7.601	*0.7*	-0.357	2.4	0.875	36	3.584	0.97	-0.030	51	3.932	9600	9.170	98	4.585	55	4.007
1999	SED-5	7500	8.923	2.4	0.875	6	1.792	83	4.419	1.2	0.182	38	3.638	15000	9.616	88	4.477	320	5.768
1999	SED-6	3500	8.161	2.1	0.742	5.1	1.629	56	4.025	1.5	0.405	43	3.761	19000	9.852	74	4.304	180	5.193
1999	SED-7	3000	8.006	1.9	0.642	3	1.099	44	3.784	0.98	-0.020	43	3.761	15000	9.616	64	4.159	230	5.438
1999	SED-8	6500	8.780	3.2	1.163	6.8	1.917	140	4.942	2.1	0.742	70	4.248	26000	10.166	89	4.489	310	5.737
1999	SED-9	8700	9.071	2.8	1.030	6.6	1.887	120	4.787	1.5	0.405	58	4.060	27000	10.204	78	4.357	710	6.565
1999	SED-10	12000	9.393	3.3	1.194	8.9	2.186	110	4.700	2.4	0.875	110	4.700	30000	10.309	120	4.787	600	6.397
1999	SED-11	7300	8.896	2.6	0.956	7.4	2.001	100	4.605	1.9	0.642	87	4.466	26000	10.166	98	4.585	970	6.877
1999	SED-13	13000	9.473	2.7	0.993	5.5	1.705	80	4.382	1	0.000	42	3.738	32000	10.373	31	3.434	420	6.040
1999	SED-14	11000	9.306	2.3	0.833	5.7	1.740	91	4.511	0.83	-0.186	34	3.526	27000	10.204	63	4.143	150	5.011
2000	SMP-E	NT		NT		9.19	2.218	114	4.736	1.64	0.495	NT		NT		134	4.898	NT	
2000	SMP-F	NT		NT		2.5	0.916	137	4.920	4.69	1.545	NT		NT		122	4.804	NT	
2000	SMP-J	NT		NT		9.34	2.234	152	5.024	1.89	0.637	NT		NT		134	4.898	NT	
2000	SMP-L	NT		NT		9.33	2.233	123	4.812	5.22	1.652	NT		NT		177	5.176	NT	
1998	SD-1	NT		NT		11	2.398	140	4.942	4.8	1.569	NT		NT		500	6.215	NT	
1998	SD-2	NT		NT		6.5	1.872	480	6.174	6.7	1.902	NT		NT		520	6.254	NT	
1998	SD-3	NT		NT		4	1.386	110	4.700	3.1	1.131	NT		NT		97	4.575	NT	
1998	SD-4/D	NT		NT		1.5	0.405	99	4.595	4	1.386	NT		NT		40.5	3.701	NT	
1998	SD-5	NT		NT		2.5	0.916	110	4.700	4.5	1.504	NT		NT		49	3.892	NT	
2000	BH1	15000	9.616	1.5	0.405	4.5	1.504	93	4.533	1	0.000	40	3.689	26000	10.166	14	2.639	500	6.215
2000	BH2	12000	9.393	1.8	0.588	3.2	1.163	63	4.143	0.79	-0.236	32	3.466	24000	10.086	26	3.258	410	6.016
2000	BH3	4400	8.389	*0.55*	-0.598	2.6	0.956	40	3.689	*0.28*	-1.273	17	2.833	16000	9.680	18	2.890	220	5.394
2000	BH4	5400	8.594	7.8	2.054	9.6	2.262	120	4.787	1.2	0.182	89	4.489	27000	10.204	150	5.011	260	5.561
2000	BH5	6100	8.716	2.3	0.833	6.7	1.902	120	4.787	0.82	-0.198	84	4.431	25000	10.127	18	2.890	480	6.174
2000	BH6	6700	8.810	1.7	0.531	4.2	1.435	50	3.912	0.62	-0.478	24	3.178	13000	9.473	350	5.858	210	5.347
2000	BH7	4800	8.476	3.5	1.253	*0.65*	-0.431	30	3.401	2.7	0.993	30	3.401	74000	11.212	2.8	1.030	500	6.215
2000	BH8	6300	8.748	20	2.996	8.6	2.152	890	6.791	11	2.398	540	6.292	130000	11.775	1,200	7.090	600	6.397
2000	BH9	4100	8.319	*0.65*	-0.431	1.7	0.531	39	3.664	*0.335*	-1.094	26	3.258	13000	9.473	13	2.565	140	4.942
2000	BH10	3500	8.161	*0.6*	-0.511	2.5	0.916	70	4.248	*0.29*	-1.238	15	2.708	10000	9.210	63	4.143	120	4.787
2000	BH11	7100	8.868	1.6	0.470	3.3	1.194	50	3.912	*0.305*	-1.187	18	2.890	17000	9.741	20	2.996	190	5.247
2000	BH12	21000	9.952	21	3.045	8.7	2.163	780	6.659	13	2.565	530	6.273	97000	11.482	1,200	7.090	660	6.492
2000	BH13	6200	8.732	2.1	0.742	3.5	1.253	73	4.290	0.88	-0.128	24	3.178	24000	10.086	58	4.060	270	5.598
2000	BH14	6400	8.764	5.9	1.775	**43**	3.761	90	4.500	0.74	-0.301	48	3.871	15000	9.616	150	5.011	150	5.011
2000	BH15	7400	8.909	1.8	0.588	7.7	2.041	93	4.533	0.69	-0.371	22	3.091	19000	9.852	34	3.526	270	5.598
2000	BH16	16000	9.680	24	3.178	11	2.398	500	6.215	9.5	2.251	580	6.363	120000	11.695	1,200	7.090	1,000	6.908
2000	MW9	12000	9.393	28	3.332	9.5	2.251	440	6.087	8.6	2.152	430	6.064	130000	11.775	1,000	6.908	690	6.537
2000	MW10	7200	8.882	10	2.303	10	2.303	940	6.846	3.6	1.281	**2,400**	7.783	69000	11.142	1,000	6.908	410	6.016
2000	MW11	3900	8.269	6.8	1.917	6.8	1.917	510	6.234	1.5	0.405	160	5.075	39000	10.571	420	6.040	290	5.670
2000	BH17	7500	8.923	1.6	0.470	4	1.386	41	3.714	0.95	-0.051	22	3.091	21000	9.952	21	3.045	200	5.298
2000	BH18	4800	8.476	1.4	0.336	3.1	1.131	58	4.060	*0.33*	-1.109	17	2.833	12000	9.393	28	3.332	150	5.011
1998	GS-1	NT		NT		2.8	1.030	130	4.868	3.5	1.253	NT		NT		120	4.787	NT	
1998	GS-2	NT		NT		2.3	0.833	66	4.190	2.1	0.742	NT		NT		38	3.638	NT	
1998	GS-3	NT		NT		1.2	0.182	51	3.932	1.5	0.405	NT		NT		30	3.401	NT	
1998	GS-4	NT		NT		16	2.773	1,200	7.090	28	3.332	NT		NT		4,300	8.366	NT	
1998	GS-5	NT		NT		12	2.485	420	6.040	**190**	5.247	NT		NT		1,100	7.003	NT	
1998	GS-6	NT		NT		*0.315*	-1.155	760	6.633	42	3.738	NT		NT		4,200	8.343	NT	
1998	GS-7	NT		NT		3.3	1.194	89	4.489	4.6	1.526	NT		NT		21	3.045	NT	
1998	GS-8	NT		NT		3.2	1.163	760	6.633	11	2.398	NT		NT		1,100	7.003	NT	
2001	KWS-SS-AR-1	7740	8.954	4.9	1.589	2.93	1.075	38.7	3.656	*0.2435*	-1.413	17.3	2.851	16500	9.711	13	2.565	258	5.553
2001	KWS-SS-AR-2	8860	9.089	9.01	2.198	3.78	1.330	108	4.682	1.11	0.104	68.5	4.227	25200	10.135	192	5.257	155	5.043
2001	KWS-SS-AR-3	8830	9.086	5.3	1.668	4.12	1.416	71	4.263	*0.2545*	-1.368	22.8	3.127	17300	9.758	24.6	3.203	770	6.646
2001	KWS-SS-AR-4	**31800**	10.367	34.2	3.532	4.89	1.587	1020	6.928	6.64	1.893	918	6.822	81700	11.311	2800	7.937	722	6.582
2001	KWS-SS-AR-5/D	23500	10.065	35.65	3.574	*3.06*	1.118	639	6.460	7	1.946	565.5	6.338	9585	9.168	4095	8.318	890	6.791
2001	KWS-SS-NE-1	19100	9.857	0.591	-0.526	13.2	2.580	374	5.924	3.15	1.147	152	5.024	69100	11.143	378	5.935	812	6.700
2001	KWS-SS-NE-2	3680	8.211	1.25	0.223	7.46	2.010	203	5.313	2.2	0.788	67.7	4.215	62900	11.049	722	6.582	386	5.956
2001	KWS-SS-NE-3	7830	8.966	*0.515*	-0.664	2.77	1.019	63.8	4.156	0.252	-1.378	17	2.833	20800	9.943	27.4	3.311	234	5.455
2001	KWS-SS-NE-4	8660	9.066	*0.575*	-0.553	4.89	1.587	68.7	4.230	0.382	-0.962	25.4	3.235	37200	10.524	58.7	4.072	266	5.583
2001	KWS-SS-WA-1	4740	8.464	0.814	-0.206	4.65	1.537	165	5.106	0.624	-0.472	62.6	4.137	16100	9.687	302	5.710	326	5.787
2001	KWS-SS-WA-2	9350	9.143	*0.4985*	-0.696	3.66	1.297	92.3	4.525	0.379	-0.970	29.3	3.378	24500	10.106	60.5	4.103	261	5.565
2001	KWS-SS-WA-3	2610	7.867	**62.3**	4.132	39.3	3.671	**5000**	8.517	3.21	1.166	687	6.532	**286000**	12.564	**10500**	9.259	**1570**	7.359
2001	KWS-SS-WA-4	6270	8.744	6.77	1.913	14.8	2.695	2440	7.800	1.55	0.438	538	6.288	169000	12.038	3300	8.102	1470	7.293
2001	KWS-SS-WA-5	5860	8.676	1.57	0.451	5.27	1.662	177	5.176	0.94	-0.062	1420	7.258	22800	10.035	1770	7.479	621	6.431
Number of observations		51	51	51	51	118	118	118	118	118	118	51	51	51	51	118	118	51	51
Data frequency distribution		Lognormal		Lognormal		Lognormal		Lognormal		Lognormal		Lognormal		Lognormal		Lognormal		Lognormal	
Mean (M)		8549		6.68		5.77		244		4.8		222		41713.43		424		436	
Standard deviation (S)		5636		11.66		5.74		539		18.0		417		49877.09		1227		323	
Mean Lognormal (ML)			8.883		0.975		1.449		4.789		0.505		4.353		10.253		4.426		5.847
Standard deviation Lognormal(SL)			0.584		1.280		0.786		1.003		1.239		1.355		0.787		1.631		0.684
H-statistic (H)			1.934		2.615		2.011		2.191		2.413		2.704		2.1		2.829		2.012
95% UCL-lognormal			10028		9.66		6.71		243		4.70		327		48856		484		531
maximum detected		31800		62.3		43		5000		190		2400		286000		10500		1570	
Exposure point concentration		**10028**		**9.66**		**6.71**		**243**		**4.7**		**327**		**48856**		**484**		**531**	

95% UCL-lognormal = EXP(ML + [0.5 x SL^2]+ [SL x H / $(n-1)^{1/2}$])

95% UCL-normal = M + [t x S / $(n)^{1/2}$]

NT = not tested.

NDE = not detected and eliminated because quantitation limit was more than 2 times greater than the maximum detected concentration.

Values in italics are one half of the reported SQL for a non-detect result.

Table G-29. Calculation of Exposure Point Concentrations for Surface Soil / Sediment / Subsurface Soi

Date	Sample	MERCURY	L MERCURY	NICKEL	L NICKEL	SELENIUM	L SELENIUM	SILVER	L SILVER	THALLIUM	L THALLIUM	VANADIUM	L VANADIUM	ZINC	L ZINC	PCB 1242	L PCB 1242	PCB 1254	L PCB 1254	PCB 1260	L PCB 1260
2000	SS-1	0.656	-0.422	NT		0.68	-0.386	3.43	1.233	NT		NT		NT		NT		NT		NT	
2000	SS-2	5.17	1.643	NT		0.505	-0.683	42.4	3.747	NT		NT		NT		NT		NT		NT	
2000	SS-4	0.261	-1.343	NT		0.63	-0.462	0.63	-0.462	NT		NT		NT		NT		NT		NT	
2000	SS-5	0.0547	-2.906	NT		0.49	-0.713	0.49	-0.713	NT		NT		NT		NT		NT		NT	
2000	SS-6	0.0621	-2.779	NT		0.366	-1.005	0.366	-1.005	NT		NT		NT		NT		NT		NT	
2000	SS-7	7.5	2.015	NT		0.515	-0.664	78.5	4.363	NT		NT		NT		NT		NT		NT	
2000	SS-8	0.377	-0.976	NT		0.386	-0.952	0.386	-0.952	NT		NT		NT		NT		NT		NT	
2000	SS-9	6.25	1.833	NT		0.525	-0.644	12.7	2.542	NT		NT		NT		NT		NT		NT	
2000	SS-10	0.171	-1.766	NT		0.545	-0.607	0.545	-0.607	NT		NT		NT		NT		NT		NT	
2000	SS-11	0.125	-2.079	NT		0.3945	-0.930	0.3945	-0.930	NT		NT		NT		NT		NT		NT	
2000	SS-12/D	0.968	-0.033	NT		0.52575	-0.643	6.18	1.821	NT		NT		NT		NT		NT		NT	
2000	SS-13	0.0702	-2.656	NT		0.59	-0.528	0.59	-0.528	NT		NT		NT		NT		NT		NT	
2000	SS-14	0.0538	-2.922	NT		0.319	-1.143	0.319	-1.143	NT		NT		NT		NT		NT		NT	
2000	SS-15	1.2	0.182	NT		0.56	-0.580	0.56	-0.580	NT		NT		NT		NT		NT		NT	
2000	SS-16	0.0616	-2.787	NT		0.439	-0.823	0.439	-0.823	NT		NT		NT		NT		NT		NT	
2000	SS-17	0.0549	-2.902	NT		0.515	-0.664	0.515	-0.664	NT		NT		NT		NT		NT		NT	
2000	SS-18	0.0215	-3.840	NT		0.555	-0.589	0.555	-0.589	NT		NT		NT		NT		NT		NT	
2000	SS-19	1.33	0.285	NT		0.4745	-0.745	0.4745	-0.745	NT		NT		NT		NT		NT		NT	
2000	SS-21	0.0536	-2.926	NT		0.4125	-0.886	0.4125	-0.886	NT		NT		NT		NT		NT		NT	
2000	SS-22	0.0923	-2.383	NT		0.3235	-1.129	0.3235	-1.129	NT		NT		NT		NT		NT		NT	
2000	SS-23	0.0462	-3.075	NT		0.408	-0.896	0.408	-0.896	NT		NT		NT		NT		NT		NT	
2000	SS-24	0.0431	-3.144	NT		0.3625	-1.015	0.3625	-1.015	NT		NT		NT		NT		NT		NT	
2000	SS-25	0.227	-1.483	NT		0.3765	-0.977	0.3765	-0.977	NT		NT		NT		NT		NT		NT	
2000	SS-26/D	0.08105	-2.513	NT		0.39675	-0.924	0.39675	-0.924	NT		NT		NT		NT		NT		NT	
2000	SS-27	1.14	0.131	NT		0.525	-0.644	6.12	1.812	NT		NT		NT		NT		NT		NT	
2000	SS-28	**7.77**	2.050	NT		0.655	-0.423	37	3.611	NT		NT		NT		NT		NT		NT	
2000	SS-31	2.17	0.775	NT		0.65	-0.431	11.7	2.460	NT		NT		NT		NT		NT		NT	
1998	SS-1	0.08	-2.526	NT		2.8	1.030	0.55	-0.598	NT		NT		NT		NT		NT		NT	
1998	SS-2	0.02	-3.912	NT		2	0.693	0.65	-0.431	NT		NT		NT		NT		NT		NT	
1998	SS-3	0.02	-3.912	NT		1.5	0.405	0.7	-0.357	NT		NT		NT		NT		NT		NT	
1998	SS-4	0.017	-4.075	NT		0.55	-0.598	0.55	-0.598	NT		NT		NT		NT		NT		NT	
1998	SS-5	0.014	-4.269	NT		0.55	-0.598	0.55	-0.598	NT		NT		NT		NT		NT		NT	
1998	SS-6	0.066	-2.718	NT		0.55	-0.598	0.55	-0.598	NT		NT		NT		NT		NT		NT	
1998	SS-7	0.0165	-4.104	NT		1.9	0.642	0.55	-0.598	NT		NT		NT		NT		NT		NT	
1998	SS-8	0.056	-2.882	NT		3.2	1.163	0.55	-0.598	NT		NT		NT		NT		NT		NT	
1998	SS-9	0.67	-0.400	NT		1.3	0.262	5.9	1.775	NT		NT		NT		NT		NT		NT	
1998	SS-10	0.017	-4.075	NT		0.55	-0.598	0.55	-0.598	NT		NT		NT		NT		NT		NT	
1998	SS-11	0.068	-2.688	NT		0.55	-0.598	0.55	-0.598	NT		NT		NT		NT		NT		NT	
1998	SS-12	0.045	-3.101	NT		0.55	-0.598	0.55	-0.598	NT		NT		NT		NT		NT		NT	
1998	SS-13	0.034	-3.381	NT		1.9	0.642	0.55	-0.598	NT		NT		NT		NT		NT		NT	
1998	SS-14	0.0175	-4.046	NT		1.4	0.336	0.6	-0.511	NT		NT		NT		NT		NT		NT	
1998	SS-15	0.09	-2.408	NT		1.9	0.642	0.55	-0.598	NT		NT		NT		NT		NT		NT	
1998	SS-16	0.07	-2.659	NT		3.3	1.194	0.6	-0.511	NT		NT		NT		NT		NT		NT	
1998	SS-17	1.9	0.642	NT		1.5	0.405	0.55	-0.598	NT		NT		NT		NT		NT		NT	
1998	SS-18	0.018	-4.017	NT		1.6	0.470	21	3.045	NT		NT		NT		NT		NT		NT	
1998	SS-19	0.0205	-3.887	NT		1.9	0.642	0.7	-0.357	NT		NT		NT		NT		NT		NT	
1998	SS-20	0.043	-3.147	NT		3.2	1.163	0.55	-0.598	NT		NT		NT		NT		NT		NT	
1998	SS-21/D	0.929	-0.074	NT		2.5	0.916	18	2.890	NT		NT		NT		NT		NT		NT	
1998	SS-22	0.0175	-4.046	NT		1.3	0.262	37	3.611	NT		NT		NT		NT		NT		NT	
1998	SS-23	0.045	-3.101	NT		0.55	-0.598	0.55	-0.598	NT		NT		NT		NT		NT		NT	
2001	KWS-SU-NE-1	3.05	1.115	24.3	3.190	2.91	1.068	29	3.367	0.655	-0.423	55.4	4.015	390	5.966	0.1275	-2.060	0.742	-0.298	1.3	0.262
2001	KWS-SU-NE-2	0.0578	-2.851	39	3.664	3.72	1.314	0.525	-0.644	0.525	-0.644	46.2	3.833	63.7	4.154	0.01085	-4.524	0.01085	-4.524	0.119	-2.129
2001	KWS-SU-NE-3	7.45	2.008	31.4	3.447	1.58	0.457	79.3	4.373	0.725	-0.322	105	4.654	831	6.723	0.2765	-1.286	**3.16**	1.151	**2.51**	0.920
2001	KWS-SU-NE-4/D	5.785	1.755	26.3	3.270	2.63	0.967	58.75	4.073	0.5825	-0.540	57.2	4.047	579	6.361	0.18525	-1.686	2.015	0.701	1.22	0.199
1999	SED-2	0.02	-3.912	20	2.996	0.7	-0.357	0.7	-0.357	0.7	-0.357	21	3.045	130	4.868	0.063	-2.765	0.072	-2.631	0.051	-2.976
1999	SED-3	0.28	-1.273	44	3.784	1.55	0.438	1.55	0.438	1.55	0.438	72	4.277	560	6.328	0.26	-1.347	0.25	-1.386	0.25	-1.386
1999	SED-4	0.05	-2.996	20	2.996	0.7	-0.357	0.7	-0.357	0.7	-0.357	17	2.833	180	5.193	0.029	-3.540	0.12	-2.120	0.089	-2.419
1999	SED-5	0.18	-1.715	25	3.219	0.55	-0.598	0.55	-0.598	0.55	-0.598	66	4.190	140	4.942	0.009	-4.711	0.009	-4.711	0.009	-4.711
1999	SED-6	0.045	-3.101	25	3.219	0.75	-0.288	0.75	-0.288	0.38	-0.968	28	3.332	200	5.298	0.058	-2.847	0.14	-1.966	0.044	-3.124
1999	SED-7	0.094	-2.364	25	3.219	0.8	-0.223	1.8	0.588	0.39	-0.942	25	3.219	190	5.247	0.048	-3.037	0.12	-2.120	0.055	-2.900
1999	SED-8	0.16	-1.833	36	3.584	1.1	0.095	1.1	0.095	0.55	-0.598	44	3.784	330	5.799	0.11	-2.207	0.17	-1.772	0.11	-2.207
1999	SED-9	0.12	-2.120	30	3.401	1.15	0.140	1.15	0.140	0.6	-0.511	52	3.951	220	5.394	0.091	-2.397	0.15	-1.897	0.093	-2.375
1999	SED-10	0.12	-2.120	52	3.951	1.15	0.140	1.15	0.140	1.15	0.140	85	4.443	360	5.886	0.091	-2.397	0.13	-2.040	0.12	-2.120
1999	SED-11	0.12	-2.120	39	3.664	1.2	0.182	1.2	0.182	0.6	-0.511	57	4.043	290	5.670	0.12	-2.120	0.16	-1.833	0.12	-2.120
1999	SED-13	0.069	-2.674	18	2.890	0.85	-0.163	0.85	-0.163	0.43	-0.844	62	4.127	83	4.419	0.034	-3.381	0.097	-2.333	0.082	-2.501
1999	SED-14	0.1	-2.303	15	2.708	0.7	-0.357	0.7	-0.357	0.36	-1.022	41	3.714	92	4.522	0.073	-2.617	0.15	-1.897	0.036	-3.324
2000	SMP-E	0.84	-0.174	NT		0.725	-0.322	4.75	1.558	NT		NT		NT		0.0546	-2.908	0.0685	-2.681	0.0596	-2.820
2000	SMP-F	0.58	-0.545	NT		1.2	0.182	1.2	0.182	NT		NT		NT		0.0522	-2.953	0.137	-1.988	0.084	-2.477
2000	SMP-J	0.412	-0.887	NT		1.045	0.044	1.045	0.044	NT		NT		NT		0.02455	-3.707	0.0905	-2.402	0.0763	-2.573
2000	SMP-L	0.456	-0.785	NT		0.488	-0.717	0.488	-0.717	NT		NT		NT		0.354	-1.038	0.571	-0.560	0.409	-0.894
1998	SD-1	0.87	-0.139	NT		1.05	0.049	1.05	0.049	NT		NT		NT		NT		NT		NT	
1998	SD-2	0.58	-0.545	NT		1.15	0.140	7.6	2.028	NT		NT		NT		NT		NT		NT	
1998	SD-3	0.16	-1.833	NT		0.65	-0.431	1.6	0.470	NT		NT		NT		NT		NT		NT	
1998	SD-4/D	0.943	-0.059	NT		0.725	-0.322	0.725	-0.322	NT		NT		NT		NT		NT		NT	
1998	SD-5	0.098	-2.323	NT		0.8	-0.223	0.8	-0.223	NT		NT		NT		NT		NT		NT	
2000	BH1	0.0185	-3.990	38	3.638	**87**	4.466	0.55	-0.598	0.55	-0.598	55	4.007	74	4.304	0.0095	-4.656	0.013	-4.343	0.0094	-4.667
2000	BH2	0.02	-3.912	16	2.773	8.6	2.152	0.6	-0.511	0.6	-0.511	51	3.932	72	4.277	0.01	-4.605	0.028	-3.576	0.027	-3.612
2000	BH3	0.0185	-3.990	12	2.485	6.4	1.856	0.55	-0.598	0.55	-0.598	32	3.466	32	3.466	0.0095	-4.656	0.007	-4.962	0.007	-4.962
2000	BH4	0.25	-1.386	22	3.091	10	2.303	0.6	-0.511	0.6	-0.511	31	3.434	100	4.605	0.01	-4.605	0.088	-2.430	0.1	-2.303
2000	BH5	0.02	-3.912	27	3.296	0.6	-0.511	0.6	-0.511	0.6	-0.511	43	3.761	66	4.190	0.1	-2.303	0.1	-2.303	0.1	-2.303
2000	BH6	0.04	-3.219	20	2.996	0.55	-0.598	0.55	-0.598	0.55	-0.598	32	3.466	63	4.143	0.37	-0.994	NDE		NDE	
2000	BH7	0.02	-3.912	0.65	-0.431	0.65	-0.431	0.65	-0.431	0.65	-0.431	130	4.868	38	3.638	0.021	-3.863	0.021	-3.863	0.021	-3.863
2000	BH8	0.31	-1.171	36	3.584	0.55	-0.598	9.2	2.219	0.55	-0.598	54	3.989	1,300	7.170	0.375	-0.981	NDE		NDE	
2000	BH9	0.05	-2.996	13	2.565	0.65	-0.431	0.65	-0.431	0.65	-0.431	28	3.332	31	3.434	0.022	-3.817	0.022	-3.817	0.022	-3.817
2000	BH10	0.015	-4.200	76	4.331	0.6	-0.511	0.6	-0.511	0.6	-0.511	16	2.773	65	4.174	0.095	-2.354	0.095	-2.354	0.095	-2.354
2000	BH11	0.02	-3.912	12	2.485	0.6	-0.511	0.6	-0.511	0.6	-0.511	31	3.434	50	3.912	0.047	-3.058	0.051	-2.976	0.0105	-4.556
2000	BH12	0.13	-2.040	100	4.605	0.65	-0.431	0.65	-0.431	0.65	-0.431	81	4.394	1,500	7.313	**2**	0.531	0.22	-1.514	0.055	-2.900
2000	BH13	0.04	-3.219	13	2.565	0.55	-0.598	0.55	-0.598	0.55	-0.598	46	3.829	84	4.431	0.043	-3.147	0.033	-3.411	0.02	-3.912
2000	BH14	0.09	-2.408	12	2.485	0.55	-0.598	0.55	-0.598	0.55	-0.598	27	3.296	77	4.344	0.049	-3.016	0.049	-3.016	0.049	-3.016
2000	BH15	0.02	-3.912	18	2.890	0.6	-0.511	0.6	-0.511	0.6	-0.511	28	3.332	110	4.700	0.046	-3.079	0.014	-4.269	0.0105	-4.556
2000	BH16	0.23	-1.470	63	4.143	0.65	-0.431	14	2.639	0.65	-0.431	94	4.543	**10,000**	9.210	1	0.182	0.094	-2.364	0.11	-2.207
2000	MW9	0.09	-2.408	53	3.970	0.6	-0.511	12	2.485	0.6	-0.511	52	3.951	1,700	7.438	0.42	-0.868	0.1	-2.303	0.063	-2.765
2000	MW10	0.16	-1.833	40	3.689	0.65	-0.431	2.8	1.030	0.65	-0.431	35	3.555	930	6.835	0.09	-2.408	0.074	-2.604	0.081	-2.513
2000	MW11	0.06	-2.813	40	3.689	0.65	-0.431	0.65	-0.431	0.65	-0.431	32	3.466	440	6.087	0.011	-4.510	0.011	-4.510	0.033	-3.411
2000	BH17	0.015	-4.200	16	2.773	0.6	-0.511	0.6	-0.511	0.6	-0.511	55	4.007	54	3.989	**2**	0.693	0.2	-1.609	0.2	-1.609
2000	BH18	0.05	-2.996	9.2	2.219	0.65	-0.431	0.65	-0.431	0.65	-0.431	24	3.178	34	3.526	0.011	-4.510	0.011	-4.510	0.014	-4.269
1998	GS-1	0.12	-2.120	NT		3.1	1.131	0.7	-0.357	NT		NT		NT		NT		NT		NT	
1998	GS-2	0.092	-2.386	NT		0.65	-0.431	0.65	-0.431	NT		NT		NT		NT		NT		NT	
1998	GS-3	0.81	-0.211	NT		0.65	-0.431	0.65	-0.431	NT		NT		NT		NT		NT		NT	
1998	GS-4	0.35	-1.050	NT		14	2.639	12	2.485	NT		NT		NT		NT		NT		NT	
1998	GS-5	0.28	-1.273	NT		13	2.565	9.4	2.241	NT		NT		NT		NT		NT		NT	
1998	GS-6	0.019	-3.963	NT		25	3.219	18	2.890	NT		NT		NT		NT		NT		NT	
1998	GS-7	0.053	-2.937	NT		2.6	0.956	0.65	-0.431	NT		NT		NT		NT		NT		NT	
1998	GS-8	3.7	1.308	NT		0.75	-0.288	0.75	-0.288	NT		NT		NT		NT		NT		NT	
2001	KWS-SS-AR-1	0.0851	-2.464	9.76	2.278	0.487	-0.719	0.599	-0.512	1.34	0.293	23.9	3.174	44.3	3.791	0.0106	-4.547	0.0106	-4.547	0.00785	-4.847
2001	KWS-SS-AR-2	0.348	-1.056	20	2.996	0.58	-0.545	1.92	0.652	3.1	1.131	54.2	3.993	233	5.451	0.0127	-4.366	0.0557	-2.888	0.0224	-3.799
2001	KWS-SS-AR-3	0.145	-1.931	10.7	2.370	0.51	-0.673	0.992	-0.008	0.51	-0.673	27.2	3.303	65.3	4.179	0.0111	-4.501	0.0718	-2.634	0.0323	-3.433
2001	KWS-SS-AR-4	0.0701	-2.658	**232**	5.447	0.56	-0.580	13.2	2.580	3.12	1.138	**662**	6.495	2990	8.003	0.01095	-4.514	0.0518	-2.960	0.01095	-4.514
2001	KWS-SS-AR-5/D	0.625	-0.470	74.1	4.305	0.61	-0.494	**102.5**	4.630	**8.085**	2.090	185.5	5.223	1365	7.219	0.02495	-3.691	0.0772	-2.561	0.05875	-2.834
2001	KWS-SS-NE-1	0.144	-1.938	35.6	3.572	6.3	1.841	0.55	-0.598	0.55	-0.598	58.3	4.066	1010	6.918	0.122	-2.104	0.119	-2.129	0.048	-3.037
2001	KWS-SS-NE-2	0.344	-1.067	22.7	3.122	6.19	1.823	0.56	-0.580	0.56	-0.580	16.3	2.791	850	6.745	0.149	-1.904	0.111	-2.198	0.022	-3.817
2001	KWS-SS-NE-3	0.101	-2.293	12.8	2.549	1.84	0.610	0.515	-0.664	0.515	-0.664	24.8	3.211	48.1	3.873	0.0102	-4.585	0.0102	-4.585	0.0102	-4.585
2001	KWS-SS-NE-4	0.311	-1.168	11.7	2.460	2.85	1.047	0.575	-0.553	0.575	-0.553	25.8	3.250	112	4.718	0.0568	-2.868	0.0384	-3.260	0.00737	-4.910
2001	KWS-SS-WA-1	0.265	-1.328	14.2	2.653	9.78	2.280	0.771	-0.260	0.515	-0.664	25.1	3.223	148	4.997	0.0477	-3.043	0.123	-2.096	0.105	-2.254
2001	KWS-SS-WA-2	0.23	-1.470	23.3	3.148	3.41	1.227	0.4985	-0.696	0.4985	-0.696	32.1	3.469	98.9	4.594	0.01055	-4.552	0.01055	-4.552	0.0228	-3.781
2001	KWS-SS-WA-3	0.636	-0.453	118	4.771	10.6	2.361	0.595	-0.519	5.95	1.783	28.7	3.357	2290	7.736	0.0104	-4.566	0.15	-1.897	0.00913	-4.696
2001	KWS-SS-WA-4	0.287	-1.248	88.5	4.483	13.3	2.588	0.6	-0.511	6	1.792	33.6	3.515	1670	7.421	0.01215	-4.410	0.01215	-4.410	0.0126	-4.374
2001	KWS-SS-WA-5	0.512	-0.669	62.3	4.132	4.3	1.459	0.56	-0.580	0.56	-0.580	27.9	3.329	500	6.215	0.01025	-4.580	0.01025	-4.580	0.0215	-3.840
Number of observations		118	118	51	51	118	118	118	118	51	51	51	51	51	51	55	55	53	53	53	53
Data frequency distribution		Lognormal		Lognormal		Lognormal		Lognormal		Lognormal		Lognormal		Lognormal		Lognormal		Lognormal		Lognormal	
Mean (M)		0.63		36.1		2.74		6.05		1.08		59.5		645		0.167		0.197		0.156	
Standard deviation (S)		1.52		37.1		8.55		16.00		1.53		91.3		1481		0.378		0.507		0.408	
Mean Lognormal (ML)			-1.977		3.242		0.096		0.239		-0.304		3.763		5.369		-2.978		-2.705		-3.019
Standard deviation Lognormal(SL)			1.615		0.880		1.046		1.448		0.688		0.655		1.392		1.431		1.345		1.322
H-statistic (H)			2.811		2.187		2.23		2.629		2.015		1.988		2.748		2.665		2.635		2.609
95% UCL-lognormal			0.776		49.5		2.36		5.15		1.14		64.2		971		0.238		0.270		0.189
maximum detected		7.77		232		87		102.5		8.085		662		10000		2		3.16		2.51	
Exposure point concentration		**0.776**		**49.5**		**2.36**		**5.15**		**1.14**		**64.2**		**971**		**0.238**		**0.27**		**0.189**	

95% UCL-lognormal = EXP(ML + [0.5 x SL^2]+ [SL x H / $(n-1)^{1/2}$])

95% UCL-normal = M + [t x S / $(n)^{1/2}$]

NT = not tested.

NDE = not detected and eliminated because quantitation limit was more than 2 times greater than the maximum detected concentration.

Values in italics are one half of the reported SQL for a non-detect result.

Table G-29. Calculation of Exposure Point Concentrations for Surface Soil / Sediment / Subsurface Soi

Date	Sample	BENZO(A) ANTHRACENE	L BENZO(A) ANTHRACENE	BENZO(A) PYRENE	L BENZO(A) PYRENE	BENZO(B) FLUORANTHENE	L BENZO(B) FLUORANTHENE	BENZO(K) FLUORANTHENE	L BENZO(K) FLUORANTHENE	CHRYSENE	L CHYRSENE	DIBENZ(A,H) ANTHRACENE	L DIBENZ(A,H) ANTHRACENE	INDENO(1,2,3-CD)PYRENE
2000	SS-1	0.174	-1.749	0.369	-0.997	0.285	-1.255	0.362	-1.016	0.208	-1.570	0.188	-1.671	0.0945
2000	SS-2	0.364	-1.011	0.388	-0.947	0.447	-0.805	0.308	-1.178	0.450	-0.799	*0.168*	-1.784	0.197
2000	SS-4	0.396	-0.926	0.527	-0.641	0.587	-0.533	0.441	-0.819	0.552	-0.594	*0.385*	-0.955	0.262
2000	SS-5	0.0201	-3.907	0.0875	-2.436	0.0432	-3.142	0.0663	-2.714	0.024	-3.738	*0.03045*	-3.492	0.0117
2000	SS-6	0.107	-2.235	0.469	-0.757	0.384	-0.957	0.408	-0.896	0.114	-2.172	*0.03025*	-3.498	0.164
2000	SS-7	2.03	0.708	2.26	0.815	2.07	0.728	1.84	0.610	2.120	0.751	*0.333*	-1.100	0.619
2000	SS-8	0.25	-1.386	0.286	-1.252	0.318	-1.146	0.252	-1.378	0.296	-1.217	*0.1415*	-1.955	0.118
2000	SS-9	0.141	-1.959	0.167	-1.790	0.239	-1.431	0.782	-0.246	0.121	-2.112	*0.15*	-1.897	0.0507
2000	SS-10	0.525	-0.644	0.561	-0.578	0.572	-0.559	0.336	-1.091	0.582	-0.541	*0.14*	-1.966	0.274
2000	SS-11	1	0.247	1	0.231	1	0.215	1	-0.383	1.400	0.336	0.0638	-2.752	0.678
2000	SS-12/D	0.219	-1.519	0.369	-0.997	0.3145	-1.157	0.3375	-1.086	0.284	-1.259	*0.253*	-1.374	0.11
2000	SS-13	0.0608	-2.800	0.0853	-2.462	0.117	-2.146	0.0589	-2.832	0.080	-2.521	*0.0287*	-3.551	0.0494
2000	SS-14	0.00857	-4.759	0.011	-4.510	0.00944	-4.663	0.00938	-4.669	0.012	-4.457	*0.02985*	-3.512	0.0043
2000	SS-15	0.0698	-2.662	1.5	0.405	0.288	-1.245	0.456	-0.785	0.114	-2.172	*0.4035*	-0.908	*0.1615*
2000	SS-16	0.321	-1.136	0.533	-0.629	0.383	-0.960	0.318	-1.146	0.356	-1.033	0.152	-1.884	0.144
2000	SS-17	0.24	-1.427	0.248	-1.394	0.261	-1.343	0.146	-1.924	0.296	-1.217	*0.1485*	-1.907	0.125
2000	SS-18	0.0385	-3.257	0.036	-3.324	0.0424	-3.161	0.0243	-3.717	0.048	-3.045	*0.0302*	-3.500	0.0244
2000	SS-19	1.19	0.174	2.05	0.718	1.3	0.262	1.15	0.140	1.230	0.207	0.803	-0.219	0.685
2000	SS-21	0.646	-0.437	0.76	-0.274	0.938	-0.064	0.395	-0.929	0.786	-0.241	*0.1475*	-1.914	0.364
2000	SS-22	1.48	0.392	2.95	1.082	1.97	0.678	1.74	0.554	1.640	0.495	1.47	0.385	1.55
2000	SS-23	0.0193	-3.948	0.0218	-3.826	0.0556	-2.890	0.0339	-3.384	0.024	-3.742	*0.0308*	-3.480	0.0127
2000	SS-24	0.0931	-2.374	0.169	-1.778	0.142	-1.952	0.077	-2.564	0.116	-2.154	*0.1475*	-1.914	0.0879
2000	SS-25	0.00885	-4.727	0.0171	-4.069	0.0312	-3.467	0.0334	-3.399	*0.02895*	-3.542	*0.02895*	-3.542	0.0102
2000	SS-26/D	0.996	-0.004	1.18	0.166	1.0165	0.016	0.5625	-0.575	1.320	0.278	*0.2825*	-1.264	0.487
2000	SS-27	0.0517	-2.962	0.114	-2.172	0.115	-2.163	0.197	-1.625	0.072	-2.635	*0.3305*	-1.107	0.0354
2000	SS-28	0.156	-1.858	0.197	-1.625	0.29	-1.238	0.248	-1.394	0.244	-1.411	*0.492*	-0.709	0.116
2000	SS-31	0.184	-1.693	0.248	-1.394	0.328	-1.115	0.923	-0.080	0.249	-1.390	*0.3185*	-1.144	0.0873
1998	SS-1	0.58	-0.545	0.49	-0.713	0.51	-0.673	0.69	-0.371	0.620	-0.478	0.11	-2.207	0.095
1998	SS-2	0.06	-2.813	0.058	-2.847	0.07	-2.659	0.051	-2.976	0.070	-2.659	*0.215*	-1.537	*0.215*
1998	SS-3	0.56	-0.580	0.47	-0.755	0.49	-0.713	0.57	-0.562	0.520	-0.654	*0.215*	-1.537	0.098
1998	SS-4	0.63	-0.462	0.55	-0.598	1	0.095	*0.19*	-1.661	0.610	-0.494	*0.19*	-1.661	0.12
1998	SS-5	0.092	-2.386	0.082	-2.501	0.098	-2.323	0.079	-2.538	0.100	-2.303	*0.185*	-1.687	0.046
1998	SS-6	0.77	-0.261	0.59	-0.528	0.71	-0.342	0.6	-0.511	0.240	-1.427	*0.18*	-1.715	0.1
1998	SS-7	0.16	-1.833	0.15	-1.897	0.14	-1.966	0.19	-1.661	0.160	-1.833	*0.18*	-1.715	*0.18*
1998	SS-8	0.52	-0.654	0.43	-0.844	0.42	-0.868	0.46	-0.777	0.500	-0.693	*0.18*	-1.715	0.096
1998	SS-9	0.16	-1.833	0.18	-1.715	0.18	-1.715	0.17	-1.772	0.190	-1.661	*0.18*	-1.715	0.046
1998	SS-10	0.32	-1.139	0.25	-1.386	0.28	-1.273	0.25	-1.386	0.320	-1.139	*0.19*	-1.661	0.095
1998	SS-11	0.82	-0.198	0.64	-0.446	0.71	-0.342	0.64	-0.446	0.840	-0.174	*0.185*	-1.687	0.19
1998	SS-12	0.36	-1.022	0.29	-1.238	0.25	-1.386	0.34	-1.079	0.360	-1.022	*0.18*	-1.715	0.079
1998	SS-13	0.15	-1.897	0.13	-2.040	0.16	-1.833	0.13	-2.040	0.150	-1.897	*0.19*	-1.661	*0.19*
1998	SS-14	*0.195*	-1.635	*0.195*	-1.635	*0.195*	-1.635	*0.195*	-1.635	0.055	-2.900	*0.195*	-1.635	*0.195*
1998	SS-15	0.41	-0.892	0.36	-1.022	0.42	-0.868	0.4	-0.916	0.420	-0.868	*0.185*	-1.687	0.062
1998	SS-16	**29**	3.367	**20**	2.996	**13**	2.565	**21**	3.045	25.000	3.219	*0.19*	-1.661	**8**
1998	SS-17	0.2	-1.609	0.17	-1.772	0.21	-1.561	0.21	-1.561	0.210	-1.561	*0.185*	-1.687	*0.185*
1998	SS-18	0.25	-1.386	0.24	-1.427	0.31	-1.171	0.29	-1.238	0.260	-1.347	*0.2*	-1.609	0.074
1998	SS-19	*0.225*	-1.492	*0.225*	-1.492	*0.225*	-1.492	*0.225*	-1.492	*0.225*	-1.492	*0.225*	-1.492	*0.225*
1998	SS-20	5	1.629	8	2.041	8	2.054	10	2.303	6.500	1.872	*0.9*	-0.105	2
1998	SS-21/D	1	0.072	1	-0.157	1	-0.062	1	-0.051	1.400	0.336	*0.19*	-1.661	0.1235
1998	SS-22	0.14	-1.966	*0.195*	-1.635	0.19	-1.661	0.19	-1.661	0.170	-1.772	*0.195*	-1.635	*0.195*
1998	SS-23	1	0.095	0.92	-0.083	2	0.693	*0.185*	-1.687	1.000	0.000	*0.17*	-1.772	0.12
2001	KWS-SU-NE-1	0.0501	-2.994	0.463	-0.770	0.598	-0.514	0.266	-1.324	0.446	-0.807	0.0868	-2.444	0.318
2001	KWS-SU-NE-2	0.0409	-3.197	0.382	-0.962	0.347	-1.058	0.216	-1.532	0.356	-1.033	0.117	-2.146	0.197
2001	KWS-SU-NE-3	*0.108*	-2.226	0.509	-0.675	0.493	-0.707	0.129	-2.048	0.436	-0.830	0.942	-0.060	0.25
2001	KWS-SU-NE-4/D	*0.0985*	-2.318	0.0997	-2.306	0.134	-2.010	0.06885	-2.676	*0.0985*	-2.318	0.642	-0.443	*0.0985*
1999	SED-2	0.17	-1.772	0.28	-1.273	0.47	-0.755	0.47	-0.755	0.330	-1.109	0.047	-3.058	*0.23*
1999	SED-3	0.19	-1.661	0.33	-1.109	0.45	-0.799	0.43	-0.844	0.340	-1.079	*0.5*	-0.693	*0.5*
1999	SED-4	0.74	-0.301	0.93	-0.073	0.96	-0.041	1.1	0.095	0.910	-0.094	0.13	-2.040	0.11
1999	SED-5	0.15	-1.897	0.23	-1.470	0.29	-1.238	0.25	-1.386	0.220	-1.514	*0.175*	-1.743	0.036
1999	SED-6	0.6	-0.511	0.66	-0.416	0.58	-0.545	0.56	-0.580	0.780	-0.248	0.23	-1.470	**1.2**
1999	SED-7	0.42	-0.868	0.49	-0.713	0.5	-0.693	0.48	-0.734	0.600	-0.511	*1.15*	0.140	0.64
1999	SED-8	0.75	-0.288	0.87	-0.139	1	0.000	0.94	-0.062	1.200	0.182	*1.85*	0.615	**1.5**
1999	SED-9	0.51	-0.673	0.67	-0.400	0.77	-0.261	0.62	-0.478	0.770	-0.261	*1.9*	0.642	0.98
1999	SED-10	0.24	-1.427	0.48	-0.734	0.81	-0.211	0.78	-0.248	0.460	-0.777	*0.38*	-0.968	*0.38*
1999	SED-11	0.53	-0.635	0.75	-0.288	0.84	-0.174	0.74	-0.301	0.900	-0.105	*2*	0.693	**1.2**
1999	SED-13	0.58	-0.545	0.54	-0.616	0.43	-0.844	0.44	-0.821	0.600	-0.511	0.19	-1.661	0.92
1999	SED-14	0.92	-0.083	0.85	-0.163	0.79	-0.236	0.74	-0.301	0.960	-0.041	0.24	-1.427	0.86
2000	SMP-E	0.0983	-2.320	0.129	-2.048	0.193	-1.645	0.119	-2.129	*0.04795*	-3.038	*0.04795*	-3.038	0.0875
2000	SMP-F	0.165	-1.802	0.279	-1.277	0.884	-0.123	1.34	0.293	*0.72*	-0.329	*0.72*	-0.329	0.137
2000	SMP-J	0.159	-1.839	0.235	-1.448	0.446	-0.807	0.481	-0.732	0.272	-1.302	*0.3065*	-1.183	0.146
2000	SMP-L	0.114	-2.172	0.132	-2.025	0.287	-1.248	0.523	-0.648	0.199	-1.614	*0.448*	-0.803	0.0927
1998	SD-1	0.46	-0.777	0.48	-0.734	0.77	-0.261	0.53	-0.635	0.610	-0.494	*0.32*	-1.139	0.091
1998	SD-2	0.27	-1.309	0.31	-1.171	0.41	-0.892	0.3	-1.204	0.310	-1.171	*0.365*	-1.008	*0.365*
1998	SD-3	0.51	-0.673	0.4	-0.916	0.39	-0.942	0.37	-0.994	0.520	-0.654	0.1	-2.303	0.13
1998	SD-4/D	0.645	-0.439	0.58	-0.545	0.675	-0.393	0.5	-0.693	0.790	-0.236	*0.24*	-1.427	0.1725
1998	SD-5	0.43	-0.844	0.41	-0.892	0.61	-0.494	0.39	-0.942	0.440	-0.821	*0.265*	-1.328	0.062
2000	BH1	0.14	-1.966	0.13	-2.040	0.096	-2.343	0.12	-2.120	0.140	-1.966	*0.185*	-1.687	0.12
2000	BH2	0.13	-2.040	0.13	-2.040	0.12	-2.120	0.12	-2.120	0.140	-1.966	*0.195*	-1.635	0.092
2000	BH3	*0.18*	-1.715	*0.18*	-1.715	*0.18*	-1.715	*0.18*	-1.715	*0.180*	-1.715	*0.18*	-1.715	*0.18*
2000	BH4	0.59	-0.528	0.52	-0.654	0.44	-0.821	0.46	-0.777	0.640	-0.446	0.13	-2.040	0.6
2000	BH5	0.15	-1.897	0.16	-1.833	0.16	-1.833	0.14	-1.966	0.160	-1.833	*0.205*	-1.585	0.11
2000	BH6	0.11	-2.207	0.1	-2.303	0.094	-2.364	0.099	-2.313	0.120	-2.120	*0.185*	-1.687	0.083
2000	BH7	*0.21*	-1.561	*0.21*	-1.561	*0.21*	-1.561	*0.21*	-1.561	*0.210*	-1.561	*0.21*	-1.561	*0.21*
2000	BH8	1.2	0.182	1	0.000	**1**	0.000	0.88	-0.128	1.200	0.182	0.17	-1.772	0.59
2000	BH9	0.15	-1.897	0.14	-1.966	0.11	-2.207	0.13	-2.040	0.150	-1.897	*0.215*	-1.537	0.12
2000	BH10	9	2.175	8	2.067	**5**	1.686	6	1.740	8.300	2.116	**2.5**	0.916	**13**
2000	BH11	0.065	-2.733	0.063	-2.765	0.066	-2.718	0.051	-2.976	0.074	-2.604	*0.2*	-1.609	0.047
2000	BH12	0.052	-2.957	*0.21*	-1.561	0.052	-2.957	*0.21*	-1.561	0.073	-2.617	*0.21*	-1.561	*0.21*
2000	BH13	0.46	-0.777	0.4	-0.916	0.45	-0.799	0.45	-0.799	0.540	-0.616	0.11	-2.207	0.13
2000	BH14	0.55	-0.598	0.52	-0.654	0.5	-0.693	0.57	-0.562	0.590	-0.528	0.12	-2.120	0.21
2000	BH15	*0.2*	-1.609	*0.2*	-1.609	*0.2*	-1.609	*0.2*	-1.609	*0.200*	-1.609	*0.2*	-1.609	*0.2*
2000	BH16	0.37	-0.994	0.31	-1.171	0.36	-1.022	0.33	-1.109	0.410	-0.892	0.11	-2.207	0.13
2000	MW9	0.26	-1.347	0.19	-1.661	0.18	-1.715	0.19	-1.661	0.270	-1.309	0.056	-2.882	0.18
2000	MW10	8	2.054	6	1.792	4.6	1.526	5	1.609	7.000	1.946	0.95	-0.051	2
2000	MW11	0.21	-1.561	0.18	-1.715	0.14	-1.966	0.15	-1.897	0.210	-1.561	0.09	-2.408	0.39
2000	BH17	0.37	-0.994	0.34	-1.079	0.32	-1.139	0.3	-1.204	0.410	-0.892	*0.95*	-0.051	0.36
2000	BH18	0.065	-2.733	0.068	-2.688	0.048	-3.037	0.051	-2.976	0.072	-2.631	*0.19*	-1.661	0.12
1998	GS-1	0.087	-2.442	0.072	-2.631	0.08	-2.526	0.063	-2.765	0.082	-2.501	*0.22*	-1.514	*0.22*
1998	GS-2	1	0.000	0.92	-0.083	0.98	-0.020	0.82	-0.198	1.000	0.000	*0.215*	-1.537	0.19
1998	GS-3	0.12	-2.120	0.14	-1.966	0.15	-1.897	0.13	-2.040	0.130	-2.040	*0.21*	-1.561	0.043
1998	GS-4	0.053	-2.937	0.066	-2.718	0.095	-2.354	0.062	-2.781	0.062	-2.781	*0.195*	-1.635	*0.195*
1998	GS-5	0.29	-1.238	0.29	-1.238	0.38	-0.968	0.2	-1.609	0.410	-0.892	*0.195*	-1.635	0.045
1998	GS-6	0.45	-0.799	0.41	-0.892	0.47	-0.755	0.44	-0.821	0.470	-0.755	*0.21*	-1.561	0.12
1998	GS-7	*0.215*	-1.537	*0.215*	-1.537	*0.215*	-1.537	*0.215*	-1.537	*0.215*	-1.537	*0.215*	-1.537	*0.215*
1998	GS-8	*0.245*	-1.406	*0.245*	-1.406	*0.245*	-1.406	*0.245*	-1.406	0.053	-2.937	*0.245*	-1.406	*0.245*
2001	KWS-SS-AR-1	0.00595	-5.124	0.00882	-4.731	0.00925	-4.683	0.00561	-5.183	0.006	-5.077	*0.01015*	-4.590	0.0049
2001	KWS-SS-AR-2	0.28	-1.273	0.296	-1.217	0.275	-1.291	0.163	-1.814	0.339	-1.082	0.0291	-3.537	0.163
2001	KWS-SS-AR-3	0.104	-2.263	0.231	-1.465	0.167	-1.790	0.13	-2.040	0.159	-1.839	0.243	-1.415	0.19
2001	KWS-SS-AR-4	0.0115	-4.465	0.0164	-4.110	0.00985	-4.620	0.0111	-4.501	0.015	-4.213	*0.0123*	-4.398	0.0123
2001	KWS-SS-AR-5/D	0.0584	-2.840	0.2825	-1.264	0.10295	-2.274	0.081	-2.513	0.094	-2.360	0.4276	-0.850	0.0465
2001	KWS-SS-NE-1	0.214	-1.542	0.681	-0.384	0.688	-0.374	0.378	-0.973	0.707	-0.347	0.0759	-2.578	0.432
2001	KWS-SS-NE-2	0.111	-2.198	0.0655	-2.726	0.134	-2.010	0.117	-2.146	*0.215*	-1.537	0.184	-1.693	0.0857
2001	KWS-SS-NE-3	0.327	-1.118	0.255	-1.366	0.303	-1.194	0.173	-1.754	0.416	-0.877	0.169	-1.778	0.154
2001	KWS-SS-NE-4	0.0987	-2.316	0.0592	-2.827	0.0635	-2.757	0.0395	-3.231	0.103	-2.273	0.0271	-3.608	0.0381
2001	KWS-SS-WA-1	0.168	-1.784	0.899	-0.106	0.559	-0.582	0.268	-1.317	0.499	-0.695	*1.025*	0.025	0.264
2001	KWS-SS-WA-2	5.86	1.768	6.25	1.833	**6.37**	1.852	3.82	1.340	7.090	1.959	*1.065*	0.063	4.11
2001	KWS-SS-WA-3	0.0896	-2.412	0.306	-1.184	0.354	-1.038	0.211	-1.556	0.346	-1.061	0.302	-1.197	0.156
2001	KWS-SS-WA-4	0.117	-2.146	0.113	-2.180	0.123	-2.096	0.109	-2.216	0.150	-1.897	*0.0234*	-3.755	0.0653
2001	KWS-SS-WA-5	0.894	-0.112	0.873	-0.136	**1.31**	0.270	0.649	-0.432	1.110	0.104	*0.218*	-1.523	0.684
Number of observations		118	118	118	118	118	118	118	118	118	118	118	118	118
Data frequency distribution		Lognormal		Lognormal		Lognormal		Lognormal		Lognormal		Lognormal		Logn
Mean (M)		0.811		0.807		0.730		0.736		0.854		0.322		0.476
Standard deviation (S)		2.908		2.192		1.594		2.220		2.592		0.418		1.434
Mean Lognormal (ML)			-1.414		-1.184		-1.144		-1.289		-1.206		-1.646	
Standard deviation Lognormal(SL)			1.351		1.253		1.229		1.250		1.305		1.021	
H-statistic (H)			2.527		2.427		2.404		2.424		2.424		2.207	
95% UCL-lognormal			0.831		0.889		0.891		0.797		0.940		0.400	
maximum detected		29		20		13		21		25		2.5		13
Exposure point concentration		**0.831**		**0.889**		**0.891**		**0.797**		**0.95**		**0.4**		**0.505**

95% UCL-lognormal = EXP(ML + [0.5 x SL^2]+ [SL x H / $(n-1)^{1/2}$])

95% UCL-normal = M + [t x S / $(n)^{1/2}$]

NT = not tested.

NDE = not detected and eliminated because quantitation limit was more than 2 times greater than the maximum detec

Values in italics are one half of the reported SQL for a non-detect result.

Date	Sample	L INDENO(1,2,3-CD)PYRENE
2000	SS-1	-2.359
2000	SS-2	-1.625
2000	SS-4	-1.339
2000	SS-5	-4.448
2000	SS-6	-1.808
2000	SS-7	-0.480
2000	SS-8	-2.137
2000	SS-9	-2.982
2000	SS-10	-1.295
2000	SS-11	-0.389
2000	SS-12/D	-2.207
2000	SS-13	-3.008
2000	SS-14	-5.449
2000	SS-15	-1.823
2000	SS-16	-1.938
2000	SS-17	-2.079
2000	SS-18	-3.713
2000	SS-19	-0.378
2000	SS-21	-1.011
2000	SS-22	0.438
2000	SS-23	-4.366
2000	SS-24	-2.432
2000	SS-25	-4.585
2000	SS-26/D	-0.719
2000	SS-27	-3.341
2000	SS-28	-2.154
2000	SS-31	-2.438
1998	SS-1	-2.354
1998	SS-2	-1.537
1998	SS-3	-2.323
1998	SS-4	-2.120
1998	SS-5	-3.079
1998	SS-6	-2.303
1998	SS-7	-1.715
1998	SS-8	-2.343
1998	SS-9	-3.079
1998	SS-10	-2.354
1998	SS-11	-1.661
1998	SS-12	-2.538
1998	SS-13	-1.661
1998	SS-14	-1.635
1998	SS-15	-2.781
1998	SS-16	2.028
1998	SS-17	-1.687
1998	SS-18	-2.604
1998	SS-19	-1.492
1998	SS-20	0.588
1998	SS-21/D	-2.092
1998	SS-22	-1.635
1998	SS-23	-2.120
2001	KWS-SU-NE-1	-1.146
2001	KWS-SU-NE-2	-1.625
2001	KWS-SU-NE-3	-1.386
2001	KWS-SU-NE-4/D	-2.318
1999	SED-2	-1.470
1999	SED-3	-0.693
1999	SED-4	-2.207
1999	SED-5	-3.324
1999	SED-6	0.182
1999	SED-7	-0.446
1999	SED-8	0.405
1999	SED-9	-0.020
1999	SED-10	-0.968
1999	SED-11	0.182
1999	SED-13	-0.083
1999	SED-14	-0.151
2000	SMP-E	-2.436
2000	SMP-F	-1.988
2000	SMP-J	-1.924
2000	SMP-L	-2.378
1998	SD-1	-2.397
1998	SD-2	-1.008
1998	SD-3	-2.040
1998	SD-4/D	-1.757
1998	SD-5	-2.781
2000	BH1	-2.120
2000	BH2	-2.386
2000	BH3	-1.715
2000	BH4	-0.511
2000	BH5	-2.207
2000	BH6	-2.489
2000	BH7	-1.561
2000	BH8	-0.528
2000	BH9	-2.120
2000	BH10	2.565
2000	BH11	-3.058
2000	BH12	-1.561
2000	BH13	-2.040
2000	BH14	-1.561
2000	BH15	-1.609
2000	BH16	-2.040
2000	MW9	-1.715
2000	MW10	0.693
2000	MW11	-0.942
2000	BH17	-1.022
2000	BH18	-2.120
1998	GS-1	-1.514
1998	GS-2	-1.661
1998	GS-3	-3.147
1998	GS-4	-1.635
1998	GS-5	-3.101
1998	GS-6	-2.120
1998	GS-7	-1.537
1998	GS-8	-1.406
2001	KWS-SS-AR-1	-5.319
2001	KWS-SS-AR-2	-1.814
2001	KWS-SS-AR-3	-1.661
2001	KWS-SS-AR-4	-4.398
2001	KWS-SS-AR-5/D	-3.068
2001	KWS-SS-NE-1	-0.839
2001	KWS-SS-NE-2	-2.457
2001	KWS-SS-NE-3	-1.871
2001	KWS-SS-NE-4	-3.268
2001	KWS-SS-WA-1	-1.332
2001	KWS-SS-WA-2	1.413
2001	KWS-SS-WA-3	-1.858
2001	KWS-SS-WA-4	-2.729
2001	KWS-SS-WA-5	-0.380
Number of observations		118
Data frequency distribution		ormal
Mean (M)		
Standard deviation (S)		
Mean Lognormal (ML)		-1.797
Standard deviation Lognormal(SL)		1.282
H-statistic (H)		2.457
95% UCL-lognormal		0.505
maximum detected		
Exposure point concentration		

:ted concentratio

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H

Ecological Data

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Table H-1. No Observed Adverse Effects Levels (NOAELs), Kenilworth Park Landfill Site, Washington D.C.

Chemical	Form of Chemical	Meadow Vole (mg/kg/day)	Short-tailed Shrew (mg/kg/day)	American Robin (mg/kg/day)	Great Blue Heron (mg/kg/day)	Red-tailed Hawk (mg/kg/day)	Red Fox (mg/kg/day)
1,2,4-Trichlorobenzene	NOAELs not available for this chemical						
1,3-Dichlorobenzene	NOAELs not available for this chemical						
1,4-Dichlorobenzene	NOAELs not available for this chemical						
2,4-Dimethylphenol	NOAELs not available for this chemical						
2-Butanone	NOAELs not available for this chemical						
2-Methylnaphthalene	NOAELs not available for this chemical						
2-Methylphenol	NOAELs not available for this chemical						
4,4'-DDD	NOAELs are for DDT and its metabolites	1.34	1.76	0.003	0.003	0.003	0.42
4,4'-DDE	NOAELs are for DDT and its metabolites	1.34	1.76	0.003	0.003	0.003	0.42
4,4'-DDT	NOAELs are for DDT and its metabolites	1.34	1.76	0.003	0.003	0.003	0.42
4-Chloraniline	NOAELs not available for this chemical						
4-Methylphenol	NOAELs not available for this chemical						
Acenaphthene		1.3	1.3	10	10	10	1.3
Acenaphthylene	NOAELs not available for this chemical						
Acetone		16.8	22				5.3
Aldrin		0.336	0.44				0.106
alpha-Chlordane	Chlordane	4.2	5.5	2.1	2.1	2.1	1.3
Aluminum	Aluminum chloride for mammals and aluminum sulfate for avia species	1.754	2.295	109.7	109.7	109.7	0.551
Anthracene		1.3	1.3	10	10	10	1.3
Antimony	Antimony potassium tartrate	0.114	0.149				0.036
Arsenic	Arsenite for mammals and sodium arsenite for avian species	0.114	0.15	5.1	5.1	5.1	0.036
Barium	Barium chloride for mammals and barium hydroxide for avian species	9	11.8	20.8	20.8	20.8	2.8
Benzo(a)anthracene		1.3	1.3	10	10	10	1.3
Benzo(a)pyrene		0.91	1.19				0.29
Benzo(b)fluoranthene		1.3	1.3	10	10	10	1.3
Benzo(g,h,i)perylene		1.3	1.3	10	10	10	1.3
Benzo(k)fluoranthene		1.3	1.3	10	10	10	1.3
Benzoic acid	NOAELs not available for this chemical						
Benzyl alcohol	NOAELs not available for this chemical						
Beryllium	Beryllium sulfate	1.11	1.45				0.35
Bis(2-ethylhexyl)phthalate		16.6	21.8	1.1	1.1	1.1	5.2
Butylbenzylphthalate		159	159				159
Cadmium	Cadmium chloride	1.62	2.12	1.45	1.45	1.45	0.509
Chromium	Chromium +3 as potassium chromium alum	4597	6015	1	1	1	1445
Chrysene		1.3	1.3	10	10	10	1.3
Cobalt	NOAELs not available for this chemical						
Copper	Copper sulfate for mammals and copper oxide for avian species	25.5	33.4	47	47	47	8

Table H-1. No Observed Adverse Effects Levels (NOAELs), Kenilworth Park Landfill Site, Washington D.C.

Chemical	Form of Chemical	Meadow Vole (mg/kg/day)	Short-tailed Shrew (mg/kg/day)	American Robin (mg/kg/day)	Great Blue Heron (mg/kg/day)	Red-tailed Hawk (mg/kg/day)	Red Fox (mg/kg/day)
Cyanide	Potassium cyanide	108.4	141.9				34.1
Dibenzo(a,h)anthracene	NOAELs not available for this chemical						
Dibenzofuran	NOAELs not available for this chemical						
Dieldrin		0.034	0.044	0.077	0.077	0.077	0.011
Di-n-butyl-phthalate		500	654	0.11	0.11	0.11	157
Di-n-octyl-phthalate	NOAELs not available for this chemical						
Endrin		0.084	0.109	0.01	0.01	0.01	0.026
Fluoranthene		1.3	1.3	10	10	10	1.3
Fluorene		1.3	1.3	10	10	10	1.3
gamma-Chlordane	Chlordane	4.2	5.5	2.1	2.1	2.1	1.3
Heptachlor epoxide	Heptachlor	0.218	0.286				0.069
Indeno(1,2,3-cd)pyrene		1.3	1.3	10	10	10	1.3
Iron		50	50	100	100	100	50
Lead	Lead acetate	13.44	17.58	1.13	1.13	1.13	4.22
Manganese	Manganese oxide	148	193	997	997	997	46
Mercury	Mercuric chloride	2.18	2.86	0.45	0.45	0.45	0.69
Methoxychlor		6.7	8.8				2.1
Napthalene		1.3	1.3	10	10	10	1.3
Nickel	Nickel sulfate hexahydrate for mammals and nickel sulfate for avaian species	67.18	87.91	77.4	77.4	77.4	21.12
PCB-1016		2.99	3.91				0.94
PCB-1242		0.151	0.197	0.41	0.41	0.41	0.047
PCB-1254		0.051	0.067	0.18	0.18	0.18	0.096
PCB-1260		0.1	0.1	0.9	0.9	0.9	0.1
Phenanthrene		1.3	1.3	10	10	10	1.3
Phenol	NOAELs not available for this chemical						
Pyrene	NOAELs not available for this chemical	1.3	1.3	10	10	10	1.3
Selenium	Selenate for mammals and sodium selenite for avain species	0.336	0.44	0.5	0.5	0.5	0.106
Silver		140	140				140
Thallium	Thallium sulfate	0.013	0.016				0.004
Toluene		23.6	30.9				7.4
Vanadium	Metavanadate for mammals and vanadyl sulfate for avian species	0.327	0.428	11.4	11.4	11.4	0.103
Zinc	Zinc oxide for mammals and zinc sulfate for avian species	268.7	351.7	14.5	14.5	14.5	84.5

Table H-2. Lowest Observed Adverse Effects Levels (LOAELs), Kenilworth Park Landfill Site, Washington D.C.

Chemical	Form of Chemical	Meadow Vole (mg/kg/day)	Short-tailed Shrew (mg/kg/day)	American Robin (mg/kg/day)	Great Blue Heron (mg/kg/day)	Red-tailed Hawk (mg/kg/day)	Red Fox (mg/kg/day)
1,2,4-Trichlorobenzene	LOAELs not available for this chemical						
1,3-Dichlorobenzene	LOAELs not available for this chemical						
1,4-Dichlorobenzene	LOAELs not available for this chemical						
2,4-Dimethylphenol	LOAELs not available for this chemical						
2-Butanone	LOAELs not available for this chemical						
2-Methylnaphthalene	LOAELs not available for this chemical						
2-Methylphenol	LOAELs not available for this chemical						
4,4'-DDD	LOAELs are for DDT and its metabolites	6.72	8.79	0.028	0.028	0.028	2.11
4,4'-DDE	LOAELs are for DDT and its metabolites	6.72	8.79	0.028	0.028	0.028	2.11
4,4'-DDT	LOAELs are for DDT and its metabolites	6.72	8.79	0.028	0.028	0.028	2.11
4-Chloraniline	LOAELs not available for this chemical						
4-Methylphenol	LOAELs not available for this chemical						
Acenaphthene		2.6	2.6	100	100	100	2.6
Acenaphthylene	LOAELs not available for this chemical						
Acetone		84	109.9				26.4
Aldrin		1.679	2.198				0.528
alpha-Chlordane	Chlordane	8.4	10.9	10.7	10.7	10.7	2.6
Aluminum	Aluminum chloride	17.538	22.952	44.5	44.5	44.5	5.515
Anthracene		2.6	2.6	100	100	100	2.6
Antimony	Antimony potassium tartrate	1.136	1.487				0.357
Arsenic	Arsenite for mammals and copper acetoarsenite for avian species	1.145	1.498	7.4	7.4	7.4	0.36
Barium	Barium hydroxide	33.3	43.5	41.7	41.7	41.7	10.5
Benzo(a)anthracene		2.6	2.6	100	100	100	2.6
Benzo(a)pyrene		9.09	11.89				2.86
Benzo(b)fluoranthene		2.6	2.6	100	100	100	2.6
Benzo(g,h,i)perylene		2.6	2.6	100	100	100	2.6
Benzo(k)fluoranthene		2.6	2.6	100	100	100	2.6
Benzoic acid	LOAELs not available for this chemical						
Benzyl alcohol	LOAELs not available for this chemical						
Beryllium	LOAELs not available for this chemical						
Bis(2-ethylhexyl)phthalate		166	218				52
Butylbenzylphthalate		1590	1590				1590
Cadmium	Cadmium chloride	16.199	21.2	20	20	20	5.094
Chromium	Chromium +3 as potassium chromium alum			5	5	5	
Chrysene		2.6	2.6	100	100	100	2.6
Cobalt	LOAELs not available for this chemical						

Table H-2. Lowest Observed Adverse Effects Levels (LOAELs), Kenilworth Park Landfill Site, Washington D.C.

Chemical	Form of Chemical	Meadow Vole (mg/kg/day)	Short-tailed Shrew (mg/kg/day)	American Robin (mg/kg/day)	Great Blue Heron (mg/kg/day)	Red-tailed Hawk (mg/kg/day)	Red Fox (mg/kg/day)
Copper	Copper sulfate for mammals and copper oxide for avian species	33.6	44	61.7	61.7	61.7	10.6
Cyanide	LOAELs not available for this chemical						
Dibenzo(a,h)anthracene	LOAELs not available for this chemical						
Dibenzofuran	LOAELs not available for this chemical						
Dieldrin		0.336	0.44				0.106
Di-n-butyl-phthalate		1666	2180	1.1	1.1	1.1	524
Di-n-octyl-phthalate	LOAELs not available for this chemical						
Endrin		0.836	1.094	0.1	0.1	0.1	0.263
Fluoranthene		2.6	2.6	100	100	100	2.6
Fluorene		2.6	2.6	100	100	100	2.6
gamma-Chlordane	Chlordane	8.4	10.9	10.7	10.7	10.7	2.6
Heptachlor epoxide	Heptachlor	2.183	2.857				0.687
Indeno(1,2,3-cd)pyrene		2.6	2.6	100	100	100	2.6
Iron		500	500	1000	1000	1000	500
Lead	Lead acetate	134.35	175.83	11.3	11.3	11.3	42.25
Manganese	Manganese oxide	477	624				150
Mercury	Methyl mercury chloride for mammals and methyl mercury dicyandiamide	0.269	0.352	0.064	0.064	0.064	0.017
Methoxychlor		13.4	17.6				4.2
Napthalene		2.6	2.6	100	100	100	2.6
Nickel	Nickel sulfate hexahydrate for mammals and nickel sulfate for avian species	134.35	175.83	107	107	107	42.25
PCB-1016		7.49	9.8				2.36
PCB-1242		1.507	1.972				0.474
PCB-1254		0.511	0.668	1.8	1.8	1.8	0.474
PCB-1260		0.13	0.13	9	9	9	0.13
Phenanthrene		2.6	2.6	100	100	100	2.6
Phenol	LOAELs not available for this chemical						
Pyrene	LOAELs not available for this chemical	2.6	2.6	100	100	100	2.6
Selenium	Selenate for mammals and sodium selenite for avain species	0.554	0.725	1	1	1	0.174
Silver		1400	1400				1400
Thallium	Thallium sulfate	0.126	0.164				0.039
Toluene		236.3	309.2				74.3
Vanadium	Metavanadate	3.274	4.285				1.03
Zinc	Zinc oxide for mammals and zinc sulfate for avian species	537.4	703.3	131	131	131	169

Table H-3. Terrestrial Receptor: Meadow Vole, Kenilworth Park Landfill Site, Washington D.C.

Meadow Vole (Conservative Dose Equation Inputs)		
Body Weight	0.0170000	kg
Food Ingestion Rate	0.0059500	kg/day
Water Ingestion Rate	0.0035700	L/day
Soil Ingestion Rate	0.0001428	kg/day

Maximum Concentrations used to calculate the Hazard Quotients (HQ)

COPEC	Soil (mg/kg)	Water (mg/L)	Vegetation (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
1,2,4-Trichlorobenzene	0	0	0	0.000	0	0	N/A	N/A
1,3-Dichlorobenzene	0	0	0	0.000	0	0	N/A	N/A
1,4-Dichlorobenzene	0	0	0	0.000	0	0	N/A	N/A
2,4-Dimethylphenol	0.064	0	0.064	0.023	0	0	N/A	N/A
2-Butanone	0	0	0	0.000	0	0	N/A	N/A
2-Methylnapthalene	17.6	0	17.6	6.308	0	0	N/A	N/A
2-Methylphenol	0.064	0	0.064	0.023	0	0	N/A	N/A
4,4'-DDD	0	0	0	0.000	1.34	6.72	0.00E+00	0.00E+00
4,4'-DDE	0	0	0	0.000	1.34	6.72	0.00E+00	0.00E+00
4,4'-DDT	0	0	0	0.000	1.34	6.72	0.00E+00	0.00E+00
4-Choroaniline	0.26	0	0.26	0.093	0	0	N/A	N/A
4-Methylphenol	0.2	0	0.2	0.072	0	0	N/A	N/A
Acenaphthene	42.6	0	42.6	15.268	1.3	2.6	1.17E+01	5.87E+00
Acenaphthylene	6.5	0	6.5	2.330	0	0	N/A	N/A
Acetone	0	0	0	0.000	16.8	84	0.00E+00	0.00E+00
Aldrin	0	0	0	0.000	0.336	1.679	0.00E+00	0.00E+00
alpha-Chlordane	0	0	0	0.000	4.2	8.4	0.00E+00	0.00E+00
Aluminum	31,800	0.41	31800	11397.206	1.754	17.538	6.50E+03	6.50E+02
Anthracene	26	0	26	9.318	1.3	2.6	7.17E+00	3.58E+00
Antimony	39.2	0	39.2	14.049	0.114	1.136	1.23E+02	1.24E+01
Arsenic	16	0	16	5.734	0.114	1.145	5.03E+01	5.01E+00
Barium	1,020	0.063	1020	365.581	9	33.3	4.06E+01	1.10E+01
Benzo(a)anthracene	29	0	29	10.394	1.3	2.6	8.00E+00	4.00E+00
Benzo(a)pyrene	20	0	20	7.168	0.91	9.09	7.88E+00	7.89E-01
Benzo(b)fluoranthene	13	0	13	4.659	1.3	2.6	3.58E+00	1.79E+00
Benzo(g,h,i)perylene	4.43	0	4.43	1.588	1.3	2.6	1.22E+00	6.11E-01
Benzo(k)fluoranthene	21	0	21	7.526	1.3	2.6	5.79E+00	2.89E+00
Benzoic acid	0	0	0	0.000	0	0	N/A	N/A
Benzyl alcohol	0	0	0	0.000	0	0	N/A	N/A
Beryllium	0.935	0	0.935	0.335	1.11	0	3.02E-01	N/A

Table H-3. Terrestrial Receptor: Meadow Vole, Kenilworth Park Landfill Site, Washington D.C.

Meadow Vole (Conservative Dose Equation Inputs)		
Body Weight	0.0170000	kg
Food Ingestion Rate	0.0059500	kg/day
Water Ingestion Rate	0.0035700	L/day
Soil Ingestion Rate	0.0001428	kg/day

Maximum Concentrations used to calculate the Hazard Quotients (HQ)

COPEC	Soil (mg/kg)	Water (mg/L)	Vegetation (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Bis(2-ethylhexyl)phthalate	0.67	0	0.67	0.240	16.6	166	1.45E-02	1.45E-03
Butylbenzylphthalate	0.26	0	0.26	0.093	159	1590	5.86E-04	5.86E-05
Cadmium	8.73	0	8.73	3.129	1.62	16.199	1.93E+00	1.93E-01
Chromium	394	0	394	141.210	4597	0	3.07E-02	N/A
Chrysene	25	0	25	8.960	1.3	2.6	6.89E+00	3.45E+00
Cobalt	15.5	0	15.5	5.555	0	0	N/A	N/A
Copper	918	0	918	329.011	25.5	33.6	1.29E+01	9.79E+00
Cyanide	0	0	0	0.000	108.4	0	0.00E+00	N/A
Dibenzo(a,h)anthracene	1.47	0	1.47	0.527	0	0	N/A	N/A
Dibenzofuran	9.8	0	9.8	3.512	0	0	N/A	N/A
Dieldrin	0	0	0	0.000	0.034	0.336	0.00E+00	0.00E+00
Di-n-butyl-phthalate	0	0	0	0.000	500	1666	0.00E+00	0.00E+00
Di-n-octyl-phthalate	0.08	0	0.08	0.029	0	0	N/A	N/A
Endrin	0	0	0	0.000	0.084	0.836	0.00E+00	0.00E+00
Fluoranthene	72	0	72	25.805	1.3	2.6	1.98E+01	9.92E+00
Fluorene	15	0	15	5.376	1.3	2.6	4.14E+00	2.07E+00
gamma-Chlordane	0	0	0	0.000	4.2	8.4	0.00E+00	0.00E+00
Heptachlor epoxide	0	0	0	0.000	0.218	2.183	0.00E+00	0.00E+00
Indeno(1,2,3-cd)pyrene	7.6	0	7.6	2.724	1.3	2.6	2.10E+00	1.05E+00
Iron	108000	1.8	108000	38707.578	50	500	7.74E+02	7.74E+01
Lead	6960	0.012	6960	2494.467	13.44	134.35	1.86E+02	1.86E+01
Manganese	967	0.27	967	346.630	148	477	2.34E+00	7.27E-01
Mercury	7.77	0	7.77	2.785	2.18	0.269	1.28E+00	1.04E+01
Methoxychlor	0	0	0	0.000	6.7	13.4	0.00E+00	0.00E+00
Napthalene	1.6	0	1.6	0.573	1.3	2.6	4.41E-01	2.21E-01
Nickel	232	0	232	83.149	67.18	134.35	1.24E+00	6.19E-01
PCB-1016	0	0	0	0.000	2.99	7.49	0.00E+00	0.00E+00
PCB-1242	0	0	0	0.000	0.151	1.507	0.00E+00	0.00E+00
PCB-1254	3.16	0	3.16	1.133	0.051	0.511	2.22E+01	2.22E+00
PCB-1260	2.51	0	2.51	0.900	0.1	0.13	9.00E+00	6.92E+00

Table H-3. Terrestrial Receptor: Meadow Vole, Kenilworth Park Landfill Site, Washington D.C.

Meadow Vole (Conservative Dose Equation Inputs)		
Body Weight	0.0170000	kg
Food Ingestion Rate	0.0059500	kg/day
Water Ingestion Rate	0.0035700	L/day
Soil Ingestion Rate	0.0001428	kg/day

Maximum Concentrations used to calculate the Hazard Quotients (HQ)

COPEC	Soil (mg/kg)	Water (mg/L)	Vegetation (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Phenanthrene	80	0	80	28.672	1.3	2.6	2.21E+01	1.10E+01
Phenol	0.12	0	0.12	0.043	0	0	N/A	N/A
Pyrene	57	0	57	20.429	1.3	2.6	1.57E+01	7.86E+00
Selenium	3.75	0	3.75	1.344	0.336	0.554	4.00E+00	2.43E+00
Silver	110	0	110	39.424	140	1400	2.82E-01	2.82E-02
Thallium	9.07	0	9.07	3.251	0.013	0.126	2.50E+02	2.58E+01
Toluene	0	0	0	0.000	23.6	236.3	0.00E+00	0.00E+00
Vanadium	662	0	662	237.261	0.327	3.274	7.26E+02	7.25E+01
Zinc	2,990	0.025	2,990	1071.621	268.7	537.4	3.99E+00	1.99E+00

Key:
mg/kg - millgrams per kilogram
mg/L - milligrams per liter
mg/kg/day - milligrams per kilogram per day
HQ - Hazard Quotient
HQ_n - Hazard Quotient using the NOAEL
HQ_l - Hazard Quotient using the LOAEL
NOAEL - No observed adverse effects level
LOAEL - Lowest observed adverse effects level
kg - kilograms
kg/day - kilograms per day
L/day - liter per day
0 - chemical was not detected in media evaluated and/or a NOAEL/LOAEL was not available
N/A - Not applicable

Table H-4. Terrestrial Receptor: Short-Tailed Shrew, Kenilworth Park Landfill Site, Washington D.C.

Short-Tailed Shrew (Conservative Dose Equation Inputs)		
Body Weight	0.0150000	kg
Food Ingestion Rate	0.0093000	kg/day
Water Ingestion Rate	0.0033450	L/day
Soil Ingestion Rate	0.0009672	kg/day

Maximum Concentrations used to calculate the Hazard Quotients (HQ)

COPEC	Soil (mg/kg)	Water (mg/L)	Invertebrate (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
1,2,4-Trichlorobenzene	0	0	0	0.000	0	0	N/A	N/A
1,3-Dichlorobenzene	0	0	0	0.000	0	0	N/A	N/A
1,4-Dichlorobenzene	0	0	0	0.000	0	0	N/A	N/A
2,4-Dimethylphenol	0.064	0	0.064	0.044	0	0	N/A	N/A
2-Butanone	0	0	0	0.000	0	0	N/A	N/A
2-Methylnapthalene	17.6	0	17.6	12.05	0	0	N/A	N/A
2-Methylphenol	0.064	0	0.064	0.044	0	0	N/A	N/A
4,4'-DDD	0	0	0	0.000	1.76	8.79	0.00E+00	0.00E+00
4,4'-DDE	0	0	0	0.000	1.76	8.79	0.00E+00	0.00E+00
4,4'-DDT	0	0	0	0.000	1.76	8.79	0.00E+00	0.00E+00
4-Choroaniline	0.26	0	0.26	0.178	0	0	N/A	N/A
4-Methylphenol	0.2	0	0.2	0.137	0	0	N/A	N/A
Acenaphthene	42.6	0	42.6	29.16	1.3	2.6	2.24E+01	1.12E+01
Acenaphthylene	6.5	0	6.5	4.449	0	0	N/A	N/A
Acetone	0	0	0	0.000	22	109.9	0.00E+00	0.00E+00
Aldrin	0	0	0	0.000	0.44	2.198	0.00E+00	0.00E+00
alpha-Chlordane	0	0	0	0.000	5.5	10.9	0.00E+00	0.00E+00
Aluminum	31,800	0.41	31,800	21,767	2.295	22.952	9.48E+03	9.48E+02
Anthracene	26	0	26	17.796	1.3	2.6	1.37E+01	6.84E+00
Antimony	39.2	0	39.2	26.832	0.149	1.487	1.80E+02	1.80E+01
Arsenic	16	0	16	10.952	0.15	1.498	7.30E+01	7.31E+00
Barium	1,020	0.063	1,020	698.18	11.8	43.5	5.92E+01	1.61E+01
Benzo(a)anthracene	29	0	29	19.850	1.3	2.6	1.53E+01	7.63E+00
Benzo(a)pyrene	20	0	20	13.690	1.19	11.89	1.15E+01	1.15E+00
Benzo(b)fluoranthene	13	0	13	8.898	1.3	2.6	6.84E+00	3.42E+00
Benzo(g,h,i)perylene	4.43	0	4.43	3.032	1.3	2.6	2.33E+00	1.17E+00
Benzo(k)fluoranthene	21	0	21	14.37	1.3	2.6	1.11E+01	5.53E+00
Benzoic acid	0	0	0	0.000	0	0	N/A	N/A
Benzyl alcohol	0	0	0	0.000	0	0	N/A	N/A
Beryllium	0.935	0	0.935	0.640	1.45	0	4.41E-01	N/A

Table H-4. Terrestrial Receptor: Short-Tailed Shrew, Kenilworth Park Landfill Site, Washington D.C.

Short-Tailed Shrew (Conservative Dose Equation Inputs)		
Body Weight	0.0150000	kg
Food Ingestion Rate	0.0093000	kg/day
Water Ingestion Rate	0.0033450	L/day
Soil Ingestion Rate	0.0009672	kg/day

Maximum Concentrations used to calculate the Hazard Quotients (HQ)

COPEC	Soil (mg/kg)	Water (mg/L)	Invertebrate (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Bis(2-ethylhexyl) phthalate	0.67	0	0.67	0.459	1.45	0	3.16E-01	N/A
Butylbenzyl phthalate	0.26	0	0.26	0.178	21.8	218	8.16E-03	8.16E-04
Cadmium	8.73	0	8.73	5.976	2.12	21.2	2.82E+00	2.82E-01
Chromium	394	0	394	269.7	6015	0	4.48E-02	N/A
Chrysene	25	0	25	17.1	1.3	2.6	1.32E+01	6.58E+00
Cobalt	15.5	0	15.5	10.609	0	0	N/A	N/A
Copper	918	0	918	628.4	33.4	44	1.88E+01	1.43E+01
Cyanide	0	0	0	0.000	141.9	0	0.00E+00	N/A
Dibenzo(a,h)anthracene	1.47	0	1.47	1.006	0	0	N/A	N/A
Dibenzofuran	9.8	0	9.8	6.708	0	0	N/A	N/A
Dieldrin	0	0	0	0.000	0.044	0.44	0.00E+00	0.00E+00
Di-n-butyl-phthalate	0	0	0	0.000	654	2180	0.00E+00	0.00E+00
Di-n-octyl-phthalate	0.08	0	0.08	0.055	0	0	N/A	N/A
Endrin	0	0	0	0.000	0.109	1.094	0.00E+00	0.00E+00
Fluoranthene	72	0	72	49.28	1.3	2.6	3.79E+01	1.90E+01
Fluorene	15	0	15	10.267	1.3	2.6	7.90E+00	3.95E+00
gamma-Chlordane	0	0	0	0.000	5.5	10.9	0.00E+00	0.00E+00
Heptachlor epoxide	0	0	0	0.000	0.286	2.857	0.00E+00	0.00E+00
Indeno(1,2,3-cd)pyrene	7.6	0	7.6	5.202	1.3	2.6	4.00E+00	2.00E+00
Iron	108,000	1.8	108,000	73,924	50	500	1.48E+03	1.48E+02
Lead	6,960	0.012	6,960	4,764	17.58	175.83	2.71E+02	2.71E+01
Manganese	967	0.27	967	662.0	193	624	3.43E+00	1.06E+00
Mercury	7.77	0	7.77	5.318	2.86	0.352	1.86E+00	1.51E+01
Methoxychlor	0	0	0	0.000	8.8	17.6	0.00E+00	0.00E+00
Napthalene	1.6	0	1.6	1.095	1.3	2.6	8.42E-01	4.21E-01
Nickel	232	0	232	158.8	87.91	175.83	1.81E+00	9.03E-01
PCB-1016	0	0	0	0.000	3.91	9.8	0.00E+00	0.00E+00
PCB-1242	0	0	0	0.000	0.197	1.972	0.00E+00	0.00E+00
PCB-1254	3.16	0	3.16	2.163	0.067	0.668	3.23E+01	3.24E+00
PCB-1260	2.51	0	2.51	1.718	0.1	0.13	1.72E+01	1.32E+01

Table H-4. Terrestrial Receptor: Short-Tailed Shrew, Kenilworth Park Landfill Site, Washington D.C.

Short-Tailed Shrew (Conservative Dose Equation Inputs)		
Body Weight	0.0150000	kg
Food Ingestion Rate	0.0093000	kg/day
Water Ingestion Rate	0.0033450	L/day
Soil Ingestion Rate	0.0009672	kg/day

Maximum Concentrations used to calculate the Hazard Quotients (HQ)

COPEC	Soil (mg/kg)	Water (mg/L)	Invertebrate (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Phenanthrene	80	0	80	54.76	1.3	2.6	4.21E+01	2.11E+01
Phenol	0.12	0	0.12	0.082	0	0	N/A	N/A
Pyrene	57	0	57	39.02	1.3	2.6	3.00E+01	1.50E+01
Selenium	3.75	0	3.75	2.567	0.44	0.725	5.83E+00	3.54E+00
Silver	110	0	110	75.29	140	1400	5.38E-01	5.38E-02
Thallium	9.07	0	9.07	6.208	0.016	0.164	3.88E+02	3.79E+01
Toluene	0	0	0	0.000	30.9	309.2	0.00E+00	0.00E+00
Vanadium	662	0	662	453.1	0.428	4.285	1.06E+03	1.06E+02
Zinc	2,990	0.025	2,990	2,047	351.7	703.3	5.82E+00	2.91E+00

Key:
mg/kg - millgrams per kilogram
mg/L - milligrams per liter
mg/kg/day - milligrams per kilogram per day
HQ - Hazard Quotient
HQ_n - Hazard Quotient using the NOAEL
HQ_l - Hazard Quotient using the LOAEL
NOAEL - No observed adverse effects level
LOAEL - Lowest observed adverse effects level
kg - kilograms
kg/day - kilograms per day
L/day - liter per day
0 - chemical was not detected in media evaluated and/or a NOAEL/LOAEL was not available
N/A - Not applicable

TableH-5. Terrestrial Receptor: American Robin, Kenilworth Park Landfill Site, Washington D.C.

American Robin (Conservative Dose Equation Inputs)		
Body Weight	0.0773000	kg
Food Ingestion Rate	0.1175000	kg/day
Water Ingestion Rate	0.0108000	L/day
Soil Ingestion Rate	0.0352500	kg/day

Maximum Concentrations used to calculate the Hazard Quotients (HQ)

COPEC	Soil (mg/kg)	Water (mg/L)	Invertebrate (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
1,2,4-Trichlorobenzene	0	0	0	0.000	0	0	N/A	N/A
1,3-Dichlorobenzene	0	0	0	0.000	0	0	N/A	N/A
1,4-Dichlorobenzene	0	0	0	0.000	0	0	N/A	N/A
2,4-Dimethylphenol	0.064	0	0.064	0.126	0	0	N/A	N/A
2-Butanone	0	0	0	0.000	0	0	N/A	N/A
2-Methylnapthalene	17.6	0	17.6	34.78	0	0	N/A	N/A
2-Methylphenol	0.064	0	0.064	0.126	0	0	N/A	N/A
4,4'-DDD	0	0	0	0.000	0.003	0.028	0.00E+00	0.00E+00
4,4'-DDE	0	0	0	0.000	0.003	0.028	0.00E+00	0.00E+00
4,4'-DDT	0	0	0	0.000	0.003	0.028	0.00E+00	0.00E+00
4-Choroaniline	0.26	0	0.26	0.514	0	0	N/A	N/A
4-Methylphenol	0.2	0	0.2	0.395	0	0	N/A	N/A
Acenaphthene	42.6	0	42.6	84.18	10	100	8.42E+00	8.42E-01
Acenaphthylene	6.5	0	6.5	12.84	0	0	N/A	N/A
Acetone	0	0	0	0.000	0	0	N/A	N/A
Aldrin	0	0	0	0.000	0	0	N/A	N/A
alpha-Chlordane	0	0	0	0.000	2.1	10.7	0.00E+00	0.00E+00
Aluminum	31,800	0.41	31,800	62,839	109.7	45	5.73E+02	1.41E+03
Anthracene	26	0	26	51.38	10	100	5.14E+00	5.14E-01
Antimony	39.2	0	39.2	77.462	0	0	N/A	N/A
Arsenic	16	0	16	31.617	5.1	7.4	6.20E+00	4.27E+00
Barium	1,020	0.063	1,020	2,016	20.8	41.7	9.69E+01	4.83E+01
Benzo(a)anthracene	29	0	29	57.31	10	100	5.73E+00	5.73E-01
Benzo(a)pyrene	20	0	20	39.52	0	0	N/A	N/A
Benzo(b)fluoranthene	13	0	13	25.69	10	100	2.57E+00	2.57E-01
Benzo(g,h,i)perylene	4.43	0	4.43	8.754	10	100	8.75E-01	8.75E-02
Benzo(k)fluoranthene	21	0	21	41.50	10	100	4.15E+00	4.15E-01
Benzoic acid	0	0	0	0.000	0	0	N/A	N/A
Benzyl alcohol	0	0	0	0.000	0	0	N/A	N/A

TableH-5. Terrestrial Receptor: American Robin, Kenilworth Park Landfill Site, Washington D.C.

American Robin (Conservative Dose Equation Inputs)		
Body Weight	0.0773000	kg
Food Ingestion Rate	0.1175000	kg/day
Water Ingestion Rate	0.0108000	L/day
Soil Ingestion Rate	0.0352500	kg/day

Maximum Concentrations used to calculate the Hazard Quotients (HQ)

COPEC	Soil (mg/kg)	Water (mg/L)	Invertebrate (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Beryllium	0.935	0	0.935	1.848	0	0	N/A	N/A
Bis(2-ethylhexyl) phthalate	0.67	0	0.67	1.324	0	0	N/A	N/A
Butylbenzyl phthalate	0.26	0	0.26	0.514	1.1	0	4.67E-01	N/A
Cadmium	8.73	0	8.73	17.251	1.45	20	1.19E+01	8.63E-01
Chromium	394	0	394	778.6	1	5	7.79E+02	1.56E+02
Chrysene	25	0	25	49.40	10	100	4.94E+00	4.94E-01
Cobalt	15.5	0	15.5	30.63	0	0	N/A	N/A
Copper	918	0	918	1,814	47	61.7	3.86E+01	2.94E+01
Cyanide	0	0	0	0.000	0	0	N/A	N/A
Dibenzo(a,h)anthracene	1.47	0	1.47	2.905	0	0	N/A	N/A
Dibenzofuran	9.8	0	9.8	19.37	0	0	N/A	N/A
Dieldrin	0	0	0	0.000	0.077	0	0.00E+00	N/A
Di-n-butyl-phthalate	0	0	0	0.000	0.11	1.1	0.00E+00	0.00E+00
Di-n-octyl-phthalate	0.08	0	0.08	0.158	0	0	N/A	N/A
Endrin	0	0	0	0.000	0.01	0.1	0.00E+00	0.00E+00
Fluoranthene	72	0	72	142.3	10	100	1.42E+01	1.42E+00
Fluorene	15	0	15	29.64	10	100	2.96E+00	2.96E-01
gamma-Chlordane	0	0	0	0.000	2.1	10.7	0.00E+00	0.00E+00
Heptachlor epoxide	0	0	0	0.000	0	0	N/A	N/A
Indeno(1,2,3-cd)pyrene	7.6	0	7.6	15.02	10	100	1.50E+00	1.50E-01
Iron	108,000	1.8	108,000	213,416	100	1,000	2.13E+03	2.13E+02
Lead	6,960	0.012	6,960	13,753	1.13	11.3	1.22E+04	1.22E+03
Manganese	967	0.27	967	1,911	997	0	1.92E+00	N/A
Mercury	7.77	0	7.77	15.35	0.45	0.064	3.41E+01	2.40E+02
Methoxychlor	0	0	0	0.000	0	0	N/A	N/A
Napthalene	1.6	0	1.6	3.162	10	100	3.16E-01	3.16E-02
Nickel	232	0	232	458.4	77.4	107	5.92E+00	4.28E+00
PCB-1016	0	0	0	0.000	0	0	N/A	N/A
PCB-1242	0	0	0	0.000	0.41	0	0.00E+00	N/A

TableH-5. Terrestrial Receptor: American Robin, Kenilworth Park Landfill Site, Washington D.C.

American Robin (Conservative Dose Equation Inputs)		
Body Weight	0.0773000	kg
Food Ingestion Rate	0.1175000	kg/day
Water Ingestion Rate	0.0108000	L/day
Soil Ingestion Rate	0.0352500	kg/day

Maximum Concentrations used to calculate the Hazard Quotients (HQ)

COPEC	Soil (mg/kg)	Water (mg/L)	Invertebrate (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
PCB-1254	3.16	0	3.16	6.244	0.18	1.8	3.47E+01	3.47E+00
PCB-1260	2.51	0	2.51	4.960	0.9	9	5.51E+00	5.51E-01
Phenanthrene	80	0	80	158.1	10	100	1.58E+01	1.58E+00
Phenol	0.12	0	0.12	0.237	0	0	N/A	N/A
Pyrene	57	0	57	112.6	10	100	1.13E+01	1.13E+00
Selenium	3.75	0	3.75	7.410	0.5	1	1.48E+01	7.41E+00
Silver	110	0	110	217.4	0	0	N/A	N/A
Thallium	9.07	0	9.07	17.92	0	0	N/A	N/A
Toluene	0	0	0	0.000	0	0	N/A	N/A
Vanadium	662	0	662	1,308	11.4	0	1.15E+02	N/A
Zinc	2,990	0.025	2,990	5,908	14.5	131	4.07E+02	4.51E+01

Key:
mg/kg - millgrams per kilogram
mg/L - milligrams per liter
mg/kg/day - milligrams per kilogram per day
HQ - Hazard Quotient
HQ_n - Hazard Quotient using the NOAEL
HQ_l - Hazard Quotient using the LOAEL
NOAEL - No observed adverse effects level
LOAEL - Lowest observed adverse effects level
kg - kilograms
kg/day - kilograms per day
L/day - liter per day
0 - chemical was not detected in media evaluated and/or a NOAEL/LOAEL was not available
N/A - Not applicable

Table H-6. Terrestrial Receptor: Red-Tailed Hawk, Kenilworth Park Landfill Site, Washington D.C.

Red-Tailed Hawk (Conservative Dose Equation Inputs)		
Body Weight	0.9570000	kg
Food Ingestion Rate	0.4000000	kg/day
Water Ingestion Rate	0.0564600	L/day
Soil Ingestion Rate	0.0028000	kg/day

Maximum Concentrations used to calculate the Hazard Quotients (HQ)

COPEC	Soil (mg/kg)	Water (mg/L)	Small Mammal (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
1,2,4-Trichlorobenzene	0	0	0	0.000	0	0	N/A	N/A
1,3-Dichlorobenzene	0	0	0	0.000	0	0	N/A	N/A
1,4-Dichlorobenzene	0	0	0	0.000	0	0	N/A	N/A
2,4-Dimethylphenol	0.064	0	0.064	0.027	0	0	N/A	N/A
2-Butanone	0	0	0	0.000	0	0	N/A	N/A
2-Methylnapthalene	17.6	0	17.6	7.408	0	0	N/A	N/A
2-Methylphenol	0.064	0	0.064	0.027	0	0	N/A	N/A
4,4'-DDD	0	0	0	0.000	0.003	0.028	0.00E+00	0.00E+00
4,4'-DDE	0	0	0	0.000	0.003	0.028	0.00E+00	0.00E+00
4,4'-DDT	0	0	0	0.000	0.003	0.028	0.00E+00	0.00E+00
4-Choroaniline	0.26	0	0.26	0.109	0	0	N/A	N/A
4-Methylphenol	0.2	0	0.2	0.084	0	0	N/A	N/A
Acenaphthene	42.6	0	42.6	17.930	10	100	1.79E+00	1.79E-01
Acenaphthylene	6.5	0	6.5	2.736	0	0	N/A	N/A
Acetone	0	0	0	0.000	0	0	N/A	N/A
Aldrin	0	0	0	0.000	0	0	N/A	N/A
alpha-Chlordane	0	0	0	0.000	2.1	10.7	0.00E+00	0.00E+00
Aluminum	31,800	0.41	31,800	13,385	109.7	45	1.22E+02	3.01E+02
Anthracene	26	0	26	10.943	10	100	1.09E+00	1.09E-01
Antimony	39.2	0	39.2	16.499	0	0	N/A	N/A
Arsenic	16	0	16	6.734	5.1	7.4	1.32E+00	9.10E-01
Barium	1,020	0.063	1,020	429.32	20.8	41.7	2.06E+01	1.03E+01
Benzo(a)anthracene	29	0	29	12.206	10	100	1.22E+00	1.22E-01
Benzo(a)pyrene	20	0	20	8.418	0	0	N/A	N/A
Benzo(b)fluoranthene	13	0	13	5.472	10	100	5.47E-01	5.47E-02
Benzo(g,h,i)perylene	4.43	0	4.43	1.865	10	100	1.86E-01	1.86E-02
Benzo(k)fluoranthene	21	0	21	8.839	10	100	8.84E-01	8.84E-02
Benzoic acid	0	0	0	0.000	0	0	N/A	N/A

Table H-6. Terrestrial Receptor: Red-Tailed Hawk, Kenilworth Park Landfill Site, Washington D.C.

Red-Tailed Hawk (Conservative Dose Equation Inputs)		
Body Weight	0.9570000	kg
Food Ingestion Rate	0.4000000	kg/day
Water Ingestion Rate	0.0564600	L/day
Soil Ingestion Rate	0.0028000	kg/day

Maximum Concentrations used to calculate the Hazard Quotients (HQ)

COPEC	Soil (mg/kg)	Water (mg/L)	Small Mammal (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Benzyl alcohol	0	0	0	0.000	0	0	N/A	N/A
Beryllium	0.935	0	0.935	0.394	0	0	N/A	N/A
Bis(2-ethylhexyl) phthalate	0.67	0	0.67	0.282	0	0	N/A	N/A
Butylbenzyl phthalate	0.26	0	0.26	0.109	1.1	0	9.95E-02	N/A
Cadmium	8.73	0	8.73	3.674	1.45	20	2.53E+00	1.84E-01
Chromium	394	0	394	165.8	1	5	1.66E+02	3.32E+01
Chrysene	25	0	25	10.522	10	100	1.05E+00	1.05E-01
Cobalt	15.5	0	15.5	6.524	0	0	N/A	N/A
Copper	918	0	918	386.4	47	61.7	8.22E+00	6.26E+00
Cyanide	0	0	0	0.000	0	0	N/A	N/A
Dibenzo(a,h)anthracene	1.47	0	1.47	0.619	0	0	N/A	N/A
Dibenzofuran	9.8	0	9.8	4.125	0	0	N/A	N/A
Dieldrin	0	0	0	0.000	0.077	0	0.00E+00	N/A
Di-n-butyl-phthalate	0	0	0	0.000	0.11	1.1	0.00E+00	0.00E+00
Di-n-octyl-phthalate	0.08	0	0.08	0.034	0	0	N/A	N/A
Endrin	0	0	0	0.000	0.01	0.1	0.00E+00	0.00E+00
Fluoranthene	72	0	72	30.305	10	100	3.03E+00	3.03E-01
Fluorene	15	0	15	6.313	10	100	6.31E-01	6.31E-02
gamma-Chlordane	0	0	0	0.000	2.1	10.7	0.00E+00	0.00E+00
Heptachlor epoxide	0	0	0	0.000	0	0	N/A	N/A
Indeno(1,2,3-cd)pyrene	7.6	0	7.6	3.199	10	100	3.20E-01	3.20E-02
Iron	108,000	1.8	108,000	45,457	100	1,000	4.55E+02	4.55E+01
Lead	6,960	0.012	6,960	2,929	1.13	11.3	2.59E+03	2.59E+02
Manganese	967	0.27	967	407.02	997	0	4.08E-01	N/A
Mercury	7.77	0	7.77	3.270	0.45	0.064	7.27E+00	5.11E+01
Methoxychlor	0	0	0	0.000	0	0	N/A	N/A
Napthalene	1.6	0	1.6	0.673	10	100	6.73E-02	6.73E-03
Nickel	232	0	232	97.65	77.4	107	1.26E+00	9.13E-01

Table H-6. Terrestrial Receptor: Red-Tailed Hawk, Kenilworth Park Landfill Site, Washington D.C.

Red-Tailed Hawk (Conservative Dose Equation Inputs)		
Body Weight	0.9570000	kg
Food Ingestion Rate	0.4000000	kg/day
Water Ingestion Rate	0.0564600	L/day
Soil Ingestion Rate	0.0028000	kg/day

Maximum Concentrations used to calculate the Hazard Quotients (HQ)

COPEC	Soil (mg/kg)	Water (mg/L)	Small Mammal (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
PCB-1016	0	0	0	0.000	0	0	N/A	N/A
PCB-1242	0	0	0	0.000	0.41	0	0.00E+00	N/A
PCB-1254	3.16	0	3.16	1.330	0.18	1.8	7.39E+00	7.39E-01
PCB-1260	2.51	0	2.51	1.056	0.9	9	1.17E+00	1.17E-01
Phenanthrene	80	0	80	33.67	10	100	3.37E+00	3.37E-01
Phenol	0.12	0	0.12	0.051	0	0	N/A	N/A
Pyrene	57	0	57	23.99	10	100	2.40E+00	2.40E-01
Selenium	3.75	0	3.75	1.578	0.5	1	3.16E+00	1.58E+00
Silver	110	0	110	46.30	0	0	N/A	N/A
Thallium	9.07	0	9.07	3.818	0	0	N/A	N/A
Toluene	0	0	0	0.000	0	0	N/A	N/A
Vanadium	662	0	662	278.63	11.4	0	2.44E+01	N/A
Zinc	2,990	0.025	2,990	1,258	14.5	131	8.68E+01	9.61E+00

Key:
mg/kg - millgrams per kilogram
mg/L - milligrams per liter
mg/kg/day - milligrams per kilogram per day
HQ - Hazard Quotient
HQ_n - Hazard Quotient using the NOAEL
HQ_l - Hazard Quotient using the LOAEL
NOAEL - No observed adverse effects level
LOAEL - Lowest observed adverse effects level
kg - kilograms
kg/day - kilograms per day
L/day - liter per day
0 - chemical was not detected in media evaluated and/or a NOAEL/LOAEL was not available
N/A - Not applicable

Table H-7. Terrestrial Receptor: Red Fox, Kenilworth Park Landfill Site, Washington D.C.

Red Fox (Conservative Dose Equation Inputs)		
Body Weight	4.5300000	kg
Food Ingestion Rate	0.5895500	kg/day
Water Ingestion Rate	0.3854750	L/day
Soil Ingestion Rate	0.0165074	kg/day

Maximum Concentrations used to calculate the Hazard Quotients (HQ)

COPEC	Soil (mg/kg)	Water (mg/L)	Small Mammal (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
1,2,4-Trichlorobenzene	0	0	0	0.000	0	0	N/A	N/A
1,3-Dichlorobenzene	0	0	0	0.000	0	0	N/A	N/A
1,4-Dichlorobenzene	0	0	0	0.000	0	0	N/A	N/A
2,4-Dimethylphenol	0.064	0	0.064	0.009	0	0	N/A	N/A
2-Butanone	0	0	0	0.000	0	0	N/A	N/A
2-Methylnapthalene	17.6	0	17.6	2.355	0	0	N/A	N/A
2-Methylphenol	0.064	0	0.064	0.009	0	0	N/A	N/A
4,4'-DDD	0	0	0	0.000	0.42	2.11	0.00E+00	0.00E+00
4,4'-DDE	0	0	0	0.000	0.42	2.11	0.00E+00	0.00E+00
4,4'-DDT	0	0	0	0.000	0.42	2.11	0.00E+00	0.00E+00
4-Choroaniline	0.26	0	0.26	0.035	0	0	N/A	N/A
4-Methylphenol	0.2	0	0.2	0.027	0	0	N/A	N/A
Acenaphthene	42.6	0	42.6	5.699	1.3	2.6	4.38E+00	2.19E+00
Acenaphthylene	6.5	0	6.5	0.870	0	0	N/A	N/A
Acetone	0	0	0	0.000	5.3	26.4	0.00E+00	0.00E+00
Aldrin	0	0	0	0.000	0.106	0.528	0.00E+00	0.00E+00
alpha-Chlordane	0	0	0	0.000	1.3	2.6	0.00E+00	0.00E+00
Aluminum	31,800	0.41	31,800	4,254	0.551	5.515	7.72E+03	7.71E+02
Anthracene	26	0	26	3.478	1.3	2.6	2.68E+00	1.34E+00
Antimony	39.2	0	39.2	5.244	0.036	0.357	1.46E+02	1.47E+01
Arsenic	16	0	16	2.141	0.036	0.36	5.95E+01	5.95E+00
Barium	1,020	0.063	1,020	136.5	2.8	10.5	4.87E+01	1.30E+01
Benzo(a)anthracene	29	0	29	3.880	1.3	2.6	2.98E+00	1.49E+00
Benzo(a)pyrene	20	0	20	2.676	0.29	2.86	9.23E+00	9.36E-01
Benzo(b)fluoranthene	13	0	13	1.739	1.3	2.6	1.34E+00	6.69E-01
Benzo(g,h,i)perylene	4.43	0	4.43	0.593	1.3	2.6	4.56E-01	2.28E-01
Benzo(k)fluoranthene	21	0	21	2.810	1.3	2.6	2.16E+00	1.08E+00
Benzoic acid	0	0	0	0.000	0	0	N/A	N/A
Benzyl alcohol	0	0	0	0.000	0	0	N/A	N/A
Beryllium	0.935	0	0.935	0.125	0.35	0	3.57E-01	N/A

Table H-7. Terrestrial Receptor: Red Fox, Kenilworth Park Landfill Site, Washington D.C.

Red Fox (Conservative Dose Equation Inputs)		
Body Weight	4.5300000	kg
Food Ingestion Rate	0.5895500	kg/day
Water Ingestion Rate	0.3854750	L/day
Soil Ingestion Rate	0.0165074	kg/day

Maximum Concentrations used to calculate the Hazard Quotients (HQ)

COPEC	Soil (mg/kg)	Water (mg/L)	Small Mammal (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Bis(2-ethylhexyl) phthalate	0.67	0	0.67	0.090	0.35	0	2.56E-01	N/A
Butylbenzyl phthalate	0.26	0	0.26	0.035	5.2	52	6.69E-03	6.69E-04
Cadmium	8.73	0	8.73	1.168	0.509	5.094	2.29E+00	2.29E-01
Chromium	394	0	394	52.71	1445	0	3.65E-02	N/A
Chrysene	25	0	25	3.345	1.3	2.6	2.57E+00	1.29E+00
Cobalt	15.5	0	15.5	2.074	0	0	N/A	N/A
Copper	918	0	918	122.8	8	10.6	1.54E+01	1.16E+01
Cyanide	0	0	0	0.000	34.1	0	0.00E+00	N/A
Dibenzo(a,h)anthracene	1.47	0	1.47	0.197	0	0	N/A	N/A
Dibenzofuran	9.8	0	9.8	1.311	0	0	N/A	N/A
Dieldrin	0	0	0	0.000	0.011	0.106	0.00E+00	0.00E+00
Di-n-butyl-phthalate	0	0	0	0.000	157	524	0.00E+00	0.00E+00
Di-n-octyl-phthalate	0.08	0	0.08	0.011	0	0	N/A	N/A
Endrin	0	0	0	0.000	0.026	0.263	0.00E+00	0.00E+00
Fluoranthene	72	0	72	9.633	1.3	2.6	7.41E+00	3.70E+00
Fluorene	15	0	15	2.007	1.3	2.6	1.54E+00	7.72E-01
gamma-Chlordane	0	0	0	0.000	1.3	2.6	0.00E+00	0.00E+00
Heptachlor epoxide	0	0	0	0.000	0.069	0.687	0.00E+00	0.00E+00
Indeno(1,2,3-cd)pyrene	7.6	0	7.6	1.017	1.3	2.6	7.82E-01	3.91E-01
Iron	108,000	1.8	108,000	14,449	50	500	2.89E+02	2.89E+01
Lead	6,960	0.012	6,960	931.2	4.22	42.25	2.21E+02	2.20E+01
Manganese	967	0.27	967	129.4	46	150	2.81E+00	8.63E-01
Mercury	7.77	0	7.77	1.040	0.69	0.017	1.51E+00	6.11E+01
Methoxychlor	0	0	0	0.000	2.1	4.2	0.00E+00	0.00E+00
Napthalene	1.6	0	1.6	0.214	1.3	2.6	1.65E-01	8.23E-02
Nickel	232	0	232	31.04	21.12	42.25	1.47E+00	7.35E-01
PCB-1016	0	0	0	0.000	0.94	2.36	0.00E+00	0.00E+00
PCB-1242	0	0	0	0.000	0.047	0.474	0.00E+00	0.00E+00
PCB-1254	3.16	0	3.16	0.423	0.096	0.474	4.40E+00	8.92E-01
PCB-1260	2.51	0	2.51	0.336	0.1	0.13	3.36E+00	2.58E+00

Table H-7. Terrestrial Receptor: Red Fox, Kenilworth Park Landfill Site, Washington D.C.

Red Fox (Conservative Dose Equation Inputs)		
Body Weight	4.5300000	kg
Food Ingestion Rate	0.5895500	kg/day
Water Ingestion Rate	0.3854750	L/day
Soil Ingestion Rate	0.0165074	kg/day

Maximum Concentrations used to calculate the Hazard Quotients (HQ)

COPEC	Soil (mg/kg)	Water (mg/L)	Small Mammal (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Phenanthrene	80	0	80	10.70	1.3	2.6	8.23E+00	4.12E+00
Phenol	0.12	0	0.12	0.016	0	0	N/A	N/A
Pyrene	57	0	57	7.626	1.3	2.6	5.87E+00	2.93E+00
Selenium	3.75	0	3.75	0.502	0.106	0.174	4.73E+00	2.88E+00
Silver	110	0	110	14.72	140	1,400	1.05E-01	1.05E-02
Thallium	9.07	0	9.07	1.213	0.004	0.039	3.03E+02	3.11E+01
Toluene	0	0	0	0.000	7.4	74.3	0.00E+00	0.00E+00
Vanadium	662	0	662	88.57	0.103	1.03	8.60E+02	8.60E+01
Zinc	2,990	0.025	2,990	400.0	84.5	169	4.73E+00	2.37E+00

Key:
mg/kg - millgrams per kilogram
mg/L - milligrams per liter
mg/kg/day - milligrams per kilogram per day
HQ - Hazard Quotient
HQ_n - Hazard Quotient using the NOAEL
HQ_l - Hazard Quotient using the LOAEL
NOAEL - No observed adverse effects level
LOAEL - Lowest observed adverse effects level
kg - kilograms
kg/day - kilograms per day
L/day - liter per day
0 - chemical was not detected in media evaluated and/or a NOAEL/LOAEL was not available
N/A - Not applicable

Table H-8. Terrestrial Receptor: Great Blue Heron, Kenilworth Park Landfill Site, Washington D.C.

Great Blue Heron (Conservative Dose Equation Inputs)		
Body Weight	2.2290000	kg
Food Ingestion Rate	0.6000000	kg/day
Water Ingestion Rate	0.1200000	L/day
Sediment Ingestion Rate	0.0540000	kg/day

Maximum Concentrations used to calculate the Hazard Quotients (HQ)

COPEC	Sediment (mg/kg)	Water (mg/L)	Fish (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
1,2,4-Trichlorobenzene	0	0	0	0.000	0	0	N/A	N/A
1,3-Dichlorobenzene	0	0	0	0.000	0	0	N/A	N/A
1,4-Dichlorobenzene	0	0	0	0.000	0	0	N/A	N/A
2,4-Dimethylphenol	0	0	0	0.000	0	0	N/A	N/A
2-Butanone	0.035	0	0.035	0.010	0	0	N/A	N/A
2-Methylnapthalene	0.11	0	0.11	0.032	0	0	N/A	N/A
2-Methylphenol	0	0	0	0.000	0	0	N/A	N/A
4,4'-DDD	0.041	0	0.041	0.012	0.003	0.028	4.01E+00	4.30E-01
4,4'-DDE	0.015	0	0.015	0.004	0.003	0.028	1.47E+00	1.57E-01
4,4'-DDT	0.014	0	0.014	0.004	0.003	0.028	1.37E+00	1.47E-01
4-Choroaniline	0	0	0	0.000	0	0	N/A	N/A
4-Methylphenol	0.64	0	0.64	0.188	0	0	N/A	N/A
Acenaphthene	0.18	0	0.18	0.05	10	100	5.28E-03	5.28E-04
Acenaphthylene	0.15	0	0.15	0.044	0	0	N/A	N/A
Acetone	0.092	0	0.092	0.027	0	0	N/A	N/A
Aldrin	0.035	0	0.035	0.010	0	0	N/A	N/A
alpha-Chlordane	0.058	0	0.058	0.017	2.1	10.7	8.10E-03	1.59E-03
Aluminum	13000	0.41	13,000	3,814	109.7	44.5	3.48E+01	8.57E+01
Anthracene	0.36	0	0.36	0.106	10	100	1.06E-02	1.06E-03
Antimony	4.4	0	4.4	1.29	0	0	N/A	N/A
Arsenic	12	0	12	3.521	5.1	7.4	6.90E-01	4.76E-01
Barium	480	0.063	480	140.8	20.8	41.7	6.77E+00	3.38E+00
Benzo(a)anthracene	0.92	0	0.92	0.270	10	100	2.70E-02	2.70E-03
Benzo(a)pyrene	0.93	0	0.93	0.273	0	0	N/A	N/A
Benzo(b)fluoranthene	1	0	1	0.293	10	100	2.93E-02	2.93E-03
Benzo(g,h,i)perylene	0.75	0	0.75	0.220	10	100	2.20E-02	2.20E-03
Benzo(k)fluoranthene	1.34	0	1.34	0.393	10	100	3.93E-02	3.93E-03
Benzoic acid	1.1	0	1.1	0.323	0	0	N/A	N/A
Benzyl alcohol	0.049	0	0.049	0.014	0	0	N/A	N/A
Beryllium	1.4	0	1.4	0.411	0	0	N/A	N/A

Table H-8. Terrestrial Receptor: Great Blue Heron, Kenilworth Park Landfill Site, Washington D.C.

Great Blue Heron (Conservative Dose Equation Inputs)		
Body Weight	2.2290000	kg
Food Ingestion Rate	0.6000000	kg/day
Water Ingestion Rate	0.1200000	L/day
Sediment Ingestion Rate	0.0540000	kg/day

Maximum Concentrations used to calculate the Hazard Quotients (HQ)

COPEC	Sediment (mg/kg)	Water (mg/L)	Fish (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Bis(2-ethylhexyl) phthalate	3.4	0	3.4	0.998	0	0	N/A	N/A
Butylbenzyl phthalate	0.19	0	0.19	0.056	1.1	0	5.07E-02	N/A
Cadmium	1.4	0	1.4	0.411	1.45	20	2.83E-01	2.05E-02
Chromium	99.5	0	99.5	29.2	1	5	2.92E+01	5.84E+00
Chrysene	1.2	0	1.2	0.352	10	100	3.52E-02	3.52E-03
Cobalt	17	0	17	4.988	0	0	N/A	N/A
Copper	110	0	110	32.3	47	61.7	6.87E-01	5.23E-01
Cyanide	0	0	0	0.000	0	0	N/A	N/A
Dibenzo(a,h)anthracene	0.24	0	0.24	0.070	0	0	N/A	N/A
Dibenzofuran	0.13	0	0.13	0.038	0	0	N/A	N/A
Dieldrin	0.004	0	0.004	0.001	0.077	0	1.52E-02	N/A
Di-n-butyl-phthalate	0	0	0	0.000	0.11	1.1	0.00E+00	0.00E+00
Di-n-octyl-phthalate	0.16	0	0.16	0.047	0	0	N/A	N/A
Endrin	0.014	0	0.014	0.004	0.01	0.1	4.11E-01	4.11E-02
Fluoranthene	2	0	2	0.59	10	100	5.87E-02	5.87E-03
Fluorene	0.18	0	0.18	0.053	10	100	5.28E-03	5.28E-04
gamma-Chlordane	0.072	0	0.072	0.021	2.1	10.7	1.01E-02	1.97E-03
Heptachlor epoxide	0.018	0	0.018	0.005	0	0	N/A	N/A
Indeno(1,2,3-cd)pyrene	1.5	0	1.5	0.440	10	100	4.40E-02	4.40E-03
Iron	32,000	1.8	32,000	9,389	100	1,000	9.39E+01	9.39E+00
Lead	520	0.012	520	153	1.13	11.3	1.35E+02	1.35E+01
Manganese	970	0.27	970	284.6	997	0	2.85E-01	N/A
Mercury	1.8	0	1.8	0.528	0.45	0.064	1.17E+00	8.25E+00
Methoxychlor	0.055	0	0.055	0.016	0	0	N/A	N/A
Napthalene	0.2	0	0.2	0.059	10	100	5.87E-03	5.87E-04
Nickel	52	0	52	15.26	77.4	107	1.97E-01	1.43E-01
PCB-1016	0	0	0	0.000	0	0	N/A	N/A
PCB-1242	0.354	0	0.354	0.104	0.41	0	2.53E-01	N/A
PCB-1254	0.571	0	0.571	0.168	0.18	1.8	9.31E-01	9.31E-02
PCB-1260	0.409	0	0.409	0.120	0.9	9	1.33E-01	1.33E-02

Table H-8. Terrestrial Receptor: Great Blue Heron, Kenilworth Park Landfill Site, Washington D.C.

Great Blue Heron (Conservative Dose Equation Inputs)		
Body Weight	2.2290000	kg
Food Ingestion Rate	0.6000000	kg/day
Water Ingestion Rate	0.1200000	L/day
Sediment Ingestion Rate	0.0540000	kg/day

Maximum Concentrations used to calculate the Hazard Quotients (HQ)

COPEC	Sediment (mg/kg)	Water (mg/L)	Fish (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Phenanthrene	1.9	0	1.9	0.56	10	100	5.57E-02	5.57E-03
Phenol	0	0	0	0.000	0	0	N/A	N/A
Pyrene	2.8	0	2.8	0.82	10	100	8.22E-02	8.22E-03
Selenium	0	0	0	0.000	0.5	1	0.00E+00	0.00E+00
Silver	7.6	0	7.6	2.23	0	0	N/A	N/A
Thallium	0	0	0	0.000	0	0	N/A	N/A
Toluene	0.0035	0	0.0035	0.001	0	0	N/A	N/A
Vanadium	85	0	85	24.9	11.4	0	2.19E+00	N/A
Zinc	560	0.025	560	164.3	14.5	131	1.13E+01	1.25E+00

Key:
mg/kg - millgrams per kilogram
mg/L - milligrams per liter
mg/kg/day - milligrams per kilogram per day
HQ - Hazard Quotient
HQ_n - Hazard Quotient using the NOAEL
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NOAEL - No observed adverse effects level
LOAEL - Lowest observed adverse effects level
kg - kilograms
kg/day - kilograms per day
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0 - chemical was not detected in media evaluated and/or a NOAEL/LOAEL was not available
N/A - Not applicable

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401
Fax Number: 410-224-2781

TO: L. Flynn

FAX NUMBER:

FROM: D. Ray

DATE: 7/17/07

PAGES (Including this Cover Sheet):

SUBJECT: List Request

IF YOU DID NOT RECEIVE THIS FAX IN ITS ENTIRETY, PLEASE CALL 410-573-4575.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401
410/573-4575

July 17, 2007

Louise Flynn
Ecology and Environment, Inc
1700 North Moore Street Suite 1610
Arlington, Va. 22209

RE: Kenilworth Aquatic Gardens.

Dear Ms. Flynn:

This responds to your letter, received July 16, 2007, requesting information on the presence of species which are federally listed or proposed for listing as endangered or threatened in the above referenced project area. We have reviewed the information you enclosed and are providing comments in accordance with section 7 of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*).

Except for occasional transient individuals, no proposed or federally listed endangered or threatened species are known to exist within the project impact area. Therefore, no Biological Assessment or further section 7 consultation with the U.S. Fish and Wildlife Service is required. Should project plans change, or should additional information on the distribution of listed or proposed species become available, this determination may be reconsidered.

This response relates only to federally protected threatened or endangered species under our jurisdiction. Limited information is currently available regarding the distribution of other rare species in the District of Columbia. However, the Nature Conservancy and National Park Service (NPS) have initiated an inventory of rare species within the District. For further information on such rare species, you should contact Mary Pfaffko of the National Park Service at (202)-535-1739.

An additional concern of the Service is wetlands protection. Federal and state partners of the Chesapeake Bay Program have adopted an interim goal of no overall net loss of the Basin's remaining wetlands, and the long term goal of increasing the quality and quantity of the Basin's wetlands resource base. Because of this policy and the functions and values wetlands perform, the Service recommends avoiding wetland impacts. All wetlands within the project area should be identified, and if alterations of wetlands is proposed, the U.S. Army Corps of Engineers, Baltimore District, should be contacted for permit requirements. They can be reached at (410) 962-3670.

We appreciate the opportunity to provide information relative to fish and wildlife issues, and

thank you for your interests in these resources. If you have any questions or need further assistance, please contact Devin Ray at (410) 573-4531.

Sincerely,

Mary Ratnaswamy

Mary J. Ratnaswamy, Ph.D.
Program Supervisor, Threatened and Endangered Species

GOVERNMENT OF THE DISTRICT OF COLUMBIA
Department of the Environment

Fisheries and Wildlife Division

17 October 2007

Ms. Louise Flynn, Project Manager
Ecology and Environment, Inc.
1501 Lee Highway, Suite 306
Arlington, Virginia 22209

Dear Ms. Flynn,

Per your request on Wednesday, 10 October 2007, I am providing you with our best information on species of concern or Species of Greatest Conservation Need (SGCN) as identified in our Wildlife Action Plan. The information is for the area identified as the former Kenilworth Park Landfill and includes the site proper as well as areas near the site.

Birds

Current recordings of avian SGCN utilizing the area include the eastern meadowlark *(Sturnella magna)* and the red-shouldered hawk *(Buteo lineatus)*. Both birds utilize the football fields or meadows adjacent to the 'landfill zone.'

The area also has suitable habitat for another SGCN, specifically, the field sparrow *(Spizella pusilla)*, but no record has been made of this species in or near the area.

Although the American kestrel *(Falco sparverius)* is not identified as a SGCN in our Wildlife Action Plan, it does use the Kenilworth Park and landfill area as part of its migratory movements through the District of Columbia. It is mentioned here because the kestrel is showing significant declines over much of its breeding range in the United States.

Invertebrates

Currently, there are no confirmed and/or identified invertebrate SGCN at the former Kenilworth Park Landfill. Based on suitable habitat present in the area, however, the following SGCN may be potentially present:

BUTTERFLIES AND MOTHS
Appalachian grizzled skipper *(Pyrgus centaureae wyandot)*
Cabbage white *(Pieris rapae)*
Crossline skipper *(Polites origenes)*
Frosted elfin *(Callophrys irus)*
Great spangled frittilary *(Speyenia cybele)*
Monarch *(Danaus plexippus)*
Question mark *(Ploygonia interrogationis)*
Red admiral *(Vanessa atalanta)*
Regal frittilary *(Euptoieta claudia)*

MOLLUSKS
Alewife floater *(Anodonta implicate)*
Dwarf wedgemussel *(Alasmidonta heterodon)*
Eastern pondmussel *(Ligumia nasuta)*
Green floater *(Lasmigona subviridis)*
Tidewater mucket *(Leptodea ochracea)*
Yellow lampmussel *(Lampsilis cariosa)*

DRAGONFLIES/DAMSEL FLIES
Mocha emerald *(Somatochlora linearis)*

51 N Street, NE, Sixth Floor, Washington, D.C. 20002 •PHONE (202) 535-2600 •FAX (202) 535-2881

Mammals

Currently, there are no confirmed and/or identified mammal SGCN at the former Kenilworth Park Landfill. Based on current suitable habitat and a (>10 years) National Park Service database the area could provide habitat for two current SGCN, the grey fox *(Urocyon cinereoargenteus)* and eastern cottontail *(sylvilagus floridanu*s).

A site visit on October 11, 2007 did show the area to be the source of fox scat in the early successional habitat on the Kenilworth Park South Landfill. However, the scat could not be positively identified as red fox or grey fox. Further, the presumption exists that the edge habitat between the mowed ball fields and un-mowed areas support eastern cottontails.

Thank you for contacting our office and including our species of greatest conservation need in your planning process.

Sincerely,

Sylvia D. Whitworth

Sylvia Whitworth, Acting Chief
Wildlife Management Branch
Fisheries and Wildlife Division
Natural Resources Administration
District Department of the Environment
51 N Street, N.E.
Washington, D.C. 20002

Species Present at Anacostia Park
North Capitol Parks

Scientific Name	Common Name	Federal Rank	Maryland Rank[1]	Maryland Status[1,2]
AMPHIBIANS				
Acris crepitans	Northern cricket frog	--	--	--
Ambystoma maculaturm	Spotted salamander	--	--	--
Ambystoma opacum	Marbled salamander	--	--	--
Bufo americanus	American toad	--	--	--
Bufo woodhousii fowleri	Fowler's toad	--	--	--
Desmognathus fuscus	Northern dusky salamander	--	--	--
Eurycea bislineata bislineata	Northern two-lined salamander	--	--	--
Hemidactylium scutatum	Four-toed salamander	--	--	--
Notothalmus viridescens	Red spotted newt	--	--	--
Plethodon cinereus	Red-backed salamander	--	--	--
Pseudacris crucifer	Spring peeper	--	--	--
Pseudacris triseriata	Upland chorus frog	--	--	--
Pseudotriton ruber	Northern red salamander	--	--	--
Rana catesbeiana	Bullfrog	--	--	--
Rana clamitans melanota	Green frog	--	--	--
Rana palustris	Pickerel frog	--	--	--
Rana sylvatica	Wood frog	--	--	--
Rana utricularia	Southern leopard frog	--	--	--
	Gray treefrog	--	--	--
BRYOZOA				
Pectinella magnifica	Jelly-ball freshwater bryozoan	--	--	--
FISH				
Anguilla rostrata	American eel	--	--	--
Dorosoma cepedianum	Gizzard shad	--	--	--
Fundulus diaphanus	Banded killifish	--	--	--
Ictalurus nebulosus	Brown bullhead	--	--	--
Ictalurus punctatus	Channel catfish	--	--	--
Lepomis gibbosus	Pumpkinseed	--	--	--
Lepomis macrochirus	Bluegill	--	--	--
Lepomis megalotis	Longear sunfish	--	--	--
Micropterus salmoides	Largemouth bass	--	--	--
Morone americanus	White perch	--	--	--
Notropis hudsoninus	Spottail shiner	--	--	--
	Mummichog	--	--	--
	Mosquito fish	--	--	--
	Carp	--	--	--
	Striped bass	--	--	--
LEPIDOTERA				
Ancyloxypha numitor	Least skipper	--	--	--
Atalopedes campestris	Sachem skipper	--	--	--
Boloria bellona	Meadow fritillary	--	--	--
Calycopis cecrops	Red-banded hairstreak	--	--	--
Celastrina ladon pseudargi	Spring azure	--	--	--
Celastrina ladon	Summer azure	--	--	--

Species Present at Anacostia Park
North Capitol Parks

Scientific Name	Common Name	Federal Rank	Maryland Rank[1]	Maryland Status[1,2]
Cercyonis p. pegala	Common wood nymph	--	--	--
Colias eurytheme	Orange sulphur	--	--	--
Colias philodice	Clouded sulphur	--	--	--
Danaus p. plexippus	Monarch	--	--	--
Epargyeus clarus	Silver-spotted skipper	--	--	--
Euptoieta claudia	Variegated fritillary	--	--	--
Everes comyntas	Eastern blue tailed	--	--	--
Junonia coenia	Common buckeye	--	--	--
Limenitis archippus	Viceroy	--	--	--
Nymphalis a. antiopa	Mourning cloak	--	--	--
Papilio g. glaucus	Eastern tiger swallowtail	--	--	--
Papilio polyxenes	Black swallowtail	--	--	--
Papilio troilus	Spicebush swallowtail	--	--	--
Pholisora catullus	Common sootywing	--	--	--
Pieris rapae	Cabbage white	--	--	--
Poanes zabulon	Zabulon skipper	--	--	--
Polygonia interrogationis	Question mark	--	--	--
Pontia protodice	Checkered white	--	--	--
Psyciodes tharos	Pearl crescent	--	--	--
Satyrodes appalachia	Appalachian brown	--	--	--
Vanessa atalanta	Red admiral	--	--	--
Vanessa cardui	Painted lady	--	--	--
	Silvery checkerspot	--	--	--
	Eastern comma	--	--	--
	Horace's duskywing	--	--	--
	Juvenal's duskywing	--	--	--
	Wildindigo duskywing	--	--	--
	Hackberry emperor	--	--	--
	Great spangled fritillary	--	--	--
	Variegated fritillary	--	--	--
	Little glassywing	--	--	--
	Gray hairstreak	--	--	--
	Red-spotted purple	--	--	--
	Queen	--	--	--
	Little wood satyr	--	--	--
	Hayhurst's scallopwing	--	--	--
	Broadwinged skipper	--	--	--
	Common-checkered skipper	--	--	--
	Crossline skipper	--	--	--
	Dun skipper	--	--	--
	Fiery skipper	--	--	--
	Ocola skipper	--	--	--
	Peck's skipper	--	--	--
	Cloudless sulphur	--	--	--
	Zebra swallowtail	--	--	--

Species Present at Anacostia Park
North Capitol Parks

Scientific Name	Common Name	Federal Rank	Maryland Rank[1]	Maryland Status[1,2]
	Checkered white	--	--	--
BIRDS				
	Bittern, American	G4	S1S2B	I
	Bittern, least	G5	S1S3B	I
	Blackbird, red-winged	--	--	--
	Blackbird, rusty	--	--	--
	Bluebird, eastern	--	--	--
	Bobolink	--	--	--
	Bunting, indigo	--	--	--
	Cardinal, northern	--	--	--
	Catbird, gray	--	--	--
	Chat, yellow-breasted	--	--	--
	Chickadee, Carolina	--	--	--
	Coot, American	--	--	--
	Cormorant, double-crested	G5	S1B	--
	Cowbird, brown-headed	--	--	--
	Creeper, brown	--	--	--
	Crow, American	--	--	--
	Crow, fish	--	--	--
	Cuckoo, black-billed	--	--	--
	Cuckoo, yellow-billed	--	--	--
	Dickcissel	G5	S2B	--
	Dove, mourning	--	--	--
	Dove, rock	--	--	--
	Dowitcher, long-billed	--	--	--
	Dowitcher, short-billed	--	--	--
	Duck, black	--	--	--
	Duck, bufflehead	--	--	--
	Duck, canvasback	--	--	--
	Duck, gadwall	--	--	--
	Duck, common goldeneye	--	--	--
	Duck, hybrid domestic	--	--	--
	Duck, long-tailed	--	--	--
	Duck, mallard	--	--	--
	Duck, oldsquaw	--	--	--
	Duck, hybrid peking	--	--	--
	Duck, northern pintail	--	--	--
	Duck, ring-necked	--	--	--
	Duck, ruddy	--	--	--
	Duck, northern shoveler	--	--	--
	Duck, blue-winged teal	--	--	--
	Duck, green-winged teal	--	--	--
	Duck, American wigeon	--	--	--
	Duck, wood	--	--	--
	Dunlin	--	--	--

Species Present at Anacostia Park
North Capitol Parks

Scientific Name	Common Name	Federal Rank	Maryland Rank[1]	Maryland Status[1,2]
	Eagle, American bald	G4	S2S3	T
	Egret, cattle	--	--	--
	Egret, great	--	--	--
	Egret, snowy	--	--	--
	Falcon, peregrine	G4	S1B	I
	Finch, house	--	--	--
	Finch, purple	G5	S3B	--
	Finch, yellow shafted	--	--	--
	Flicker, northern	--	--	--
	Flycatcher, Acadian	--	--	--
	Flycatcher, great crested	--	--	--
	Flycatcher, least	G5	S3S4B	--
	Flycatcher, willow	--	--	--
	Flycatcher, yellow-bellied	--	--	--
	Gallinule, common	--	--	--
	Gnatcatcher, blue-gray	--	--	--
	Goldfinch, American	--	--	--
	Goose, Canada	--	--	--
	Goose, hybrid domestic	--	--	--
	Goose, greater white-fronted	--	--	--
	Goose, snow	--	--	--
	Grackle, common	--	--	--
	Grebe, eared	--	--	--
	Grebe, horned	--	--	--
	Grebe, pied-billed	G5	S2B	--
	Grebe, red-necked	--	--	--
	Grosbeak, blue	--	--	--
	Grosbeak, evening	--	--	--
	Grosbeak, rose-breasted	--	--	--
	Gull, bonaparte's	--	--	--
	Gull, franklin's	--	--	--
	Gull, greater black-backed	--	--	--
	Gull, herring	--	--	--
	Gull, laughing	G5	S1B	--
	Gull, lesser black-backed	--	--	--
	Gull, ring-billed	--	--	--
	Harrier, northern	G5	S2B	--
	Hawk, broad-winged	--	--	--
	Hawk, cooper's	--	--	--
	Hawk, red-shouldered	--	--	--
	Hawk, red-tailed	--	--	--
	Hawk, sharp-shinned	--	--	--
	Heron, back-crowned night	--	--	--
	Heron, great blue	--	--	--
	Heron, green	--	--	--

Species Present at Anacostia Park
North Capitol Parks

Scientific Name	Common Name	Federal Rank	Maryland Rank[1]	Maryland Status[1,2]
	Heron, little blue	--	--	--
	Heron, yellow-crowned night	G5	S3B	--
	Hummingbird, ruby-throated	--	--	--
	Ibis, glossy	--	--	--
	Jay, blue	--	--	--
	Junco, dark-eyed	G5	S2B	--
	Kestrel, American	--	--	--
	Killdeer	--	--	--
	Kingbird, eastern	--	--	--
	Kingbird, western	--	--	--
	Kingfisher, belted	--	--	--
	Kinglet, golden-crowned	G5	S2B	--
	Kinglet, ruby-crowned	--	--	--
	Lark, horned	--	--	--
	Loon, common	--	--	--
	Loon, red-throated	--	--	--
	Martin, purple	--	--	--
	Meadowlark, eastern	--	--	--
	Merganser, common	--	--	--
	Merganser, hooded	G5	S1B	
	Merganser, red-breasted	--	--	--
	Merlin	--	--	--
	Mockingbird, northern	--	--	--
	Nighthawk, common	G5	S3S4B	--
	Nuthatch, red-breasted	G5	S1B	--
	Nuthatch, white-breasted	--	--	--
	Oriole, northern Baltimore	--	--	--
	Oriole, orchard	--	--	--
	Osprey	--	--	--
	Owl, barred	--	--	--
	Owl, great horned	--	--	--
	Phalarope, northern	--	--	--
	Phalarope, red-necked	--	--	--
	Phoebe, eastern	--	--	--
	Pine siskin	--	--	--
	Pipit, American	--	--	--
	Pipit, water	--	--	--
	Plover, american golden	--	--	--
	Plover, semipalmated	--	--	--
	Quail, bobwhite common	--	--	--
	Rail, common moorhen	--	--	--
	Rail, sora	--	--	--
	Rail Virginia	--	--	--
	Robin, American	--	--	--
	Sanderling	--	--	--

Species Present at Anacostia Park
North Capitol Parks

Scientific Name	Common Name	Federal Rank	Maryland Rank[1]	Maryland Status[1,2]
	Sandpiper, least	--	--	--
	Sandpiper, pectoral	--	--	--
	Sandpiper, semipalmated	--	--	--
	Sandpiper, solitary	--	--	--
	Sandpiper, spotted	--	--	--
	Sandpiper, stilt	--	--	--
	Sandpiper, western	--	--	--
	Sandpiper, white-rumped	--	--	--
	Sapsucker, yellow-bellied	G5	SHB	--
	Scaup, lesser	--	--	--
	Shoveler, northern	--	--	--
	Snipe, common	--	--	--
	Sparrow, American tree	--	--	--
	Sparrow, chipping	--	--	--
	Sparrow, field	--	--	--
	Sparrow, fox	--	--	--
	Sparrow, grasshopper	--	--	--
	Sparrow, house	--	--	--
	Sparrow, lincoln's	--	--	--
	Sparrow, savannah	G5	S3S4B	--
	Sparrow, song	--	--	--
	Sparrow, swamp	--	--	--
	Sparrow, vesper	G5	S3S4B	--
	Sparrow, white-crowned	--	--	--
	Sparrow, white-throated	--	--	--
	Starling, European	--	--	--
	Stilt, black-necked	--	--	--
	Swallow, bank	G5	S3S4B	--
	Swallow, barn	--	--	--
	Swallow, cliff	--	--	--
	Swallow, rough-winged	--	--	--
	Swallow, tree	--	--	--
	Swan, tundra	--	--	--
	Swift, chimney	--	--	--
	Tanager, scarlet	--	--	--
	Teal, green-winged	--	--	--
	Teal, blue-winged	--	--	--
	Tern, Caspian	--	--	--
	Tern forester's	--	--	--
	Tern, least	G4	S2B	--
	Thrasher, brown	--	--	--
	Thrush, gray-cheeked	--	--	--
	Thrush, hermit	--	--	--
	Thrush, swainson's	--	--	--
	Thrush, veery	--	--	--

Species Present at Anacostia Park
North Capitol Parks

Scientific Name	Common Name	Federal Rank	Maryland Rank[1]	Maryland Status[1,2]
	Thrush, wood	--	--	--
	Titmouse, tufted	--	--	--
	Towhee, eastern	--	--	--
	Towhee, rufous-sided	--	--	--
	Vireo, blue-headed	--	--	--
	Vireo, red-eyed	--	--	--
	Vireo, solitary	--	--	--
	Vireo, warbling	--	--	--
	Vireo, white-eyed	--	--	--
	Vireo, yellow-throated	--	--	--
	Vulture, black	--	--	--
	Vulture, turkey	--	--	--
	Warbler, american redstart	--	--	--
	Warbler, bay-breasted	--	--	--
	Warbler, black-and-white	--	--	--
	Warbler, black-throated blue	G5	S3S4B	--
	Warbler, black-throated green	--	--	--
	Warbler, blackburnian	G5	S1S2B	--
	Warbler, blackpoll	--	--	--
	Warbler, blue-winged	--	--	--
	Warbler, Canada	G5	S3B	--
	Warbler, cape may	--	--	--
	Warbler, cerulean	G4	S3S4B	--
	Warbler, chestnut-sided	--	--	--
	Warbler, common yellowthroat	--	--	--
	Warbler, Connecticut	--	--	--
	Warbler, hooded	--	--	--
	Warbler, Kentucky	--	--	--
	Warbler, magnolia	G5	S3S4B	--
	Warbler, Nashville	G5	S1S2B	I
	Warbler, orange-crowned	--	--	--
	Warbler, ovenbird	--	--	--
	Warbler, palm	--	--	--
	Warbler, parula northern	--	--	--
	Warbler, prairie	--	--	--
	Warbler, prothonotary	--	--	--
	Warbler, wilson's	--	--	--
	Warbler, yellow	--	--	--
	Warbler, yellow-rumped	--	--	--
	Waterthrush, Louisiana	--	--	--
	Waterthrush, northern	G5	S2S3B	--
	Waxwing, cedar	--	--	--
	Wigeon, American	--	--	--
	Woodcock, American	--	--	--
	Woodpecker, downy	--	--	--

Species Present at Anacostia Park
North Capitol Parks

Scientific Name	Common Name	Federal Rank	Maryland Rank[1]	Maryland Status[1,2]
	Woodpecker, hairy	--	--	--
	Woodpecker, pileated	--	--	--
	Woodpecker, red-bellied	--	--	--
	Woodpecker, red-headed	--	--	--
	Wood-pewee, eastern	--	--	--
	Wren, Carolina	--	--	--
	Wren, house	--	--	--
	Wren, marsh	--	--	--
	Wren, winter	G5	S2B	--
	Yellowlegs, greater	--	--	--
	Yellowlegs, lesser	--	--	--
MAMMALS				
Blarina brevicauda	Short-tail shrew	--	--	--
Castor canadensis	Beaver	--	--	--
Condylura cristata	Starnose mole	--	--	--
Diadelphis marsupialis	Opossum	--	--	--
Eptesicus fuscus	Big brown bat	--	--	--
Lassiurus borealis	Red bat	--	--	--
Lutra canadensis lataxina	River otter	--	--	--
Marmota monax	Woodchuck	--	--	--
Microtus pennsylvanicus	Meadow vole	--	--	--
Mustela vision	Mink	--	--	--
Odocoileus virginiana	White-tailed deer	--	--	--
Ondatra zibethica	Muskrat	--	--	--
Peromyscus leucopus	White-footed mouse	--	--	--
Procyon lotor	Raccoon	--	--	--
Scalopus aquaticus	Eastern mole	--	--	--
Sciurus carolinesis	Eastern gray squirrel	--	--	--
Sylvilagus floridanus	Eastern cottontail	--	--	--
Tamias striatus	Eastern chipmunk	--	--	--
Urocyon cinereoargenteus	Gray fox	--	--	--
Vulpes vulpes	Red fox	--	--	--
MANTODEA				
Mantis religiosa	Preying mantis	--	--	--
MOLLUSKS				
Pyganodon cataracta	Eastern floater mussel	--	--	--
ODONATA				
Anax junius	Common green darner dragonfly	--	--	--
Perithemis tenera	Eastern amberwing dragonfly	--	--	--
Tramea lacerata hagen	Black saddlebag dragonfly	--	--	--
	Blue dasher	--	--	--
	Spangled skimmer	--	--	--
	Common whitetail	--	--	--
	Lilypad forktail	--	--	--
	Eastern pondhawk	--	--	--

Species Present at Anacostia Park
North Capitol Parks

Scientific Name	Common Name	Federal Rank	Maryland Rank[1]	Maryland Status[1,2]
	Slaty skimmer	--	--	--
	Widow skimmer	--	--	--
	Swamp darner	--	--	--
	Familiar bluet	--	--	--
Carphophis amoenus	Eastern worn snake	--	--	--
Chelydra serpentina	Snapping turtle	--	--	--
Chrysemys p. picta	Eastern painted turtle	--	--	--
REPTILES				
Clemmys guttata	Spotted turtle	--	--	--
Columber c. constrictor	Northern black racer snake	--	--	--
Chrysemys p. picta	Eastern painted turtle	--	--	--
Diadophis punctatus edwardsi	Northern ringneck snake	--	--	--
Elaphe o. obsoleta	Black rat snake	--	--	--
Eumeces fasciatus	Five-lined skink	--	--	--
Heterodon platyrhinos	Eastern hognose snake	--	--	--
Kinosternon s. subrubrum	Eastern mud turtle	--	--	--
Nerodia s. sipedon	Northern water snake	--	--	--
Ophedodrys aestivus	Rough green snake	--	--	--
Pseudemys rubriventris	Red-bellied turtle	--	--	--
Regina septemvittata	Queen snake	--	--	--
Sceloporus undulatus hyacinthinus	Fence lizard	--	--	--
Sternotherus odoratus	Eastern mud turtle	--	--	--
Sternotherus odoratus	Common musk turtle	--	--	--
Storeria d. dekayi	Northern brown snake	--	--	--
Terrapene c. carolina	Eastern box turtle	--	--	--
Thamnophis sauritis	Ribbon snake	--	--	--
Thamnophis sirtalis	Eastern garter snake	--	--	--
Trachemys scripta elegans	Red-eared slider turtle	--	--	--

Sources: MDNR 2003a, MDNR 2003b, NPS 2002a, NPS 2000d, NPS 2002e, NPS 2002f, NPS 2001a, NPS 1999a, NPS 1999b, NPS 1999d, NPS 1997b

[1] The District of Columbia utilizes the species rankings adopted by the Maryland Wildlife and Heritage Service Natural Heritage Program.

[2] This is the status of a species as determined by the Maryland Department of Natural Resources, in accordance with the Nongame and Endangered Species Conservation Act. Definitions as shown below have been taken from Code of Maryland Regulations (COMAR) 08.03.08.

Global Rank

G2 Apparently secure globally, although it may be quite rare in parts of its range, especially at the periphery.
G4 Apparently secure globally, although it may be quite rare in parts of its range, especially at the periphery
G5 Demonstrably secure globally, although it may be rare in parts of its range, especially at the periphery.
G? The species has not yet been ranked.

Species Present at Anacostia Park
North Capitol Parks

Scientific Name	Common Name	Federal Rank	Maryland Rank[1]	Maryland Status[1,2]

State Rank

S1 Highly State rare. Critically imperiled in Maryland because of extreme rarity (typically 5 or fewer estimated occurrences or very few remaining individuals or acres in the State) or because of some factor(s) making it especially vulnerable to extirpation. Species with this rank are actively tracked by the Wildlife and Heritage Service.

S2 State rare. Imperiled in Maryland because of rarity (typically 6 to 20 estimated occurrences or few remaining individuals or acres in the State) or because of some factor(s) making it vulnerable to becoming extirpated. Species with this rank are actively tracked by the Wildlife and Heritage Service.

S3 Watch List. Rare to uncommon with the number of occurrences typically in the range of 21 to 100 in Maryland. It may have fewer occurrences but with a large number of individuals in some populations, and it may be susceptible to large-scale disturbances. Species with this rank are not actively tracked by the Wildlife and Heritage Service.

S4 Apparently secure in Maryland with typically more than 100 occurrences in the State or may have fewer occurrences if they contain large numbers of individuals. It is apparently secure under present conditions, although it may be restricted to only a portion of the State.

SH Historically known from Maryland, but not verified for an extended period (usually 20 or more years), with the expectation that it may be rediscovered.

_B A qualifier at the end of a rank. This species is a migrant. Subrank refers only to the breeding status of the species in Maryland. This species may have a different subrank for non-breeding populations.

State Status

E Endangered. A species whose continued existence as a viable component of the State's flora and fauna is determined to be in jeopardy.

I In Need of Conservation. An species whose population is limited or declining in the State such that it may become threatened in the foreseeable future if current trends or conditions persist.

T Threatened. A species of flora or fauna that appears likely, within the foreseeable future, to become endangered in the State.

Health Effects Summaries

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HEALTH EFFECTS SUMMARIES

This appendix contains health effects summaries for chemicals of potential concern at the Kenilworth Park Site. These summaries provide information on the occurrence and behavior of the COPCs in the environment, potential exposure mechanisms, and adverse health effects that could result from exposure, and the basis and reliability of the quantitative toxicity values used in the risk assessment. Information in each summary is drawn largely from the Public Health statement in the Toxicological Profile or Fact Sheet for the chemical, prepared by the Agency for Toxic Substances and Disease Registry (ATSDR) and the United States Environmental Protection Agency Integrated Risk Information System (IRIS) profiles.

Aluminum

Aluminum is a silver-white flexible metal with a vast number of uses. It is poorly absorbed and efficiently eliminated; however, when absorption does occur, aluminum is distributed mainly in bone, liver, testes, kidneys, and brain.

Aluminum is a naturally occurring metal that is found in the earth in combination with other elements. Aluminum is used in cooking utensils, appliances, and building materials. In combination with other substances, aluminum is an ingredient in such everyday items as antacids and antiperspirants.

Limited amounts of aluminum can be found in natural waters, drinking water, and air. It makes up approximately 8 percent of the earth's crust; however, higher concentrations may exist in soil surrounding waste sites associated with industries such as coal combustion and aluminum mining and smelting.

Oral doses of aluminum have been shown to induce neurobehavioral effects in adult mice and in developing offspring. Developmental effects (neurobehavioral deficits, decreased body weight, and possibly skeletal abnormalities) in the offspring of mice were identified as the most sensitive toxicity endpoint. A provisional oral reference dose (RfD) for aluminum of 1 mg/kg-day is derived by applying to the lowest observed adverse effect level (LOAEL) a total uncertainty factor (UF) of 100 to account for use of a LOAEL rather than a no observed adverse effect level (NOAEL), interspecies extrapolation, and human population variability. Confidence in the RfD is low because of limitations in the database. The RfD is based on conservative data (i.e., ingestion of soluble aluminum compounds).

Very little aluminum enters the body through the skin or the lungs, and the small amount that might enter the bloodstream through the stomach is quickly eliminated. Some people may get skin rashes from aluminum in antiperspirants, and factory workers who breathe in large amounts of aluminum dust can have lung problems such as coughing or changes that show up in chest x-rays. Because it is minimally absorbed through the gastrointestinal tract (GI), aluminum has long been regarded as nontoxic. Human and animal studies have shown that elevated levels of aluminum in the body may be toxic to the central nervous, skeletal, and hematological systems; however, these effects have been

observed mainly under conditions in which the GI tract has been bypassed (e.g., intravenously).

Antimony

Antimony is a naturally occurring element that can be found at very low levels in air, soil, food, and water. Much of the antimony in the environment is bound tightly to dust, soil, and rocks. Antimony is used industrially in metal alloys and for producing fireproofing chemicals, ceramics, glassware, and pigments. It also has been used medicinally as an antiparasitic agent.

Antimony can enter the body by absorption from the gastrointestinal tract following ingestion of food or water containing it, or by absorption from the lungs after inhalation. People may be exposed to high levels of antimony in dust if they live near antimony mines or processing companies. Ingestion of high doses of antimony can result in burning stomach pains, colic, nausea, and vomiting. Long-term occupational inhalation exposure has been shown to cause heart problems, stomach ulcers, and irritation of the lungs, eyes, and skin. It is not known whether antimony can enter the body through the skin. Antimony can have beneficial effects when used for medical reasons. It has been used as a medicine to treat people infected with parasites.

The critical or most sensitive noncarcinogenic effects of antimony exposure, based on chronic oral exposure of rats to antimony, are shortened life span, reduced blood glucose levels, and altered cholesterol levels. The oral RfD for antimony, 4×10^{-4} mg/kg-day, is based on a chronic oral bioassay in which 5 part per million (ppm) of potassium antimony tartrate was administered to rats in their drinking water. Confidence in the principal study is considered low because only one species and one dose level were used; a “no observed adverse effects level” (NOAEL) was not determined; and gross pathology and histopathology were not well described. Confidence in the database, and consequently the RfD, is low due to lack of adequate oral exposure investigations.

Existing data suggest that antimony may be an animal carcinogen; however, the data are not sufficient to justify a quantitative cancer potency estimate at this time. In laboratory rats, inhalation of antimony dust can increase the risk of lung cancer. However, there is no evidence of increased risk of cancer to animals from eating food or drinking water containing antimony. It is not known whether antimony can cause cancer in humans. Antimony has not yet received a weight-of-evidence classification from the EPA.

Arsenic

Arsenic, a naturally occurring element, is present at low levels in soil, water, and air. It is usually found in combination with one or more elements such as oxygen, chlorine, or sulfur; these compounds are called inorganic arsenic. Arsenic is also found in plants, animals, fish, and shellfish, usually in combination with carbon and hydrogen; these compounds, called organic arsenic, are generally less toxic than inorganic arsenic. Arsenic is widely distributed in the environment from natural sources, but higher concentrations have been found to occur in association with chemical waste, smelting of copper and other metals, fossil fuel combustion, and pesticide use. The primary use of

arsenic is as a wood preservative, but it is also used to make insect and weed killers and pharmaceuticals.

Arsenic does not break down in the environment, but it can change from one form to another. Most arsenic compounds are soluble in water but do not evaporate. Arsenic can be released into the air when minerals containing arsenic are processed or smelted, or when materials containing arsenic are burned. Airborne particles containing arsenic can settle on the ground, surface water, and plants. Fish and shellfish accumulate arsenic in their tissues, but most of the arsenic in fish is the less- toxic organic arsenic.

Most people are routinely exposed to low levels of arsenic because it is naturally occurring and low levels are present in food, water, soil, and air. Workers in several industries (nonferrous smelting, wood preservation, arsenical pharmaceutical production, and production and application of arsenical pesticides) may be exposed to significantly higher levels. Higher exposures also can result from breathing sawdust or smoke from wood treated with arsenic.

Ingestion of food or water with high levels of inorganic arsenic (60 mg/kg in food or 60 mg/L in water) can be fatal. Chronic arsenic overexposure may cause many health effects, including body weight changes, changes in the blood, and liver and kidney damage. Arsenic damages many tissues, including nerves, stomach, intestines, liver, kidneys, and skin. Breathing high levels can irritate the throat and lungs. Lower levels of exposure to inorganic arsenic may cause nausea, vomiting, and diarrhea; decreased production of red and white blood cells; abnormal heart rhythm; blood vessel damage; and a “pins and needles” sensation in the hands and feet. Long-term exposure to inorganic arsenic may lead to a darkening of the skin (hyperpigmentation), and the appearance of small “corns” or “warts” (keratosis) on the palms, soles, and torso. Direct skin contact may cause redness and swelling.

The critical or most sensitive effects of arsenic exposure, based on chronic oral exposure to humans, are hyperpigmentation of the skin, keratosis, and possible vascular complications. The oral RfD for arsenic, 3×10^{-4} mg/kg-day, is based on chronic human exposure to elevated levels of inorganic arsenic in drinking water. The principal study upon which the reference dose is based included more than 40,000 individuals, and there are a number of supporting studies. Confidence in the principal study is considered medium. An extremely large number of people were included in the study, but the doses were not well-characterized and other contaminants were present. The supporting human toxicity database is extensive but somewhat flawed. Problems exist with all of the epidemiological studies; however, the database does support the choice of a NOAEL. Confidence in the database as a whole and in the RfD is considered medium.

Arsenic is classified as a Group A human carcinogen by EPA. Epidemiologic studies and case reports have shown that ingesting inorganic arsenic increases the risk of cancer of the skin, lungs, bladder, and kidneys. Breathing inorganic arsenic increases the risk of lung cancer.

An oral slope factor and inhalation unit risk has been derived for inorganic arsenic. The oral slope factor of 1.5 $(mg/kg\text{-}day)^{-1}$, which is based on increased incidence of skin cancer in humans who consumed drinking water with high arsenic concentrations, was derived from the same principal study as the oral RfD. Although the study included a large number of people, uncertainties about the dosages of arsenic led the EPA administrator to conclude that the slope factor estimates based on that study could be modified downward by as much as an order of magnitude relative to estimates for most other carcinogens.

The inhalation unit risk, 0.0043 $(\mu g/m^3)^{-1}$, is derived from observations of increased lung cancer mortality in occupationally exposed males. Data from several studies were combined to obtain the final unit risk estimates. Overall, a large study population was observed. Exposure assessments included both work place air and urinary arsenic measurements. The unit risk estimated from the individual studies that were combined to obtain the final estimate all fell within a factor of 6 of one another. All of these factors lead to medium confidence in the final inhalation unit risk estimate.

Cadmium

Cadmium is a naturally occurring element present in trace amounts in the earth's crust. It is usually found as a mineral combined with other elements such as oxygen (cadmium oxide), chlorine (cadmium chloride), or sulfur (cadmium sulfate, cadmium sulfide). Because cadmium does not corrode easily, it has several industrial applications, including metal plating and the manufacture of pigments, batteries, and plastics.

Cadmium enters the air from mining and industrial processes, and from the burning of coal and household wastes, eventually depositing on land and water surfaces. It also can be released to water and soil by waste disposal processes and spills or leaks at hazardous waste sites. Cadmium can bind to soil particles; however, some cadmium dissolves in water. Cadmium does not break down in the environment, but can change from one form to another. Plants and animals take up cadmium from the environment, and cadmium accumulates in body tissues even as a result of prolonged exposure to low levels. Humans are exposed to small quantities of cadmium because it is widely distributed in air, water, soil, and food. Cadmium can enter the body by absorption from the stomach or intestines after ingestion of food or water containing cadmium, or by absorption from the lungs after inhalation of cadmium-containing dust, mists, or fumes. Food and cigarette smoke are probably the largest sources of cadmium exposure for the general public. Very little cadmium enters the body through the skin.

Cadmium can cause a number of adverse health effects. Ingestion of very high levels of cadmium causes severe irritation to the stomach, leading to vomiting and diarrhea. Breathing high levels of cadmium severely damages the lungs and can cause death. There is very strong evidence that long-term exposure to lower levels of cadmium in air, food, or water leads to a build up of cadmium in the kidneys and possible kidney disease. Long-term human exposure by the inhalation route may cause kidney damage and lung disease such as emphysema.

Studies of animals given cadmium in food or water indicate that high blood pressure, iron-poor blood, liver disease, and nerve or brain damage may result. It is not known if humans get any of these diseases from eating or drinking cadmium. Skin contact with cadmium is not known to cause health effects in humans or animals.

The most sensitive or critical effect of cadmium exposure is abnormal kidney function as indicated by significant proteinuria. Oral RfDs (5×10^{-4} mg/kg-day [water] and 1×10^{-3} mg/kg-day [food]) have been derived for cadmium based on a toxicokinetic model that predicts NOAELs for chronic cadmium exposure in water (5×10^{-3} mg/kg-day) and food (0.01 mg/kg-day). An UF of 10 was applied to each NOAEL to obtain the RfDs. The toxicokinetic model was used to identify the level of chronic human oral exposure that results in a concentration of 200 µg cadmium/gm human renal cortex (wet), the highest renal level not associated with significant proteinuria. Confidence in the RfDs is high because the NOAEL reflects data obtained from many studies on cadmium toxicity in both humans and animals. These data also permit calculation of pharmacokinetic parameters of cadmium absorption, distribution, metabolism, and elimination. Taken together, this information gives a high level of confidence in the database and, as a result, a high level of confidence in each of the RfDs.

Studies of humans or animals have not demonstrated increased cancer rates from ingestion of cadmium. However, there is evidence that long-term inhalation of cadmium by workers may be associated with an increased risk of lung cancer. Laboratory rats that inhaled cadmium also have shown increased cancer rates. EPA classifies cadmium as a Group B1, probable human carcinogen, based on the occupational studies. The inhalation unit risk, 0.0018 ($\mu g/m^{3)}$-1, is based on increased incidence of cancer from lung, tracheal, and bronchial cancers among occupationally exposed males (for example, a 2-fold excess risk of lung cancer observed in cadmium smelter workers). The cohort consisted of 602 white males who had been employed in production work for a minimum of 6 months during the years 1940-1969. An excess lung cancer risk also was observed in three other occupational studies; however, those studies were compromised by the presence of other carcinogens (e.g., arsenic, smoking) or by a small population. Although the inhalation unit risk for cadmium in one animal study was higher (i.e., more conservative) than that used to derive the unit risk, the use of available human data was considered to be more reliable because of species response variations and differences in the forms of cadmium used in the animal studies.

Chlordane

Chlordane is a manufactured chemical that was used as a pesticide in the United States from 1948 to 1988. Technical chlordane is not a single chemical, but is actually a mixture of alpha and gamma isomers of chlordane mixed with many related chemicals. It doesn't occur naturally in the environment. It is a thick liquid whose color ranges from colorless to amber. Chlordane has a mild, irritating smell.

Until 1983, chlordane was used as a pesticide on crops like corn and citrus and on home lawns and gardens. Because of concern about damage to the environment and harm to

human health, the EPA banned all uses of chlordane in 1983 except to control termites. In 1988, EPA banned all uses.

Chlordane adheres strongly to soil particles at the surface and is not likely to enter groundwater. Chlordane doesn't dissolve easily in water. Most chlordane leaves soil by evaporation to the air. It breaks down very slowly. It builds up in the tissues of fish, birds, and mammals.

Chlordane affects the nervous system, the digestive system, and the liver in people and animals. Headaches, irritability, confusion, weakness, vision problems, vomiting, stomach cramps, diarrhea, and jaundice have occurred in people who breathed air containing high concentrations of chlordane or accidentally swallowed small amounts of chlordane. Large amounts of chlordane taken by mouth can cause convulsions and death in people.

Long-term exposure caused harmful effects in the liver of test animals. It is not known whether chlordane affects the ability of people to have children or whether it causes birth defects. Animals exposed before birth or while nursing developed behavioral effects later.

The chronic oral reference dose of 5×10^{-4} mg/kg-d is based on a chronic toxicity test in mice. Statistically significant increased incidences over controls were found for hepatocellular swelling (hypertrophy) in 5- and 12.5-ppm males and females, and hepatic fatty degeneration was observed in 12.5-ppm males and 5- and 12.5-ppm females. Hepatic necrosis was noted in males only. An UF of 300 was applied to the NOAEL derived from the principal study: 10 for consideration of intraspecies variation, 10 for consideration of interspecies extrapolation, and 3 for lack of any reproductive studies. The overall confidence for this RfD assessment is medium.

The chronic inhalation reference concentration of 7×10^{-4} mg/m^3 is based on a comparative inhalation toxicity of technical chlordane in rats and monkeys. At the end of the exposure period, increased liver weights ($p < 0.01$) were observed for male and female rats exposed to 10 mg/m^3 at weeks 9 and 14. Analysis of blood chemistry results gave indications of hepatic functional alteration, but only among rats exposed to the highest concentration. An UF of 1000 was applied to the NOAEL: 10 for subchronic to chronic extrapolation; 10 for consideration of intraspecies variation. Partial UFs are used for interspecies extrapolation (which already has been addressed partially) and for database deficiencies (lack of any reproductive studies). The overall confidence in this RfC assessment is low.

EPA classifies chlordane as a Group B2, probable human carcinogen - based on sufficient evidence of carcinogenicity in animals.

Copper

Copper is a naturally occurring element that is used to make electrical wiring and water pipes and as a component of alloys such as bronze and brass. Copper compounds are

used as fungicides to prevent plant disease, in water treatment, and in wood, leather, and fabric preservatives.

Copper may enter the body by breathing air, drinking water, or eating food containing copper, and by skin contact with soil, water, and other copper-containing substances. Copper is an essential element at low-dose levels but may induce toxic effects at high-dose levels. The critical or most sensitive effect is gastrointestinal irritation. The National Academy of Science has recommended 2 to 3 mg/day of copper as a safe and adequate daily intake. Long-term overexposure to copper dust can irritate the nose, mouth, and eyes and cause headaches, dizziness, nausea, and diarrhea. Ingestion of high concentrations of copper can cause vomiting, diarrhea, stomach cramps, and nausea. Very young children are particularly sensitive to ingested copper. Liver and kidney damage and possibly death may result from long-term exposure.

In general, the seriousness of health effects of copper increase as the level and duration of exposure increases. Copper is not known to cause cancer or birth defects.

EPA assigns a Group D classification to chlordane for carcinogenicity meaning is not classified as a carcinogen. This classification is based no human data, inadequate animal data from assays of copper compounds, and equivocal mutagenicity data.

Dieldrin

Dieldrin is an insecticide. It is a white powder, which has a mild chemical odor. The less pure commercial powders have a tan color. Aldrin quickly breaks down to dieldrin in the body and in the environment. Neither aldrin nor dieldrin occurs naturally in the environment.

From the 1950s until 1970, dieldrin was widely used pesticides for crops like corn and cotton. Because of concerns about damage to the environment and potentially to human health, EPA banned all uses of dieldrin in 1974, except to control termites. In 1987, EPA banned all uses.

Sunlight and bacteria change aldrin to dieldrin so dieldrin is found most often in the environment. Dieldrin binds tightly to soil and slowly evaporate to the air. Dieldrin in soil and water breaks down very slowly. Plants take in and store aldrin and dieldrin from the soil. Aldrin rapidly changes to dieldrin in plants and animals. Dieldrin is stored in the fat and leaves the body very slowly.

People who intentionally or accidentally ingested large amounts of aldrin or dieldrin suffered convulsions and some died. Health effects may also occur after a longer period of exposure to smaller amounts because these chemicals build up in the body.

Some workers exposed to moderate levels in the air for a long time had headaches, dizziness, irritability, vomiting, and uncontrolled muscle movements. Workers removed from the source of exposure rapidly recovered from most of these effects.

Animals exposed to high amounts of aldrin or dieldrin also had nervous system effects. In animals, oral exposure to lower levels for a long period also affected the liver and decreased their ability to fight infections. We do not know whether aldrin or dieldrin affect the ability of people to fight disease.\

Studies in animals have given conflicting results about whether aldrin and dieldrin affect reproduction in male animals and whether these chemicals may damage the sperm. We do not know whether aldrin or dieldrin affect reproduction in humans.

The oral reference dose of 5×10^{-5} mg/kg-d is based on a two-year oral exposure study of rats and dogs. At the end of 2 years, females fed 1.0 and 10.0 ppm (0.05 and 0.5 mg/kg/day) had increased liver weights and liver-to- body weight ratios. Histopathological examinations revealed liver parenchymal cell changes including focal proliferation and focal hyperplasia. These hepatic lesions were considered to be characteristic of exposure to an organochlorine insecticide. An UF of 100 was applied to allow for uncertainty in the extrapolation of dose levels from laboratory animals to humans and uncertainty in the threshold for sensitive humans. The principal study is an older study for which detailed data are not available and in which a wide range of doses was tested. The chronic toxicity evaluation is relatively complete and supports the critical effect, if not the magnitude of effects. Reproductive studies are lacking. The RfD is given a medium confidence rating because of the support for the critical effect from other dieldrin studies, and from studies on organochlorine insecticides in general. There is no conclusive evidence that aldrin or dieldrin cause cancer in humans. Aldrin and dieldrin have shown to cause liver cancer in mice. The EPA has determined that dieldrin is a class B2; probable human carcinogen.

Iron

Iron is a naturally occurring metallic element. It is commonly used to produce steel, special-purpose alloys with magnetic properties, and heat, corrosion and electrical resistances. In combination with other substances, iron is used to make pigments, polishing compounds, catalysts, feeds, disinfectants, and sewage and industrial wastewater treatment chemicals.

Iron is an essential nutrient; required for maintenance of good health. Available data indicate that to protect against the adverse health effects associated with iron deficiency, the RDA (recommended dietary allowance) should be at least 30 mg/day for pregnant women. If ingested in larger quantities iron can be toxic, causing effects such as irritability, seizures, abdominal pain, vomiting, diarrhea, lethargy, and coma. However, apart from accidental or deliberate poisoning, ingestion of sufficient iron to cause these effects is unlikely in most individuals.

Approximately 0.01% of the body burden of iron is excreted daily and the elimination half-time of iron from the body is 10 to 20 years. Humans do not have a mechanism to increase the excretion of absorbed iron in response to elevated body levels. Chronic ingestion of high levels of iron causes an increase in tissue iron levels. During iron overload, excess iron is stored in the liver and other organs. Massive iron overload can

lead to liver cirrhosis and damage to other organs including the heart, endocrine glands, and pancreas.

A provisional oral RfD has been developed for iron based on typical dietary intake. The average intakes of iron, which range from 0.15 to 0.27 mg/kg-day do not cause iron overload, yet are sufficient to protect against iron deficiency. Dividing the NOAEL of 0.27 mg/kg-day by an UF of 1 yields a provisional chronic oral RfD of 0.3 mg/kg-day. While confidence in the critical study is high, overall confidence in the overall database is medium because the data are insufficient to determine the chronic dose level that is associated with adverse effects in health individuals. This RfD may not be protective of people with disorders of iron metabolism and could be conservative if applied to forms of iron with low bioavailability.

There is no evidence that iron can cause cancer. Iron has not been assigned a carcinogenicity weight-of-evidence classification by EPA.

Lead

Lead is a naturally occurring metal that is used in the manufacture of storage batteries and the production of ammunition and miscellaneous metal products (e.g., sheet lead, solder, and pipes). Other uses for lead are in the manufacturing of lead compounds including gasoline additives and pigments. In recent years, the quantity of lead used in paints, gasoline additives, ammunition, and solder has been reduced because of lead's toxic effects.

Lead can enter the body via ingestion and inhalation. Although it may also enter the body through the skin, dermal absorption of inorganic lead compounds is less significant than absorption through other routes. Children appear to be the segment of the population at greatest risk from toxic effects of lead. Children absorb about 50% of ingested lead while adults absorb only 5% to 15%. Initially, lead travels in the blood to the soft tissues (heart, liver, kidney, brain, etc.), then it is gradually sequestered in the bones and teeth. Children retain a larger fraction of the absorbed lead, about 57%, in the blood and soft tissue compartments, whereas in adults roughly 95% of the total body burden of lead is found in bones and teeth.

The most serious effects associated with markedly elevated blood lead levels include neurotoxic effects such as irreversible brain damage. Health effects are the same for inhaled and ingested lead. At blood lead levels of 40 to 100 micrograms per deciliter (µg/dL), children have exhibited nerve damage, permanent mental retardation, colic, anemia, brain damage, and death. Chronic kidney disease is also evident at these levels. For most adults, such damage does not occur until blood lead levels exceed 100 to 120 µg/dL. At these levels, damage to the male reproductive system; miscarriages; anemia; severe digestive system symptoms; decreased reaction time; weakness in fingers, wrists, or ankles; and some increased risk of heart and circulatory system disease may be exhibited.

Developmental effects in children have been identified as the most sensitive or critical effects of lead exposure. IQ, hearing, and growth deficits have been reported in children with blood lead levels of 10 µg/dL. The Center for Disease Control (CDC) regards 10 µg/dL as a level of concern for blood lead based on the evidence of adverse health effects at that level and above. EPA has adopted the 10 µg/dL blood lead level as a target to assist in evaluating progress in reducing lead exposure. This level is not considered to be a threshold for adverse health effects; rather, it is a benchmark that is subject to revision. EPA recognizes that there may be a small but finite risk of health effects at lower levels.

None of the epidemiology studies conducted to explore the relationship between lead exposure and increased cancer risk found any relationship. However, animal studies have shown increased kidney cancer and central nervous system (CNS) cancer in rats and mice. The EPA has classified lead as a Group B2 probable human carcinogen.

EPA currently provides neither a RfD for evaluating noncarcinogenic effects nor a SF for evaluating possible carcinogenic effects of lead exposure. The absence of toxicological values reflects the scientific community's inability to agree on the threshold dose for lead's noncarcinogenic effects or to satisfactorily estimate its carcinogenic potential, despite a rather large body of scientific literature on its toxic effects.

Manganese

Manganese, a naturally occurring element, is usually found combined with other elements such as oxygen, sulfur, and chlorine. Manganese is used in the steel industry; metallurgical processing; the production of dry cell batteries; as a component of some ceramics, pesticides, and fertilizers; and in nutritional supplements. Manganese is an essential element for humans and is a cofactor for a number of enzymatic reactions. The United States National Research Council recommends a provisional daily dietary intake of manganese of 2.0 to 5.0 gram for adults.

Manganese enters the air primarily through the burning of fossil fuels and emissions from factories where metallic manganese is produced from ores. It can be released to water and soil from factories or spills and leaks at hazardous waste sites. Some manganese compounds are soluble in water, and low levels of these compounds are normally present in lakes, streams, and the ocean. Manganese does not break down in the environment, but can change from one form to another.

Because manganese occurs naturally in the environment, humans are exposed to low levels of manganese in water, air, soil, and food. Food is the primary source of manganese for most people. There are few reports of negative health effects in humans exposed to manganese in drinking water or food. Laboratory studies of animals exposed to manganese in water or food have demonstrated adverse health effects, including changes in brain chemical levels, low birth weights in rats when mothers were exposed during pregnancy, slower than usual testes development, decreased body weight gain, and weakness and muscle rigidity in monkeys.

Inhalation of manganese dust at mining or ore processing plants and inhalation of welding fumes may be significant sources of occupational exposure. Following inhalation of manganese dust, absorption into the bloodstream occurs only if particles are sufficiently small to be able to penetrate deeply into the lungs. Long-term inhalation of manganese dust may result in a neurological disorder characterized by irritability, difficulty in walking, and speech disturbances. Impotence and loss of libido also have been reported in men exposed to high levels of manganese in air. Short-term inhalation exposure has been associated with respiratory disease.

Several studies were used to derive the oral RfD for dietary manganese, 1.4E-01 mg/kg-day. While those studies report average levels of manganese in various diets, no quantitative information is available to indicate toxic levels of manganese in the diet. Because humans maintain homeostatic control of manganese uptake and elimination, there is a wide range of dietary intakes considered to be safe. The determination of a single acceptable intake of manganese in the diet does not reflect the considerable variability in its absorption and elimination by humans, which are influenced by both environmental and biological factors. Confidence in the database and in the dietary RfD for manganese is medium.

For assessments of exposure to manganese is soil or drinking water, EPA recommends that the oral RfD should be adjusted by subtracting the amount of manganese that would be consumed in a normal diet (assuming 5 mg/day for a 70 kg adult, or 0.071 mg/kg-day) and dividing by an UF of 3. The resulting oral RfD for soil or water is 2.4×10^{-2} mg/kg-day. Region 3 (EPA 2006) does not conduct this non-standard adjustment to the oral RfD and therefore was not used in this risk assessment.

The inhalation RfC for manganese, 0.00005 mg/m^3, is based on a study in which impairment of neurobehavioral function in occupationally exposed individuals was identified as the critical effect. The principal study included 92 male workers exposed to manganese dioxide dust in a Belgian alkaline battery plant for an average of 5.3 years (range: 0.2 to 17.7 years) and a control group of 101 male workers. Confidence in the study and the database is considered medium. The principal study did not identify a NOAEL for neurobehavioral effects, nor did it measure particle size directly or provide information on particle size distribution. These limitations are mitigated by the fact that the principal study found similar indications of neurobehavioral dysfunction, and these findings were consistent with the results of other human studies. In all of the principal and supporting studies, the exposure duration was relatively limited and the workers were relatively young. These temporal limitations raise concerns that longer exposure durations and/or interactions with aging might result in the detection of effects at lower concentrations. There also is insufficient information on the developmental and reproductive effects of manganese inhalation. Medium confidence in the inhalation RfC follows medium confidence in the principal studies and the database.

There are no human carcinogenicity data for manganese exposure. The data from some animal studies have shown increases in tumors in a small number of animals at high doses of manganese, but the data are inadequate to judge whether manganese can cause

cancer. The EPA has placed manganese in Group D (not classifiable as to human carcinogenicity).

Mercury

Mercury is a naturally occurring element that exists in three oxidation states—metallic mercury (Hg), mercurous mercury (Hg^{1+}), and mercuric mercury (Hg^{2+})—and a variety of chemical forms. Mercury is used in a variety of manufactured products, including thermometers, barometers, batteries, mercury lamps, and paint, and as a catalyst in the manufacture of chlorine, caustic soda, and other chemicals. Man-made sources of mercury in the environment include mercury mining and smelting operations, industrial processes that use mercury, fossil fuel combustion, and waste disposal.

The most important forms of mercury with respect to human exposure are methyl mercury, mercuric mercury, and elemental mercury. Elemental mercury, the principal form in the atmosphere, can be transported long distances, eventually depositing on land and in surface waters. In soils and surface waters, mercury can exist in the mercuric and mercurous states as complex ions with varying water solubilities. Inorganic forms tend to sorb to soil and sediment particles and are relatively immobile; however, chemical and biological processes can convert sorbed mercury to more mobile forms, including elemental mercury and volatile organic forms. The most common organic form, methyl mercury, is relatively mobile, and it quickly enters the aquatic food chain and bioaccumulates in aquatic organisms.

Non-occupational exposure to inorganic mercury and methyl mercury compounds occurs primarily through ingestion, with the major source of human exposure to methyl mercury occurring through the consumption of fish and shellfish. Mercury also can enter the body readily through inhalation of mercury vapor, which is the principal route of occupational exposure.

The form of mercury determines its distribution in the body and its health effects. Metallic mercury and organic mercury distribute primarily to the kidneys; however, they also can readily cross the blood-brain and placental barriers. Long-term exposure to these forms of mercury can permanently damage the brain, kidneys, and developing fetus. Inorganic mercuric compounds also are distributed primarily to the kidneys, similar to metallic mercury; however, the amount that crosses the blood-brain and placental barriers is much lower.

The nervous system appears to be the most sensitive target of low-level exposure to metallic and organic mercury. CNS effects associated with chronic inhalation of mercury vapors or chronic ingestion of methyl mercury include tremors, memory loss, impaired vision, and irritability. Prenatal exposure to methyl mercury via maternal ingestion can cause neurological effects in the children ranging from slowed mental and coordination development at low exposure levels to severe, irreversible brain damage from mercury poisoning. The most sensitive target of exposure to inorganic mercury salts appears to be the kidneys, though brain effects also have been reported.

A chronic oral RfD of 3×10^{-4} has been established for mercuric chloride and other soluble salts based on rat subchronic feeding and subcutaneous studies that reported autoimmune effects. An UF of 1000 was applied to the LOAEL, 10 to convert to and expected NOAEL, 10 for the use of subchronic studies, and 10 for both animal-to-human extrapolation and protection of sensitive human subpopulations. While no one study was considered adequate, based on the weight of evidence from available studies and the entirety of the data base, confidence in this oral RfD is high.

The oral RfD for methylmercury, 1×10^{-4} mg/kg-day, is based on neurologic abnormalities observed in human infants whose mothers ingested methylmercury in their diet. An UF of 10 was applied to the NOAEL to account for variability in the human population and for the lack of a two-generation reproductive study and lack of data for the effect of exposure duration on longer-term effects. Confidence in the RfD is medium.

The inhalation RfC, 0.0003 mg/m^3, which is specifically for elemental mercury, is derived from a human inhalation study in which neurotoxicity was identified as the critical effect. A NOAEL of 0.009 mg/m^3 was identified in the critical study and an UF of 30 was applied.

Mercuric chloride and methylmercury have been classified by EPA as Group C possible human carcinogens; however, SFs have not been derived for these chemicals. Inorganic mercury has not been found to be carcinogenic in animals or humans and has been placed in Group D, not classifiable as to human carcinogenicity, by the EPA.

Nickel

Nickel is a naturally occurring metal found in small quantities in the earth's crust. Nickel is used industrially in making various steels and alloys and in electroplating. Exposure to nickel and nickel compounds may occur through inhalation of dust and particles, ingestion of food and drinking water containing nickel, and by absorption through the skin. Nickel has been shown to be essential nutrients for some species of animals and may be essential to humans.

Inhalation exposure to high levels of nickel and nickel compounds may have adverse effects on the lungs. Exposure by oral and inhalation routes may also affect the immune system, kidneys, and blood. Inhalation of nickel at concentrations greater than 0.001 mg/m^3 in air may cause immune system depression, lung irritation, and pulmonary disease. Death may result from inhalation of concentrations greater than 0.1 mg/m^3.

An oral RfD for soluble salts of nickel, 0.02 mg/kg-day, is based on decreased organ and body weights in rats who ingested nickel in their diet. The NOAEL of 5 mg/kg-day was multiplied by an UF of 300 to account for interspecies extrapolation, protection of sensitive populations, and inadequacies in the reproductive studies. Confidence in the oral RfD is medium.

Inhalation of nickel refinery dust has caused cancer of the lung, nasal cavity, and voice box in humans. Nickel refinery dust and nickel subsulfide have been classified as Group A human carcinogens. It is not known if other nickel compounds are carcinogenic.

Polychlorinated Biphenyls (PCBs)

PCBs are a group of man-made chemicals composed of 209 individual compounds. They have been used widely in coolants, lubricants, and dielectric materials in transformers, capacitors, and other electrical equipment because of their insulating and flame-resistant properties. The industrial manufacture of PCBs in the United States was stopped in 1977 in response to the discovery that PCBs could accumulate and persist in the environment and might cause adverse health effects. Although PCBs are no longer manufactured in the United States, people can be exposed to PCBs spilled or leaked from older transformers, capacitors, and other kinds of equipment and to low levels of PCBs which are widespread throughout the environment. PCBs bind tightly to soils, and can be found in high concentrations in some freshwater and marine sediments. Some freshwater fish have bioconcentrated PCBs, and eating fish from contaminated areas may be a potentially significant source of human exposure.

PCBs can enter the body when fish, other foods, or water containing PCBs are ingested, when air that contains PCBs is breathed, or when skin comes in contact with PCBs. Skin irritations characterized by acne-like lesions and rashes and liver effects were the only significant adverse health effects reported in PCB-exposed workers. Epidemiological studies of workers occupationally exposed to PCBs thus far have not found any conclusive evidence of an increased incidence of cancer in these groups.

Aroclor 1254 has an oral reference dose of 2 x 10-5 mg/kg-d based on monkey clinical and immunologic studies. A 10-fold US is applied to account for sensitive individuals. A factor of 3 is applied to extrapolation from rhesus monkeys to humans. A full 10-fold factor for interspecies extrapolation is not considered necessary because of similarities in toxic responses and metabolism of PCBs between monkeys and humans and the general physiologic similarity between these species. A partial factor is applied for the use of a minimal LOAEL since the changes in the periocular tissues and nail bed see at the 0.05 mg/kg-day are not considered to be of marked severity. The duration of the critical study continued for approximately 25% of the lifespan of rhesus monkeys so that a reduced factor was used for extrapolation from subchronic exposure to a chronic RfD. The immunologic and clinical changes that were observed did not appear to be dependent upon duration which further justifies using a factor of 3 rather than 10 for extrapolation from subchronic to chronic, lifetime exposure. The total UF is 300.

Effects of PCBs in experimentally exposed animals include liver damage, skin irritations, death, low birth weights, and other reproductive effects. Some strains of rats and mice that were fed PCB mixtures throughout their lives showed increased incidence of cancer of the liver and other organs. Based on these animal studies, the EPA has classified PCBs as Group B2 probable human carcinogen.

Polycyclic Aromatic Hydrocarbons (PAHs)

PAHs contain only carbon and hydrogen and consist of two or more fused benzene rings in linear, angular, or cluster arrangements. PAHs are formed during the incomplete burning of fossil fuel, garbage, or any organic matter. PAHs produced by burning may be carried into the air on dust particles and distributed into water and soil. In general, PAHs do not evaporate easily, and do not dissolve in water.

Exposure to PAHs may occur by inhaling airborne particles, drinking water, or accidentally ingesting soil or dust containing PAHs. In addition, smoking tobacco or eating charcoal-broiled food are common routes of exposure to PAHs.

Some PAHs are known carcinogens, and potential health effects caused by PAHs are usually discussed in terms of an individual PAH compound's carcinogenic or noncarcinogenic effects. Little attention has been paid to non-cancer effects of PAHs. Rapidly growing tissues, such as the intestinal lining, bone marrow, lymphoid organs, blood cells, and testes seem to be especially susceptible targets to non-cancer effects.

Exposure to benzo(a)pyrene (B(a)P) and other carcinogenic PAHs can cause cancer at the point of exposure. When exposed to high levels of B(a)P in air, animal develop lung tumors; when exposed via the dietary route, they develop stomach tumors; and when B(a)P is painted on skin, animals develop skin tumors. B(a)P and six other PAHs have been classified by EPA as Group B2 probable human carcinogens. The other Group B2 carcinogenic PAHs are: benzo(a)anthracene, benzo)b)fluoranthene, benzo(k) fluoranthene, chrysene, dibenzo(a,a) anthracene, and indeno(1,2,3-cd)pyrene.. Only B(a)P has been assigned a slope factor (SF) by EPA.

The oral SF for B(a)P, 7.3 $(mg/kg\text{-}day)^{-1}$ is based on the geometric mean of four slope factors derived using differing modeling procedures from two different studies of mice and rats in which increased incidences of cancer of the forestomach were caused by dietary exposures. The range of slope factors calculated was 4.5 to 11.7 $(mg/kg\text{-}day)^{-1}$. The data used are considered to be less than optimal, but acceptable.

In the past, other group B2 carcinogenic PAHs were assumed to be equipotent to B(a)P; however, it has been shown in animal studies that some are less carcinogenic than B(a)P. EPA has adopted relative potency factors (RPFs) that account for differences in the carcinogenic potencies of individual PAHs relative to that of B(a)P (EPA 1993c). In this risk assessment, the SF for each carcinogenic PAH has been estimated by multiplying the SF for B(a)P by the compound-specific RPF.

It is not really appropriate to use the oral SF for B(a)P or the other carcinogenic PAHs to evaluate carcinogenic risks from dermal contact, because B(a)P exposure is associated with cancer at the point of contact. Nevertheless, rather than eliminating the dermal route and possibly underestimating the total cancer risks, the oral SFs were extrapolated to estimate risks from dermal exposure in this assessment.

Silver

Silver is a soft metal that occurs naturally in pure form and in ores. Silver com-pounds have been used industrially in the manufacture of photographic film, indelible inks, and medications. Photographic materials are the major source of silver released to the environment.

In general, silver in the environment binds to minerals in soil. However, silver can convert to forms that dissolve in water. Most people are exposed daily to very low levels of silver in food and water. It is less likely for the general public to be exposed to silver in air.

Most of the information about health effects caused by human exposure to silver is based on exposure to very high concentrations of silver in medications or the work place, such as chemical manufacturing facilities. Long-term oral or inhalation exposure to silver compounds can cause a gray or blue-gray color in some areas of skin or other body tissues. This condition, called argyria, is permanent but thought to be only a "cosmetic" problem.

Argyria is the critical or most sensitive health effect of exposure to silver. Other health effects seen in humans include minor allergic reactions from dermal exposure to silver and irritation of the throat, lungs, and stomach after exposure to dust containing high levels of silver compounds.

Studies of long-term exposure of laboratory animals to silver have demonstrated reduced activity, decreased weight gain, and enlarged hearts. It is not known whether similar effects could occur in humans, although some occupational studies in humans suggest silver can cause kidney problems.

The oral reference dose for silver is 5×10^{-3} mg/kg-d based on an 1935 clinical spectroscopy study that showed seventy cases of generalized argyrosis following organic and colloidal silver medication. Argyria, is a medically benign but permanent bluish-gray discoloration of the skin. Argyria results from the deposition of silver in the dermis and also from silver-induced production of melanin. Although silver has been shown to be uniformly deposited in exposed and unexposed areas, the increased pigmentation becomes more pronounced in areas exposed to sunlight due to photoactivated reduction of the metal. Although the deposition of silver is permanent, it is not associated with any adverse health effects. No pathologic changes or inflammatory reactions have been shown to result from silver deposition. Silver compounds have been employed for medical uses for centuries. In the nineteenth and early twentieth centuries, silver arsphenamine was used in the treatment of syphillis; more recently it has been used as an astringent in topical preparations. While argyria occurred more commonly before the development of antibiotics, it is now a rare occurrence. An UF of 3 is applied to account for minimal effects in a subpopulation which has exhibited an increased propensity for the development of argyria. The critical effect observed is a cosmetic effect, with no associated adverse health effects. Also, the critical study reports on only 1 individual who developed argyria following an i.v. dose of 1 g silver (4 g silver arsphenamine).

Other individuals did not respond until levels five times higher were administered. No UF for less than chronic to chronic duration is needed because the dose has been apportioned over a lifetime of 70 years.

Silver is not classified as to its human carcinogenicity and therefore is a Class D compound. In animals, local sarcomas have been induced after implantation of foils and discs of silver. However, the interpretation of these findings has been questioned due to the phenomenon of solid-state carcinogenesis in which even insoluble solids such as plastic have been shown to result in local fibrosarcomas.

Thallium

Thallium is a naturally occurring element that is widely distributed in trace amounts in the earth's crust. It is usually found combined with other elements (primarily oxygen, sulfur, and halogens) in inorganic compounds. Thallium is used mainly in the semiconductor industry for the production of switches and closures. It is also used in the manufacture of specialty glasses and for certain medical procedures. Thallium was once widely used as a pesticide for rodents and insects, but that use was banned by the EPA in 1972.

The major sources of thallium releases to the environment are emissions from coal burning or smelting operations. Thallium compounds are generally soluble in water, and the element is found in water mainly as the monovalent ion (Tl^+). Thallium tends to be sorbed to soils and sediments and bioaccumulates in aquatic plants, invertebrates, and fish. Terrestrial plants can also take up thallium from the soil.

Humans may be exposed to thallium by ingestion, inhalation, or dermal absorption. The main route of exposure for the general population is ingestion of thallium-containing foods, especially home-grown fruits and vegetables. Cigarette smoking is another common source of exposure. Inhalation of contaminated air may be a significant route of exposure for people who live or work near emission sources such as power plants or smelters.

Most thallium that is ingested is absorbed through the gastrointestinal tract and rapidly distributed to various parts of the body, especially the kidney and liver. Thallium is slowly eliminated in the urine and feces; its half-life within the body is approximately three days. Ingestion of large amounts over a short period can affect the liver and kidneys and the nervous, respiratory, and cardiovascular systems. Animal studies indicate that high doses damaged the nervous and cardiovascular systems and that lower doses over a longer period caused damage to the male reproductive system. Reproductive effects have not been reported in humans.

Oral studies in humans suggest that the liver is susceptible to thallium toxicity; necrosis, fatty changes, and altered serum enzyme levels have been reported. EPA has identified increased levels of serum glutamic oxaloacetic transaminase (SGOT) and lactate dihydrogenase (LDH) as the critical effect for deriving oral RfDs for several thallium compounds, including thallium acetate, carbonate, chloride, nitrite, and sulfate. The

RfDs for all of these compounds are all based on a subchronic study in which rats that had been exposed by gavage to thallium sulfate in water showed increased levels of SGOT and LDH, and other effects. The RfD for thallium sulfate, $8x10^{-5}$mg/kg-day, was obtained by multiplying the NOAEL from the critical study by an UF of 3,000 to account for extrapolation from subchronic to chronic, interspecies extrapolation, interspecies variability, and lack of reproductive and chronic toxicity data. (RfDs for the other compounds were obtained similarly, with an additional adjustment to account for molecular weight differences.) Confidence in the critical study is low because of uncertainties in the results, and confidence in the database is low because it includes just one subchronic study and some anecdotal human data. Low confidence in the RfD follows.

There is no evidence that thallium causes cancer in humans or animals. The EPA has placed thallium in Group D (not classifiable as to carcinogenicity in humans).

Vanadium

Vanadium is a naturally occurring gray metal. In the environment, vanadium is usually combined with elements such as oxygen and sulfur. Vanadium compounds, primarily vanadium pentoxide, are used extensively in industry. The largest industrial use of vanadium oxide is in steel manufacturing, but vanadium compounds also are used in plastic, rubber, ceramic, and other chemical manufacturing.

Burning of fuel oil is the largest source of vanadium releases to the atmosphere, which are generally in the form of vanadium oxides. Deposition of atmospheric vanadium is an important source of vanadium in soil and water; however, natural releases from weathering of rocks and soil erosion are far greater than anthropogenic sources to the atmosphere. Vanadium is not generally very soluble in water, but it can be carried with small particles in surface water and groundwater.

Because vanadium occurs naturally, people are likely to be exposed to low concentrations of vanadium in food and drinking water. People can be exposed to vanadium in air near industries that use vanadium, waste disposal areas of these industries, or downwind of fuel oil or coal burning areas. Most inhaled or ingested vanadium is not absorbed from the respiratory or digestive tract. Only a small amount is absorbed into the bloodstream, and most of that leaves the body quickly in the urine. Vanadium is not believed to be absorbed through skin. Humans exposed to large amounts of vanadium in air have experienced coughs, and eye and throat irritation. However, these effects stop soon after exposure ceases.

Long-term oral exposure of rats to vanadium causes minor cell changes in the kidney and lungs. Female rats exposed to vanadium have offspring of decreased body weights. It is unknown whether humans experience effects similar to vanadium-exposed rats. The oral RfD for vanadium is currently under review by the EPA. The provisional oral RfD for vanadium, 0.001 mg/kg-day, is based on a study in which rats were administered vanadium in their drinking water.

There have been no specific studies of the carcinogenicity of vanadium. No increased incidence of cancer has been noticed in studies of long-term oral exposure of rats, but these studies are less sensitive than specific cancer studies. Vanadium has not yet received a weight-of-evidence classification from the EPA.

Zinc

Zinc is a naturally occurring element that can be found in a variety of compounds. Zinc has many industrial uses, including the production of galvanized steel and the manufacture of zinc-containing alloys such as brass. Zinc is an essential nutrient, and an inadequate amount of zinc in the diet will lead to adverse health effects such as loss of appetite, decreased sense of taste and smell, slow wound healing, and skin sores.

Although zinc occurs naturally, releases from anthropogenic sources are greater than from natural sources. The primary sources are releases from mining and metallurgical operations and the use of commercial products containing zinc, such as fertilizers. The mobility of zinc in soil depends on its chemical form and on soil properties, which affect zinc adsorption. Mobility is greater at lower pH under oxidizing conditions in soils with low cation exchange capacity and high organic content. Migration to groundwater is usually slow; however, the rate would be faster under favorable soil conditions or if zinc was applied in a soluble form or with corrosive substances (such as mine tailings).

People are exposed to low concentrations of zinc in air, water, soil, and food. Sources of zinc exposure include drinking water containing elevated levels of zinc and breathing air containing elevated levels of zinc from galvanizing, smelting, welding, or brass foundry operations. Drinking water is thought to be the most significant exposure route to zinc at hazardous waste sites.

The oral RfD for zinc, 0.3 mg/kg-day, is based on decreased erythrocyte superoxide dismutase (a blood enzyme) activity in a 10-week study of 18 healthy women who were given zinc as a dietary supplement. By 10 weeks, the blood enzyme activity had decreased to 53% of pretreatment levels. The principal study is supported by several other studies that indicate that zinc supplementation can alter copper balance. The level of confidence in the studies is medium. The clinical studies were well-conducted, with many biochemical parameters investigated; however, only a small number of subjects were tested. The confidence in the overall data base is medium because these studies were all of short duration.

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J Analytical Results and Data Validation

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DATA REVIEW MEMORANDUM

DATE: April 10, 2006

TO: Margaret McMorrow, Project Manager, E & E, Arlington

FROM: Barbara Krajewski, Chemist, E & E, Buffalo

SUBJ: Data Review
Kenilworth Park Landfill, RI

ProjectID	Lab Work Order
Kenilworth RI	A06-2421
Kenilworth RI	A06-2469
Kenilworth RI	A06-2621
Kenilworth RI	A06-2665
Kenilworth RI	A06-2734

I. SAMPLE IDENTIFICATION

For the sampling activities at Kenilworth Park Landfill, Ecology and Environment, Inc. (E & E) collected the samples listed on Table 1. The samples were analyzed for methods listed below. Project-specific matrix spike/matrix spike duplicates (MS/MSD) designated in the field by extra volume on the COC are noted with a " * " on Table 1. Any other samples noted as MS/MSD on Table 1 are provided as batch quality control (QC) MS/MSD. Trip blanks were provided with each shipment. Samples identified as "Trip Blank" are trip blanks. Rinsate blanks were not required for this site because all equipment was dedicated to the monitoring well. All samples were sent to STL - Buffalo for analysis. All other tables are included at the end of this memorandum.

Data were reviewed for field and laboratory precision, accuracy, and completeness in accordance with procedures and quality control (QC) limits, the current laboratory Quality Assurance Manual (QAM) and current standard operating procedures (SOPs).
Laboratory data qualifiers for compound identification and quantitation were accepted. Any additional data review qualifiers added are noted below and listed on the tables at the end of this memorandum. Definitions of all data qualifiers are given in the report.

Table 1 Sample Listing

Work Order	Matrix	Sample ID	Lab ID	Sample Date	Lab QC	MS/ MSD	ID Corrections

Work Order	Matrix	Sample ID	Lab ID	Sample Date	Lab QC	MS/ MSD	ID Corrections
A06-2421	WATER	KWN-MW-1-030606-067	A6242101	3/6/2006			None
A06-2421	WATER	KWN-MW-1-030606-068	A6242102	3/6/2006			None
A06-2421	WATER	KWN-MW-1-030606-069	A6242103	3/6/2006			None
A06-2421	WATER	KWN-MW-1-030606-070	A6242104	3/6/2006			None
A06-2421	WATER	KWN-MW-2-030606-071	A6242105	3/6/2006			None
A06-2421	WATER	KWN-MW-2-030606-072	A6242106	3/6/2006			None
A06-2421	WATER	KWN-MW-2-030606-073	A6242107	3/6/2006			None
A06-2421	WATER	KWN-MW-2-030606-074	A6242108	3/6/2006			None
A06-2421	WATER	KWN-MW-5-030606-079	A6242109	3/6/2006			None
A06-2421	WATER	KWN-MW-5-030606-080	A6242110	3/6/2006			None
A06-2421	WATER	KWN-MW-5-030606-081	A6242111	3/6/2006			None
A06-2421	WATER	KWN-MW-5-030606-082	A6242112	3/6/2006			None
A06-2421	WATER	Trip Blank 030606	A6242113	3/6/2006			Trip Blank
A06-2469	WATER	KWN-MW-4-030706	A6246901	3/7/2006			None
A06-2469	WATER	KWN-MW-6-030706	A6246902	3/7/2006			None
A06-2469	WATER	KWN-MW-7-030706	A6246903	3/7/2006			None
A06-2469	WATER	Trip Blank 030706	A6246904	3/7/2006			Trip Blank
A06-2621	WATER	KWN-MW-3NR-031006	A6262101	3/10/2006			None
A06-2621	WATER	KWN-MW-3NR-031006	A6262101MS	3/10/2006	MS/MSD		None
A06-2621	WATER	KWN-MW-3NR-031006	A6262101SD	3/10/2006	MS/MSD		None
A06-2621	WATER	KWN-MW-8NR-031006	A6262102	3/10/2006			None
A06-2621	WATER	KWN-MW-14-031006	A6262103	3/10/2006			None
A06-2621	WATER	KWN-MW-15-031006	A6262104	3/10/2006			None
A06-2621	WATER	KWN-MW-16-031006	A6262105	3/10/2006			None
A06-2621	WATER	KWN-MW-16-031006	A6262105MS	3/10/2006	MS/MSD		None
A06-2621	WATER	KWN-MW-16-031006	A6262105SD	3/10/2006	MS/MSD		None
A06-2621	WATER	Trip Blank 031006	A6262106	3/10/2006			Trip Blank
A06-2665	WATER	KWN-MW-9-031306	A6266501	3/13/2006			None
A06-2665	WATER	KWN-MW-9-031306	A6266501MS	3/13/2006	MS/MSD		None
A06-2665	WATER	KWN-MW-9-031306	A6266501SD	3/13/2006	MS/MSD		None
A06-2665	WATER	KWN-MW-10-031306	A6266502	3/13/2006			None
A06-2665	WATER	KWN-MW-11-031306	A6266503	3/13/2006			None
A06-2665	WATER	KWN-MW-17-031306	A6266504	3/13/2006			None
A06-2665	WATER	KWN-MW-17-031306	A6266504MS	3/13/2006	MS/MSD		None
A06-2665	WATER	KWN-MW-17-031306	A6266504SD	3/13/2006	MS/MSD		None
A06-2665	WATER	TRIP BLANK	A6266505	3/13/2006			None
A06-2734	WATER	KWN-MW-12-031406	A6273401	3/14/2006			None
A06-2734	WATER	KWN-MW-13-031406	A6273402	3/14/2006			None

Work Order	Matrix	Sample ID	Lab ID	Sample Date	Lab QC	MS/ MSD	ID Corrections
A06-2734	WATER	Trip Blank 031406	A6273403	3/14/2006			Trip Blank

Work Orders	Matrix	Test Method	Method Name	Number of Samples
A06-2421	WATER	SW6010	SW6010 Metals Total	3
A06-2421	WATER	SW7470	SW7470 Mercury Total	3
A06-2421	WATER	SW8081	SW8081 Pesticides	3
A06-2421	WATER	SW8082	SW8082 PCBs	3
A06-2421	WATER	SW8260	SW8260 Volatiles	4
A06-2421	WATER	SW8270	SW8270 SemiVolatiles	3
A06-2469	WATER	SW6010	SW6010 Metals Total	3
A06-2469	WATER	SW7470	SW7470 Mercury Total	3
A06-2469	WATER	SW8081	SW8081 Pesticides	3
A06-2469	WATER	SW8082	SW8082 PCBs	3
A06-2469	WATER	SW8260	SW8260 Volatiles	4
A06-2469	WATER	SW8270	SW8270 SemiVolatiles	3
A06-2621	WATER	SW6010	SW6010 Metals Total	5
A06-2621	WATER	SW7470	SW7470 Mercury Total	5
A06-2621	WATER	SW8081	SW8081 Pesticides	5
A06-2621	WATER	SW8082	SW8082 PCBs	5
A06-2621	WATER	SW8260	SW8260 Volatiles	6
A06-2621	WATER	SW8270	SW8270 SemiVolatiles	5
A06-2665	WATER	SW6010	SW6010 Metals Total	4
A06-2665	WATER	SW7470	SW7470 Mercury Total	4
A06-2665	WATER	SW8081	SW8081 Pesticides	4
A06-2665	WATER	SW8082	SW8082 PCBs	4
A06-2665	WATER	SW8260	SW8260 Volatiles	5
A06-2665	WATER	SW8270	SW8270 SemiVolatiles	4
A06-2734	WATER	SW6010	SW6010 Metals Total	2
A06-2734	WATER	SW7470	SW7470 Mercury Total	2
A06-2734	WATER	SW8081	SW8081 Pesticides	2
A06-2734	WATER	SW8082	SW8082 PCBs	2
A06-2734	WATER	SW8260	SW8260 Volatiles	3
A06-2734	WATER	SW8270	SW8270 SemiVolatiles	2

II. SAMPLE PROCEDURES

All samples were collected as specified in the work plan and documented on the chain-of-custody (COC) and in field notebooks. Samples were analyzed as specified on the COC. Samples were packaged, shipped and received as specified in the work plan. All samples must be received cold (4 +/-2) ^{o}C and in good condition as documented on the Cooler Receipt Form.

REVIEW RESULTS:

All sample procedures were followed and the sample coolers were received at the appropriate temperatures. Rinsate blanks were not required for these wells because the sampling equipment is dedicated to each well.

III. LABORATORY DATA

1.0 HOLDING TIMES

Holding times are established and monitored to ensure analytical results accurately represent analyte concentrations in a sample at the time of collection. Exceeding the holding time for a sample generally results in a loss of the analyte due to a variety of mechanisms, such as deposition on the sample container walls or precipitation.

REVIEW RESULTS:

All samples were analyzed within the project-specified holding time.

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2.0 BLANKS

Laboratory and field blank samples are analyzed and evaluated to determine the existence and magnitude of possible contamination during the sampling and analysis process. As noted in Table 2 (if applicable), analyte concentrations in the blanks are generally below the practical quantitation limit (PQL). If the analyte is present in the sample at similar trace levels, then the analyte is likely a common background contaminant from some phase of the sampling, extraction, or analytical procedure and associated low level sample concentrations are not considered to be site related. If the analyte concentration is above the PQL, then there is a potential contamination problem and sample results may be biased high or the data unusable.

REVIEW RESULTS:

All blanks were performed at the required frequency. No blank contamination was detected in the method blanks except for naphthalene and bis(2-ethylhexyl)phthalate as noted on Table 2. As a result of this blank contamination, the trace level detection of naphthalene in sample KWN-MW-1-030606 and bis(2-ethylhexyl)phthalate in sample KWN-MW13-031406 were negated by the validator (i.e. change to "U" at the reporting limit). Tetrachlorothene was detected in Trip Blank 060310 at a concentration below the reporting limit. This compound was not detected in the associated samples. No additional data qualification is required.

3.0 SURROGATE SPIKE RECOVERY

Laboratory performance for individual samples analyzed for organic compounds is established by means of surrogate spiking activities. Samples are spiked with surrogate compounds prior to preparation and analysis. Unusually low or high surrogate recovery values may indicate some deficiency in the analytical system or that some matrix effects exist, resulting in low or high sample results for target compounds. Sample surrogate recoveries outside QC limits (if applicable) are presented in Table 3.

REVIEW RESULTS:

Surrogate spikes were appropriately added to all field samples and laboratory control samples analyzed for organic compounds. Recovery of one surrogate for the base neutral fraction of samples KWN-MW-8NR-031006, KWN-MW-10-031306, and KWN-MW-13-031406 was low. Recovery of one surrogate for the acid phenol fraction of samples KWN-MW-12-031406, KWN-MW-13-031406 and the laboratory control sample were low. Data is not qualified based on surrogate recovery unless two or more semivolatile surrogates within the same fraction are out of specification. Recovery of one of the surrogates for the pesticide fraction of sample KWN-MW-8NR-031006, KWN-MW-12-031406, and KWN-MW-13-031406 was low. Since recovery was not below 10% and recovery of the second surrogate was within specification, no data qualification is required.

4.0 MATRIX SPIKE AND MATRIX SPIKE DUPLICATE ANALYSIS

The matrix spike and matrix spike duplicate (MS/MSD) analyses are intended to provide information about the affects that the sample matrix exerts on the digestion/extraction and measurement methodology. MS recovery values that do not meet laboratory QC criteria may indicate that sample analyte results are being attenuated in the analysis procedure. These

results are presented in Table 4 (if applicable). The potential sample bias may be estimated by noting the degree to which the MS concentration was elevated or lowered in the spike analysis. However, this bias should serve only as approximations; sample-specific problems may be the cause of the discrepancy, particularly in soil samples. Recoveries of a post-digestion spike or a laboratory control sample (LCS) are used to verify that the analytical methodology is acceptable and that MS recoveries are due to matrix effects. An MSD analysis is performed to evaluate the precision of the sample results. Precision is measured as the relative percent difference (RPD) between analytical results for duplicate samples. The laboratory's failure to produce similar results for MSD samples may indicate that the samples were non-homogeneous (particularly in soil samples), or that method defects may exist in the laboratory's techniques.

REVIEW RESULTS:

A sample was not designated for MS/MSD analyses on the chain of custody. The laboratory provided results of batch quality control (QC) MS/MSD. The recovery and RPD results were within QC criteria.

5.0 LABORATORY CONTROL SAMPLE ANALYSIS

The LCS is analyzed to monitor the efficiency of the digestion/extraction procedure and analytical instrument operation. The ability of the laboratory to successfully analyze an LCS demonstrates that there are no analytical problems related to the digestion/sample preparation procedures and/or instrument operations. The LCS results outside QC limits are presented in Table 5 (if applicable). Sporadic and marginal QC failures for multiple component methods do not indicate an analytical concern. If recoveries are high and the compounds are not detected in the samples, then no data qualification is required. All recoveries should be above 10% or the non-detect results flagged “UR” as rejected.

REVIEW RESULTS:

All LCS analyses were within control limits and performed at the required frequency.

IV. COMPOUND IDENTIFICATION AND QUANTITATION

Compound identities are assigned by comparing sample compound retention times to retention times from known (standard) compounds and identification of an acceptable mass spectrum. Compounds detected below PQLs in samples should be considered estimated and are qualified "J." The samples with compounds above the linear range were all re-analyzed at a higher dilution factor.

REVIEW RESULTS:

All compound identification and quantitation criteria were achieved. The volatile fractions of samples KWN-MW-2-030606, KWN-MW-6-030706, KWN-MW-14-031006, KWN-MW-16-031006, KWN-MW-3NR-031006, KWN-MW-8NR-031006, KWN-MW-9-031306, KWN-MW-10-031306, KWN-MW-11-031306, KWN-MW-17-031306, KWN-MW-12-031406, and KWN-MW-13-031406 foamed upon purging and were analyzed at dilutions. The total metals fraction of samples KWN-MW-12-031406 and KWN-MW-13-031406, and dissolved metals fraction of sample KWN-8NR-031006 were analyzed at dilutions for sodium.

V. FIELD DUPLICATE SAMPLE RESULTS

Field duplicate samples were collected and analyzed as an indication of overall precision for both field and laboratory. Field duplicate results are summarized in Table 7 (if applicable). The results are expected to have more variability than laboratory duplicates, which measure only laboratory precision. It is expected also that soil field duplicates will exhibit greater variance than water field duplicates due to the difficulties associated with collecting identical field samples. The QC criteria used to assess field duplicate samples for this project was limits of 70% RPD for soils and 40% RPD for waters, or twice the general laboratory duplicate criteria. If both compounds were below the laboratory PQL or one of the compounds was present as a non-detect, then the compounds are generally not qualified due to field duplicate precision. There are no guidelines regarding data qualification based on poor field duplicate precision. Professional judgement was used to determine whether or not to qualify results.

REVIEW RESULTS:

Field duplicates were performed on one set of samples collected for an overall frequency of 5%. The RPD ratings are listed on Table 7 as “Good” if the RPD is less than field duplicate QC criteria and as “Poor” if the RPD exceeded the field duplicate QC criteria. Field duplicate results with “Poor” are flagged “J” as estimated. All the results show good precision except for chromium, copper, lead, vanadium and zinc.

Table 2 - List of Positive Results for Blank Samples

Method	Sample ID	Samp Type	Analyte	Result	Qual	Anal Type	Units	MDL	PQL
SW8270	A6B1493103	MBLK	Naphthalene	0.9	J	A	µg/L	0.1	10
SW8270	A6B1537302	MBLK	Bis(2-ethylhexyl) phthalate	3	J	A	µg/L	3	10

Table 2A - List of Samples Qualified for Method Blank Contamination

Method	Lab Blank	Matrix	Analyte	Blank Result	Sample Result	Lab Qual	PQL	Affected Samples	Sample Flag
SW8270	A6B1493103	WATER	Naphthalene	0.9	0.8	BJ	10	KWN-MW-1-030606-070	U Flag
SW8270	A6B1537302	WATER	Bis(2-ethylhexyl) phthalate	3	5	BJ	10	KWN-MW-13-031406	U Flag

Table 2B - List of Samples Qualified for Field Blank Contamination

Not applicable

Table 3 - List of Samples with Surrogates outside Control Limits

Method	Sample ID	Sample Type	Analyte	Rec.	Low Limit	High Limit	Dil Fac	Sample Qual.
SW8270	A6B1537301	LCS	2,4,6-Tribromophenol	60	62	133	1	Not qualified
SW8270	KWN-MW-10-031306	SAMP	p-Terphenyl-d14	34	36	138	1	Not qualified
SW8270	KWN-MW-12-031406	SAMP	2,4,6-Tribromophenol	60	62	133	1	Not qualified
SW8270	KWN-MW-13-031406	SAMP	2,4,6-Tribromophenol	45	62	133	1	Not qualified
SW8270	KWN-MW-13-031406	SAMP	p-Terphenyl-d14	20	36	138	1	Not qualified
SW8270	KWN-MW-8NR-031006	SAMP	p-Terphenyl-d14	34	36	138	1	Not qualified
SW8082	KWN-MW-12-031406	SAMP	Decachlorobiphenyl	14	28	132	1	Not qualified
SW8082	KWN-MW-13-031406	SAMP	Tetrachloro-m-xylene	34	36	132	1	Not qualified
SW8082	KWN-MW-8NR-031006	SAMP	Decachlorobiphenyl	12	28	132	1	Not qualified

Table 4 - List MS/MSD Recoveries and RPDs outside Control Limits

None

Table 5 - List LCS Recoveries outside Control Limits

None

Table 6 –Samples that were Reanalyzed

None

Table 7 – Summary of Field Duplicate Results

Method	Analyte	Unit	PQL	KWN-MW-11-031306	KWN-MW-17-031306	RPD	RPD Rating	Samp Qual
SW6010	Aluminum - Total	mg/L	0.20	11.2	7.6	38.3%	Good	None
SW6010	Arsenic - Total	mg/L	0.010	0.022	0.015	37.8%	Good	None
SW6010	Barium - Total	mg/L	0.0020	0.42	0.36	15.4%	Good	None
SW6010	Calcium - Total	mg/L	0.50	96.9	92.9	4.2%	Good	None
SW6010	Chromium - Total	mg/L	0.0040	0.028	0.018	43.5%	Poor	J Flag
SW6010	Cobalt - Total	mg/L	0.0040	0.11	0.092	17.8%	Good	None
SW6010	Copper - Total	mg/L	0.010	0.036	0.022	48.3%	Poor	J Flag
SW6010	Iron - Total	mg/L	0.050	100	72.8	31.5%	Good	None
SW6010	Lead - Total	mg/L	0.0050	0.019	0.011	53.3%	Poor	J Flag
SW6010	Magnesium - Total	mg/L	0.20	25.1	23.7	5.7%	Good	None
SW6010	Manganese - Total	mg/L	0.0030	2.0	1.9	5.1%	Good	None
SW6010	Nickel - Total	mg/L	0.010	0.025	0.017	38.1%	Good	None
SW6010	Potassium - Total	mg/L	0.50	32.8	30.8	6.3%	Good	None
SW6010	Sodium - Total	mg/L	1.0	178	171	4.0%	Good	None
SW6010	Vanadium - Total	mg/L	0.0050	0.049	0.031	45.0%	Poor	J Flag
SW6010	Zinc - Total	mg/L	0.010	0.066	0.042	44.4%	Poor	J Flag

Key:

A = Analyte
NC = Not Calculated
ND = Not Detected
PQL = Practical Quantitation Limit
RPD = Relative Percent Difference
T = Tentatively Identified Compound

DATA REVIEW MEMORANDUM

DATE: April 10, 2006

TO: Margaret McMorrow, Project Manager, E & E, Arlington

FROM: Barbara Krajewski, Chemist, E & E, Buffalo

SUBJ: Data Review
Kenilworth Park Landfill, RI

REFERENCE:

ProjectID	Lab Work Order
Kenilworth RI	A06-2265
Kenilworth RI	A06-2267
Kenilworth RI	A06-2365
Kenilworth RI	A06-2366
Kenilworth RI	A06-2419
Kenilworth RI	A06-2471

I. SAMPLE IDENTIFICATION

For the sampling activities at Kenilworth Park Landfill, Ecology and Environment, Inc. (E & E) collected the samples listed on Table 1. The samples were analyzed for methods listed below. Project-specific matrix spike/matrix spike duplicates (MS/MSD) designated in the field by extra volume on the COC are noted with a " * " on Table 1. Any other samples noted as MS/MSD on Table 1 are provided as batch quality control (QC) MS/MSD. Trip blanks were not required. Rinsate blanks were not collected. All samples were sent to STL - Buffalo for analysis. All other tables are included at the end of this memorandum.

Data were reviewed for field and laboratory precision, accuracy, and completeness in accordance with procedures and quality control (QC) limits, the current laboratory Quality Assurance Manual (QAM) and current standard operating procedures (SOPs). Laboratory data qualifiers for compound identification and quantitation were accepted. Any additional data review qualifiers added are noted below and listed on the tables at the end of this memorandum. Definitions of all data qualifiers are given in the report.

Table 1 Sample Listing

Work Order	Matrix	Sample ID	Lab ID	Sample Date	Lab QC	MS/ MSD	ID Corrections
A06-2265	SOIL	KWN-SD-6-022806-001	A6226501	2/28/2006			None
A06-2265	SOIL	KWN-SD-6-022806-002	A6226502	2/28/2006			None
A06-2265	SOIL	KWN-SD-6-022806-002	A6226502MS	2/28/2006	MS/MSD		None
A06-2265	SOIL	KWN-SD-6-022806-002	A6226502SD	2/28/2006	MS/MSD		None
A06-2265	SOIL	KWN-SD-7-022806-003	A6226503	2/28/2006			None
A06-2265	SOIL	KWN-SD-7-022806-004	A6226504	2/28/2006			None
A06-2265	SOIL	KWN-SD-8-022806-005	A6226505	2/28/2006			None
A06-2265	SOIL	KWN-SD-8-022806-006	A6226506	2/28/2006			None
A06-2265	SOIL	KWN-SD-9-022806-007	A6226507	2/28/2006			None
A06-2265	SOIL	KWN-SD-9-022806-008	A6226508	2/28/2006			None
A06-2265	SOIL	KWN-SD-10-022806-009	A6226509	2/28/2006			None
A06-2265	SOIL	KWN-SD-10-022806-010	A6226510	2/28/2006			None
A06-2265	SOIL	KWN-SD-11-030106-011	A6226511	3/1/2006			None
A06-2265	SOIL	KWN-SD-11-030106-012	A6226512	3/1/2006			None
A06-2265	SOIL	KWN-SD-12-030106-013	A6226513	3/1/2006			None
A06-2265	SOIL	KWN-SD-12-030106-014	A6226514	3/1/2006			None
A06-2265	SOIL	KWN-SD-13-030106-015	A6226515	3/1/2006			None
A06-2265	SOIL	KWN-SD-13-030106-016	A6226516	3/1/2006			None
A06-2265	SOIL	KWN-SD-14-030106-017	A6226517	3/1/2006			None
A06-2265	SOIL	KWN-SD-14-030106-018	A6226518	3/1/2006			None
A06-2265	SOIL	KWN-SD-15-030106-019	A6226519	3/1/2006			None
A06-2265	SOIL	KWN-SD-15-030106-020	A6226520	3/1/2006			None
A06-2267	SOIL	KWN-SD-16-030106-021	A6226701	3/1/2006			None
A06-2267	SOIL	KWN-SD-16-030106-022	A6226702	3/1/2006			None
A06-2267	SOIL	KWN-SD-17-030106-023	A6226703	3/1/2006			None
A06-2267	SOIL	KWN-SD-17-030106-024	A6226704	3/1/2006			None
A06-2267	SOIL	KWN-SD-18-030106-025	A6226705	3/1/2006			None
A06-2267	SOIL	KWN-SD-18-030106-026	A6226706	3/1/2006			None
A06-2365	SOIL	KWN-SU-1-030206-027	A6236501	3/2/2006			None
A06-2365	SOIL	KWN-SU-1-030206-028	A6236502	3/2/2006			None
A06-2365	SOIL	KWN-SU-2-030206-029	A6236503	3/2/2006			None
A06-2365	SOIL	KWN-SU-2-030206-029	A6236503MS	3/2/2006	MS/MSD		None
A06-2365	SOIL	KWN-SU-2-030206-029	A6236503SD	3/2/2006	MS/MSD		None
A06-2365	SOIL	KWN-SU-2-030206-030	A6236504	3/2/2006			None

Work Order	Matrix	Sample ID	Lab ID	Sample Date	Lab QC	MS/ MSD	ID Corrections
A06-2365	SOIL	KWN-SU-3-030206-031	A6236505	3/2/2006			None
A06-2365	SOIL	KWN-SU-3-030206-032	A6236506	3/2/2006			None
A06-2365	SOIL	KWN-SU-4-030206-033	A6236507	3/2/2006			None
A06-2365	SOIL	KWN-SU-4-030206-034	A6236508	3/2/2006			None
A06-2365	SOIL	KWN-SU-5-030206-035	A6236509	3/2/2006			None
A06-2365	SOIL	KWN-SU-5-030206-036	A6236510	3/2/2006			None
A06-2365	SOIL	KWN-SU-6-030206-037	A6236511	3/2/2006			None
A06-2365	SOIL	KWN-SU-6-030206-038	A6236512	3/2/2006			None
A06-2365	SOIL	KWN-SU-7-030206-039	A6236513	3/2/2006			None
A06-2365	SOIL	KWN-SU-7-030206-040	A6236514	3/2/2006			None
A06-2365	SOIL	KWN-SU-8-030206-041	A6236515	3/2/2006			None
A06-2365	SOIL	KWN-SU-8-030206-042	A6236516	3/2/2006			None
A06-2365	SOIL	KWN-SU-9-030206-043	A6236517	3/2/2006			None
A06-2365	SOIL	KWN-SU-9-030206-044	A6236518	3/2/2006			None
A06-2365	SOIL	KWN-SU-10-030206-045	A6236519	3/3/2006			None
A06-2365	SOIL	KWN-SU-10-030206-046	A6236520	3/3/2006			None
A06-2366	SOIL	KWN-SU-11-030306-047	A6236601	3/3/2006			None
A06-2366	SOIL	KWN-SU-11-030306-048	A6236602	3/3/2006			None
A06-2366	SOIL	KWN-SU-11-030306-048	A6236602MS	3/3/2006	MS/MSD		None
A06-2366	SOIL	KWN-SU-11-030306-048	A6236602SD	3/3/2006	MS/MSD		None
A06-2366	SOIL	KWN-SU-11-030306-049	A6236603	3/3/2006			None
A06-2366	SOIL	KWN-SU-11-030306-050	A6236604	3/3/2006			None
A06-2366	SOIL	KWN-SU-BK1-030306-51	A6236605	3/3/2006			None
A06-2366	SOIL	KWN-SU-BK1-030306-52	A6236606	3/3/2006			None
A06-2366	SOIL	KWN-SU-BK2-030306-53	A6236607	3/3/2006			None
A06-2366	SOIL	KWN-SU-BK2-030306-54	A6236608	3/3/2006			None
A06-2366	SOIL	KWNSB6-030306-065-05	A6236609	3/3/2006			None
A06-2366	SOIL	KWNSB6-030306-065-10	A6236610	3/3/2006			None
A06-2366	SOIL	KWNSB6-030306-066-10	A6236611	3/3/2006			None
A06-2366	SOIL	KWNSB5-030306-063-05	A6236612	3/3/2006			None
A06-2366	SOIL	KWNSB5-030306-064-05	A6236613	3/3/2006			None
A06-2419	SOIL	KWN-SB2-030606-05710	A6241901	3/6/2006			None
A06-2419	SOIL	KWN-SB2-030606-05710	A6241901MS	3/6/2006	MS/MSD		None
A06-2419	SOIL	KWN-SB2-030606-05710	A6241901SD	3/6/2006	MS/MSD		None
A06-2419	SOIL	KWN-SB2-030606-05810	A6241902	3/6/2006			None
A06-2419	SOIL	KWN-SB2-030606-05810	A6241902MS	3/6/2006	MS/MSD		None

Work Order	Matrix	Sample ID	Lab ID	Sample Date	Lab QC	MS/ MSD	ID Corrections
A06-2419	SOIL	KWN-SB2-030606-05810	A6241902SD	3/6/2006	MS/MSD		None
A06-2419	SOIL	KWN-SB2-030606-05720	A6241903	3/6/2006			None
A06-2419	SOIL	KWN-SB2-030606-05720	A6241903MS	3/6/2006	MS/MSD		None
A06-2419	SOIL	KWN-SB2-030606-05720	A6241903SD	3/6/2006	MS/MSD		None
A06-2419	SOIL	KWN-SB2-030606-05820	A6241904	3/6/2006			None
A06-2419	SOIL	KWN-SB3-030606-05910	A6241905	3/6/2006			None
A06-2419	SOIL	KWN-SB3-030606-06010	A6241906	3/6/2006			None
A06-2419	SOIL	KWN-SB3-030606-05920	A6241907	3/6/2006			None
A06-2419	SOIL	KWN-SB3-030606-06020	A6241908	3/6/2006			None
A06-2471	SOIL	KWN-SB4-030706-06110	A6247101	3/7/2006			None
A06-2471	SOIL	KWN-SB4-030706-06120	A6247102	3/7/2006			None
A06-2471	SOIL	KWN-SB4-030706-06130	A6247103	3/7/2006			None
A06-2471	SOIL	KWN-SB1-030706-05525	A6247104	3/7/2006			None

Work Orders	Matrix	Test Method	Method Name	Number of Samples	Sample Type
A06-2265	SOIL	DD2216-90	TOTAL MOISTURE CONTENT - S	10	SAMP
A06-2265	SOIL	SW6010	SW6010 Metals Total	10	SAMP
A06-2265	SOIL	SW7471	SW7471 Mercury Total	10	SAMP
A06-2265	SOIL	SW8081	SOIL-SW8463 8081 - TCL PESTICIDES	10	SAMP
A06-2265	SOIL	SW8082	SW8082 PCBs	10	SAMP
A06-2265	SOIL	SW8270	SW8270 SemiVolatiles	10	SAMP
A06-2267	SOIL	DD2216-90	TOTAL MOISTURE CONTENT - S	3	SAMP
A06-2267	SOIL	SW6010	SW6010 Metals Total	3	SAMP
A06-2267	SOIL	SW7471	SW7471 Mercury Total	3	SAMP
A06-2267	SOIL	SW8081	SOIL-SW8463 8081 - TCL PESTICIDES	3	SAMP
A06-2267	SOIL	SW8082	SW8082 PCBs	3	SAMP
A06-2267	SOIL	SW8270	SW8270 SemiVolatiles	3	SAMP
A06-2365	SOIL	DD2216-90	TOTAL MOISTURE CONTENT - S	10	SAMP
A06-2365	SOIL	SW6010	SW6010 Metals Total	10	SAMP
A06-2365	SOIL	SW7471	SW7471 Mercury Total	10	SAMP
A06-2365	SOIL	SW8081	SOIL-SW8463 8081 - TCL PESTICIDES	10	SAMP
A06-2365	SOIL	SW8082	SW8082 PCBs	10	SAMP
A06-2365	SOIL	SW8270	SW8270 SemiVolatiles	10	SAMP
A06-2366	SOIL	DD2216-90	TOTAL MOISTURE CONTENT - S	6	SAMP
A06-2366	SOIL	SW6010	SW6010 Metals Total	6	SAMP
A06-2366	SOIL	SW7471	SW7471 Mercury Total	6	SAMP

Work Orders	Matrix	Test Method	Method Name	Number of Samples	Sample Type
A06-2366	SOIL	SW8081	SOIL-SW8463 8081 - TCL PESTICIDES	7	SAMP
A06-2366	SOIL	SW8082	SW8082 PCBs	7	SAMP
A06-2366	SOIL	SW8270	SW8270 SemiVolatiles	7	SAMP
A06-2419	SOIL	DD2216-90	TOTAL MOISTURE CONTENT - S	4	SAMP
A06-2419	SOIL	SW6010	SW6010 Metals Total	4	SAMP
A06-2419	SOIL	SW7471	SW7471 Mercury Total	4	SAMP
A06-2419	SOIL	SW8081	SOIL-SW8463 8081 - TCL PESTICIDES	4	SAMP
A06-2419	SOIL	SW8082	SW8082 PCBs	4	SAMP
A06-2419	SOIL	SW8270	SW8270 SemiVolatiles	4	SAMP
A06-2471	SOIL	DD2216-90	TOTAL MOISTURE CONTENT - S	1	SAMP
A06-2471	SOIL	SW6010	SW6010 Metals Total	1	SAMP
A06-2471	SOIL	SW7471	SW7471 Mercury Total	1	SAMP
A06-2471	SOIL	SW8081	SOIL-SW8463 8081 - TCL PESTICIDES	4	SAMP
A06-2471	SOIL	SW8082	SW8082 PCBs	4	SAMP
A06-2471	SOIL	SW8270	SW8270 SemiVolatiles	4	SAMP

II. SAMPLE PROCEDURES

All samples were collected as specified in the work plan and documented on the chain-of-custody (COC) and in field notebooks. Samples were analyzed as specified on the COC. Samples were packaged, shipped and received as specified in the work plan. All samples must be received cold (4 +/-2) ^{o}C and in good condition as documented on the Cooler Receipt Form.

REVIEW RESULTS:

All sample procedures were followed and the sample coolers were received at the appropriate temperatures. Rinsate blanks were not required because dedicated sampling equipment was used.

III. LABORATORY DATA

1.0 HOLDING TIMES

Holding times are established and monitored to ensure analytical results accurately represent analyte concentrations in a sample at the time of collection. Exceeding the holding time for a sample generally results in a loss of the analyte due to a variety of mechanisms, such as deposition on the sample container walls or precipitation.

REVIEW RESULTS:

All samples were analyzed within the project-specified holding time.

Go to Tables **List**

2.0 BLANKS

Laboratory and field blank samples are analyzed and evaluated to determine the existence and magnitude of possible contamination during the sampling and analysis process. As noted in Table 2 (if applicable), analyte concentrations in the blanks are generally below the practical quantitation limit (PQL). If the analyte is present in the sample at similar trace levels, then the analyte is likely a common background contaminant from some phase of the sampling, extraction, or analytical procedure and associated low level sample concentrations are not considered to be site related. If the analyte concentration is above the PQL, then there is a potential contamination problem and sample results may be biased high or the data unusable.

REVIEW RESULTS:

All blanks were performed at the required frequency. No blank contamination was detected in the method blanks except for bis(2-ethylhexyl)phthalate and zinc as noted on Table 2. As a result of this blank contamination, the bis(2-ethylhexyl)phthalate detected in samples KWN-SD111-030106 -011, KWN-SD9-022806, KWN-SD-10-022806. KWN-SB1-0307-6-05525, KWN-SB4-030706-06130 and KWN-SB2-030606-05710 was negated by the validator (i.e. change to “U” at the reporting limit). No additional data qualification is required.

3.0 SURROGATE SPIKE RECOVERY

Laboratory performance for individual samples analyzed for organic compounds is established by means of surrogate spiking activities. Samples are spiked with surrogate compounds prior to preparation and analysis. Unusually low or high surrogate recovery values may indicate some deficiency in the analytical system or that some matrix effects exist, resulting in low or high sample results for target compounds. Sample surrogate recoveries outside QC limits (if applicable) are presented in Table 3.

REVIEW RESULTS:

Surrogate spikes were appropriately added to all field samples and laboratory control samples analyzed for organic compounds. Recovery of one surrogate for the base neutral

fraction of sample KWN-SU-7-030206-039 was low. Data is not qualified based on surrogate recovery unless two or more semivolatile surrogates within the same fraction are out of specification. Pesticide and PCB surrogates were not recovered from several samples due to analysis of the extracts at dilutions. No data qualification is required based on surrogates diluted out of the sample.

4.0 MATRIX SPIKE AND MATRIX SPIKE DUPLICATE ANALYSIS

The matrix spike and matrix spike duplicate (MS/MSD) analyses are intended to provide information about the affects that the sample matrix exerts on the digestion/extraction and measurement methodology. MS recovery values that do not meet laboratory QC criteria may indicate that sample analyte results are being attenuated in the analysis procedure. These results are presented in Table 4 (if applicable). The potential sample bias may be estimated by noting the degree to which the MS concentration was elevated or lowered in the spike analysis. However, this bias should serve only as approximations; sample-specific problems may be the cause of the discrepancy, particularly in soil samples. Recoveries of a post-digestion spike or a laboratory control sample (LCS) are used to verify that the analytical methodology is acceptable and that MS recoveries are due to matrix effects. An MSD analysis is performed to evaluate the precision of the sample results. Precision is measured as the relative percent difference (RPD) between analytical results for duplicate samples. The laboratory's failure to produce similar results for MSD samples may indicate that the samples were non-homogeneous (particularly in soil samples), or that method defects may exist in the laboratory's techniques.

REVIEW RESULTS:

A sample was not designated for MS/MSD analyses on the chain of custody. The laboratory provided results of batch quality control (QC) MS/MSD. Recovery of 2,4-dintritoluene from the MS/MSD of sample KWN-SU-2-030206-029 was affected by the dilution of the extract. Mercury recovery from the MS of sample KWN-SU-11-030306-048 was also affected by dilution. Since the samples concentrations exceeded the spike amounts added for iron in the MS/MSD of sample KWN-SB2-030606-05810 and barium, calcium, iron and zinc in sample KWN-SU-11-030306-048, no data qualification is necessary. Recoveries outside of control limits for several other metals and the associated qualifier applied to the parent sample result are summarized on Table 4.

5.0 LABORATORY CONTROL SAMPLE ANALYSIS

The LCS is analyzed to monitor the efficiency of the digestion/extraction procedure and analytical instrument operation. The ability of the laboratory to successfully analyze an LCS demonstrates that there are no analytical problems related to the digestion/sample preparation procedures and/or instrument operations. The LCS results outside QC limits are presented in Table 5 (if applicable). Sporadic and marginal QC failures for multiple component methods do not indicate an analytical concern. If recoveries are high and the compounds are not detected in the samples, then no data qualification is required. All recoveries should be above 10% or the non-detect results flagged “UR” as rejected.

REVIEW RESULTS:

All LCS analyses were performed at the required frequency. Iron and mercury recoveries were outside of project control limits as summarized on Table 5. These recoveries are within the manufacturer’s recommended limits and not indicative of an analytical problem. No qualifiers were applied.

IV. COMPOUND IDENTIFICATION AND QUANTITATION

Compound identities are assigned by comparing sample compound retention times to retention times from known (standard) compounds and identification of an acceptable mass spectrum. Compounds detected below PQLs in samples should be considered estimated and are qualified "J." The samples with compounds above the linear range were all re-analyzed at a higher dilution factor.

REVIEW RESULTS:

All compound identification and quantitation criteria were achieved. The Method 8270 fraction of sample KWN-SU-7-030206-039 was subjected to gel permeation chromatography in order to achieve requested detection limits. Limited sample was available for the Method 8270 analysis of sample KWN-SU-1-030206-027. The pesticide fractions of samples KWN-SU-4-030706-06110, KWN-SU-4-030706-06120, KWN-SU-4-030706-06130 and KWN-SU-1-030706-05525 required copper treatment to the presence of elemental sulfur. The Method 8270 fraction of sample KWN-SU-1-030206-028 required analysis at a dilution due to sample viscosity. Eleven samples were analyzed for mercury at dilutions due to the high concentrations of the element present. The majority of the samples analyzed for pesticides and PCBs were analyzed at dilutions based on the sample extract color and/or matrix effects.

V. FIELD DUPLICATE SAMPLE RESULTS

Field duplicate samples were collected and analyzed as an indication of overall precision for both field and laboratory. Field duplicate results are summarized in Table 7 (if applicable). The results are expected to have more variability than laboratory duplicates, which measure only laboratory precision. It is expected also that soil field duplicates will exhibit greater variance than water field duplicates due to the difficulties associated with collecting identical field samples. The QC criteria used to assess field duplicate samples for this project was limits of 70% RPD for soils and 40% RPD for waters, or twice the general laboratory duplicate criteria. If both compounds were below the laboratory PQL or one of the compounds was present as a non-detect, then the compounds are generally not qualified due to field duplicate precision. There are no guidelines regarding data qualification based on poor field duplicate precision. Professional judgement was used to determine whether or not to qualify results.

REVIEW RESULTS:

A field duplicate was not collected.

Table 2 - List of Positive Results for Blank Samples

Method	Sample ID	Samp Type	Analyte	Result	Qual	Anal Type	Units	MDL	PQL
SW6010	A6B1462702	MBLK	Zinc - Total	1.0		A	mg/Kg	0.16	1.0
SW8270	A6B1460803	MBLK	Bis(2-ethylhexyl) phthalate	56	J	A	µg/Kg	19	320
SW8270	A6B1504402	MBLK	Bis(2-ethylhexyl) phthalate	25	J	A	µg/Kg	19	320

Table 2A - List of Samples Qualified for Method Blank Contamination

Method	Lab Blank	Matrix	Analyte	Blank Result	Sample Result	Lab Qual	PQL	Affected Samples	Sample Flag
SW8270	A6B1460803	SOIL	Bis(2-ethylhexyl) phthalate	56	1000	B	890	KWN-SD-7-022806-003	Not Qualified
SW8270	A6B1460803	SOIL	Bis(2-ethylhexyl) phthalate	56	1600	B	710	KWN-SD-6-022806-001	Not Qualified
SW8270	A6B1460803	SOIL	Bis(2-ethylhexyl) phthalate	56	440	B	400	KWN-SD-13-030106-015	U Flag
SW8270	A6B1460803	SOIL	Bis(2-ethylhexyl) phthalate	56	740	B	490	KWN-SD-14-030106-017	Not Qualified
SW8270	A6B1460803	SOIL	Bis(2-ethylhexyl) phthalate	56	160	BJ	650	KWN-SD-11-030106-011	U Flag
SW8270	A6B1460803	SOIL	Bis(2-ethylhexyl) phthalate	56	210	BJ	1200	KWN-SD-9-022806-007	U Flag
SW8270	A6B1460803	SOIL	Bis(2-ethylhexyl) phthalate	56	250	BJ	880	KWN-SD-10-022806-009	U Flag
SW8270	A6B1460803	SOIL	Bis(2-ethylhexyl) phthalate	56	410	BJ	420	KWN-SD-15-030106-019	U Flag
SW8270	A6B1460803	SOIL	Bis(2-ethylhexyl) phthalate	56	470	BJ	520	KWN-SD-12-030106-013	U Flag
SW8270	A6B1460803	SOIL	Bis(2-ethylhexyl) phthalate	56	580	BJ	700	KWN-SD-8-022806-005	U Flag
SW6010	A6B1462702	SOIL	Zinc - Total	1	118		1.4	KWN-SD-17-030106-024	Not Qualified
SW6010	A6B1462702	SOIL	Zinc - Total	1	188		1.5	KWN-SD-18-030106-026	Not Qualified
SW6010	A6B1462702	SOIL	Zinc - Total	1	40.1		1.2	KWN-SD-16-030106-022	Not Qualified
SW8270	A6B1504402	SOIL	Bis(2-ethylhexyl) phthalate	25	620	B	390	KWN-SB4-030706-06110	Not Qualified
SW8270	A6B1504402	SOIL	Bis(2-ethylhexyl) phthalate	25	220	BJ	450	KWN-SB4-030706-06120	U Flag
SW8270	A6B1504402	SOIL	Bis(2-ethylhexyl) phthalate	25	28	BJ	420	KWN-SB1-030706-05525	U Flag
SW8270	A6B1504402	SOIL	Bis(2-ethylhexyl) phthalate	25	31	BJ	410	KWN-SB4-030706-06130	U Flag
SW8270	A6B1504402	SOIL	Bis(2-ethylhexyl) phthalate	25	32	BJ	380	KWN-SB2-030606-05710	U Flag
SW8270	A6B1504402	SOIL	Bis(2-ethylhexyl) phthalate	25	39	BJ	370	KWN-SB3-030606-05910	U Flag

Method	Lab Blank	Matrix	Analyte	Blank Result	Sample Result	Lab Qual	PQL	Affected Samples	Sample Flag
SW8270	A6B1504402	SOIL	Bis(2-ethylhexyl) phthalate	25	47	BJ	400	KWN-SB3-030606-05920	U Flag
SW8270	A6B1504402	SOIL	Bis(2-ethylhexyl) phthalate	25	50	BJ	390	KWN-SB2-030606-05720	U Flag

Table 2B - List of Samples Qualified for Field Blank Contamination

Not applicable

Table 3 - List of Samples with Surrogates outside Control Limits

Method	Sample ID	Sample Type	Analyte	Rec.	Low Limit	High Limit	Dil Fac	Sample Qual.
SW8270	KWN-SU-7-030206-039	SAMP	2,4,6-Tribromophenol	32	53	132	10	Diluted Out
SW8082	KWNSB5-030306-063-05	SAMP	Decachlorobiphenyl	0	36	153	10	Diluted Out
SW8082	KWNSB5-030306-063-05	SAMP	Tetrachloro-m-xylene	0	32	148	10	Diluted Out
SW8082	KWN-SU-11-030306-047	SAMP	Decachlorobiphenyl	0	36	153	10	Diluted Out
SW8082	KWN-SU-11-030306-047	SAMP	Tetrachloro-m-xylene	0	32	148	10	Diluted Out
SW8082	KWN-SU-2-030206-029	SAMP	Decachlorobiphenyl	0	36	153	10	Diluted Out
SW8082	KWN-SU-2-030206-029	SAMP	Tetrachloro-m-xylene	0	32	148	10	Diluted Out
SW8082	KWN-SU-4-030206-033	SAMP	Decachlorobiphenyl	0	36	153	10	Diluted Out
SW8082	KWN-SU-4-030206-033	SAMP	Tetrachloro-m-xylene	0	32	148	10	Diluted Out
SW8082	KWN-SU-8-030206-041	SAMP	Decachlorobiphenyl	0	36	153	10	Diluted Out
SW8082	KWN-SU-8-030206-041	SAMP	Tetrachloro-m-xylene	0	32	148	10	Diluted Out
SW8082	KWN-SU-9-030206-043	SAMP	Decachlorobiphenyl	0	36	153	10	Diluted Out
SW8082	KWN-SU-9-030206-043	SAMP	Tetrachloro-m-xylene	0	32	148	10	Diluted Out
SW8081	KWN-SD-10-022806-009	SAMP	Decachlorobiphenyl	0	46	151	10	Diluted Out
SW8081	KWN-SD-10-022806-009	SAMP	Tetrachloro-m-xylene	0	38	132	10	Diluted Out
SW8081	KWN-SD-11-030106-011	SAMP	Decachlorobiphenyl	0	46	151	10	Diluted Out
SW8081	KWN-SD-11-030106-011	SAMP	Tetrachloro-m-xylene	0	38	132	10	Diluted Out
SW8081	KWN-SD-12-030106-013	SAMP	Decachlorobiphenyl	0	46	151	10	Diluted Out

Method	Sample ID	Sample Type	Analyte	Rec.	Low Limit	High Limit	Dil Fac	Sample Qual.
SW8081	KWN-SD-12-030106-013	SAMP	Tetrachloro-m-xylene	0	38	132	10	Diluted Out
SW8081	KWN-SD-13-030106-015	SAMP	Decachlorobiphenyl	0	46	151	10	Diluted Out
SW8081	KWN-SD-13-030106-015	SAMP	Tetrachloro-m-xylene	0	38	132	10	Diluted Out
SW8081	KWN-SD-14-030106-017	SAMP	Decachlorobiphenyl	0	46	151	10	Diluted Out
SW8081	KWN-SD-14-030106-017	SAMP	Tetrachloro-m-xylene	0	38	132	10	Diluted Out
SW8081	KWN-SD-15-030106-019	SAMP	Decachlorobiphenyl	0	46	151	10	Diluted Out
SW8081	KWN-SD-15-030106-019	SAMP	Tetrachloro-m-xylene	0	38	132	10	Diluted Out
SW8081	KWN-SD-17-030106-023	SAMP	Decachlorobiphenyl	0	46	151	10	Diluted Out
SW8081	KWN-SD-17-030106-023	SAMP	Tetrachloro-m-xylene	0	38	132	10	Diluted Out
SW8081	KWN-SD-6-022806-001	SAMP	Decachlorobiphenyl	0	46	151	10	Diluted Out
SW8081	KWN-SD-6-022806-001	SAMP	Tetrachloro-m-xylene	0	38	132	10	Diluted Out
SW8081	KWN-SD-7-022806-003	SAMP	Decachlorobiphenyl	0	46	151	10	Diluted Out
SW8081	KWN-SD-7-022806-003	SAMP	Tetrachloro-m-xylene	0	38	132	10	Diluted Out
SW8081	KWN-SD-8-022806-005	SAMP	Decachlorobiphenyl	0	46	151	10	Diluted Out
SW8081	KWN-SD-8-022806-005	SAMP	Tetrachloro-m-xylene	0	38	132	10	Diluted Out
SW8081	KWN-SD-9-022806-007	SAMP	Decachlorobiphenyl	0	46	151	10	Diluted Out
SW8081	KWN-SD-9-022806-007	SAMP	Tetrachloro-m-xylene	0	38	132	10	Diluted Out
SW8081	KWN-SU-10-030206-045	SAMP	Decachlorobiphenyl	0	46	151	10	Diluted Out
SW8081	KWN-SU-10-030206-045	SAMP	Tetrachloro-m-xylene	0	38	132	10	Diluted Out
SW8081	KWN-SU-1-030206-027	SAMP	Decachlorobiphenyl	0	46	151	10	Diluted Out
SW8081	KWN-SU-1-030206-027	SAMP	Tetrachloro-m-xylene	0	38	132	10	Diluted Out
SW8081	KWN-SU-11-030306-049	SAMP	Decachlorobiphenyl	0	46	151	10	Diluted Out
SW8081	KWN-SU-11-030306-049	SAMP	Tetrachloro-m-xylene	0	38	132	10	Diluted Out
SW8081	KWN-SU-6-030206-037	SAMP	Decachlorobiphenyl	176	46	151	4	Diluted Out
SW8081	KWN-SU-7-030206-039	SAMP	Decachlorobiphenyl	0	46	151	20	Diluted Out
SW8081	KWN-SU-7-030206-039	SAMP	Tetrachloro-m-xylene	0	38	132	20	Diluted Out

Table 4 - List MS/MSD Recoveries and RPDs outside Control Limits

Method	Sample ID	Sample Type	Analyte	Orig. Result	Spike Amount	Rec.	Dil Fac	Low Limit	High Limit	Sample Qual.	REPORTABLE
SW8270	KWN-SU-2-030206-029	MS	2,4-Dinitrotoluene	<33	12734	39	10	51	126	Diluted Out	Yes
SW8270	KWN-SU-2-030206-029	MSD	2,4-Dinitrotoluene	<33	11883	37	10	51	126	Diluted Out	Yes
SW7471	KWN-SD-6-022806-002	MS	Mercury - Total	0.094	0.765	74	1	80	120	J Flag	Yes
SW7471	KWN-SD-6-022806-002	MSD	Mercury - Total	0.094	0.792	70	1	80	120	J Flag	Yes
SW7471	KWN-SU-11-030306-048	MS	Mercury - Total	1.7	0.442	428	10	80	120	Diluted Out	Yes
SW6010	KWN-SB2-030606-05810	MS	Antimony - Total	<0.69	48.85	71	1	75	125	None	Yes
SW6010	KWN-SB2-030606-05810	MSD	Antimony - Total	<0.69	49.42	70	1	75	125	None	Yes
SW6010	KWN-SB2-030606-05810	MS	Iron - Total	9580	2442	340	1	75	125	J Flag	Yes
SW6010	KWN-SB2-030606-05810	MSD	Iron - Total	9580	2471	135	1	75	125	J Flag	Yes
SW6010	KWN-SB2-030606-05810	MS	Manganese - Total	96.7	97.7	45	1	75	125	J Flag	Yes
SW6010	KWN-SB2-030606-05810	MSD	Manganese - Total	96.7	98.85	47	1	75	125	J Flag	Yes
SW6010	KWN-SD-6-022806-002	MS	Aluminum - Total	9020	4500	128	1	75	125	J Flag	Yes
SW6010	KWN-SD-6-022806-002	MS	Antimony - Total	<0.69	90	43	1	75	125	None	Yes
SW6010	KWN-SD-6-022806-002	MSD	Antimony - Total	<0.69	86.96	55	1	75	125	None	Yes
SW6010	KWN-SD-6-022806-002	MS	Iron - Total	23000	4500	130	1	75	125	4X	Yes
SW6010	KWN-SD-6-022806-002	MSD	Iron - Total	23000	4348	148	1	75	125	4X	Yes
SW6010	KWN-SD-6-022806-002	MS	Manganese - Total	229	180	45	1	75	125	J Flag	Yes
SW6010	KWN-SD-6-022806-002	MSD	Manganese - Total	229	173.9	65	1	75	125	J Flag	Yes
SW6010	KWN-SD-6-022806-002	MSD	Silver - Total	<0.15	21.74	65	1	75	125	None	Yes
SW6010	KWN-SU-11-030306-048	MS	Aluminum - Total	8160	2581	141	1	75	125	J Flag	Yes
SW6010	KWN-SU-11-030306-048	MS	Antimony - Total	<0.69	51.63	44	1	75	125	None	Yes
SW6010	KWN-SU-11-030306-048	MSD	Antimony - Total	<0.69	52.91	53	1	75	125	None	Yes
SW6010	KWN-SU-11-030306-048	MS	Barium - Total	277	51.63	187	1	75	125	4X	Yes
SW6010	KWN-SU-11-030306-048	MSD	Barium - Total	277	52.91	171	1	75	125	4X	Yes
SW6010	KWN-SU-11-030306-048	MSD	Calcium - Total	11600	2645	30	1	75	125	4X	Yes

Method	Sample ID	Sample Type	Analyte	Orig. Result	Spike Amount	Rec.	Dil Fac	Low Limit	High Limit	Sample Qual.	REPORTABLE
SW6010	KWN-SU-11-030306-048	MS	Copper - Total	196	51.63	159	1	75	125	J Flag	Yes
SW6010	KWN-SU-11-030306-048	MSD	Copper - Total	196	52.91	162	1	75	125	J Flag	Yes
SW6010	KWN-SU-11-030306-048	MS	Iron - Total	19900	2581	136	1	75	125	4X	Yes
SW6010	KWN-SU-11-030306-048	MSD	Iron - Total	19900	2645	174	1	75	125	4X	Yes
SW6010	KWN-SU-11-030306-048	MS	Manganese - Total	302	103.2	41	1	75	125	J Flag	Yes
SW6010	KWN-SU-11-030306-048	MSD	Manganese - Total	302	105.8	66	1	75	125	J Flag	Yes
SW6010	KWN-SU-11-030306-048	MS	Silver - Total	32.7	12.9	156	1	75	125	None	Yes
SW6010	KWN-SU-11-030306-048	MSD	Silver - Total	32.7	13.22	156	1	75	125	None	Yes
SW6010	KWN-SU-11-030306-048	MS	Zinc - Total	397	51.63	136	1	75	125	4X	Yes
SW6010	KWN-SU-11-030306-048	MSD	Zinc - Total	397	52.91	130	1	75	125	4X	Yes

Method	Sample ID	Sample Type	Analyte	RPD	RPD Limit	Sample Qual.
SW6010	KWN-SD-6-022806-002	MSD	Antimony - Total	24	20	None
SW6010	KWN-SU-11-030306-048	MSD	Calcium - Total	86	20	None
SW6010	KWN-SB2-030606-05810	MSD	Iron - Total	86	20	None
SW6010	KWN-SU-11-030306-048	MSD	Iron - Total	24	20	None
SW6010	KWN-SD-6-022806-002	MSD	Manganese - Total	36	20	None
SW6010	KWN-SU-11-030306-048	MSD	Manganese - Total	47	20	None
SW6010	KWN-SD-6-022806-002	MSD	Silver - Total	33	20	None
SW7471	KWN-SU-11-030306-048	MSD	Mercury - Total	127	20	Diluted Out

Table 5 - List LCS Recoveries outside Control Limits

Method	Sample ID	Analyte	Rec.	Low Limit	High Limit	No. of Affected Samples	Samp Qual
SW6010	A6B1462701	Iron - Total	69	80	120	3	Not Qualified
SW6010	A6B1483301	Iron - Total	76	80	120	10	Not Qualified
SW6010	A6B1500301	Iron - Total	66	80	120	1	Not Qualified

Method	Sample ID	Analyte	Rec.	Low Limit	High Limit	No. of Affected Samples	Samp Qual
SW6010	A6B1512701	Iron - Total	66	80	120	4	Not Qualified
SW7471	A6B1460701	Mercury - Total	78	80	120	13	Not Qualified
SW7471	A6B1492901	Mercury - Total	121	80	120	10	Not Qualified

Table 6 –Samples that were Reanalyzed

None

Table 7 – Summary of Field Duplicate Results

None

Key:

A = Analyte
NC = Not Calculated
ND = Not Detected
PQL = Practical Quantitation Limit
RPD = Relative Percent Difference
T = Tentatively Identified Compound

Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

August 09, 2001

Mr. Nate Gahr
E and E Washington D.C. Office
1700 North Moore St.
Suite 1610
Arlington, VA 22209

RE: Kenilworth RI/FS
CostPoint ID: **001096.GT05.01..**

Work Order No.: **0106202**

Dear Mr. Nate Gahr,

Ecology and Environment, Inc. received 3 samples on Thursday, June 28, 2001 for the analyses presented in the following report.

E & E will retain the samples addressed in this report for 30 days, unless otherwise instructed by the client. If additional storage is requested, the storage fee is $1.00 per sample container per month, to accrue until the client authorizes sample destruction.

Sincerely,

Tony Bogolin
Project Manager

CC:
Enclosures as note

This report ends on page 59

CHAIN OF CUSTODY RECORD

ASC analytical services center

Ecology and Environment, Inc., Analytical Services Center
4493 Walden Avenue, Lancaster, New York, 14086, Tel: 716/685-8080, Fax 716/685-0852
Where Scientific Excellence and Efficiency Meet

Cooler No: _____
Lab: _____

Page: ____ of ____

PROJECT No: 001016.6705.01
SITE NAME: KANILWORTH RI/FS
LOCATION: (Include State) WASHINGTON DC
CLIENT: NATIONAL PARKS SERVICE
PROJECT MANAGER: John Pasch
OFFICE No: W.D.C.
FIELD TEAM LEADER: NATHAN GAHR
PHONE No: W.D.C
SAMPLERS: (PRINT) Nora McMahon, Nathan Gahr

CONTAINER TYPE AND PRESERVATIVE: 1 L Poly; 1 Liter Spec Amber; 40mL HCL

REQUESTED ANALYSIS: TAL METAL; TCL; TCL (VOA)

TURNAROUND TIME: 24-HOUR ☐; 48-HOUR ☐; 1-WEEK ☐; STANDARD ☒; RUSH ____ days; OTHER ____

(FOR LAB USE ONLY) Lab Job No: Report type: Batch QC: Yes No

DATE	TIME	SAMPLE ID	SAMPLE MATRIX	CHECK FOR MS/MSD	SAMPLE TYPE	No. OF CONTAINERS	TAL METAL	TCL	TCL (VOA)	OVA/HNU READINGS (PPM)	BEGINNING DEPTH (FEET BGS)	ENDING DEPTH (FEET BGS)	REMARKS
6/27/01	1005	KWS-MW-12	GW		O	5	/	/	/				
6/27/01	1005	KWS-MW-12D	GW		D	5	/	/	/				
6/13/01		TRIP BLANK			T	1			X				

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	Ship Via:	Date:
[signature]	6/27/01 1200			FED EX	6/27/01
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	BL/Airbill Number:	
		[signature]	6/28/01 850	826693862819	

Temperature Blank Info. Enclosed: Yes No

(FOR LAB USE ONLY) Date: _____ Time: _____ Temperature: _____ °C

Distribution: White - Lab original Yellow - Field team leader

0881297

Cooler Receipt Form

PACKAGE RECEIPT #: 8033 NUMBER OF COOLERS: 1 DATE RECEIVED: 6/28/01

E & E PROJECT #: _____ PROJECT OR SITE NAME: E+E Arlington

CIRCLE ONE

A. Preliminary Examination Phase

1. Did coolers come with airbill or packing slip? — YES NO NA

   Enter carrier here and print airbill # below: *(Circle One)* FedEx Airborne Client Other

   Ship as high hazard or dangerous goods — YES NO NA

2. Did cooler(s) have custody seals? — YES NO NA
3. Were custody seals unbroken and intact on receipt? — YES NO* NA
4. Were custody seals dated and signed? — YES NO NA
5. Sign here to acknowledge receipt of cooler (s): [signature]

   Date cooler(s) opened: 6/28/01 C-O-C numbers: _____

   Cooler(s) opened by (print): J Henderson Signature: [signature]

6. Were the C-O-C forms received? — YES NO* NA
7. Was the project identifiable from the C-O-C form? — YES NO* NA
   If YES, enter the project number and name in the heading above.

Please record Temperature Blank Vial or Cooler Temperature for Each Cooler, Range (2 - 6C)* NJDEP must be ≤4C

AIRBILL #	TEMP. °C	AIRBILL #	TEMP. °C	AIRBILL #	TEMP. °C
826693862819	4.0				

Thermometer # 129 Correction Factor 0 * If No or Temperature Outside of Acceptable Range, prepare a PM Notification form.

B. Unpacking Phase

8. Was enough packing material used in cooler(s)? — YES NO NA
   Type of material: ☐ Vermiculite ☒ Bubble Wrap ☐ Other
9. If required, was enough ice used? — YES NO NA
   If YES, type of ice used: ☒ Wet ☐ Dry ☐ Blue ☐ Other
10. Was a temperature blank vial included inside cooler(s)? — YES NO NA
    If YES, indicate temperature blank vial temperature in table above. If NO, indicate cooler temperature in table above.
11. Were all containers sealed in separate plastic bags? — YES NO NA
12. Did all containers arrive unbroken and in good condition? — YES NO* NA
13. Samples stored in W Cooler before Login Phase? — YES NO
    If yes: Signature In: _____ Date/Time: _____

    Signature Out: _____ Date/Time: _____

C. Login Phase

Samples Logged in By (print): J Henderson Signature: [signature] Date: 6/28/01

14. Were all container labels complete (e.g. date, time preserved)? — YES NO* NA
15. Were all C-O-C forms filled out properly in ink and signed? — YES NO* NA
16. Did the C-O-C form agree with containers received? — YES NO* NA
17. Were the correct containers used for the tests requested? — YES NO* NA
18. Were the correct preservatives listed on the sample labels? — YES NO* NA
19. Was a sufficient sample volume sent for the tests requested? — YES NO* NA
20. Were all volatile samples received without head space? — YES NO* NA

3

*Prepare a PM Notification form.

I Forms & Lists Final F_024 ene Rev Approval Date5/1/00Last Update:

Ecology and Environment, Inc.
Analytical Services Center
Lancaster, New York 14086
Phone: (716) 685-8080

Laboratory Results

NYS ELAP ID#: 10486

CLIENT:	E and E Washington D.C. Office
Project:	Kenilworth RI/FS
Lab Order:	0106202

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition

GCMS VOLATILES
A DB 624 or equivalent column and a trap packed with OV-1, Tenax, silica gel and activated charcoal was used for the volatile analysis.

Sample Analysis
All aqueous volatile samples were determined to be at a pH of 1.

All samples were analyzed within hold time.

Calibration and Tunes
All initial and continuing calibrations were acceptable.

QC
All surrogate recoveries were within acceptable limits except for sample KWS-MW-12. The sample was reanalyzed with similar results. Both the initial and reanalysis have been reported.

All blank analyses were acceptable.

All laboratory control sample (LCS) recoveries were acceptable.

All internal standard area responses were acceptable.

GCMS SEMIVOLATILES
A RESTEK (Rtx-5ms) column, which is 30-m long, 0.25-mm wide, and has a 0.5-micron film thickness, was used for the semivolatile analyses. The column contains 5% diphenyl and 95% dimethylpolysiloxane.

Water Analysis
All samples were extracted and analyzed within hold times.

Calibration and Tunes
The initial and continuing calibrations were acceptable.

QC
All surrogate recoveries were within acceptable limits.

Method blank was acceptable.

An MS/MSD were not extracted on any of the water samples in this job. A laboratory control sample and duplicate were extracted and the surrogate and spike recoveries were within acceptable limits, except for a high spike recovery of Pentachlorophenol in the LCS.

All internal standard area responses were acceptable.

No manual integrations were required.

GC SEMIVOLATILES
PESTICIDE
The columns used for analysis were an RTX-5 (column 1) and an RTX-35 (column 2), both 30 meters long and 0.53 mm in diameter, with a 1.0 um film thickness. A 2-ul injection was performed on all samples, QC, and standards.

Sample Analysis
All samples were extracted and analyzed within hold time.

Calibrations
All initial and continuing calibrations were acceptable.

Manual integrations were not required.

QC
All surrogate recoveries were within acceptable limits.

All blank analyses were acceptable.

All laboratory control sample (LCS) recoveries were acceptable.

PCB
The columns used for analysis were an RTX-5, 30 meters long and 0.53 mm in diameter, with a 1.0 um film thickness. A 2-ul injection was performed on all samples, QC, and standards.

Sample Analysis
All samples were extracted and analyzed within hold time.

Calibrations
All initial and continuing calibrations were acceptable.

Manual integrations were not required.

QC
All surrogate recoveries were within acceptable limits.

All blank analyses were acceptable.

All laboratory control sample (LCS) recoveries were acceptable.

METALS
Sample Analysis
All samples were digested and analyzed within hold time.

Calibrations
All initial and continuing calibrations were acceptable.

QC
All calibration and preparation blank analyses were acceptable. Aluminum, copper and potassium were present in the method blank above the MDL but below the reporting limit.

All laboratory control sample (LCS) recoveries were acceptable.

MERCURY
Sample Analysis
All samples were digested and analyzed within hold time.

Calibrations
All initial and continuing calibrations were acceptable.

QC
All calibration and preparation blank analyses were acceptable.

All laboratory control sample (LCS) recoveries were acceptable.

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Ecology and Environment, Inc.

Analytical Services Center
Lancaster, New York 14086
Phone: (716) 685-8080

Laboratory Results

NYS ELAP ID#: 10486

Lab Order: 0106202
Client: E and E Washington D.C. Office
Project: Kenilworth RI/FS

DATES REPORT

Sample ID	Client Sample ID	Collection Date	Received Date	Matrix	Test Name	TCLP Date*	Prep Date	Analysis Date
0106202-01A	KWS-MW-12	06/27/2001 10:05:00 AM	6/28/2001 8:50:00 AM	Water	VOC by GCMS Method 8260B			06/29/2001
0106202-01B					PCBs by Method 8082		06/28/2001	07/01/2001
					Pesticides by Method 8081A		06/28/2001	07/03/2001
					Semivolatile Organics by Method 8270C		06/28/2001	07/06/2001
0106202-01C					Dissolved Mercury in Water by Method 7470A		07/06/2001	07/09/2001
					Dissolved Metals, TAL by ICP Method 6010B		07/05/2001	08/07/2001
0106202-02A	KWS-MW-12D				VOC by GCMS Method 8260B			06/29/2001
0106202-02B					PCBs by Method 8082		06/28/2001	07/01/2001
					Pesticides by Method 8081A		06/28/2001	07/03/2001
					Semivolatile Organics by Method 8270C		06/28/2001	07/06/2001
0106202-02C					Dissolved Mercury in Water by Method 7470A		07/06/2001	07/09/2001
					Dissolved Metals, TAL by ICP Method 6010B		07/05/2001	08/07/2001
0106202-03A	TRIP BLANK	06/27/2001 12:00:00 PM			VOC by GCMS Method 8260B			06/29/2001

*Reflects Date of TCLP Extraction Completion

GCMS VOLATILES

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Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106202
Project: Kenilworth RI/FS
Test Code: 1_8260B_5030B_W
Batch ID: NILES_010628C

QC SUMMARY REPORT SURROGATE RECOVERIES

VOC by GCMS Method 8260B

Sample ID	Type	BR4FBZ	BZMED8	DBFM	DCA12D4				
0106202-01A	SAMP	86*	101	106	90				
0106202-01A	RA	86*	103	105	87				
0106202-02A	SAMP	88	102	105	89				
0106202-03A	SAMP	89	102	107	91				
LCS-1423-80-1	LCS	89	105	103	90				
LCS-1423-80-2	LCSD	90	105	104	91				
MB-1423-80-1	MBLK	91	102	105	92				

Acronym		Surrogate	QC Limits
BR4FBZ	=	4-Bromofluorobenzene	87-115
BZMED8	=	Toluene-d8	85-115
DBFM	=	Dibromofluoromethane	89-119
DCA12D4	=	1,2-Dichloroethane-d4	82-124

* Surrogate recovery outside acceptance limits

D - Diluted due to matrix or extended target compounds

Ecology & Environment Inc. LIMS Version 3.1.1.9 - 7/6/01 2:00:00 PM Monday, July 16, 2001 11:54:20 PM

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Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106202 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106202-01A **Sample Type:** SAMP

Client Sample ID: KWS-MW-12
Alt. Client ID:
Collection Date: 6/27/01 10:05:00 AM
Matrix: WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
VOLATILE ORGANIC COMPOUNDS BY METHOD 8260B 1_8260B_5030B_W								
1,1,1-Trichloroethane	ND		5.00	µg/L	1	6/29/01 1:35:00 AM	NILES_010628C	MRD
1,1,2,2-Tetrachloroethane	ND		5.00	µg/L	1			
1,1,2-Trichloroethane	ND		5.00	µg/L	1			
1,1-Dichloroethane	ND		5.00	µg/L	1			
1,1-Dichloroethene	ND		5.00	µg/L	1			
1,2-Dichlorobenzene	ND		5.00	µg/L	1			
1,2-Dichloroethane	ND		5.00	µg/L	1			
1,2-Dichloroethene, Total	ND		5.00	µg/L	1			
1,2-Dichloropropane	ND		5.00	µg/L	1			
1,3-Dichlorobenzene	ND		5.00	µg/L	1			
1,4-Dichlorobenzene	3.37	J	5.00	µg/L	1			
2-Butanone	ND		10.0	µg/L	1			
2-Hexanone	ND		10.0	µg/L	1			
4-Methyl-2-pentanone	ND		10.0	µg/L	1			
Acetone	8.10	J	10.0	µg/L	1			
Benzene	ND		5.00	µg/L	1			
Bromodichloromethane	ND		5.00	µg/L	1			
Bromoform	ND		5.00	µg/L	1			
Bromomethane	ND		10.0	µg/L	1			
Carbon disulfide	ND		5.00	µg/L	1			
Carbon tetrachloride	ND		5.00	µg/L	1			
Chlorobenzene	2.76	J	5.00	µg/L	1			
Chloroethane	ND		10.0	µg/L	1			
Chloroform	ND		5.00	µg/L	1			
Chloromethane	ND		10.0	µg/L	1			
cis-1,2-Dichloroethene	ND		5.00	µg/L	1			
cis-1,3-Dichloropropene	ND		5.00	µg/L	1			
Dibromochloromethane	ND		5.00	µg/L	1			
Ethylbenzene	ND		5.00	µg/L	1			
m,p-Xylene	ND		5.00	µg/L	1			
Methylene chloride	ND		5.00	µg/L	1			
o-Xylene	ND		5.00	µg/L	1			
Styrene	ND		5.00	µg/L	1			
Tetrachloroethene	ND		5.00	µg/L	1			
Toluene	ND		5.00	µg/L	1			
trans-1,2-Dichloroethene	ND		5.00	µg/L	1			
trans-1,3-Dichloropropene	ND		5.00	µg/L	1			
Trichloroethene	ND		5.00	µg/L	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106202 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106202-01A **Sample Type:** SAMP

Client Sample ID: KWS-MW-12
Alt. Client ID:
Collection Date: 6/27/01 10:05:00 AM
Matrix: WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
VOLATILE ORGANIC COMPOUNDS BY METHOD 8260B								
1_8260B_5030B_W								
Trichlorofluoromethane	ND		5.00	µg/L	1			
Vinyl acetate	ND		10.0	µg/L	1			
Vinyl chloride	ND		10.0	µg/L	1			
Xylenes, Total	ND		5.00	µg/L	1			
Surr:1,2-Dichloroethane-d4	90		82 - 124	%REC	1	6/29/01 1:35:00 AM	NILES_010628C	MRD
Surr:4-Bromofluorobenzene	86	*	87 - 115	%REC	1			
Surr:Dibromofluoromethane	106		89 - 119	%REC	1			
Surr:Toluene-d8	101		85 - 115	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106202 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106202-01A **Sample Type:** RA

Client Sample ID: KWS-MW-12
Alt. Client ID:
Collection Date: 6/27/01 10:05:00 AM
Matrix: WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
VOLATILE ORGANIC COMPOUNDS BY METHOD 8260B 1_8260B_5030B_W								
1,1,1-Trichloroethane	ND		5.00	µg/L	1	6/29/01 7:10:00 AM	NILES_010628C	MRD
1,1,2,2-Tetrachloroethane	ND		5.00	µg/L	1			
1,1,2-Trichloroethane	ND		5.00	µg/L	1			
1,1-Dichloroethane	ND		5.00	µg/L	1			
1,1-Dichloroethene	ND		5.00	µg/L	1			
1,2-Dichlorobenzene	ND		5.00	µg/L	1			
1,2-Dichloroethane	ND		5.00	µg/L	1			
1,2-Dichloroethene, Total	ND		5.00	µg/L	1			
1,2-Dichloropropane	ND		5.00	µg/L	1			
1,3-Dichlorobenzene	ND		5.00	µg/L	1			
1,4-Dichlorobenzene	3.40	J	5.00	µg/L	1			
2-Butanone	ND		10.0	µg/L	1			
2-Hexanone	ND		10.0	µg/L	1			
4-Methyl-2-pentanone	ND		10.0	µg/L	1			
Acetone	8.41	J	10.0	µg/L	1			
Benzene	ND		5.00	µg/L	1			
Bromodichloromethane	ND		5.00	µg/L	1			
Bromoform	ND		5.00	µg/L	1			
Bromomethane	ND		10.0	µg/L	1			
Carbon disulfide	ND		5.00	µg/L	1			
Carbon tetrachloride	ND		5.00	µg/L	1			
Chlorobenzene	2.80	J	5.00	µg/L	1			
Chloroethane	ND		10.0	µg/L	1			
Chloroform	ND		5.00	µg/L	1			
Chloromethane	ND		10.0	µg/L	1			
cis-1,2-Dichloroethene	ND		5.00	µg/L	1			
cis-1,3-Dichloropropene	ND		5.00	µg/L	1			
Dibromochloromethane	ND		5.00	µg/L	1			
Ethylbenzene	ND		5.00	µg/L	1			
m,p-Xylene	ND		5.00	µg/L	1			
Methylene chloride	ND		5.00	µg/L	1			
o-Xylene	ND		5.00	µg/L	1			
Styrene	ND		5.00	µg/L	1			
Tetrachloroethene	ND		5.00	µg/L	1			
Toluene	ND		5.00	µg/L	1			
trans-1,2-Dichloroethene	ND		5.00	µg/L	1			
trans-1,3-Dichloropropene	ND		5.00	µg/L	1			
Trichloroethene	ND		5.00	µg/L	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Ecology and Environment, Inc.

Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-MW-12
Lab Order:	0106202 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/27/01 10:05:00 AM
Lab ID:	0106202-01A **Sample Type:** RA	**Matrix:**	WATER % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
VOLATILE ORGANIC COMPOUNDS BY METHOD 8260B								
1_8260B_5030B_W								
Trichlorofluoromethane	ND		5.00	µg/L	1			
Vinyl acetate	ND		10.0	µg/L	1			
Vinyl chloride	ND		10.0	µg/L	1			
Xylenes, Total	ND		5.00	µg/L	1			
Surr:1,2-Dichloroethane-d4	87		82 - 124	%REC	1	6/29/01 7:10:00 AM	NILES_010628C	MRD
Surr:4-Bromofluorobenzene	86	*	87 - 115	%REC	1			
Surr:Dibromofluoromethane	105		89 - 119	%REC	1			
Surr:Toluene-d8	103		85 - 115	%REC	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106202 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106202-02A **Sample Type:** SAMP

Client Sample ID: KWS-MW-12D
Alt. Client ID:
Collection Date: 6/27/01 10:05:00 AM
Matrix: WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
VOLATILE ORGANIC COMPOUNDS BY METHOD 8260B								
1_8260B_5030B_W								
1,1,1-Trichloroethane	ND		5.00	µg/L	1	6/29/01 7:39:00 AM	NILES_010628C	MRD
1,1,2,2-Tetrachloroethane	ND		5.00	µg/L	1			
1,1,2-Trichloroethane	ND		5.00	µg/L	1			
1,1-Dichloroethane	ND		5.00	µg/L	1			
1,1-Dichloroethene	ND		5.00	µg/L	1			
1,2-Dichlorobenzene	ND		5.00	µg/L	1			
1,2-Dichloroethane	ND		5.00	µg/L	1			
1,2-Dichloroethene, Total	ND		5.00	µg/L	1			
1,2-Dichloropropane	ND		5.00	µg/L	1			
1,3-Dichlorobenzene	ND		5.00	µg/L	1			
1,4-Dichlorobenzene	3.38	J	5.00	µg/L	1			
2-Butanone	ND		10.0	µg/L	1			
2-Hexanone	ND		10.0	µg/L	1			
4-Methyl-2-pentanone	ND		10.0	µg/L	1			
Acetone	7.60	J	10.0	µg/L	1			
Benzene	ND		5.00	µg/L	1			
Bromodichloromethane	ND		5.00	µg/L	1			
Bromoform	ND		5.00	µg/L	1			
Bromomethane	ND		10.0	µg/L	1			
Carbon disulfide	ND		5.00	µg/L	1			
Carbon tetrachloride	ND		5.00	µg/L	1			
Chlorobenzene	2.75	J	5.00	µg/L	1			
Chloroethane	ND		10.0	µg/L	1			
Chloroform	ND		5.00	µg/L	1			
Chloromethane	ND		10.0	µg/L	1			
cis-1,2-Dichloroethene	ND		5.00	µg/L	1			
cis-1,3-Dichloropropene	ND		5.00	µg/L	1			
Dibromochloromethane	ND		5.00	µg/L	1			
Ethylbenzene	ND		5.00	µg/L	1			
m,p-Xylene	ND		5.00	µg/L	1			
Methylene chloride	ND		5.00	µg/L	1			
o-Xylene	ND		5.00	µg/L	1			
Styrene	ND		5.00	µg/L	1			
Tetrachloroethene	ND		5.00	µg/L	1			
Toluene	ND		5.00	µg/L	1			
trans-1,2-Dichloroethene	ND		5.00	µg/L	1			
trans-1,3-Dichloropropene	ND		5.00	µg/L	1			
Trichloroethene	ND		5.00	µg/L	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

Ecology and Environment, Inc.

Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-MW-12D
Lab Order:	0106202 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/27/01 10:05:00 AM
Lab ID:	0106202-02A **Sample Type:** SAMP	**Matrix:**	WATER % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
VOLATILE ORGANIC COMPOUNDS BY METHOD 8260B								
1_8260B_5030B_W								
Trichlorofluoromethane	ND		5.00	µg/L	1			
Vinyl acetate	ND		10.0	µg/L	1			
Vinyl chloride	ND		10.0	µg/L	1			
Xylenes, Total	ND		5.00	µg/L	1			
Surr:1,2-Dichloroethane-d4	89		82 - 124	%REC	1	6/29/01 7:39:00 AM	NILES_010628C	MRD
Surr:4-Bromofluorobenzene	88		87 - 115	%REC	1			
Surr:Dibromofluoromethane	105		89 - 119	%REC	1			
Surr:Toluene-d8	102		85 - 115	%REC	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106202 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106202-03A **Sample Type:** SAMP

Client Sample ID: TRIP BLANK
Alt. Client ID:
Collection Date: 6/27/01 12:00:00 PM
Matrix: WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
VOLATILE ORGANIC COMPOUNDS BY METHOD 8260B 1_8260B_5030B_W								
1,1,1-Trichloroethane	ND		5.00	µg/L	1	6/29/01 1:06:00 AM	NILES_010628C	MRD
1,1,2,2-Tetrachloroethane	ND		5.00	µg/L	1			
1,1,2-Trichloroethane	ND		5.00	µg/L	1			
1,1-Dichloroethane	ND		5.00	µg/L	1			
1,1-Dichloroethene	ND		5.00	µg/L	1			
1,2-Dichlorobenzene	ND		5.00	µg/L	1			
1,2-Dichloroethane	ND		5.00	µg/L	1			
1,2-Dichloroethene, Total	ND		5.00	µg/L	1			
1,2-Dichloropropane	ND		5.00	µg/L	1			
1,3-Dichlorobenzene	ND		5.00	µg/L	1			
1,4-Dichlorobenzene	ND		5.00	µg/L	1			
2-Butanone	ND		10.0	µg/L	1			
2-Hexanone	ND		10.0	µg/L	1			
4-Methyl-2-pentanone	ND		10.0	µg/L	1			
Acetone	ND		10.0	µg/L	1			
Benzene	ND		5.00	µg/L	1			
Bromodichloromethane	ND		5.00	µg/L	1			
Bromoform	ND		5.00	µg/L	1			
Bromomethane	ND		10.0	µg/L	1			
Carbon disulfide	ND		5.00	µg/L	1			
Carbon tetrachloride	ND		5.00	µg/L	1			
Chlorobenzene	ND		5.00	µg/L	1			
Chloroethane	ND		10.0	µg/L	1			
Chloroform	ND		5.00	µg/L	1			
Chloromethane	ND		10.0	µg/L	1			
cis-1,2-Dichloroethene	ND		5.00	µg/L	1			
cis-1,3-Dichloropropene	ND		5.00	µg/L	1			
Dibromochloromethane	ND		5.00	µg/L	1			
Ethylbenzene	ND		5.00	µg/L	1			
m,p-Xylene	ND		5.00	µg/L	1			
Methylene chloride	ND		5.00	µg/L	1			
o-Xylene	ND		5.00	µg/L	1			
Styrene	ND		5.00	µg/L	1			
Tetrachloroethene	ND		5.00	µg/L	1			
Toluene	ND		5.00	µg/L	1			
trans-1,2-Dichloroethene	ND		5.00	µg/L	1			
trans-1,3-Dichloropropene	ND		5.00	µg/L	1			
Trichloroethene	ND		5.00	µg/L	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Ecology and Environment, Inc.

Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	TRIP BLANK
Lab Order:	0106202 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/27/01 12:00:00 PM
Lab ID:	0106202-03A **Sample Type:** SAMP	**Matrix:**	WATER % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
VOLATILE ORGANIC COMPOUNDS BY METHOD 8260B								
1_8260B_5030B_W								
Trichlorofluoromethane	ND		5.00	µg/L	1			
Vinyl acetate	ND		10.0	µg/L	1			
Vinyl chloride	ND		10.0	µg/L	1			
Xylenes, Total	ND		5.00	µg/L	1			
Surr:1,2-Dichloroethane-d4	91		82 - 124	%REC	1	6/29/01 1:06:00 AM	NILES_010628C	MRD
Surr:4-Bromofluorobenzene	89		87 - 115	%REC	1			
Surr:Dibromofluoromethane	107		89 - 119	%REC	1			
Surr:Toluene-d8	102		85 - 115	%REC	1			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier A -Result by Method of Std. Addition
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	D - Diluted due to matrix or extended target compounds
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis 17

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106202
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

VOC by GCMS Method 8260B

Test Code: *1_8260B_5030B_W* Units: *µg/L*

Sample ID: **MB-1423-80-1** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **NILES_010628C** SeqNo: **374073** Analysis Date **6/28/01 11:08:00 PM** Prep Batch ID: **R18694** Prep Date:

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	1,1,1-Trichloroethane	ND	5.000								
A	1,1,2,2-Tetrachloroethane	ND	5.000								
A	1,1,2-Trichloroethane	ND	5.000								
A	1,1-Dichloroethane	ND	5.000								
A	1,1-Dichloroethene	ND	5.000								
A	1,2-Dichlorobenzene	ND	5.000								
A	1,2-Dichloroethane	ND	5.000								
A	1,2-Dichloroethene, Total	ND	5.000								
A	1,2-Dichloropropane	ND	5.000								
A	1,3-Dichlorobenzene	ND	5.000								
A	1,4-Dichlorobenzene	ND	5.000								
A	2-Butanone	ND	10.00								
A	2-Hexanone	ND	10.00								
A	4-Methyl-2-pentanone	ND	10.00								
A	Acetone	ND	10.00								
A	Benzene	ND	5.000								
A	Bromodichloromethane	ND	5.000								
A	Bromoform	ND	5.000								
A	Bromomethane	ND	10.00								
A	Carbon disulfide	ND	5.000								
A	Carbon tetrachloride	ND	5.000								
A	Chlorobenzene	ND	5.000								
A	Chloroethane	ND	10.00								

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106202
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

VOC by GCMS Method 8260B Test Code: *1_8260B_5030B_W* Units: *µg/L*

Sample ID: **MB-1423-80-1** Client Sample ID: DF: 1 DL_No: 1.

Run Batch ID: **NILES_010628C** SeqNo: **374073** Analysis Date **6/28/01 11:08:00 PM** Prep Batch ID: **R18694** Prep Date:

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Chloroform	ND	5.000								
A	Chloromethane	ND	10.00								
A	cis-1,2-Dichloroethene	ND	5.000								
A	cis-1,3-Dichloropropene	ND	5.000								
A	Dibromochloromethane	ND	5.000								
A	Ethylbenzene	ND	5.000								
A	m,p-Xylene	ND	5.000								
A	Methylene chloride	ND	5.000								
A	o-Xylene	ND	5.000								
A	Styrene	ND	5.000								
A	Tetrachloroethene	ND	5.000								
A	Toluene	ND	5.000								
A	trans-1,2-Dichloroethene	ND	5.000								
A	trans-1,3-Dichloropropene	ND	5.000								
A	Trichloroethene	ND	5.000								
A	Trichlorofluoromethane	ND	5.000								
A	Vinyl acetate	ND	10.00								
A	Vinyl chloride	ND	10.00								
A	Xylenes, Total	ND	5.000								
S	1,2-Dichloroethane-d4	46.19	0			92	82	124			
S	4-Bromofluorobenzene	45.55	0			91	87	115			
S	Dibromofluoromethane	52.68	0			105	89	119			
S	Toluene-d8	51.02	0			102	85	115			

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106202
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

VOC by GCMS Method 8260B

Test Code: *1_8260B_5030B_W* Units: *µg/L*

Sample ID: **LCS-1423-80-1** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **NILES_010628C** SeqNo: **374068** Analysis Date **6/28/01 10:09:00 PM** Prep Batch ID: **R18694** Prep Date:

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	1,1-Dichloroethene	59.38	5.000	50.00	0	119	61	135			
A	Benzene	51.41	5.000	50.00	0	103	82	131			
A	Chlorobenzene	51.21	5.000	50.00	0	102	77	128			
A	Toluene	50.94	5.000	50.00	0	102	80	125			
A	Trichloroethene	47.10	5.000	50.00	0	94	82	120			
S	1,2-Dichloroethane-d4	45.05	0	50.00	0	90	82	124			
S	4-Bromofluorobenzene	44.46	0	50.00	0	89	87	115			
S	Dibromofluoromethane	51.43	0	50.00	0	103	89	119			
S	Toluene-d8	52.44	0	50.00	0	105	85	115			

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106202
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike Duplicate

VOC by GCMS Method 8260B Test Code: *1_8260B_5030B_W* Units: *µg/L*

Sample ID: **LCS-1423-80-2** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **NILES_010628C** SeqNo: **374074** Analysis Date **6/28/01 10:39:00 PM** Prep Batch ID: **R18694** Prep Date:

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	1,1-Dichloroethene	57.63	5.000	50.00	0	115	61	135	3.0	20	
A	Benzene	50.02	5.000	50.00	0	100	82	131	2.7	20	
A	Chlorobenzene	50.39	5.000	50.00	0	101	77	128	1.6	20	
A	Toluene	49.47	5.000	50.00	0	99	80	125	2.9	20	
A	Trichloroethene	46.61	5.000	50.00	0	93	82	120	1.0	20	
S	1,2-Dichloroethane-d4	45.29	0	50.00	0	91	82	124	0.0	0	
S	4-Bromofluorobenzene	44.95	0	50.00	0	90	87	115	0.0	0	
S	Dibromofluoromethane	51.83	0	50.00	0	104	89	119	0.0	0	
S	Toluene-d8	52.56	0	50.00	0	105	85	115	0.0	0	

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Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

GCMS SEMIVOLATILES

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106202
Project: Kenilworth RI/FS
Test Code: 1_8270C_3520C_W
Batch ID: KIM_010706A

QC SUMMARY REPORT
SURROGATE RECOVERIES

Semivolatile Organics by Method 8270C

Sample ID	Type	NO2BZD5	PH246BR	PH2F	PHD5	PHEN2F	PHEND14
0106202-01B	SAMP	76	85	42	59	79	75
0106202-02B	SAMP	73	83	49	59	76	69
LCS-200101663	LCS	81	78	59	75	81	96
LCSD-200101663	LCSD	64	61	50	59	67	86
MB-200101663	MBLK	78	76	56	71	75	91

Acronym		Surrogate	QC Limits
NO2BZD5	=	Nitrobenzene-d5	45-118
PH246BR	=	2,4,6-Tribromophenol	32-162
PH2F	=	2-Fluorophenol	15-142
PHD5	=	Phenol-d5	18-136
PHEN2F	=	2-Fluorobiphenyl	38-129
PHEND14	=	Terphenyl-d14	10-154

*** Surrogate recovery outside acceptance limits**

D - Diluted due to matrix or extended target compounds

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Friday July 13 2001 [illegible] AM

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106202 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106202-01B **Sample Type:** SAMP

Client Sample ID: KWS-MW-12
Alt. Client ID:
Collection Date: 6/27/01 10:05:00 AM
Matrix: WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
SEMIVOLATILE ORGANICS BY METHOD 8270C 1_8270C_3520C_W								
1,2,4-Trichlorobenzene	ND		10.0	µg/L	1	7/6/01 5:37:00 PM	KIM_010706A	DCE
1,2-Dichlorobenzene	ND		10.0	µg/L	1			
1,3-Dichlorobenzene	ND		10.0	µg/L	1			
1,4-Dichlorobenzene	ND		10.0	µg/L	1			
2,4,5-Trichlorophenol	ND		50.0	µg/L	1			
2,4,6-Trichlorophenol	ND		10.0	µg/L	1			
2,4-Dichlorophenol	ND		10.0	µg/L	1			
2,4-Dimethylphenol	ND		10.0	µg/L	1			
2,4-Dinitrophenol	ND		50.0	µg/L	1			
2,4-Dinitrotoluene	ND		10.0	µg/L	1			
2,6-Dinitrotoluene	ND		10.0	µg/L	1			
2-Chloronaphthalene	ND		10.0	µg/L	1			
2-Chlorophenol	ND		10.0	µg/L	1			
2-Methylnaphthalene	ND		10.0	µg/L	1			
2-Methylphenol	ND		10.0	µg/L	1			
2-Nitroaniline	ND		50.0	µg/L	1			
2-Nitrophenol	ND		10.0	µg/L	1			
3,3'-Dichlorobenzidine	ND		20.0	µg/L	1			
3-Nitroaniline	ND		50.0	µg/L	1			
4,6-Dinitro-2-methylphenol	ND		50.0	µg/L	1			
4-Bromophenyl phenyl ether	ND		10.0	µg/L	1			
4-Chloro-3-methylphenol	ND		10.0	µg/L	1			
4-Chloroaniline	ND		10.0	µg/L	1			
4-Chlorophenyl phenyl ether	ND		10.0	µg/L	1			
4-Methylphenol	ND		10.0	µg/L	1			
4-Nitroaniline	ND		50.0	µg/L	1			
4-Nitrophenol	ND		50.0	µg/L	1			
Acenaphthene	ND		10.0	µg/L	1			
Acenaphthylene	ND		10.0	µg/L	1			
Anthracene	ND		10.0	µg/L	1			
Benz(a)anthracene	ND		10.0	µg/L	1			
Benzo(a)pyrene	ND		10.0	µg/L	1			
Benzo(b)fluoranthene	ND		10.0	µg/L	1			
Benzo(g,h,i)perylene	ND		10.0	µg/L	1			
Benzo(k)fluoranthene	ND		10.0	µg/L	1			
Benzoic acid	ND		150	µg/L	1			
Benzyl alcohol	ND		10.0	µg/L	1			
Bis(2-chloroethoxy)methane	ND		10.0	µg/L	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	KWS-MW-12
Lab Order:	0106202 CPID: 001096.GT05.01..	Alt. Client ID:	
Project:	Kenilworth RI/FS	Collection Date:	6/27/01 10:05:00 AM
Lab ID:	0106202-01B Sample Type: SAMP	Matrix:	WATER % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
SEMIVOLATILE ORGANICS BY METHOD 8270C								
1_8270C_3520C_W								
Bis(2-chloroethyl)ether	ND		10.0	µg/L	1			
Bis(2-chloroisopropyl)ether	ND		10.0	µg/L	1			
Bis(2-ethylhexyl)phthalate	6.63	J	10.0	µg/L	1			
Butyl benzyl phthalate	ND		10.0	µg/L	1			
Carbazole	ND		10.0	µg/L	1			
Chrysene	ND		10.0	µg/L	1			
Di-n-butyl phthalate	ND		10.0	µg/L	1			
Di-n-octyl phthalate	ND		10.0	µg/L	1			
Dibenz(a,h)anthracene	ND		10.0	µg/L	1			
Dibenzofuran	ND		10.0	µg/L	1			
Diethyl phthalate	ND		10.0	µg/L	1			
Dimethyl phthalate	ND		10.0	µg/L	1			
Fluoranthene	ND		10.0	µg/L	1			
Fluorene	ND		10.0	µg/L	1			
Hexachlorobenzene	ND		10.0	µg/L	1			
Hexachlorobutadiene	ND		10.0	µg/L	1			
Hexachlorocyclopentadiene	ND		50.0	µg/L	1			
Hexachloroethane	ND		10.0	µg/L	1			
Indeno(1,2,3-cd)pyrene	ND		10.0	µg/L	1			
Isophorone	ND		10.0	µg/L	1			
N-Nitrosodi-n-propylamine	ND		10.0	µg/L	1			
N-Nitrosodimethylamine	ND		10.0	µg/L	1			
N-Nitrosodiphenylamine	ND		10.0	µg/L	1			
Naphthalene	ND		10.0	µg/L	1			
Nitrobenzene	ND		10.0	µg/L	1			
Pentachlorophenol	ND		50.0	µg/L	1			
Phenanthrene	ND		10.0	µg/L	1			
Phenol	ND		10.0	µg/L	1			
Pyrene	ND		10.0	µg/L	1			
Surr:2,4,6-Tribromophenol	85		32 - 162	%REC	1	7/6/01 5:37:00 PM	KIM_010706A	DCE
Surr:2-Fluorobiphenyl	79		38 - 129	%REC	1			
Surr:2-Fluorophenol	42		15 - 142	%REC	1			
Surr:Nitrobenzene-d5	76		45 - 118	%REC	1			
Surr:Phenol-d5	59		18 - 136	%REC	1			
Surr:Terphenyl-d14	75		10 - 154	%REC	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106202 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106202-02B **Sample Type:** SAMP

Client Sample ID: KWS-MW-12D
Alt. Client ID:
Collection Date: 6/27/01 10:05:00 AM
Matrix: WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
SEMIVOLATILE ORGANICS BY METHOD 8270C								
1_8270C_3520C_W								
1,2,4-Trichlorobenzene	ND		10.0	µg/L	1	7/6/01 6:21:00 PM	KIM_010706A	DCE
1,2-Dichlorobenzene	ND		10.0	µg/L	1			
1,3-Dichlorobenzene	ND		10.0	µg/L	1			
1,4-Dichlorobenzene	ND		10.0	µg/L	1			
2,4,5-Trichlorophenol	ND		50.0	µg/L	1			
2,4,6-Trichlorophenol	ND		10.0	µg/L	1			
2,4-Dichlorophenol	ND		10.0	µg/L	1			
2,4-Dimethylphenol	ND		10.0	µg/L	1			
2,4-Dinitrophenol	ND		50.0	µg/L	1			
2,4-Dinitrotoluene	ND		10.0	µg/L	1			
2,6-Dinitrotoluene	ND		10.0	µg/L	1			
2-Chloronaphthalene	ND		10.0	µg/L	1			
2-Chlorophenol	ND		10.0	µg/L	1			
2-Methylnaphthalene	ND		10.0	µg/L	1			
2-Methylphenol	ND		10.0	µg/L	1			
2-Nitroaniline	ND		50.0	µg/L	1			
2-Nitrophenol	ND		10.0	µg/L	1			
3,3'-Dichlorobenzidine	ND		20.0	µg/L	1			
3-Nitroaniline	ND		50.0	µg/L	1			
4,6-Dinitro-2-methylphenol	ND		50.0	µg/L	1			
4-Bromophenyl phenyl ether	ND		10.0	µg/L	1			
4-Chloro-3-methylphenol	ND		10.0	µg/L	1			
4-Chloroaniline	ND		10.0	µg/L	1			
4-Chlorophenyl phenyl ether	ND		10.0	µg/L	1			
4-Methylphenol	ND		10.0	µg/L	1			
4-Nitroaniline	ND		50.0	µg/L	1			
4-Nitrophenol	ND		50.0	µg/L	1			
Acenaphthene	ND		10.0	µg/L	1			
Acenaphthylene	ND		10.0	µg/L	1			
Anthracene	ND		10.0	µg/L	1			
Benz(a)anthracene	ND		10.0	µg/L	1			
Benzo(a)pyrene	ND		10.0	µg/L	1			
Benzo(b)fluoranthene	ND		10.0	µg/L	1			
Benzo(g,h,i)perylene	ND		10.0	µg/L	1			
Benzo(k)fluoranthene	ND		10.0	µg/L	1			
Benzoic acid	ND		150	µg/L	1			
Benzyl alcohol	ND		10.0	µg/L	1			
Bis(2-chloroethoxy)methane	ND		10.0	µg/L	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-MW-12D
Lab Order:	0106202 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/27/01 10:05:00 AM
Lab ID:	0106202-02B **Sample Type:** SAMP	**Matrix:**	WATER % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
SEMIVOLATILE ORGANICS BY METHOD 8270C								
1_8270C_3520C_W								
Bis(2-chloroethyl)ether	ND		10.0	µg/L	1			
Bis(2-chloroisopropyl)ether	ND		10.0	µg/L	1			
Bis(2-ethylhexyl)phthalate	ND		10.0	µg/L	1			
Butyl benzyl phthalate	ND		10.0	µg/L	1			
Carbazole	ND		10.0	µg/L	1			
Chrysene	ND		10.0	µg/L	1			
Di-n-butyl phthalate	ND		10.0	µg/L	1			
Di-n-octyl phthalate	ND		10.0	µg/L	1			
Dibenz(a,h)anthracene	ND		10.0	µg/L	1			
Dibenzofuran	ND		10.0	µg/L	1			
Diethyl phthalate	ND		10.0	µg/L	1			
Dimethyl phthalate	ND		10.0	µg/L	1			
Fluoranthene	ND		10.0	µg/L	1			
Fluorene	ND		10.0	µg/L	1			
Hexachlorobenzene	ND		10.0	µg/L	1			
Hexachlorobutadiene	ND		10.0	µg/L	1			
Hexachlorocyclopentadiene	ND		50.0	µg/L	1			
Hexachloroethane	ND		10.0	µg/L	1			
Indeno(1,2,3-cd)pyrene	ND		10.0	µg/L	1			
Isophorone	ND		10.0	µg/L	1			
N-Nitrosodi-n-propylamine	ND		10.0	µg/L	1			
N-Nitrosodimethylamine	ND		10.0	µg/L	1			
N-Nitrosodiphenylamine	ND		10.0	µg/L	1			
Naphthalene	ND		10.0	µg/L	1			
Nitrobenzene	ND		10.0	µg/L	1			
Pentachlorophenol	ND		50.0	µg/L	1			
Phenanthrene	ND		10.0	µg/L	1			
Phenol	ND		10.0	µg/L	1			
Pyrene	ND		10.0	µg/L	1			
Surr:2,4,6-Tribromophenol	83		32 - 162	%REC	1	7/6/01 6:21:00 PM	KIM_010706A	DCE
Surr:2-Fluorobiphenyl	76		38 - 129	%REC	1			
Surr:2-Fluorophenol	49		15 - 142	%REC	1			
Surr:Nitrobenzene-d5	73		45 - 118	%REC	1			
Surr:Phenol-d5	59		18 - 136	%REC	1			
Surr:Terphenyl-d14	69		10 - 154	%REC	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106202
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

Semivolatile Organics by Method 8270C

Test Code: *1_8270C_3520C_W* Units: *µg/L*

Sample ID: **MB-200101663** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **KIM_010706A** SeqNo: **377579** Analysis Date **7/6/01 8:44:00 AM** Prep Batch ID: 200101663 Prep Date: **6/28/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	1,2,4-Trichlorobenzene	ND	10.00								
A	1,2-Dichlorobenzene	ND	10.00								
A	1,3-Dichlorobenzene	ND	10.00								
A	1,4-Dichlorobenzene	ND	10.00								
A	2,4,5-Trichlorophenol	ND	50.00								
A	2,4,6-Trichlorophenol	ND	10.00								
A	2,4-Dichlorophenol	ND	10.00								
A	2,4-Dimethylphenol	ND	10.00								
A	2,4-Dinitrophenol	ND	50.00								
A	2,4-Dinitrotoluene	ND	10.00								
A	2,6-Dinitrotoluene	ND	10.00								
A	2-Chloronaphthalene	ND	10.00								
A	2-Chlorophenol	ND	10.00								
A	2-Methylnaphthalene	ND	10.00								
A	2-Methylphenol	ND	10.00								
A	2-Nitroaniline	ND	50.00								
A	2-Nitrophenol	ND	10.00								
A	3,3'-Dichlorobenzidine	ND	20.00								
A	3-Nitroaniline	ND	50.00								
A	4,6-Dinitro-2-methylphenol	ND	50.00								
A	4-Bromophenyl phenyl ether	ND	10.00								
A	4-Chloro-3-methylphenol	ND	10.00								
A	4-Chloroaniline	ND	10.00								

Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

Ecology & Environment Inc. LIMS Version 3.1.1.9 - 7/6/01 2:00:00 PM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106202
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

Semivolatile Organics by Method 8270C

Test Code: *1_8270C_3520C_W* Units: *µg/L*

Sample ID: **MB-200101663** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **KIM_010706A** SeqNo: **377579** Analysis Date **7/6/01 8:44:00 AM** Prep Batch ID: **200101663** Prep Date: **6/28/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	4-Chlorophenyl phenyl ether	ND	10.00								
A	4-Methylphenol	ND	10.00								
A	4-Nitroaniline	ND	50.00								
A	4-Nitrophenol	ND	50.00								
A	Acenaphthene	ND	10.00								
A	Acenaphthylene	ND	10.00								
A	Anthracene	ND	10.00								
A	Benz(a)anthracene	ND	10.00								
A	Benzo(a)pyrene	ND	10.00								
A	Benzo(b)fluoranthene	ND	10.00								
A	Benzo(g,h,i)perylene	ND	10.00								
A	Benzo(k)fluoranthene	ND	10.00								
A	Benzoic acid	ND	150.0								
A	Benzyl alcohol	ND	10.00								
A	Bis(2-chloroethoxy)methane	ND	10.00								
A	Bis(2-chloroethyl)ether	ND	10.00								
A	Bis(2-chloroisopropyl)ether	ND	10.00								
A	Bis(2-ethylhexyl)phthalate	ND	10.00								
A	Butyl benzyl phthalate	ND	10.00								
A	Carbazole	ND	10.00								
A	Chrysene	ND	10.00								
A	Di-n-butyl phthalate	ND	10.00								
A	Di-n-octyl phthalate	ND	10.00								

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106202
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

Semivolatile Organics by Method 8270C

Test Code: *1_8270C_3520C_W* Units: *µg/L*

Sample ID: **MB-200101663** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **KIM_010706A** SeqNo: **377579** Analysis Date **7/6/01 8:44:00 AM** Prep Batch ID: **200101663** Prep Date: **6/28/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Dibenz(a,h)anthracene	ND	10.00								
A	Dibenzofuran	ND	10.00								
A	Diethyl phthalate	ND	10.00								
A	Dimethyl phthalate	ND	10.00								
A	Fluoranthene	ND	10.00								
A	Fluorene	ND	10.00								
A	Hexachlorobenzene	ND	10.00								
A	Hexachlorobutadiene	ND	10.00								
A	Hexachlorocyclopentadiene	ND	50.00								
A	Hexachloroethane	ND	10.00								
A	Indeno(1,2,3-cd)pyrene	ND	10.00								
A	Isophorone	ND	10.00								
A	N-Nitrosodi-n-propylamine	ND	10.00								
A	N-Nitrosodimethylamine	ND	10.00								
A	N-Nitrosodiphenylamine	ND	10.00								
A	Naphthalene	ND	10.00								
A	Nitrobenzene	ND	10.00								
A	Pentachlorophenol	ND	50.00								
A	Phenanthrene	ND	10.00								
A	Phenol	ND	10.00								
A	Pyrene	ND	10.00								
S	2,4,6-Tribromophenol	45.55	0			76	32	162			
S	2-Fluorobiphenyl	37.59	0			75	38	129			

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106202
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

Semivolatile Organics by Method 8270C Test Code: *1_8270C_3520C_W* Units: *µg/L*

Sample ID: **MB-200101663** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **KIM_010706A** SeqNo: **377579** Analysis Date **7/6/01 8:44:00 AM** Prep Batch ID: **200101663** Prep Date: **6/28/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
S	2-Fluorophenol	33.85	0			56	15	142			
S	Nitrobenzene-d5	38.87	0			78	45	118			
S	Phenol-d5	42.65	0			71	18	136			
S	Terphenyl-d14	45.28	0			91	10	154			

J-63

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Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106202
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

Semivolatile Organics by Method 8270C

Sample ID: **LCS-200101663** Client Sample ID:
Test Code: *1_8270C_3520C_W* Units: *µg/L*
Run Batch ID: **KIM_010706A** SeqNo: **377589** Analysis Date **7/6/01 9:28:00 AM** Prep Batch ID: **200101663** DF: 1 DL_No: 1 Prep Date: **6/28/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	1,2,4-Trichlorobenzene	20.11	10.00	30.00	0	67	34	119			
A	1,4-Dichlorobenzene	19.09	10.00	30.00	0	64	31	116			
A	2,4-Dinitrotoluene	23.14	10.00	30.00	0	77	47	128			
A	2-Chlorophenol	20.87	10.00	30.00	0	70	29	130			
A	4-Chloro-3-methylphenol	23.29	10.00	30.00	0	78	34	133			
A	4-Nitrophenol	24.15	50.00	30.00	0	81	10	115			J
A	Acenaphthene	19.32	10.00	30.00	0	64	38	130			
A	N-Nitrosodi-n-propylamine	19.33	10.00	30.00	0	64	34	117			
A	Pentachlorophenol	46.37	50.00	30.00	0	155	43	129			J*
A	Phenol	20.29	10.00	30.00	0	68	27	131			
A	Pyrene	17.11	10.00	30.00	0	57	27	130			
S	2,4,6-Tribromophenol	47.09	0	60.00	0	78	32	162			
S	2-Fluorobiphenyl	40.57	0	50.00	0	81	38	129			
S	2-Fluorophenol	35.38	0	60.00	0	59	15	142			
S	Nitrobenzene-d5	40.65	0	50.00	0	81	45	118			
S	Phenol-d5	45.14	0	60.00	0	75	18	136			
S	Terphenyl-d14	47.79	0	50.00	0	96	10	154			

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106202
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike Duplicate

Semivolatile Organics by Method 8270C Test Code: *1_8270C_3520C_W* Units: *µg/L*

Sample ID: **LCSD-200101663** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **KIM_010706A** SeqNo: **377588** Analysis Date **7/6/01 10:13:00 AM** Prep Batch ID: **200101663** Prep Date: **6/28/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	1,2,4-Trichlorobenzene	16.51	10.00	30.00	0	55	34	119			
A	1,4-Dichlorobenzene	15.80	10.00	30.00	0	53	31	116			
A	2,4-Dinitrotoluene	17.76	10.00	30.00	0	59	47	128			
A	2-Chlorophenol	17.22	10.00	30.00	0	57	29	130			
A	4-Chloro-3-methylphenol	17.91	10.00	30.00	0	60	34	133			
A	4-Nitrophenol	19.08	50.00	30.00	0	64	10	115			J
A	Acenaphthene	15.16	10.00	30.00	0	51	38	130			
A	N-Nitrosodi-n-propylamine	16.92	10.00	30.00	0	56	34	117			
A	Pentachlorophenol	21.76	50.00	30.00	0	73	43	129			J
A	Phenol	16.31	10.00	30.00	0	54	27	131			
A	Pyrene	14.19	10.00	30.00	0	47	27	130			
S	2,4,6-Tribromophenol	36.31	0	60.00	0	61	32	162			
S	2-Fluorobiphenyl	33.36	0	50.00	0	67	38	129			
S	2-Fluorophenol	29.79	0	60.00	0	50	15	142			
S	Nitrobenzene-d5	31.97	0	50.00	0	64	45	118			
S	Phenol-d5	35.58	0	60.00	0	59	18	136			
S	Terphenyl-d14	42.76	0	50.00	0	86	10	154			

Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

GC SEMIVOLATILES

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Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106202
Project: Kenilworth RI/FS
Test Code: 1_8081A_3510C_W
Batch ID: V34004A_010702A

QC SUMMARY REPORT
SURROGATE RECOVERIES

Pesticides by Method 8081A

Sample ID	Type	CL10BZ2	XYL2456CLM
0106202-01B	SAMP	71	74
0106202-02B	SAMP	78	71
LCS-200101664	LCS	91	68
LCSD-200101664	LCSD	100	68
MB-200101664	MBLK	90	48

Acronym		Surrogate	QC Limits
CL10BZ2	=	Decachlorobiphenyl	12-132
XYL2456CLM	=	Tetrachloro-m-xylene	31-122

*** Surrogate recovery outside acceptance limits**

D - Diluted due to matrix or extended target compounds

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Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106202 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106202-01B **Sample Type:** SAMP

Client Sample ID: KWS-MW-12
Alt. Client ID:
Collection Date: 6/27/01 10:05:00 AM
Matrix: WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PESTICIDES BY METHOD 8081A								
1_8081A_3510C_W								
4,4'-DDD	ND		0.0900	µg/L	1	7/3/01 9:15:06 AM	V34004A_010702A	RN
4,4'-DDE	ND		0.100	µg/L	1			
4,4'-DDT	ND		0.100	µg/L	1			
Aldrin	ND		0.0700	µg/L	1			
alpha-BHC	ND		0.0400	µg/L	1			
alpha-Chlordane	ND		0.0600	µg/L	1			
beta-BHC	ND		0.0500	µg/L	1			
delta-BHC	ND		0.0600	µg/L	1			
Dieldrin	ND		0.100	µg/L	1			
Endosulfan I	ND		0.0500	µg/L	1			
Endosulfan II	ND		0.180	µg/L	1			
Endosulfan sulfate	ND		0.400	µg/L	1			
Endrin	ND		0.100	µg/L	1			
Endrin aldehyde	ND		0.300	µg/L	1			
Endrin ketone	ND		0.200	µg/L	1			
gamma-BHC	ND		0.0400	µg/L	1			
gamma-Chlordane	ND		0.0500	µg/L	1			
Heptachlor	ND		0.100	µg/L	1			
Heptachlor epoxide	ND		0.100	µg/L	1			
Methoxychlor	ND		1.00	µg/L	1			
Toxaphene	ND		3.00	µg/L	1			
Surr:Decachlorobiphenyl	71		12 - 132	%REC	1	7/3/01 9:15:06 AM	V34004A_010702A	RN
Surr:Tetrachloro-m-xylene	74		31 - 122	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Ecology and Environment, Inc.

Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106202 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106202-02B **Sample Type:** SAMP

Client Sample ID: KWS-MW-12D
Alt. Client ID:
Collection Date: 6/27/01 10:05:00 AM
Matrix: WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PESTICIDES BY METHOD 8081A								
1_8081A_3510C_W								
4,4'-DDD	ND		0.0900	µg/L	1	7/3/01 9:57:52 AM	V34004A_010702A	RN
4,4'-DDE	ND		0.100	µg/L	1			
4,4'-DDT	ND		0.100	µg/L	1			
Aldrin	ND		0.0700	µg/L	1			
alpha-BHC	ND		0.0400	µg/L	1			
alpha-Chlordane	ND		0.0600	µg/L	1			
beta-BHC	ND		0.0500	µg/L	1			
delta-BHC	ND		0.0600	µg/L	1			
Dieldrin	ND		0.100	µg/L	1			
Endosulfan I	ND		0.0500	µg/L	1			
Endosulfan II	ND		0.180	µg/L	1			
Endosulfan sulfate	ND		0.400	µg/L	1			
Endrin	ND		0.100	µg/L	1			
Endrin aldehyde	ND		0.300	µg/L	1			
Endrin ketone	ND		0.200	µg/L	1			
gamma-BHC	ND		0.0400	µg/L	1			
gamma-Chlordane	ND		0.0500	µg/L	1			
Heptachlor	ND		0.100	µg/L	1			
Heptachlor epoxide	ND		0.100	µg/L	1			
Methoxychlor	ND		1.00	µg/L	1			
Toxaphene	ND		3.00	µg/L	1			
Surr:Decachlorobiphenyl	78		12 - 132	%REC	1	7/3/01 9:57:52 AM	V34004A_010702A	RN
Surr:Tetrachloro-m-xylene	71		31 - 122	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106202
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

Pesticides by Method 8081A

Sample ID: **MB-200101664** Client Sample ID: Test Code: *1_8081A_3510C_W* Units: µg/L
Run Batch ID: **V34004A_010702A** SeqNo: **381817** Analysis Date **7/3/01 6:24:25 AM** Prep Batch ID: **200101664** DF: 1 DL_No: 1 Prep Date: **6/28/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	4,4'-DDD	ND	0.09000								
A	4,4'-DDE	ND	0.1000								
A	4,4'-DDT	ND	0.1000								
A	Aldrin	ND	0.07000								
A	alpha-BHC	ND	0.04000								
A	alpha-Chlordane	ND	0.06000								
A	beta-BHC	ND	0.05000								
A	delta-BHC	ND	0.06000								
A	Dieldrin	ND	0.1000								
A	Endosulfan I	ND	0.05000								
A	Endosulfan II	ND	0.1800								
A	Endosulfan sulfate	ND	0.4000								
A	Endrin	ND	0.1000								
A	Endrin aldehyde	ND	0.3000								
A	Endrin ketone	ND	0.2000								
A	gamma-BHC	ND	0.04000								
A	gamma-Chlordane	ND	0.05000								
A	Heptachlor	ND	0.1000								
A	Heptachlor epoxide	ND	0.1000								
A	Methoxychlor	ND	1.000								
A	Toxaphene	ND	3.000								
S	Decachlorobiphenyl	0.1797	0			90	12	132			
S	Tetrachloro-m-xylene	0.09643	0			48	31	122			

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106202
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

Pesticides by Method 8081A Test Code: *1_8081A_3510C_W* Units: µg/L

Sample ID: **LCS-200101664** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **V34004A_010702A** SeqNo: **381821** Analysis Date **7/3/01 7:07:03 AM** Prep Batch ID: **200101664** Prep Date: **6/28/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	4,4'-DDD	0.09319	0.09000	0.1000	0	93	64	133			
A	4,4'-DDE	0.09175	0.1000	0.1000	0	92	49	143			J
A	4,4'-DDT	0.1648	0.1000	0.2000	0	82	61	148			
A	Aldrin	0.06805	0.07000	0.1000	0	68	22	168			J
A	alpha-BHC	0.08644	0.04000	0.1000	0	86	51	130			
A	alpha-Chlordane	0.08916	0.06000	0.1000	0	89	33	129			
A	beta-BHC	0.09030	0.05000	0.1000	0	90	58	127			
A	delta-BHC	0.09196	0.06000	0.1000	0	92	10	146			
A	Dieldrin	0.09242	0.1000	0.1000	0	92	55	165			J
A	Endosulfan I	0.08452	0.05000	0.1000	0	85	62	114			
A	Endosulfan II	0.09034	0.1800	0.1000	0	90	48	128			J
A	Endosulfan sulfate	0.1648	0.4000	0.2000	0	82	54	126			J
A	Endrin	0.09016	0.1000	0.1000	0	90	56	161			J
A	Endrin aldehyde	0.09945	0.3000	0.1000	0	99	33	129			J
A	Endrin ketone	0.09646	0.2000	0.1000	0	96	47	118			J
A	gamma-BHC	0.08825	0.04000	0.1000	0	88	56	144			
A	gamma-Chlordane	0.08647	0.05000	0.1000	0	86	38	124			
A	Heptachlor	0.08643	0.1000	0.1000	0	86	44	155			J
A	Heptachlor epoxide	0.08981	0.1000	0.1000	0	90	46	127			J
A	Methoxychlor	0.8291	1.000	1.000	0	83	67	135			J
S	Decachlorobiphenyl	0.1819	0	0.2000	0	91	12	132			
S	Tetrachloro-m-xylene	0.1352	0	0.2000	0	68	31	122			

Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106202
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike Duplicate

Pesticides by Method 8081A

Test Code: *1_8081A_3510C_W* Units: µg/L

Sample ID: **LCSD-200101664** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **V34004A_010702A** SeqNo: **381820** Analysis Date **7/3/01 7:49:38 AM** Prep Batch ID: 200101664 Prep Date: 6/28/01

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	4,4'-DDD	0.1027	0.09000	0.1000	0	103	64	133	9.7	20	
A	4,4'-DDE	0.09784	0.1000	0.1000	0	98	49	143	6.4	20	J
A	4,4'-DDT	0.1836	0.1000	0.2000	0	92	61	148	10.8	20	
A	Aldrin	0.06915	0.07000	0.1000	0	69	22	168	1.6	20	J
A	alpha-BHC	0.09031	0.04000	0.1000	0	90	51	130	4.4	20	
A	alpha-Chlordane	0.09596	0.06000	0.1000	0	96	33	129	7.3	20	
A	beta-BHC	0.09750	0.05000	0.1000	0	98	58	127	7.7	20	
A	delta-BHC	0.1007	0.06000	0.1000	0	101	10	146	9.1	20	
A	Dieldrin	0.09949	0.1000	0.1000	0	99	55	165	7.4	20	J
A	Endosulfan I	0.09079	0.05000	0.1000	0	91	62	114	7.2	20	
A	Endosulfan II	0.09943	0.1800	0.1000	0	99	48	128	9.6	20	J
A	Endosulfan sulfate	0.1836	0.4000	0.2000	0	92	54	126	10.8	20	J
A	Endrin	0.09832	0.1000	0.1000	0	98	56	161	8.7	20	J
A	Endrin aldehyde	0.1140	0.3000	0.1000	0	114	33	129	13.6	20	J
A	Endrin ketone	0.1080	0.2000	0.1000	0	108	47	118	11.3	20	J
A	gamma-BHC	0.09280	0.04000	0.1000	0	93	56	144	5.0	20	
A	gamma-Chlordane	0.09273	0.05000	0.1000	0	93	38	124	7.0	20	
A	Heptachlor	0.08439	0.1000	0.1000	0	84	44	155	2.4	20	J
A	Heptachlor epoxide	0.09549	0.1000	0.1000	0	95	46	127	6.1	20	J
A	Methoxychlor	0.9332	1.000	1.000	0	93	67	135	11.8	20	J
S	Decachlorobiphenyl	0.1999	0	0.2000	0	100	12	132	0.0	0	
S	Tetrachloro-m-xylene	0.1369	0	0.2000	0	68	31	122	0.0	0	

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Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

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Analytical Services Center
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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106202
Project: Kenilworth RI/FS
Test Code: 1_8082_3510C_W
Batch ID: HP58902A_010629B

QC SUMMARY REPORT
SURROGATE RECOVERIES

PCBs by Method 8082

Sample ID	Type	CL10BZ2	XYL2456CLM
0106202-01B	SAMP	67	77
0106202-02B	SAMP	73	78
LCS-200101665	LCS	85	68
LCSD-200101665	LCSD	90	63
MB-200101665	MBLK	90 *	71

Acronym		Surrogate	QC Limits
CL10BZ2	=	Decachlorobiphenyl	18-112
XYL2456CLM	=	Tetrachloro-m-xylene	32-110

*** Surrogate recovery outside acceptance limits**

D - Diluted due to matrix or extended target compounds

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106202 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106202-01B **Sample Type:** SAMP

Client Sample ID: KWS-MW-12
Alt. Client ID:
Collection Date: 6/27/01 10:05:00 AM
Matrix: WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082 1_8082_3510C_W								
Aroclor 1016	ND		0.500	µg/L	1	7/1/01 2:11:30 AM	HP58902A_010629B	RN
Aroclor 1221	ND		1.00	µg/L	1			
Aroclor 1232	ND		0.500	µg/L	1			
Aroclor 1242	0.327	J	0.500	µg/L	1			
Aroclor 1248	ND		0.500	µg/L	1			
Aroclor 1254	ND		0.500	µg/L	1			
Aroclor 1260	ND		0.500	µg/L	1			
Surr:Decachlorobiphenyl	67		18 - 112	%REC	1	7/1/01 2:11:30 AM	HP58902A_010629B	RN
Surr:Tetrachloro-m-xylene	77		32 - 110	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106202 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106202-02B **Sample Type:** SAMP

Client Sample ID: KWS-MW-12D
Alt. Client ID:
Collection Date: 6/27/01 10:05:00 AM
Matrix: WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3510C_W								
Aroclor 1016	ND		0.500	µg/L	1	7/1/01 2:56:40 AM	HP58902A_010629B	RN
Aroclor 1221	ND		1.00	µg/L	1			
Aroclor 1232	ND		0.500	µg/L	1			
Aroclor 1242	0.317	J	0.500	µg/L	1			
Aroclor 1248	ND		0.500	µg/L	1			
Aroclor 1254	ND		0.500	µg/L	1			
Aroclor 1260	ND		0.500	µg/L	1			
Surr:Decachlorobiphenyl	73		18 - 112	%REC	1	7/1/01 2:56:40 AM	HP58902A_010629B	RN
Surr:Tetrachloro-m-xylene	78		32 - 110	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106202
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

PCBs by Method 8082 Test Code: *1_8082_3510C_W* Units: µg/L

Sample ID: **MB-200101665** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **HP58902A_010629B** SeqNo: **375503** Analysis Date **6/30/01 8:10:45 PM** Prep Batch ID: **200101665** Prep Date: **6/28/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Aroclor 1016	ND	0.5000								
A	Aroclor 1221	ND	1.000								
A	Aroclor 1232	ND	0.5000								
A	Aroclor 1242	ND	0.5000								
A	Aroclor 1248	ND	0.5000								
A	Aroclor 1254	ND	0.5000								
A	Aroclor 1260	ND	0.5000								
S	Decachlorobiphenyl	0.1801	0			90	18	112			
S	Tetrachloro-m-xylene	0.1414	0			71	32	110			

Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106202
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

PCBs by Method 8082 Test Code: *1_8082_3510C_W* Units: µg/L

Sample ID: **LCS-200101665** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **HP58902A_010629B** SeqNo: **375511** Analysis Date **6/30/01 8:55:51 PM** Prep Batch ID: **200101665** Prep Date: **6/28/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Aroclor 1016	3.942	0.5000	5.000	0	79	50	124			
A	Aroclor 1260	4.173	0.5000	5.000	0	83	52	127			
S	Decachlorobiphenyl	0.1708	0	0.2000	0	85	18	112			
S	Tetrachloro-m-xylene	0.1368	0	0.2000	0	68	32	110			

Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

Ecology and Environment, Inc.

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106202
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike Duplicate

PCBs by Method 8082

Test Code: *1_8082_3510C_W* Units: µg/L

Sample ID: **LCSD-200101665** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **HP58902A_010629B** SeqNo: **375510** Analysis Date **6/30/01 9:40:53 PM** Prep Batch ID: **200101665** Prep Date: **6/28/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Aroclor 1016	3.852	0.5000	5.000	0	77	50	124	2.3	30	
A	Aroclor 1260	4.222	0.5000	5.000	0	84	52	127	1.2	30	
S	Decachlorobiphenyl	0.1808	0	0.2000	0	90	18	112	0.0	0	
S	Tetrachloro-m-xylene	0.1259	0	0.2000	0	63	32	110	0.0	0	

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Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

METALS

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Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106202 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106202-01C **Sample Type:** SAMP

Client Sample ID: KWS-MW-12
Alt. Client ID:
Collection Date: 6/27/01 10:05:00 AM
Matrix: WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B (DISSOLVED)								
1_6010B_TAL_D_W								
Aluminum	ND		200	µg/L	1	8/7/01 12:05:57 AM	OPTIMA3300_010806F	SHT
Antimony	4.55	J	10.0	µg/L	1			
Arsenic	ND		25.0	µg/L	1			
Barium	287		20.0	µg/L	1			
Beryllium	ND		5.00	µg/L	1			
Cadmium	ND		5.00	µg/L	1			
Calcium	114000		1500	µg/L	1	8/7/01 4:46:27 PM	OPTIMA3300_010807C	
Chromium	ND		10.0	µg/L	1	8/7/01 12:05:57 AM	OPTIMA3300_010806F	
Cobalt	ND		20.0	µg/L	1			
Copper	6.07	J	20.0	µg/L	1			
Iron	9490		200	µg/L	1			
Lead	ND		5.00	µg/L	1			
Magnesium	29500		600	µg/L	1			
Manganese	360		10.0	µg/L	1			
Nickel	ND		20.0	µg/L	1			
Potassium	25200		500	µg/L	1			
Selenium	ND		20.0	µg/L	1			
Silver	ND		10.0	µg/L	1			
Sodium	66800		1500	µg/L	1			
Thallium	ND		20.0	µg/L	1			
Vanadium	ND		20.0	µg/L	1			
Zinc	24.0		10.0	µg/L	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.2.0 - 8/7/01 12:30:00 PM

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4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106202 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106202-02C **Sample Type:** SAMP

Client Sample ID: KWS-MW-12D
Alt. Client ID:
Collection Date: 6/27/01 10:05:00 AM
Matrix: WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B (DISSOLVED) 1_6010B_TAL_D_W								
Aluminum	ND		200	µg/L	1	8/7/01 12:10:13 AM	OPTIMA3300_010806F	SHT
Antimony	3.58	J	10.0	µg/L	1			
Arsenic	ND		25.0	µg/L	1			
Barium	289		20.0	µg/L	1			
Beryllium	ND		5.00	µg/L	1			
Cadmium	ND		5.00	µg/L	1			
Calcium	114000		1500	µg/L	1	8/7/01 4:49:08 PM	OPTIMA3300_010807C	
Chromium	ND		10.0	µg/L	1	8/7/01 12:10:13 AM	OPTIMA3300_010806F	
Cobalt	ND		20.0	µg/L	1			
Copper	4.53	J	20.0	µg/L	1			
Iron	9600		200	µg/L	1			
Lead	ND		5.00	µg/L	1			
Magnesium	29600		600	µg/L	1			
Manganese	364		10.0	µg/L	1			
Nickel	ND		20.0	µg/L	1			
Potassium	25200		500	µg/L	1			
Selenium	14.2	J	20.0	µg/L	1			
Silver	ND		10.0	µg/L	1			
Sodium	67000		1500	µg/L	1			
Thallium	ND		20.0	µg/L	1			
Vanadium	ND		20.0	µg/L	1			
Zinc	22.6		10.0	µg/L	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.2.0 - 8/7/01 12:30:00 PM

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Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106202
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

Dissolved Metals, TAL by ICP Method 6010B

Test Code: *1_6010B_TAL_D_W* Units: µg/L

Sample ID: **MB-200101717** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **OPTIMA3300_010806F** SeqNo: **392215** Analysis Date **8/6/01 11:35:32 PM** Prep Batch ID: **200101717** Prep Date: **7/5/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Aluminum	71.29	200.0								J
A	Antimony	ND	10.00								
A	Arsenic	ND	25.00								
A	Barium	ND	20.00								
A	Beryllium	ND	5.000								
A	Cadmium	ND	5.000								
A	Chromium	ND	10.00								
A	Cobalt	ND	20.00								
A	Copper	3.889	20.00								J
A	Iron	ND	200.0								
A	Lead	ND	5.000								
A	Magnesium	ND	600.0								
A	Manganese	ND	10.00								
A	Nickel	ND	20.00								
A	Potassium	54.40	500.0								J
A	Selenium	ND	20.00								
A	Silver	ND	10.00								
A	Sodium	ND	1500								
A	Thallium	ND	20.00								
A	Vanadium	ND	20.00								
A	Zinc	ND	10.00								

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106202
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

Dissolved Metals, TAL by ICP Method 6010B Test Code: *1_6010B_TAL_D_W* Units: µg/L

Sample ID: **MB-200101717** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **OPTIMA3300_010807C** SeqNo: **392655** Analysis Date **8/7/01 4:27:30 PM** Prep Batch ID: **200101717** Prep Date: **7/5/01**

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Calcium	ND	1500								

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106202
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

Dissolved Metals, TAL by ICP Method 6010B Test Code: *1_6010B_TAL_D_W* Units: µg/L

Sample ID: **LCS-200101717** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **OPTIMA3300_010806F** SeqNo: **392216** Analysis Date **8/6/01 11:40:23 PM** Prep Batch ID: **200101717** Prep Date: **7/5/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Aluminum	1097	200.0	1000	0	110	80	120			
A	Antimony	1031	10.00	1000	0	103	80	120			
A	Arsenic	1115	25.00	1000	0	111	80	120			
A	Barium	1065	20.00	1000	0	106	80	120			
A	Beryllium	1048	5.000	1000	0	105	80	120			
A	Cadmium	1046	5.000	1000	0	105	80	120			
A	Chromium	1048	10.00	1000	0	105	80	120			
A	Cobalt	1059	20.00	1000	0	106	80	120			
A	Copper	1050	20.00	1000	0	105	80	120			
A	Iron	1024	200.0	1000	0	102	80	120			
A	Lead	1059	5.000	1000	0	106	80	120			
A	Magnesium	10930	600.0	10000	0	109	80	120			
A	Manganese	1059	10.00	1000	0	106	80	120			
A	Nickel	1050	20.00	1000	0	105	80	120			
A	Potassium	10660	500.0	10000	0	107	80	120			
A	Selenium	1035	20.00	1000	0	104	80	120			
A	Silver	43.93	10.00	50.00	0	88	80	120			
A	Sodium	10880	1500	10000	0	109	80	120			
A	Thallium	1046	20.00	1000	0	105	80	120			
A	Vanadium	1035	20.00	1000	0	103	80	120			
A	Zinc	1053	10.00	1000	0	105	80	120			

Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

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Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106202
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

Dissolved Metals, TAL by ICP Method 6010B Test Code: *1_6010B_TAL_D_W* Units: µg/L

Sample ID: **LCS-200101717** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **OPTIMA3300_010807C** SeqNo: **392656** Analysis Date **8/7/01 4:30:27 PM** Prep Batch ID: **200101717** Prep Date: **7/5/01**

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Calcium	11740	1500	10000	0	117	80	120			

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Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

MERCURY

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Ecology and Environment, Inc.

Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-MW-12
Lab Order:	0106202 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	-
Project:	Kenilworth RI/FS	**Collection Date:**	6/27/01 10:05:00 AM
Lab ID:	0106202-01C **Sample Type:** SAMP	**Matrix:**	WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DISSOLVED MERCURY IN WATER BY METHOD 7470A								
1_7470A_HG_D_W								
Mercury	ND		0.200	µg/L	1	7/9/01 11:02:58 AM	LEEMAN_010709C	JLW

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier A -Result by Method of Std. Addition
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	D - Diluted due to matrix or extended target compounds
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-MW-12D
Lab Order:	0106202 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/27/01 10:05:00 AM
Lab ID:	0106202-02C **Sample Type:** SAMP	**Matrix:**	WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DISSOLVED MERCURY IN WATER BY METHOD 7470A								
1_7470A_HG_D_W								
Mercury	ND		0.200	µg/L	1	7/9/01 11:04:21 AM	LEEMAN_010709C	JLW

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106202
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

Dissolved Mercury in Water by Method 7470A Test Code: *1_7470A_HG_D_W* Units: µg/L

Sample ID: **MB-200101737** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **LEEMAN_010709C** SeqNo: **379183** Analysis Date: **7/9/01 10:40:31 AM** Prep Batch ID: **200101737** Prep Date: **7/6/01**

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Mercury	ND	0.2000								

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106202
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

Dissolved Mercury in Water by Method 7470A

Test Code: *1_7470A_HG_D_W* Units: µg/L

Sample ID: **LCS-200101737** Client Sample ID:

DF: 1 DL_No: 1

Run Batch ID: **LEEMAN_010709C** SeqNo: **379184** Analysis Date: **7/9/01 10:41:59 AM** Prep Batch ID: **200101737** Prep Date: **7/6/01**

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Mercury	0.9878	0.2000	1.000	0	99	80	120			

Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

Ecology & Environment Inc. LIMS Version 3.1.1.9 - 7/6/01 2:00:00 PM

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Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

August 09, 2001

Mr. Nate Gahr
E and E Washington D.C. Office
1700 North Moore St.
Suite 1610
Arlington, VA 22209

RE: Kenilworth RI/FS

CostPoint ID: **001096.GT05.01..**

Work Order No.: **0106216**

Dear Mr. Nate Gahr,

Ecology and Environment, Inc. received 2 samples on Saturday, June 30, 2001 for the analyses presented in the following report.

E & E will retain the samples addressed in this report for 30 days, unless otherwise instructed by the client. If additional storage is requested, the storage fee is $1.00 per sample container per month, to accrue until the client authorizes sample destruction.

Sincerely,

Tony Bogolin

Tony Bogolin
Project Manager

CC:
Enclosures as note

This report ends on page 61

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CHAIN OF CUSTODY RECORD

ASC analytical services center

Ecology and Environment, Inc., Analytical Services Center
4493 Walden Avenue, Lancaster, New York, 14086, Tel: 716/685-8080, Fax 716/685-0852
Where Scientific Excellence and Efficiency Meet

Cooler No: _____
Lab: _____

Page: 1 of 1

PROJECT No: 001096.GT05.01
SITE NAME: KENILWORTH PARK SOUTH RIFS
LOCATION: (Include State) WASHINGTON DC.
CLIENT: NATIONAL PARK SERVICE
PROJECT MANAGER: JOHN PASCH
OFFICE No: WDC
FIELD TEAM LEADER: NATHANIAL GAHR
PHONE No: WDC
SAMPLERS: (PRINT) Nora McMillan, Nathan Gahr

CONTAINER TYPE AND PRESERVATIVE: 2.5 L Amber ICE; 40mL HCl + ice; 1L Poly HNO3 + ice

REQUESTED ANALYSIS: TCL; TCL (VOA); TAL METALS

DATE	TIME	SAMPLE ID	SAMPLE MATRIX	CHECK FOR MS/MSD	SAMPLE TYPE	No. OF CONTAINERS	TCL	TCL (VOA)	TAL METALS					OVA/HNU READINGS (PPM)	BEGINNING DEPTH (FEET BGS)	ENDING DEPTH (FEET BGS)	REMARKS
6/29/01	0810	KWS-MW-13	GW	✓	O	13	X	X	X								
6/28/01		TRIP BLANK	W		T	1		X									

TURNAROUND TIME: 24-HOUR ☐ R; 48-HOUR ☐ U; 1-WEEK ☐ S; STANDARD ☒ H; RUSH _____ days; OTHER _____

(FOR LAB USE ONLY)
Lab Job No:
Report type:
Batch QC: Yes No

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	Ship Via:	Date:
[signature]	17:00 6/29/01			FEDEX	6/29/01
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	BL/Airbill Number:	
		[signature]	6/30/01 940	8266 9386 2370	

Temperature Blank Info. Enclosed: Yes No

(FOR LAB USE ONLY)
Date: _____ Time: _____
Temperature: _____ °C

Distribution: White - Lab original Yellow - Field team leader

0881297

2

Cooler Receipt Form

PACKAGE RECEIPT #: 8043 NUMBER OF COOLERS: 1 DATE RECEIVED: 6/30/01

E & E PROJECT #: _____ PROJECT OR SITE NAME: E + E Arlington

A. Preliminary Examination Phase

CIRCLE ONE

1. Did coolers come with airbill or packing slip? _____ YES NO NA

   Enter carrier here and print airbill # below: *(Circle One)* FedEx Airborne Client Other

   Ship as high hazard or dangerous goods YES NO NA

2. Did cooler(s) have custody seals? _____ YES NO NA
3. Were custody seals unbroken and intact on receipt? _____ YES NO* NA
4. Were custody seals dated and signed? _____ YES NO NA
5. Sign here to acknowledge receipt of cooler (s): _____

   Date cooler(s) opened: 6/30/01 C-O-C numbers: _____

   Cooler(s) opened by (print): J Henderson Signature: _____

6. Were the C-O-C forms received? _____ YES NO* NA
7. Was the project identifiable from the C-O-C form? _____ YES NO* NA
   If YES, enter the project number and name in the heading above.

Please record Temperature Blank Vial or Cooler Temperature for Each Cooler, Range (2 - 6C)* NJDEP must be ≤4C

AIRBILL #	TEMP. °C	AIRBILL #	TEMP. °C	AIRBILL #	TEMP. °C
826693862370	5.0				

Thermometer # 129 Correction Factor 0 * If No or Temperature Outside of Acceptable Range, prepare a PM Notification form.

B. Unpacking Phase

8. Was enough packing material used in cooler(s)? _____ YES NO NA
   Type of material: ☐ Vermiculite ☒ Bubble Wrap ☒ Other
9. If required, was enough ice used? _____ YES NO NA
   If YES, type of ice used: ☒ Wet ☐ Dry ☐ Blue ☐ Other
10. Was a temperature blank vial included inside cooler(s)? _____ YES NO NA
    If YES, indicate temperature blank vial temperature in table above. If NO, indicate cooler temperature in table above.
11. Were all containers sealed in separate plastic bags? _____ YES NO NA
12. Did all containers arrive unbroken and in good condition? _____ YES NO* NA
13. Samples stored in W Cooler before Login Phase? YES NO
    If yes: Signature In: _____ Date/Time: _____

    Signature Out: _____ Date/Time: _____

C. Login Phase

Samples Logged in By (print): J Henderson Signature: _____ Date: 6/30/01

14. Were all container labels complete (e.g. date, time preserved)? _____ YES NO* NA
15. Were all C-O-C forms filled out properly in ink and signed? _____ YES NO* NA
16. Did the C-O-C form agree with containers received? _____ YES NO* NA
17. Were the correct containers used for the tests requested? _____ YES NO* NA
18. Were the correct preservatives listed on the sample labels? _____ YES NO* NA
19. Was a sufficient sample volume sent for the tests requested? _____ YES NO* NA
20. Were all volatile samples received without head space? _____ YES NO* NA

3

*Prepare a PM Notification form.

Forms & Lists Final:F_024 cnesRev :Approval Date5/1/00Last Update:

Ecology and Environment, Inc.
Analytical Services Center
Lancaster, New York 14086
Phone: (716) 685-8080

Laboratory Results

NYS ELAP ID#: 10486

CLIENT:	E and E Washington D.C. Office
Project:	Kenilworth RI/FS
Lab Order:	0106216

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition

GCMS VOLATILES
A DB 624 or equivalent column and a trap packed with OV-1, Tenax, silica gel and activated charcoal was used for the volatile analysis.

Sample Analysis
All aqueous volatile samples were determined to be at a pH of 1.

Headspace was present in the trip blank vials and three of the six vials submitted for volatile analysis for sample KWS-MW-13.

All samples were analyzed within hold time.

Calibration and Tunes
All initial and continuing calibrations were acceptable.

QC
All surrogate recoveries were within acceptable limits.

All blank analyses were acceptable.

All matrix spike/spike duplicate (MS/MSD) recoveries and RPD values were acceptable.

All laboratory control sample (LCS) recoveries were acceptable.

All internal standard area responses were acceptable.

GCMS SEMIVOLATILES
A RESTEK (Rtx-5ms) column, which is 30-m long, 0.25-mm wide, and has a 0.5-micron film thickness, was used for the semivolatile analyses. The column contains 5% diphenyl and 95% dimethylpolysiloxane.

Water Analysis
The sample was extracted and analyzed within hold times.

Calibration and Tunes
The initial and continuing calibrations were acceptable.

QC
All surrogate recoveries were within acceptable limits.

Method blank was acceptable.

All matrix spike/spike duplicate (MS/MSD) recoveries and RPD values were acceptable except for a low recovery and a high RPD of N-Nitroso-di-n-propylamine for sample KWS-MW-13. A laboratory control sample and duplicate were extracted and all recoveries and RPD values were within acceptable limits.

All internal standard area responses were acceptable.

No manual integrations were required.

GC SEMIVOLATILES
PESTICIDE
The columns used for analysis were an RTX-5 (column 1) and an RTX-35 (column 2), both 30 meters long and 0.53 mm in diameter, with a 1.0 um film thickness. A 2-ul injection was performed on all samples, QC, and standards.

Sample Analysis
All samples were extracted and analyzed within hold time.

Calibrations
All initial and continuing calibrations were acceptable.

No manual integrations were required.

QC
All surrogate recoveries were within acceptable limits.

All blank analyses were acceptable.

All matrix spike/spike duplicate (MS/MSD) recoveries and RPD values were acceptable.

All laboratory control sample (LCS) recoveries were acceptable.

PCB
The columns used for analysis were an RTX-5, 30 meters long and 0.53 mm in diameter, with a 1.0 um film thickness. A 2-ul injection was performed on all samples, QC, and standards.

Sample Analysis
All samples were extracted and analyzed within hold time.

Calibrations
All initial and continuing calibrations were acceptable.

No manual integrations were required.

QC
All surrogate recoveries were within acceptable limits.

All blank analyses were acceptable.

Due to an oversight, an MS/MSD was not analyzed on sample KWS-MW-13 as requested. A laboratory control sample and duplicate were extracted and all of the surrogate and spike recoveries were within acceptable limits.

METALS
Sample Analysis
All samples were digested and analyzed within hold time.

Calibrations
All initial and continuing calibrations were acceptable.

QC
All calibration and preparation blank analyses were acceptable. Aluminum, copper and potassium were present in the method blank above the MDL but below the reporting limit.

All matrix spike/spike duplicate (MS/MSD) recoveries and RPD values were acceptable except for a high recoveries and a high RPDs for iron and calcium for sample KWS-MW-13. The parent sample contained calcium and iron at concentrations greater than ten times the amount of spike added.

All laboratory control sample (LCS) recoveries were acceptable.

MERCURY
Sample Analysis
All samples were digested and analyzed within hold time.

Calibrations
All initial and continuing calibrations were acceptable.

QC
All calibration and preparation blank analyses were acceptable.

All matrix spike/spike duplicate (MS/MSD) recoveries and RPD values were acceptable.

All laboratory control sample (LCS) recoveries were acceptable.

Ecology and Environment, Inc.

Analytical Services Center
Lancaster, New York 14086
Phone: (716) 685-8080

Laboratory Results

NYS ELAP ID#: 10486

Lab Order: 0106216
Client: E and E Washington D.C. Office
Project: Kenilworth RI/FS

DATES REPORT

Sample ID	Client Sample ID	Collection Date	Received Date	Matrix	Test Name	TCLP Date*	Prep Date	Analysis Date
0106216-01A	KWS-MW-13	06/29/2001 8:10:00 AM	6/30/2001 9:40:00 AM	Water	VOC by GCMS Method 8260B			07/02/2001
0106216-01B					PCBs by Method 8082		07/02/2001	07/05/2001
					Pesticides by Method 8081A		07/02/2001	07/07/2001
					Semivolatile Organics by Method 8270C		07/02/2001	07/06/2001
0106216-01C					Dissolved Mercury in Water by Method 7470A		07/06/2001	07/09/2001
					Dissolved Metals, TAL by ICP Method 6010B		07/05/2001	08/07/2001
0106216-02A	TRIP BLANK	06/29/2001 12:00:00 PM			VOC by GCMS Method 8260B			07/02/2001

*Reflects Date of TCLP Extraction Completion

GCMS VOLATILES

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Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106216
Project: Kenilworth RI/FS
Test Code: 1_8260B_5030B_W
Batch ID: NILES_010702A

QC SUMMARY REPORT
SURROGATE RECOVERIES

VOC by GCMS Method 8260B

Sample ID	Type	BR4FBZ	BZMED8	DBFM	DCA12D4				
0106216-01A	SAMP	89	101	105	90				
0106216-01A	MSD	91	103	103	90				
0106216-01A	MS	89	103	103	89				
0106216-02A	SAMP	91	102	105	92				
LCS-1423-82-1	LCS	92	104	102	91				
MB-1423-82-1	MBLK	92	103	104	94				

Acronym		Surrogate	QC Limits
BR4FBZ	=	4-Bromofluorobenzene	87-115
BZMED8	=	Toluene-d8	85-115
DBFM	=	Dibromofluoromethane	89-119
DCA12D4	=	1,2-Dichloroethane-d4	82-124

*** Surrogate recovery outside acceptance limits**

D - Diluted due to matrix or extended target compounds

Ecology & Environment Inc. LIMS Version 3.1.1.9 - 7/6/01 2:00:00 PM Tuesday, July 17, 2001 10:20:35 PM

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Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106216 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106216-01A **Sample Type:** SAMP

Client Sample ID: KWS-MW-13
Alt. Client ID:
Collection Date: 6/29/01 8:10:00 AM
Matrix: WATER **% Moist:**

VOLATILE ORGANIC COMPOUNDS BY METHOD 8260B
1_8260B_5030B_W

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
1,1,1-Trichloroethane	ND		5.00	µg/L	1	7/2/01 10:38:00 PM	NILES_010702A	MRD
1,1,2,2-Tetrachloroethane	ND		5.00	µg/L	1			
1,1,2-Trichloroethane	ND		5.00	µg/L	1			
1,1-Dichloroethane	ND		5.00	µg/L	1			
1,1-Dichloroethene	ND		5.00	µg/L	1			
1,2-Dichlorobenzene	ND		5.00	µg/L	1			
1,2-Dichloroethane	ND		5.00	µg/L	1			
1,2-Dichloroethene, Total	ND		5.00	µg/L	1			
1,2-Dichloropropane	ND		5.00	µg/L	1			
1,3-Dichlorobenzene	ND		5.00	µg/L	1			
1,4-Dichlorobenzene	ND		5.00	µg/L	1			
2-Butanone	ND		10.0	µg/L	1			
2-Hexanone	ND		10.0	µg/L	1			
4-Methyl-2-pentanone	ND		10.0	µg/L	1			
Acetone	ND		10.0	µg/L	1			
Benzene	ND		5.00	µg/L	1			
Bromodichloromethane	ND		5.00	µg/L	1			
Bromoform	ND		5.00	µg/L	1			
Bromomethane	ND		10.0	µg/L	1			
Carbon disulfide	4.58	J	5.00	µg/L	1			
Carbon tetrachloride	ND		5.00	µg/L	1			
Chlorobenzene	ND		5.00	µg/L	1			
Chloroethane	ND		10.0	µg/L	1			
Chloroform	ND		5.00	µg/L	1			
Chloromethane	ND		10.0	µg/L	1			
cis-1,2-Dichloroethene	ND		5.00	µg/L	1			
cis-1,3-Dichloropropene	ND		5.00	µg/L	1			
Dibromochloromethane	ND		5.00	µg/L	1			
Ethylbenzene	ND		5.00	µg/L	1			
m,p-Xylene	ND		5.00	µg/L	1			
Methylene chloride	ND		5.00	µg/L	1			
o-Xylene	ND		5.00	µg/L	1			
Styrene	ND		5.00	µg/L	1			
Tetrachloroethene	ND		5.00	µg/L	1			
Toluene	ND		5.00	µg/L	1			
trans-1,2-Dichloroethene	ND		5.00	µg/L	1			
trans-1,3-Dichloropropene	ND		5.00	µg/L	1			
Trichloroethene	ND		5.00	µg/L	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106216 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106216-01A **Sample Type:** SAMP

Client Sample ID: KWS-MW-13
Alt. Client ID:
Collection Date: 6/29/01 8:10:00 AM
Matrix: WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
VOLATILE ORGANIC COMPOUNDS BY METHOD 8260B								
1_8260B_5030B_W								
Trichlorofluoromethane	ND		5.00	µg/L	1			
Vinyl acetate	ND		10.0	µg/L	1			
Vinyl chloride	ND		10.0	µg/L	1			
Xylenes, Total	ND		5.00	µg/L	1			
Surr:1,2-Dichloroethane-d4	90		82 - 124	%REC	1	7/2/01 10:38:00 PM	NILES_010702A	MRD
Surr:4-Bromofluorobenzene	89		87 - 115	%REC	1			
Surr:Dibromofluoromethane	105		89 - 119	%REC	1			
Surr:Toluene-d8	101		85 - 115	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106216 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106216-02A **Sample Type:** SAMP

Client Sample ID: TRIP BLANK
Alt. Client ID:
Collection Date: 6/29/01 12:00:00 PM
Matrix: WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
VOLATILE ORGANIC COMPOUNDS BY METHOD 8260B 1_8260B_5030B_W								
1,1,1-Trichloroethane	ND		5.00	µg/L	1	7/2/01 8:42:00 PM	NILES_010702A	MRD
1,1,2,2-Tetrachloroethane	ND		5.00	µg/L	1			
1,1,2-Trichloroethane	ND		5.00	µg/L	1			
1,1-Dichloroethane	ND		5.00	µg/L	1			
1,1-Dichloroethene	ND		5.00	µg/L	1			
1,2-Dichlorobenzene	ND		5.00	µg/L	1			
1,2-Dichloroethane	ND		5.00	µg/L	1			
1,2-Dichloroethene, Total	ND		5.00	µg/L	1			
1,2-Dichloropropane	ND		5.00	µg/L	1			
1,3-Dichlorobenzene	ND		5.00	µg/L	1			
1,4-Dichlorobenzene	ND		5.00	µg/L	1			
2-Butanone	ND		10.0	µg/L	1			
2-Hexanone	ND		10.0	µg/L	1			
4-Methyl-2-pentanone	ND		10.0	µg/L	1			
Acetone	ND		10.0	µg/L	1			
Benzene	ND		5.00	µg/L	1			
Bromodichloromethane	ND		5.00	µg/L	1			
Bromoform	ND		5.00	µg/L	1			
Bromomethane	ND		10.0	µg/L	1			
Carbon disulfide	ND		5.00	µg/L	1			
Carbon tetrachloride	ND		5.00	µg/L	1			
Chlorobenzene	ND		5.00	µg/L	1			
Chloroethane	ND		10.0	µg/L	1			
Chloroform	ND		5.00	µg/L	1			
Chloromethane	ND		10.0	µg/L	1			
cis-1,2-Dichloroethene	ND		5.00	µg/L	1			
cis-1,3-Dichloropropene	ND		5.00	µg/L	1			
Dibromochloromethane	ND		5.00	µg/L	1			
Ethylbenzene	ND		5.00	µg/L	1			
m,p-Xylene	ND		5.00	µg/L	1			
Methylene chloride	ND		5.00	µg/L	1			
o-Xylene	ND		5.00	µg/L	1			
Styrene	ND		5.00	µg/L	1			
Tetrachloroethene	ND		5.00	µg/L	1			
Toluene	ND		5.00	µg/L	1			
trans-1,2-Dichloroethene	ND		5.00	µg/L	1			
trans-1,3-Dichloropropene	ND		5.00	µg/L	1			
Trichloroethene	ND		5.00	µg/L	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Ecology and Environment, Inc.

Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	**TRIP BLANK**
Lab Order:	0106216 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/29/01 12:00:00 PM
Lab ID:	**0106216-02A** **Sample Type:** SAMP	**Matrix:**	WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
VOLATILE ORGANIC COMPOUNDS BY METHOD 8260B								
1_8260B_5030B_W								
Trichlorofluoromethane	ND		5.00	µg/L	1			
Vinyl acetate	ND		10.0	µg/L	1			
Vinyl chloride	ND		10.0	µg/L	1			
Xylenes, Total	ND		5.00	µg/L	1			
Surr:1,2-Dichloroethane-d4	92		82 - 124	%REC	1	7/2/01 8:42:00 PM	NILES_010702A	MRD
Surr:4-Bromofluorobenzene	91		87 - 115	%REC	1			
Surr:Dibromofluoromethane	105		89 - 119	%REC	1			
Surr:Toluene-d8	102		85 - 115	%REC	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106216
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

VOC by GCMS Method 8260B

Test Code: *1_8260B_5030B_W* Units: *µg/L*

Sample ID: **MB-1423-82-1** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **NILES_010702A** SeqNo: **375587** Analysis Date **7/2/01 7:13:00 PM** Prep Batch ID: **R18777** Prep Date:

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	1,1,1-Trichloroethane	ND	5.000								
A	1,1,2,2-Tetrachloroethane	ND	5.000								
A	1,1,2-Trichloroethane	ND	5.000								
A	1,1-Dichloroethane	ND	5.000								
A	1,1-Dichloroethene	ND	5.000								
A	1,2-Dichlorobenzene	ND	5.000								
A	1,2-Dichloroethane	ND	5.000								
A	1,2-Dichloroethene, Total	ND	5.000								
A	1,2-Dichloropropane	ND	5.000								
A	1,3-Dichlorobenzene	ND	5.000								
A	1,4-Dichlorobenzene	ND	5.000								
A	2-Butanone	ND	10.00								
A	2-Hexanone	ND	10.00								
A	4-Methyl-2-pentanone	ND	10.00								
A	Acetone	ND	10.00								
A	Benzene	ND	5.000								
A	Bromodichloromethane	ND	5.000								
A	Bromoform	ND	5.000								
A	Bromomethane	ND	10.00								
A	Carbon disulfide	ND	5.000								
A	Carbon tetrachloride	ND	5.000								
A	Chlorobenzene	ND	5.000								
A	Chloroethane	ND	10.00								

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Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106216
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

VOC by GCMS Method 8260B Test Code: *1_8260B_5030B_W* Units: *µg/L*

Sample ID: **MB-1423-82-1** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **NILES_010702A** SeqNo: **375587** Analysis Date **7/2/01 7:13:00 PM** Prep Batch ID: **R18777** Prep Date:

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Chloroform	ND	5.000								
A	Chloromethane	ND	10.00								
A	cis-1,2-Dichloroethene	ND	5.000								
A	cis-1,3-Dichloropropene	ND	5.000								
A	Dibromochloromethane	ND	5.000								
A	Ethylbenzene	ND	5.000								
A	m,p-Xylene	ND	5.000								
A	Methylene chloride	ND	5.000								
A	o-Xylene	ND	5.000								
A	Styrene	ND	5.000								
A	Tetrachloroethene	ND	5.000								
A	Toluene	ND	5.000								
A	trans-1,2-Dichloroethene	ND	5.000								
A	trans-1,3-Dichloropropene	ND	5.000								
A	Trichloroethene	ND	5.000								
A	Trichlorofluoromethane	ND	5.000								
A	Vinyl acetate	ND	10.00								
A	Vinyl chloride	ND	10.00								
A	Xylenes, Total	ND	5.000								
S	1,2-Dichloroethane-d4	46.96	0			94	82	124			
S	4-Bromofluorobenzene	46.17	0			92	87	115			
S	Dibromofluoromethane	51.82	0			104	89	119			
S	Toluene-d8	51.40	0			103	85	115			

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106216
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Sample Matrix Spike

VOC by GCMS Method 8260B

Sample ID: **0106216-01A** Client Sample ID: **KWS-MW-13** Test Code: *1_8260B_5030B_W* Units: µg/L

Run Batch ID: **NILES_010702A** SeqNo: **375579** Analysis Date **07/02/2001 11:08:00 P** Prep Batch ID: **R18777** DF: 1 DL_No: 1 Prep Date:

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	1,1-Dichloroethene	64.45	5.000	50.00	0	129	61	135			
A	Benzene	53.09	5.000	50.00	0	106	82	131			
A	Chlorobenzene	52.39	5.000	50.00	0	105	77	128			
A	Toluene	51.73	5.000	50.00	0	103	80	125			
A	Trichloroethene	48.70	5.000	50.00	0	97	82	120			
S	1,2-Dichloroethane-d4	44.53	0	50.00	0	89	82	124			
S	4-Bromofluorobenzene	44.67	0	50.00	0	89	87	115			
S	Dibromofluoromethane	51.57	0	50.00	0	103	89	119			
S	Toluene-d8	51.65	0	50.00	0	103	85	115			

Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106216
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Sample Matrix Spike Duplicate

VOC by GCMS Method 8260B Test Code: *1_8260B_5030B_W* Units: µg/L

Sample ID: **0106216-01A** Client Sample ID: **KWS-MW-13** DF: 1 DL_No: 1

Run Batch ID: **NILES_010702A** SeqNo: **375588** Analysis Date **07/02/2001 11:37:00 P** Prep Batch ID: **R18777** Prep Date:

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	1,1-Dichloroethene	63.52	5.000	50.00	0	127	61	135	1.5	20	
A	Benzene	52.33	5.000	50.00	0	105	82	131	1.4	20	
A	Chlorobenzene	51.86	5.000	50.00	0	104	77	128	1.0	20	
A	Toluene	51.51	5.000	50.00	0	103	80	125	0.4	20	
A	Trichloroethene	49.20	5.000	50.00	0	98	82	120	1.0	20	
S	1,2-Dichloroethane-d4	45.11	0	50.00	0	90	82	124	0.0	0	
S	4-Bromofluorobenzene	45.47	0	50.00	0	91	87	115	0.0	0	
S	Dibromofluoromethane	51.38	0	50.00	0	103	89	119	0.0	0	
S	Toluene-d8	51.58	0	50.00	0	103	85	115	0.0	0	

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106216
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

VOC by GCMS Method 8260B

Test Code: *1_8260B_5030B_W* Units: *µg/L*

Sample ID: **LCS-1423-82-1** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **NILES_010702A** SeqNo: **375578** Analysis Date **7/2/01 6:44:00 PM** Prep Batch ID: **R18777** Prep Date:

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	1,1-Dichloroethene	60.11	5.000	50.00	0	120	61	135			
A	Benzene	48.40	5.000	50.00	0	97	82	131			
A	Chlorobenzene	48.58	5.000	50.00	0	97	77	128			
A	Toluene	47.66	5.000	50.00	0	95	80	125			
A	Trichloroethene	44.84	5.000	50.00	0	90	82	120			
S	1,2-Dichloroethane-d4	45.71	0	50.00	0	91	82	124			
S	4-Bromofluorobenzene	45.87	0	50.00	0	92	87	115			
S	Dibromofluoromethane	50.93	0	50.00	0	102	89	119			
S	Toluene-d8	52.19	0	50.00	0	104	85	115			

Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

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GCMS SEMIVOLATILES

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Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106216
Project: Kenilworth RI/FS
Test Code: I_8270C_3520C_W
Batch ID: KIM_010706A

QC SUMMARY REPORT
SURROGATE RECOVERIES

Semivolatile Organics by Method 8270C

Sample ID	Type	NO2BZD5	PH246BR	PH2F	PHD5	PHEN2F	PHEND14
0106216-01B	SAMP	58	65	44	55	64	64
0106216-01BMS	MS	51	60	37	45	54	61
0106216-01BMSD	MSD	53	71	39	49	60	72
LCS-200101694	LCS	75	65	55	69	76	87
LCSD-200101694	LCSD	54	49	40	51	56	78
MB-200101694	MBLK	69	63	50	64	70	83

Acronym		Surrogate	QC Limits
NO2BZD5	=	Nitrobenzene-d5	45-118
PH246BR	=	2,4,6-Tribromophenol	32-162
PH2F	=	2-Fluorophenol	15-142
PHD5	=	Phenol-d5	18-136
PHEN2F	=	2-Fluorobiphenyl	38-129
PHEND14	=	Terphenyl-d14	10-154

*** Surrogate recovery outside acceptance limits**

D - Diluted due to matrix or extended target compounds

Ecology & Environment Inc. LIMS Version 3.1.1.9 - 7/6/01 2:00:00 PM

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Ecology and Environment, Inc.

Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	KWS-MW-13
Lab Order:	0106216 CPID: 001096.GT05.01..	Alt. Client ID:	
Project:	Kenilworth RI/FS	Collection Date:	6/29/01 8:10:00 AM
Lab ID:	0106216-01B Sample Type: SAMP	Matrix:	WATER % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
SEMIVOLATILE ORGANICS BY METHOD 8270C								
1_8270C_3520C_W								
1,2,4-Trichlorobenzene	ND		10.0	µg/L	1	7/6/01 1:10:00 PM	KIM_010706A	DCE
1,2-Dichlorobenzene	ND		10.0	µg/L	1			
1,3-Dichlorobenzene	ND		10.0	µg/L	1			
1,4-Dichlorobenzene	ND		10.0	µg/L	1			
2,4,5-Trichlorophenol	ND		50.0	µg/L	1			
2,4,6-Trichlorophenol	ND		10.0	µg/L	1			
2,4-Dichlorophenol	ND		10.0	µg/L	1			
2,4-Dimethylphenol	ND		10.0	µg/L	1			
2,4-Dinitrophenol	ND		50.0	µg/L	1			
2,4-Dinitrotoluene	ND		10.0	µg/L	1			
2,6-Dinitrotoluene	ND		10.0	µg/L	1			
2-Chloronaphthalene	ND		10.0	µg/L	1			
2-Chlorophenol	ND		10.0	µg/L	1			
2-Methylnaphthalene	ND		10.0	µg/L	1			
2-Methylphenol	ND		10.0	µg/L	1			
2-Nitroaniline	ND		50.0	µg/L	1			
2-Nitrophenol	ND		10.0	µg/L	1			
3,3'-Dichlorobenzidine	ND		20.0	µg/L	1			
3-Nitroaniline	ND		50.0	µg/L	1			
4,6-Dinitro-2-methylphenol	ND		50.0	µg/L	1			
4-Bromophenyl phenyl ether	ND		10.0	µg/L	1			
4-Chloro-3-methylphenol	ND		10.0	µg/L	1			
4-Chloroaniline	ND		10.0	µg/L	1			
4-Chlorophenyl phenyl ether	ND		10.0	µg/L	1			
4-Methylphenol	ND		10.0	µg/L	1			
4-Nitroaniline	ND		50.0	µg/L	1			
4-Nitrophenol	ND		50.0	µg/L	1			
Acenaphthene	ND		10.0	µg/L	1			
Acenaphthylene	ND		10.0	µg/L	1			
Anthracene	ND		10.0	µg/L	1			
Benz(a)anthracene	ND		10.0	µg/L	1			
Benzo(a)pyrene	ND		10.0	µg/L	1			
Benzo(b)fluoranthene	ND		10.0	µg/L	1			
Benzo(g,h,i)perylene	ND		10.0	µg/L	1			
Benzo(k)fluoranthene	ND		10.0	µg/L	1			
Benzoic acid	ND		150	µg/L	1			
Benzyl alcohol	ND		10.0	µg/L	1			
Bis(2-chloroethoxy)methane	ND		10.0	µg/L	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	KWS-MW-13
Lab Order:	0106216 CPID: 001096.GT05.01..	Alt. Client ID:	
Project:	Kenilworth RI/FS	Collection Date:	6/29/01 8:10:00 AM
Lab ID:	0106216-01B Sample Type: SAMP	Matrix:	WATER % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
SEMIVOLATILE ORGANICS BY METHOD 8270C 1_8270C_3520C_W								
Bis(2-chloroethyl)ether	ND		10.0	µg/L	1			
Bis(2-chloroisopropyl)ether	ND		10.0	µg/L	1			
Bis(2-ethylhexyl)phthalate	9.07	J	10.0	µg/L	1			
Butyl benzyl phthalate	ND		10.0	µg/L	1			
Carbazole	ND		10.0	µg/L	1			
Chrysene	ND		10.0	µg/L	1			
Di-n-butyl phthalate	ND		10.0	µg/L	1			
Di-n-octyl phthalate	ND		10.0	µg/L	1			
Dibenz(a,h)anthracene	ND		10.0	µg/L	1			
Dibenzofuran	ND		10.0	µg/L	1			
Diethyl phthalate	ND		10.0	µg/L	1			
Dimethyl phthalate	ND		10.0	µg/L	1			
Fluoranthene	ND		10.0	µg/L	1			
Fluorene	ND		10.0	µg/L	1			
Hexachlorobenzene	ND		10.0	µg/L	1			
Hexachlorobutadiene	ND		10.0	µg/L	1			
Hexachlorocyclopentadiene	ND		50.0	µg/L	1			
Hexachloroethane	ND		10.0	µg/L	1			
Indeno(1,2,3-cd)pyrene	ND		10.0	µg/L	1			
Isophorone	ND		10.0	µg/L	1			
N-Nitrosodi-n-propylamine	ND		10.0	µg/L	1			
N-Nitrosodimethylamine	ND		10.0	µg/L	1			
N-Nitrosodiphenylamine	ND		10.0	µg/L	1			
Naphthalene	ND		10.0	µg/L	1			
Nitrobenzene	ND		10.0	µg/L	1			
Pentachlorophenol	ND		50.0	µg/L	1			
Phenanthrene	ND		10.0	µg/L	1			
Phenol	ND		10.0	µg/L	1			
Pyrene	ND		10.0	µg/L	1			
Surr:2,4,6-Tribromophenol	65		32 - 162	%REC	1	7/6/01 1:10:00 PM	KIM_010706A	DCE
Surr:2-Fluorobiphenyl	64		38 - 129	%REC	1			
Surr:2-Fluorophenol	44		15 - 142	%REC	1			
Surr:Nitrobenzene-d5	58		45 - 118	%REC	1			
Surr:Phenol-d5	55		18 - 136	%REC	1			
Surr:Terphenyl-d14	64		10 - 154	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106216
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

Semivolatile Organics by Method 8270C

Test Code: *1_8270C_3520C_W* Units: *µg/L*

Sample ID: **MB-200101694** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **KIM_010706A** SeqNo: **377587** Analysis Date **7/6/01 10:57:00 AM** Prep Batch ID: **200101694** Prep Date: **7/2/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	1,2,4-Trichlorobenzene	ND	10.00								
A	1,2-Dichlorobenzene	ND	10.00								
A	1,3-Dichlorobenzene	ND	10.00								
A	1,4-Dichlorobenzene	ND	10.00								
A	2,4,5-Trichlorophenol	ND	50.00								
A	2,4,6-Trichlorophenol	ND	10.00								
A	2,4-Dichlorophenol	ND	10.00								
A	2,4-Dimethylphenol	ND	10.00								
A	2,4-Dinitrophenol	ND	50.00								
A	2,4-Dinitrotoluene	ND	10.00								
A	2,6-Dinitrotoluene	ND	10.00								
A	2-Chloronaphthalene	ND	10.00								
A	2-Chlorophenol	ND	10.00								
A	2-Methylnaphthalene	ND	10.00								
A	2-Methylphenol	ND	10.00								
A	2-Nitroaniline	ND	50.00								
A	2-Nitrophenol	ND	10.00								
A	3,3'-Dichlorobenzidine	ND	20.00								
A	3-Nitroaniline	ND	50.00								
A	4,6-Dinitro-2-methylphenol	ND	50.00								
A	4-Bromophenyl phenyl ether	ND	10.00								
A	4-Chloro-3-methylphenol	ND	10.00								
A	4-Chloroaniline	ND	10.00								

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit
J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106216
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

Semivolatile Organics by Method 8270C

Sample ID: **MB-200101694** Client Sample ID: Test Code: *1_8270C_3520C_W* Units: *µg/L*

Run Batch ID: **KIM_010706A** SeqNo: **377587** Analysis Date **7/6/01 10:57:00 AM** Prep Batch ID: **200101694** DF: 1 DL_No: 1 Prep Date: **7/2/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	4-Chlorophenyl phenyl ether	ND	10.00								
A	4-Methylphenol	ND	10.00								
A	4-Nitroaniline	ND	50.00								
A	4-Nitrophenol	ND	50.00								
A	Acenaphthene	ND	10.00								
A	Acenaphthylene	ND	10.00								
A	Anthracene	ND	10.00								
A	Benz(a)anthracene	ND	10.00								
A	Benzo(a)pyrene	ND	10.00								
A	Benzo(b)fluoranthene	ND	10.00								
A	Benzo(g,h,i)perylene	ND	10.00								
A	Benzo(k)fluoranthene	ND	10.00								
A	Benzoic acid	ND	150.0								
A	Benzyl alcohol	ND	10.00								
A	Bis(2-chloroethoxy)methane	ND	10.00								
A	Bis(2-chloroethyl)ether	ND	10.00								
A	Bis(2-chloroisopropyl)ether	ND	10.00								
A	Bis(2-ethylhexyl)phthalate	ND	10.00								
A	Butyl benzyl phthalate	ND	10.00								
A	Carbazole	ND	10.00								
A	Chrysene	ND	10.00								
A	Di-n-butyl phthalate	ND	10.00								
A	Di-n-octyl phthalate	ND	10.00								

Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106216
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

Semivolatile Organics by Method 8270C

Test Code: *1_8270C_3520C_W* Units: *µg/L*

Sample ID: **MB-200101694** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **KIM_010706A** SeqNo: **377587** Analysis Date **7/6/01 10:57:00 AM** Prep Batch ID: **200101694** Prep Date: **7/2/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Dibenz(a,h)anthracene	ND	10.00								
A	Dibenzofuran	ND	10.00								
A	Diethyl phthalate	ND	10.00								
A	Dimethyl phthalate	ND	10.00								
A	Fluoranthene	ND	10.00								
A	Fluorene	ND	10.00								
A	Hexachlorobenzene	ND	10.00								
A	Hexachlorobutadiene	ND	10.00								
A	Hexachlorocyclopentadiene	ND	50.00								
A	Hexachloroethane	ND	10.00								
A	Indeno(1,2,3-cd)pyrene	ND	10.00								
A	Isophorone	ND	10.00								
A	N-Nitrosodi-n-propylamine	ND	10.00								
A	N-Nitrosodimethylamine	ND	10.00								
A	N-Nitrosodiphenylamine	ND	10.00								
A	Naphthalene	ND	10.00								
A	Nitrobenzene	ND	10.00								
A	Pentachlorophenol	ND	50.00								
A	Phenanthrene	ND	10.00								
A	Phenol	ND	10.00								
A	Pyrene	ND	10.00								
S	2,4,6-Tribromophenol	37.51	0			63	32	162			
S	2-Fluorobiphenyl	35.14	0			70	38	129			

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P - Post Spike Recovery outside limits; RL - Reporting Limit
J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates > 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106216
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

Semivolatile Organics by Method 8270C

Sample ID: **MB-200101694** Client Sample ID: Test Code: *1_8270C_3520C_W* Units: *µg/L*

Run Batch ID: **KIM_010706A** SeqNo: **377587** Analysis Date **7/6/01 10:57:00 AM** Prep Batch ID: **200101694** DF: 1 DL_No: 1 Prep Date: **7/2/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
S	2-Fluorophenol	29.91	0			50	15	142			
S	Nitrobenzene-d5	34.62	0			69	45	118			
S	Phenol-d5	38.25	0			64	18	136			
S	Terphenyl-d14	41.45	0			83	10	154			

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106216
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Sample Matrix Spike

Semivolatile Organics by Method 8270C

Test Code: *1_8270C_3520C_W* Units: *µg/L*

Sample ID: **0106216-01BMS** Client Sample ID: **KWS-MW-13** DF: 1 DL_No: 1

Run Batch ID: **KIM_010706A** SeqNo: **377581** Analysis Date **7/6/01 3:24:00 PM** Prep Batch ID: **200101694** Prep Date: **7/2/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	1,2,4-Trichlorobenzene	13.56	10.00	30.00	0	45	34	119			
A	1,4-Dichlorobenzene	12.65	10.00	30.00	0	42	31	116			
A	2,4-Dinitrotoluene	16.58	10.00	30.00	0	55	47	128			
A	2-Chlorophenol	13.15	10.00	30.00	0	44	29	130			
A	4-Chloro-3-methylphenol	17.15	10.00	30.00	0	57	34	133			
A	4-Nitrophenol	17.86	50.00	30.00	0	60	10	115			J
A	Acenaphthene	14.11	10.00	30.00	0	47	38	130			
A	N-Nitrosodi-n-propylamine	9.943	10.00	30.00	0	33	34	117			JM
A	Pentachlorophenol	20.78	50.00	30.00	0	69	43	129			J
A	Phenol	12.53	10.00	30.00	0	42	27	131			
A	Pyrene	13.36	10.00	30.00	0	45	27	130			
S	2,4,6-Tribromophenol	36.19	0	60.00	0	60	32	162			
S	2-Fluorobiphenyl	26.99	0	50.00	0	54	38	129			
S	2-Fluorophenol	22.20	0	60.00	0	37	15	142			
S	Nitrobenzene-d5	25.43	0	50.00	0	51	45	118			
S	Phenol-d5	26.85	0	60.00	0	45	18	136			
S	Terphenyl-d14	30.54	0	50.00	0	61	10	154			

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit
J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106216
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Sample Matrix Spike Duplicate

Semivolatile Organics by Method 8270C

Sample ID: **0106216-01BMSD** Client Sample ID: **KWS-MW-13** Test Code: *1_8270C_3520C_W* Units: *µg/L*

Run Batch ID: **KIM_010706A** SeqNo: **377580** Analysis Date **7/6/01 4:08:00 PM** Prep Batch ID: **200101694** DF: 1 DL_No: 1

Prep Date: **7/2/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	1,2,4-Trichlorobenzene	14.21	10.00	30.00	0	47	34	119	4.7	20	
A	1,4-Dichlorobenzene	13.23	10.00	30.00	0	44	31	116	4.5	20	
A	2,4-Dinitrotoluene	19.62	10.00	30.00	0	65	47	128	16.8	20	
A	2-Chlorophenol	14.08	10.00	30.00	0	47	29	130	6.8	20	
A	4-Chloro-3-methylphenol	20.05	10.00	30.00	0	67	34	133	15.6	20	
A	4-Nitrophenol	21.57	50.00	30.00	0	72	10	115	18.8	20	J
A	Acenaphthene	16.56	10.00	30.00	0	55	38	130	16.0	20	
A	N-Nitrosodi-n-propylamine	12.35	10.00	30.00	0	41	34	117	21.6	20	R
A	Pentachlorophenol	23.33	50.00	30.00	0	78	43	129	11.6	20	J
A	Phenol	13.52	10.00	30.00	0	45	27	131	7.6	20	
A	Pyrene	15.54	10.00	30.00	0	52	27	130	15.0	20	
S	2,4,6-Tribromophenol	42.58	0	60.00	0	71	32	162	0.0	0	
S	2-Fluorobiphenyl	29.83	0	50.00	0	60	38	129	0.0	0	
S	2-Fluorophenol	23.25	0	60.00	0	39	15	142	0.0	0	
S	Nitrobenzene-d5	26.60	0	50.00	0	53	45	118	0.0	0	
S	Phenol-d5	29.38	0	60.00	0	49	18	136	0.0	0	
S	Terphenyl-d14	35.85	0	50.00	0	72	10	154	0.0	0	

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106216
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

Semivolatile Organics by Method 8270C

Test Code: *1_8270C_3520C_W* Units: *µg/L*

Sample ID: **LCS-200101694** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **KIM_010706A** SeqNo: **377586** Analysis Date **7/6/01 11:42:00 AM** Prep Batch ID: **200101694** Prep Date: **7/2/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	1,2,4-Trichlorobenzene	19.52	10.00	30.00	0	65	34	119			
A	1,4-Dichlorobenzene	19.12	10.00	30.00	0	64	31	116			
A	2,4-Dinitrotoluene	19.26	10.00	30.00	0	64	47	128			
A	2-Chlorophenol	19.50	10.00	30.00	0	65	29	130			
A	4-Chloro-3-methylphenol	20.12	10.00	30.00	0	67	34	133			
A	4-Nitrophenol	19.22	50.00	30.00	0	64	10	115			J
A	Acenaphthene	19.21	10.00	30.00	0	64	38	130			
A	N-Nitrosodi-n-propylamine	15.52	10.00	30.00	0	52	34	117			
A	Pentachlorophenol	20.91	50.00	30.00	0	70	43	129			J
A	Phenol	19.21	10.00	30.00	0	64	27	131			
A	Pyrene	17.85	10.00	30.00	0	60	27	130			
S	2,4,6-Tribromophenol	39.20	0	60.00	0	65	32	162			
S	2-Fluorobiphenyl	38.09	0	50.00	0	76	38	129			
S	2-Fluorophenol	32.96	0	60.00	0	55	15	142			
S	Nitrobenzene-d5	37.64	0	50.00	0	75	45	118			
S	Phenol-d5	41.19	0	60.00	0	69	18	136			
S	Terphenyl-d14	43.49	0	50.00	0	87	10	154			

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Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106216
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike Duplicate

Semivolatile Organics by Method 8270C

Sample ID: **LCSD-200101694** Client Sample ID: Test Code: *1_8270C_3520C_W* Units: *µg/L*

Run Batch ID: **KIM_010706A** SeqNo: **377585** Analysis Date **7/6/01 12:26:00 PM** Prep Batch ID: **200101694** DF: 1 DL_No: 1 Prep Date: 7/2/01

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	1,2,4-Trichlorobenzene	14.12	10.00	30.00	0	47	34	119			
A	1,4-Dichlorobenzene	13.36	10.00	30.00	0	45	31	116			
A	2,4-Dinitrotoluene	14.78	10.00	30.00	0	49	47	128			
A	2-Chlorophenol	14.43	10.00	30.00	0	48	29	130			
A	4-Chloro-3-methylphenol	15.57	10.00	30.00	0	52	34	133			
A	4-Nitrophenol	15.42	50.00	30.00	0	51	10	115			J
A	Acenaphthene	14.22	10.00	30.00	0	47	38	130			
A	N-Nitrosodi-n-propylamine	11.03	10.00	30.00	0	37	34	117			
A	Pentachlorophenol	16.98	50.00	30.00	0	57	43	129			J
A	Phenol	14.23	10.00	30.00	0	47	27	131			
A	Pyrene	14.94	10.00	30.00	0	50	27	130			
S	2,4,6-Tribromophenol	29.25	0	60.00	0	49	32	162			
S	2-Fluorobiphenyl	27.98	0	50.00	0	56	38	129			
S	2-Fluorophenol	23.91	0	60.00	0	40	15	142			
S	Nitrobenzene-d5	27.24	0	50.00	0	54	45	118			
S	Phenol-d5	30.48	0	60.00	0	51	18	136			
S	Terphenyl-d14	39.09	0	50.00	0	78	10	154			

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

GC SEMIVOLATILES

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106216
Project: Kenilworth RI/FS
Test Code: I_8081A_3510C_W
Batch ID: HP68901B_010705B

QC SUMMARY REPORT
SURROGATE RECOVERIES

Pesticides by Method 8081A

Sample ID	Type	CL10BZ2	XYL2456CLM
0106216-01B	SAMP	64	75
0106216-01BMS	MS	68	67
0106216-01BMSD	MSD	62	70
LCS-200101692	LCS	74	66
MB-200101692	MBLK	82	74

Acronym		Surrogate	QC Limits
CL10BZ2	=	Decachlorobiphenyl	12-132
XYL2456CLM	=	Tetrachloro-m-xylene	31-122

*** Surrogate recovery outside acceptance limits**
D - Diluted due to matrix or extended target compounds

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Ecology and Environment, Inc.

Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106216 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106216-01B **Sample Type:** SAMP

Client Sample ID: KWS-MW-13
Alt. Client ID:
Collection Date: 6/29/01 08:10:00
Matrix: WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PESTICIDES BY METHOD 8081A								
1_8081A_3510C_W								
4,4'-DDD	ND		0.0900	µg/L	1	7/7/01 16:42:28	HP68901B_010705B	RN
4,4'-DDE	ND		0.100	µg/L	1			
4,4'-DDT	ND		0.100	µg/L	1			
Aldrin	ND		0.0700	µg/L	1			
alpha-BHC	ND		0.0400	µg/L	1			
alpha-Chlordane	0.0120	J	0.0600	µg/L	1			
beta-BHC	ND		0.0500	µg/L	1			
delta-BHC	ND		0.0600	µg/L	1			
Dieldrin	ND		0.100	µg/L	1			
Endosulfan I	0.0120	J	0.0500	µg/L	1			
Endosulfan II	ND		0.180	µg/L	1			
Endosulfan sulfate	ND		0.400	µg/L	1			
Endrin	ND		0.100	µg/L	1			
Endrin aldehyde	ND		0.300	µg/L	1			
Endrin ketone	ND		0.200	µg/L	1			
gamma-BHC	ND		0.0400	µg/L	1			
gamma-Chlordane	ND		0.0500	µg/L	1			
Heptachlor	ND		0.100	µg/L	1			
Heptachlor epoxide	ND		0.100	µg/L	1			
Methoxychlor	ND		1.00	µg/L	1			
Toxaphene	ND		3.00	µg/L	1			
Surr:Decachlorobiphenyl	64		12 - 132	%REC	1	7/7/01 16:42:28	HP68901B_010705B	RN
Surr:Tetrachloro-m-xylene	75		31 - 122	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 14:00:00

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106216
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

Pesticides by Method 8081A

Sample ID: **MB-200101692** Client Sample ID: Test Code: *1_8081A_3510C_W* Units: µg/L

Run Batch ID: **HP68901B_010705B** SeqNo: **383151** Analysis Date **7/7/01 13:21:55** Prep Batch ID: **200101692** DF: 1 DL_No: 1 Prep Date: **7/2/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	4,4'-DDD	ND	0.09000								
A	4,4'-DDE	ND	0.1000								
A	4,4'-DDT	ND	0.1000								
A	Aldrin	ND	0.07000								
A	alpha-BHC	ND	0.04000								
A	alpha-Chlordane	ND	0.06000								
A	beta-BHC	ND	0.05000								
A	delta-BHC	ND	0.06000								
A	Dieldrin	ND	0.1000								
A	Endosulfan I	ND	0.05000								
A	Endosulfan II	ND	0.1800								
A	Endosulfan sulfate	ND	0.4000								
A	Endrin	ND	0.1000								
A	Endrin aldehyde	ND	0.3000								
A	Endrin ketone	ND	0.2000								
A	gamma-BHC	ND	0.04000								
A	gamma-Chlordane	ND	0.05000								
A	Heptachlor	ND	0.1000								
A	Heptachlor epoxide	ND	0.1000								
A	Methoxychlor	ND	1.000								
A	Toxaphene	ND	3.000								
S	Decachlorobiphenyl	0.1638	0			82	12	132			
S	Tetrachloro-m-xylene	0.1473	0			74	31	122			

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL. Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Laboratory Results

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Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106216
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Sample Matrix Spike

Pesticides by Method 8081A

Test Code: *1_8081A_3510C_W* Units: µg/L

Sample ID: **0106216-01BMS** Client Sample ID: **KWS-MW-13** DF: 1 DL_No: 1

Run Batch ID: **HP68901B_010705B** SeqNo: **383154** Analysis Date **7/7/01 17:22:29** Prep Batch ID: **200101692** Prep Date: **7/2/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	4,4'-DDD	0.1894	0.09000	0.2000	0	95	64	133			
A	4,4'-DDE	0.08494	0.1000	0.1000	0	85	49	143			J
A	4,4'-DDT	0.1699	0.1000	0.2000	0	85	61	148			
A	Aldrin	0.07454	0.07000	0.1000	0	75	22	168			
A	alpha-BHC	0.06473	0.04000	0.1000	0	65	51	130			
A	alpha-Chlordane	0.1723	0.06000	0.2000	0.01200	80	33	129			
A	beta-BHC	0.07965	0.05000	0.1000	0	80	58	127			
A	delta-BHC	0.08465	0.06000	0.1000	0	85	10	146			
A	Dieldrin	0.09167	0.1000	0.1000	0	92	55	165			J
A	Endosulfan I	0.1723	0.05000	0.2000	0.01200	80	62	114			
A	Endosulfan II	0.1894	0.1800	0.2000	0	95	48	128			
A	Endosulfan sulfate	0.07586	0.4000	0.1000	0	76	54	126			J
A	Endrin	0.09105	0.1000	0.1000	0	91	56	161			J
A	Endrin aldehyde	0.1699	0.3000	0.2000	0	85	33	129			J
A	Endrin ketone	1.138	0.2000	1.100	0	103	47	118			
A	gamma-BHC	0.07728	0.04000	0.1000	0	77	56	144			
A	gamma-Chlordane	0.08333	0.05000	0.1000	0	83	38	124			
A	Heptachlor	0.08161	0.1000	0.1000	0	82	44	155			J
A	Heptachlor epoxide	0.1208	0.1000	0.1000	0	121	46	127			
A	Methoxychlor	1.138	1.000	1.100	0	103	67	135			
S	Decachlorobiphenyl	0.1364	0	0.2000	0	68	12	132			
S	Tetrachloro-m-xylene	0.1345	0	0.2000	0	67	31	122			

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E/Washington D.C. Office
Work Order: 0106216
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Sample Matrix Spike Duplicate

Pesticides by Method 8081A

Sample ID: **0106216-01BMSD** Client Sample ID: **KWS-MW-13** Test Code: *1_8081A_3510C_W* Units: µg/L

Run Batch ID: **HP68901B_010705B** SeqNo: **383155** Analysis Date **7/7/01 18:02:31** Prep Batch ID: 200101692 DF: 1 DL_No: 1 Prep Date: 7/2/01

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	4,4'-DDD	0.1960	0.09000	0.2000	0	98	64	133	3.4	20	
A	4,4'-DDE	0.09252	0.1000	0.1000	0	93	49	143	8.5	20	J
A	4,4'-DDT	0.1641	0.1000	0.2000	0	82	61	148	3.5	20	
A	Aldrin	0.07413	0.07000	0.1000	0	74	22	168	0.6	20	
A	alpha-BHC	0.07220	0.04000	0.1000	0	72	51	130	10.9	20	
A	alpha-Chlordane	0.1681	0.06000	0.2000	0.01200	78	33	129	2.6	20	
A	beta-BHC	0.07973	0.05000	0.1000	0	80	58	127	0.1	20	
A	delta-BHC	0.07646	0.06000	0.1000	0	76	10	146	10.2	20	
A	Dieldrin	0.08756	0.1000	0.1000	0	88	55	165	4.6	20	J
A	Endosulfan I	0.1681	0.05000	0.2000	0.01200	78	62	114	2.6	20	
A	Endosulfan II	0.1960	0.1800	0.2000	0	98	48	128	3.4	20	
A	Endosulfan sulfate	0.07497	0.4000	0.1000	0	75	54	126	1.2	20	J
A	Endrin	0.09159	0.1000	0.1000	0	92	56	161	0.6	20	J
A	Endrin aldehyde	0.1641	0.3000	0.2000	0	82	33	129	3.5	20	J
A	Endrin ketone	1.140	0.2000	1.100	0	104	47	118	0.2	20	
A	gamma-BHC	0.07910	0.04000	0.1000	0	79	56	144	2.3	20	
A	gamma-Chlordane	0.08228	0.05000	0.1000	0	82	38	124	1.3	20	
A	Heptachlor	0.07817	0.1000	0.1000	0	78	44	155	4.3	20	J
A	Heptachlor epoxide	0.1214	0.1000	0.1000	0	121	46	127	0.5	20	
A	Methoxychlor	1.140	1.000	1.100	0	104	67	135	0.2	20	
S	Decachlorobiphenyl	0.1241	0	0.2000	0	62	12	132	0.0	0	
S	Tetrachloro-m-xylene	0.1396	0	0.2000	0	70	31	122	0.0	0	

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106216
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

Pesticides by Method 8081A

Test Code: *1_8081A_3510C_W* Units: µg/L

Sample ID: **LCS-200101692** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **HP68901B_010705B** SeqNo: **383152** Analysis Date **7/7/01 14:02:07** Prep Batch ID: **200101692** Prep Date: **7/2/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	4,4'-DDD	0.1834	0.09000	0.2000	0	92	64	133			
A	4,4'-DDE	0.06518	0.1000	0.1000	0	65	49	143			J
A	4,4'-DDT	0.1513	0.1000	0.2000	0	76	61	148			
A	Aldrin	0.06356	0.07000	0.1000	0	64	22	168			J
A	alpha-BHC	0.06547	0.04000	0.1000	0	65	51	130			
A	alpha-Chlordane	0.1322	0.06000	0.2000	0	66	33	129			
A	beta-BHC	0.07417	0.05000	0.1000	0	74	58	127			
A	delta-BHC	0.07713	0.06000	0.1000	0	77	10	146			
A	Dieldrin	0.07556	0.1000	0.1000	0	76	55	165			J
A	Endosulfan I	0.1322	0.05000	0.2000	0	66	62	114			
A	Endosulfan II	0.1834	0.1800	0.2000	0	92	48	128			
A	Endosulfan sulfate	0.08562	0.4000	0.1000	0	86	54	126			J
A	Endrin	0.07850	0.1000	0.1000	0	78	56	161			J
A	Endrin aldehyde	0.1513	0.3000	0.2000	0	76	33	129			J
A	Endrin ketone	1.054	0.2000	1.100	0	96	47	118			
A	gamma-BHC	0.06882	0.04000	0.1000	0	69	56	144			
A	gamma-Chlordane	0.07193	0.05000	0.1000	0	72	38	124			
A	Heptachlor	0.06897	0.1000	0.1000	0	69	44	155			J
A	Heptachlor epoxide	0.07365	0.1000	0.1000	0	74	46	127			J
A	Methoxychlor	1.054	1.000	1.100	0	96	67	135			
S	Decachlorobiphenyl	0.1480	0	0.2000	0	74	12	132			
S	Tetrachloro-m-xylene	0.1314	0	0.2000	0	66	31	122			

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106216
Project: Kenilworth RI/FS
Test Code: 1_8082_3510C_W
Batch ID: HP58901A_010703E

QC SUMMARY REPORT
SURROGATE RECOVERIES

PCBs by Method 8082

Sample ID	Type	CL10BZ2	XYL2456CLM
0106216-01B	SAMP	71	84
LCS-200101693	LCS	94	91
LCSD-200101693	LCSD	79	74
MB-200101693	MBLK	89	79

Acronym		Surrogate	QC Limits
CL10BZ2	=	Decachlorobiphenyl	18-112
XYL2456CLM	=	Tetrachloro-m-xylene	32-110

* Surrogate recovery outside acceptance limits
D - Diluted due to matrix or extended target compounds

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4493 Walden Avenue
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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106216 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106216-01B **Sample Type:** SAMP

Client Sample ID: KWS-MW-13
Alt. Client ID:
Collection Date: 6/29/01 08:10:00
Matrix: WATER
% Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3510C_W								
Aroclor 1016	ND		0.500	µg/L	1	7/5/01 16:06:26	HP58901A_010703E	RN
Aroclor 1221	ND		1.00	µg/L	1			
Aroclor 1232	ND		0.500	µg/L	1			
Aroclor 1242	ND		0.500	µg/L	1			
Aroclor 1248	ND		0.500	µg/L	1			
Aroclor 1254	ND		0.500	µg/L	1			
Aroclor 1260	ND		0.500	µg/L	1			
Surr:Decachlorobiphenyl	71		18 - 112	%REC	1	7/5/01 16:06:26	HP58901A_010703E	RN
Surr:Tetrachloro-m-xylene	84		32 - 110	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 14:00:00

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106216
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

PCBs by Method 8082

Test Code: *1_8082_3510C_W* Units: µg/L

Sample ID: **MB-200101693** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **HP58901A_010703E** SeqNo: **383005** Analysis Date **7/5/01 12:01:09** Prep Batch ID: **200101693** Prep Date: **7/2/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Aroclor 1016	ND	0.5000								
A	Aroclor 1221	ND	1.000								
A	Aroclor 1232	ND	0.5000								
A	Aroclor 1242	ND	0.5000								
A	Aroclor 1248	ND	0.5000								
A	Aroclor 1254	ND	0.5000								
A	Aroclor 1260	ND	0.5000								
S	Decachlorobiphenyl	0.1776	0			89	18	112			
S	Tetrachloro-m-xylene	0.1577	0			79	32	110			

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Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106216
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

PCBs by Method 8082

Sample ID: **LCS-200101693** Client Sample ID: Test Code: *1_8082_3510C_W* Units: µg/L

Run Batch ID: **HP58901A_010703E** SeqNo: **383009** Analysis Date **7/5/01 12:41:55** Prep Batch ID: **200101693** DF: 1 DL_No: 1 Prep Date: **7/2/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Aroclor 1016	4.137	0.5000	5.000	0	83	50	124			
A	Aroclor 1260	4.117	0.5000	5.000	0	82	52	127			
S	Decachlorobiphenyl	0.1887	0	0.2000	0	94	18	112			
S	Tetrachloro-m-xylene	0.1830	0	0.2000	0	91	32	110			

Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

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Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106216
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike Duplicate

PCBs by Method 8082

Test Code: *1_8082_3510C_W* Units: µg/L

Sample ID: **LCSD-200101693** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **HP58901A_010703E** SeqNo: **383008** Analysis Date **7/5/01 13:22:53** Prep Batch ID: **200101693** Prep Date: **7/2/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Aroclor 1016	3.526	0.5000	5.000	0	71	50	124	15.9	30	
A	Aroclor 1260	3.542	0.5000	5.000	0	71	52	127	15.0	30	
S	Decachlorobiphenyl	0.1586	0	0.2000	0	79	18	112	0.0	0	
S	Tetrachloro-m-xylene	0.1473	0	0.2000	0	74	32	110	0.0	0	

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Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

METALS

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-MW-13
Lab Order:	0106216 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/29/01 8:10:00 AM
Lab ID:	0106216-01C **Sample Type:** SAMP	**Matrix:**	WATER % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B (DISSOLVED)								
1_6010B_TAL_D_W								
Aluminum	ND		200	µg/L	1	8/7/01 12:36:28 AM	OPTIMA3300_010806F	SHT
Antimony	3.41	J	10.0	µg/L	1			
Arsenic	ND		25.0	µg/L	1			
Barium	847		20.0	µg/L	1			
Beryllium	ND		5.00	µg/L	1			
Cadmium	ND		5.00	µg/L	1			
Calcium	124000		1500	µg/L	1	8/7/01 5:05:40 PM	OPTIMA3300_010807C	
Chromium	9.91	J	10.0	µg/L	1	8/7/01 12:36:28 AM	OPTIMA3300_010806F	
Cobalt	ND		20.0	µg/L	1			
Copper	5.79	J	20.0	µg/L	1			
Iron	92800		200	µg/L	1			
Lead	ND		5.00	µg/L	1			
Magnesium	17900		600	µg/L	1			
Manganese	722		10.0	µg/L	1			
Nickel	ND		20.0	µg/L	1			
Potassium	8820		500	µg/L	1			
Selenium	9.34	J	20.0	µg/L	1			
Silver	ND		10.0	µg/L	1			
Sodium	11600		1500	µg/L	1			
Thallium	ND		20.0	µg/L	1			
Vanadium	4.54	J	20.0	µg/L	1			
Zinc	73.7		10.0	µg/L	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106216
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

Dissolved Metals, TAL by ICP Method 6010B

Sample ID: **MB-200101717** Client Sample ID: Test Code: *1_6010B_TAL_D_W* Units: µg/L

Run Batch ID: **OPTIMA3300_010806F** SeqNo: **392215** Analysis Date **8/6/01 11:35:32 PM** Prep Batch ID: **200101717** DF: 1 DL_No: 1 Prep Date: **7/5/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Aluminum	71.29	200.0								
A	Antimony	ND	10.00								J
A	Arsenic	ND	25.00								
A	Barium	ND	20.00								
A	Beryllium	ND	5.000								
A	Cadmium	ND	5.000								
A	Chromium	ND	10.00								
A	Cobalt	ND	20.00								
A	Copper	3.889	20.00								
A	Iron	ND	200.0								J
A	Lead	ND	5.000								
A	Magnesium	ND	600.0								
A	Manganese	ND	10.00								
A	Nickel	ND	20.00								
A	Potassium	54.40	500.0								
A	Selenium	ND	20.00								J
A	Silver	ND	10.00								
A	Sodium	ND	1500								
A	Thallium	ND	20.00								
A	Vanadium	ND	20.00								
A	Zinc	ND	10.00								

40

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Laboratory Results

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CLIENT: E and E Washington D.C. Office
Work Order: 0106216
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

Dissolved Metals, TAL by ICP Method 6010B Test Code: *1_6010B_TAL_D_W* Units: µg/L

Sample ID: **MB-200101717** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **OPTIMA3300_010807C** SeqNo: **392655** Analysis Date **8/7/01 4:27:30 PM** Prep Batch ID: **200101717** Prep Date: **7/5/01**

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Calcium	ND	1500								

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Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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CLIENT: E and E Washington D.C. Office
Work Order: 0106216
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

Dissolved Metals, TAL by ICP Method 6010B

Sample ID: **LCS-200101717** Client Sample ID: Test Code: *1_6010B_TAL_D_W* Units: µg/L

Run Batch ID: **OPTIMA3300_010806F** SeqNo: **392216** Analysis Date **8/6/01 11:40:23 PM** Prep Batch ID: **200101717** DF: 1 DL_No: 1 Prep Date: **7/5/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Aluminum	1097	200.0	1000	0	110	80	120			
A	Antimony	1031	10.00	1000	0	103	80	120			
A	Arsenic	1115	25.00	1000	0	111	80	120			
A	Barium	1065	20.00	1000	0	106	80	120			
A	Beryllium	1048	5.000	1000	0	105	80	120			
A	Cadmium	1046	5.000	1000	0	105	80	120			
A	Chromium	1048	10.00	1000	0	105	80	120			
A	Cobalt	1059	20.00	1000	0	106	80	120			
A	Copper	1050	20.00	1000	0	105	80	120			
A	Iron	1024	200.0	1000	0	102	80	120			
A	Lead	1059	5.000	1000	0	106	80	120			
A	Magnesium	10930	600.0	10000	0	109	80	120			
A	Manganese	1059	10.00	1000	0	106	80	120			
A	Nickel	1050	20.00	1000	0	105	80	120			
A	Potassium	10660	500.0	10000	0	107	80	120			
A	Selenium	1035	20.00	1000	0	104	80	120			
A	Silver	43.93	10.00	50.00	0	88	80	120			
A	Sodium	10880	1500	10000	0	109	80	120			
A	Thallium	1046	20.00	1000	0	105	80	120			
A	Vanadium	1035	20.00	1000	0	103	80	120			
A	Zinc	1053	10.00	1000	0	105	80	120			

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Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

Dissolved Metals, TAL by ICP Method 6010B Test Code: *1_6010B_TAL_D_W* Units: µg/L

Sample ID: **LCS-200101717** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: OPTIMA3300_010807C SeqNo: 392656 Analysis Date 8/7/01 4:30:27 PM Prep Batch ID: 200101717 Prep Date: 7/5/01

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Calcium	11740	1500	10000	0	117	80	120			

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Work Order: 0106216
Project: Kenilworth RI/FS

QC SUMMARY REPORT

Sample Matrix Spike

Dissolved Metals, TAL by ICP Method 6010B

Test Code: *1_6010B_TAL_D_W* Units: µg/L

Sample ID: **0106216-01CS**

Run Batch ID: **OPTIMA3300_010806F** SeqNo: **392231** Analysis Date **8/7/01 12:40:39 AM** Prep Batch ID: **200101717** Prep Date: **7/5/01**

	Analyte	Result	PQL	SPK Added	Orig Result	%REC	%RPD
A	Aluminum	1088	200.0	1000	0	109	
A	Antimony	1016	10.00	1000	3.408	101	
A	Arsenic	1086	25.00	1000	0	109	
A	Barium	1861	20.00	1000	847.3	101	
A	Beryllium	1012	5.000	1000	0	101	
A	Cadmium	993.0	5.000	1000	0	99	
A	Chromium	1021	10.00	1000	9.907	101	
A	Cobalt	1010	20.00	1000	0	101	
A	Copper	1071	20.00	1000	5.788	107	
A	Iron	94030	200.0	1000	92820	121	
A	Lead	1018	5.000	1000	0	102	
A	Magnesium	28560	600.0	10000	17870	107	
A	Manganese	1733	10.00	1000	722.4	101	
A	Nickel	1002	20.00	1000	0	100	
A	Potassium	19140	500.0	10000	8818	103	
A	Selenium	1016	20.00	1000	9.342	101	
A	Silver	39.07	10.00	50.00	0	78	
A	Sodium	22080	1500	10000	11600	105	
A	Thallium	990.6	20.00	1000	0	99	
A	Vanadium	1008	20.00	1000	4.542	100	

Definitions: ND - Not Detected at the Reporting Limit; J - Analyte detected below reporting limits; 1 - Represents RSD Limit for Quad Analysis; * - LCS Recovery outside limits; B - Analyte detected in the associated Method Blank; NC - Not Calculated; M - Matrix Spike Recovery outside limits; E - Result exceeds Highest Calibration Standard; RL -Reporting Limit; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)

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Work Order: 0106216
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Sample Matrix Spike

Dissolved Metals, TAL by ICP Method 6010B Test Code: *1_6010B_TAL_D_W* Units: µg/L

Sample ID: **0106216-01CS**

Run Batch ID: **OPTIMA3300_010807C** SeqNo: **392670** Analysis Date **8/7/01 5:08:16 PM** Prep Batch ID: **200101717** Prep Date: **7/5/01**

Analyte	Result	PQL	SPK Added	Orig Result	%REC	%RPD
A Calcium	137500	1500	10000	124100	134	

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Definitions: ND - Not Detected at the Reporting Limit; J - Analyte detected below reporting limits; 1 - Represents RSD Limit for Quad Analysis; * - LCS Recovery outside limits; B - Analyte detected in the associated Method Blank; NC - Not Calculated; M - Matrix Spike Recovery outside limits; E - Result exceeds Highest Calibration Standard; RL -Reporting Limit; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)

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Work Order: 0106216
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Sample Matrix Spike

A	Zinc	1037	10.00	1000	73.70	96	

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below reporting limits
1 - Represents RSD Limit for Quad Analysis
* - LCS Recovery outside limits
B - Analyte detected in the associated Method Blank
NC - Not Calculated
M - Matrix Spike Recovery outside limits
E - Result exceeds Highest Calibration Standard
RL -Reporting Limit
R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)

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Work Order: 0106216
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Sample Matrix Spike Duplicate

Dissolved Metals, TAL by ICP Method 6010B Test Code: *1_6010B_TAL_D_W* Units: µg/L

Sample ID: **0106216-01CS1**

Run Batch ID: **OPTIMA3300_010806F** SeqNo: **392232** Analysis Date **8/7/01 12:44:51 AM** Prep Batch ID: **200101717** Prep Date: **7/5/01**

	Analyte	Result	PQL	SPK Added	Orig Result	%REC	%RPD
A	Aluminum	1151	200.0	1000	0	115	5.7
A	Antimony	1056	10.00	1000	3.408	105	3.8
A	Arsenic	1136	25.00	1000	0	114	4.6
A	Barium	1928	20.00	1000	847.3	108	6.4
A	Beryllium	1073	5.000	1000	0	107	5.9
A	Cadmium	1035	5.000	1000	0	104	4.2
A	Chromium	1064	10.00	1000	9.907	105	4.2
A	Cobalt	1054	20.00	1000	0	105	4.3
A	Copper	1114	20.00	1000	5.788	111	4.0
A	Iron	98290	200.0	1000	92820	547	127.3
A	Lead	1062	5.000	1000	0	106	4.3
A	Magnesium	29620	600.0	10000	17870	118	9.5
A	Manganese	1793	10.00	1000	722.4	107	5.8
A	Nickel	1048	20.00	1000	0	105	4.5
A	Potassium	20130	500.0	10000	8818	113	9.2
A	Selenium	1074	20.00	1000	9.342	106	5.6
A	Silver	38.90	10.00	50.00	0	78	0.4
A	Sodium	23230	1500	10000	11600	116	10.4
A	Thallium	1037	20.00	1000	0	104	4.6
A	Vanadium	1049	20.00	1000	4.542	104	4.0

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; RL -Reporting Limit
J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated; E - Result exceeds Highest Calibration Standard

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Work Order: 0106216
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Sample Matrix Spike Duplicate

Dissolved Metals, TAL by ICP Method 6010B

Test Code: *1_6010B_TAL_D_W* Units: µg/L

Sample ID: **0106216-01CS1**

Run Batch ID: **OPTIMA3300_010807C** SeqNo: **392671** Analysis Date **8/7/01 5:10:54 PM** Prep Batch ID: **200101717** Prep Date: **7/5/01**

	Analyte	Result	PQL	SPK Added	Orig Result	%REC	%RPD
A	Calcium	141200	1500	10000	124100	171	24.1

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Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below reporting limits
1 - Represents RSD Limit for Quad Analysis
* - LCS Recovery outside limits
B - Analyte detected in the associated Method Blank
NC - Not Calculated
M - Matrix Spike Recovery outside limits
E - Result exceeds Highest Calibration Standard
RL -Reporting Limit
R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)

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QC SUMMARY REPORT
Sample Matrix Spike Duplicate

A	Zinc	1077	10.00	1000	73.70	100	4.1	

J-155

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below reporting limits
1 - Represents RSD Limit for Quad Analysis
* - LCS Recovery outside limits
B - Analyte detected in the associated Method Blank
NC - Not Calculated
M - Matrix Spike Recovery outside limits
E - Result exceeds Highest Calibration Standard
RL -Reporting Limit
R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)

MERCURY

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Laboratory Results

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106216 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106216-01C **Sample Type:** SAMP

Client Sample ID: KWS-MW-13
Alt. Client ID:
Collection Date: 6/29/01 8:10:00 AM
Matrix: WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DISSOLVED MERCURY IN WATER BY METHOD 7470A								
1_7470A_HG_D_W								
Mercury	ND		0.200	µg/L	1	7/9/01 11:14:32 AM	LEEMAN_010709C	JLW

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Laboratory Results

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Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106216
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

Dissolved Mercury in Water by Method 7470A

Test Code: *1_7470A_HG_D_W* Units: µg/L

Sample ID: **MB-200101737** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **LEEMAN_010709C** SeqNo: **379183** Analysis Date: **7/9/01 10:40:31 AM** Prep Batch ID: **200101737** Prep Date: **7/6/01**

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Mercury	ND	0.2000								

Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

Ecology & Environment Inc. LIMS Version 3.1.1.9 - 7/6/01 2:00:00 PM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106216
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

Dissolved Mercury in Water by Method 7470A

Test Code: *1_7470A_HG_D_W* Units: µg/L

Sample ID: **LCS-200101737** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: LEEMAN_010709C SeqNo: 379184 Analysis Date: 7/9/01 10:41:59 AM Prep Batch ID: 200101737 Prep Date: 7/6/01

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Mercury	0.9878	0.2000	1.000	0	99	80	120			

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Work Order: 0106216
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Sample Matrix Spike

Dissolved Mercury in Water by Method 7470A

Sample ID: **0106216-01CS** Test Code: *1_7470A_HG_D_W* Units: µg/L

Run Batch ID: **LEEMAN_010709C** SeqNo: **379207** Analysis Date: **7/9/01 11:16:28 AM** Prep Batch ID: **200101737** Prep Date: **7/6/01**

Analyte	Result	PQL	SPK Added	Orig Result	%REC	%RPD
A Mercury	1.000	0.2000	1.000	0	100	

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below reporting limits
1 - Represents RSD Limit for Quad Analysis
* - LCS Recovery outside limits
B - Analyte detected in the associated Method Blank
NC - Not Calculated
M - Matrix Spike Recovery outside limits
E - Result exceeds Highest Calibration Standard
RL -Reporting Limit
R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)

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NYS ELAP ID#: 10486
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CLIENT: E and E Washington D.C. Office
Work Order: 0106216
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Sample Matrix Spike Duplicate

Dissolved Mercury in Water by Method 7470A Test Code: *1_7470A_HG_D_W* Units: µg/L

Sample ID: **0106216-01CS1**

Run Batch ID: **LEEMAN_010709C** SeqNo: **379208** Analysis Date: **7/9/01 11:17:43 AM** Prep Batch ID: **200101737** Prep Date: **7/6/01**

Analyte	Result	PQL	SPK Added	Orig Result	%REC	%RPD
A Mercury	0.9852	0.2000	1.000	0	99	1.5

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below reporting limits
1 - Represents RSD Limit for Quad Analysis
* - LCS Recovery outside limits
B - Analyte detected in the associated Method Blank
NC - Not Calculated
M - Matrix Spike Recovery outside limits
E - Result exceeds Highest Calibration Standard
RL -Reporting Limit
R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)

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Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

August 14, 2001

Mr. Nate Gahr
E and E Washington D.C. Office
1700 North Moore St.
Suite 1610
Arlington, VA 22209

RE: Kenilworth RI/FS
CostPoint ID: **001096.GT05.01.**

Work Order No.: **0106170**

Dear Mr. Nate Gahr,

Ecology and Environment, Inc. received 14 samples on Thursday, June 21, 2001 for the analyses presented in the following report.

E & E will retain the samples addressed in this report for 30 days, unless otherwise instructed by the client. If additional storage is requested, the storage fee is $1.00 per sample container per month, to accrue until the client authorizes sample destruction.

Sincerely,

Tony Bogolin

Tony Bogolin
Project Manager

CC:
Enclosures as note

CHAIN OF CUSTODY RECORD

ASC analytical services center

Ecology and Environment, Inc., Analytical Services Center
4493 Walden Avenue, Lancaster, New York, 14086, Tel: 716/685-8080, Fax 716/685-0852
Where Scientific Excellence and Efficiency Meet

Cooler No: 1
Lab:

Page: 3 of 4

PROJECT No: 0010%-9T05-01
SITE NAME: KENILWORTH PARK SOUTH RIFS
LOCATION: (Include State) ~~VA~~ DC
CLIENT: NPS - GSA
PROJECT MANAGER: J. PASCH
OFFICE No: 703-522-6065
FIELD TEAM LEADER: M. BOUZINAC
PHONE No: 703-522-6065
SAMPLERS: (PRINT) NATE GAHR, MURIEL BOUZINAC, NOEL McMAHON

CONTAINER TYPE AND PRESERVATIVE: 802 GLASS

REQUESTED ANALYSIS: TAL METALS, PAH, PCB

TURNAROUND TIME: 24-HOUR, 48-HOUR, 1-WEEK, STANDARD, RUSH (RUSH ____ days), OTHER ____

(FOR LAB USE ONLY) Lab Job No: Report type: Batch QC: Yes No

DATE	TIME	SAMPLE ID	SAMPLE MATRIX	CHECK FOR MS/MSD	SAMPLE TYPE	No. OF CONTAINERS	TAL METALS	PAH	PCB	OVA/HNU READINGS (PPM)	BEGINNING DEPTH (FEET BGS)	ENDING DEPTH (FEET BGS)	REMARKS
6/19/2001	1347	KWS-SU-NE-1	SS			1	✓	✓	✓				
	1450	KWS-SU-NE-2	SS			1	✓	✓	✓				
	1406	KWS-SU-NE-3	SS			1	✓	✓	✓				
	1419	KWS-SU-NE-4	SS			1	✓	✓	✓				
	1419	KWS-SU-NE-5	SS		D	1	✓	✓	✓				

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	Ship Via:	Date:	Temperature Blank Info. Enclosed: Yes No
[signature]	06/20/01 0800					
Relinquished By: (Signature)	**Date/Time:**	**Received By: (Signature)**	**Date/Time:**	**BL/Airbill Number:**		(FOR LAB USE ONLY) Date: ____ Time: ____ Temperature: ____ °C
		[signature]	6/21/01 845	8287 5467 6807		

Distribution: White - Lab original Yellow - Field team leader

181297

CHAIN OF CUSTODY RECORD

ASC analytical services center

Ecology and Environment, Inc., Analytical Services Center
4493 Walden Avenue, Lancaster, New York, 14086, Tel: 716/685-8080, Fax 716/685-0852
Where Scientific Excellence and Efficiency Meet

Cooler No: 1
Lab:

PROJECT No: 00109-4705.01
SITE NAME: KENILWORTH PARK SOUTH RI/FS
LOCATION: (Include State) DC
CLIENT: NPS-GSA
PROJECT MANAGER: J PASCH
OFFICE No: 703-522-6065
FIELD TEAM LEADER: M BOSZINAC
PHONE No: 703-522-6065
SAMPLERS: (PRINT) M BOSZINAC / N GAHK / N. RERAHOV

CONTAINER TYPE AND PRESERVATIVE: PGZ (GAS)

REQUESTED ANALYSIS: TAL METALS, PCBs, PAH

TURNAROUND TIME: 24-HOUR, 48-HOUR, 1-WEEK, STANDARD, RUSH ____ days, OTHER ____

(FOR LAB USE ONLY)
Lab Job No:
Report type:
Batch QC: Yes No

DATE	TIME	SAMPLE ID	SAMPLE MATRIX	CHECK FOR MS/MSD	SAMPLE TYPE	No. OF CONTAINERS	TAL METALS	PCBs	PAH	OVA/HNU READINGS (PPM)	BEGINNING DEPTH (FEET BGS)	ENDING DEPTH (FEET BGS)	REMARKS
6/19/01	1520	KWS-SS-NE-1	SB			1	✓	✓	✓				
	1540	KWS-SS-NE-2				1							
	1620	KWS-SS-NE-3				1							
	1600	KWS-SS-NE-4				1							
	1820	KWS-SS-WA-1				1							
	1700	KWS-SS-WA-2				1							
	1640	KWS-SS-WA-3				1							
	1750	KWS-SS-WA-4				1							
	1730	KWS-SS-WA-5				1							

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	Ship Via:	Date:
M Boszinac	6/20/01 0800				
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	BL/Airbill Number:	
		[signature]	6/21/01 845	8287 5467 6807	

Temperature Blank Info.
Enclosed: Yes No

(FOR LAB USE ONLY)
Date: ____ Time: ____
Temperature: ____ °C

Distribution: White - Lab original Yellow - Field team leader

0881297

Cooler Receipt Form

PACKAGE RECEIPT #: 8005 NUMBER OF COOLERS: 1 DATE RECEIVED: 6/21/01

E & E PROJECT #: _____ PROJECT OR SITE NAME: E+E Va

A. Preliminary Examination Phase

CIRCLE ONE

1. Did coolers come with airbill or packing slip? _____ YES NO NA

   Enter carrier here and print airbill # below: *(Circle One)* FedEx Airborne Client Other

   Ship as high hazard or dangerous goods YES NO NA

2. Did cooler(s) have custody seals? _____ YES NO NA
3. Were custody seals unbroken and intact on receipt? _____ YES NO* NA
4. Were custody seals dated and signed? _____ YES NO NA
5. Sign here to acknowledge receipt of cooler (s): _____

   Date cooler(s) opened: 6/21/01 C-O-C numbers: _____

   Cooler(s) opened by (print): J Henderson Signature: _____

6. Were the C-O-C forms received? _____ YES NO* NA
7. Was the project identifiable from the C-O-C form? _____ YES NO* NA
   If YES, enter the project number and name in the heading above.

Please record Temperature Blank Vial or Cooler Temperature for Each Cooler, Range (2 - 6C)* NJDEP must be ≤4C

AIRBILL #	TEMP. °C	AIRBILL #	TEMP. °C	AIRBILL #	TEMP. °C
828754676807	4.0				

Thermometer = 129 Correction Factor 0 * If No or Temperature Outside of Acceptable Range, prepare a PM Notification form.

B. Unpacking Phase

8. Was enough packing material used in cooler(s)? _____ YES NO NA
   Type of material: ☐ Vermiculite ☒ Bubble Wrap ☒ Other
9. If required, was enough ice used? _____ YES NO NA
   If YES, type of ice used: ☒ Wet ☐ Dry ☐ Blue ☐ Other
10. Was a temperature blank vial included inside cooler(s)? _____ YES NO NA
    If YES, indicate temperature blank vial temperature in table above. If NO, indicate cooler temperature in table above.
11. Were all containers sealed in separate plastic bags? _____ YES NO NA
12. Did all containers arrive unbroken and in good condition? _____ YES NO* NA
13. Samples stored in W Cooler before Login Phase? YES NO
    If yes: Signature In: _____ Date/Time: _____

    Signature Out: _____ Date/Time: _____

C. Login Phase

Samples Logged in By (print): Kevin Oakley Signature: Kevin Oakley Date: 6/21/01

14. Were all container labels complete (e.g. date, time preserved)? _____ YES NO* NA
15. Were all C-O-C forms filled out properly in ink and signed? _____ YES NO* NA
16. Did the C-O-C form agree with containers received? _____ YES NO* NA
17. Were the correct containers used for the tests requested? _____ YES NO* NA
18. Were the correct preservatives listed on the sample labels? _____ YES NO* NA
19. Was a sufficient sample volume sent for the tests requested? _____ YES NO* NA
20. Were all volatile samples received without head space? _____ YES NO* NA

4

*Prepare a PM Notification form.

1 Forms & Lists Final\F_024 ene\Rev \Approval Date5/1/00Last Update:

Ecology and Environment, Inc.
Analytical Services Center
Lancaster, New York 14086
Phone: (716) 685-8080

Laboratory Results

NYS ELAP ID#: 10486

CLIENT: E and E Washington D.C. Office
Project: Kenilworth RI/FS
Lab Order: 0106170

CASE NARRATIVE

The chain-of-custody form did not have any analysis checked off for samples KWS-SS-NE-1 through 4 and KWS-SS-WA-1 through 5. Muriel Bouzinac was contacted and indicated the samples should be analyzed for TAL metals, PCBs, and PAHs.

GC SEMIVOLATILES
PCB
The columns used for analysis were an RTX-5, 30 meters long and 0.53 mm in diameter, with a 1.0 um film thickness. A 2-ul injection was performed on all samples, QC, and standards.

Sample Analysis
All samples were extracted and analyzed within hold time.

A secondary dilution was performed on samples KWS-SU-NE-1, KWS-SU-NE-3, KWS-SU-NE-4, and KWS-SU-NE-5, based on the level of target compounds present in the native extract.

Calibrations
All initial and continuing calibrations were acceptable.

Manual integrations were not required.

QC
All surrogate recoveries were within acceptable limits except for a high recovery of the surrogate DCB in samples KWS-SU-NE-4, KWS-SS-NE-1, KWS-SS-WA-3, and KWS-SS-WA-4. Recoveries were elevated due to sample matrix interference. The surrogate DCB was unable to be recovered in sample KWS-SU-NE-1 due to a large co-eluting interferent peak which masked the DCB. As a result of the secondary dilutions performed on samples KWS-SU-NE-3 and KWS-SU-NE-5, the surrogate compounds were diluted out, and a percent recovery could not be recorded.

All blank analyses were acceptable.

As a result of the secondary dilutions performed on sample KWS-SU-NE-5, the matrix spike compounds were diluted out, and a percent recovery could not be recorded.

All laboratory control sample (LCS) recoveries were acceptable.

HPLC
PAH
The column used for analysis was either a PAH Hypersil (Keystone Scientific, Inc.) and a Envirosep-PP (Phenonmenex), with particle sizes of 3 uM and 5uM, respectively. A 25-ul injection was performed on all samples, QC, and standards.

Use of Method 8310 presupposes a high expectation of finding the specific compounds of interest. No HPLC column has been developed for the confirmation of PAH"""'s. All positive results above the quantitation limit are flagged "N" as not confirmed.

Sample Analysis
All samples were extracted and analyzed within hold time.

A secondary dilution was performed on all samples except sample KWS-SS-NE-4, based on the level of target compounds present in the native extract.

Calibrations
All initial and continuing calibrations were acceptable.

Manual integrations were performed on all samples and standards, to negate false area resulting from an elevated baseline.

QC
All surrogate recoveries were within acceptable limits except for high recoveries in samples KWS-SS-NE-2, KWS-SS-NE-3, KWS-SS-NE-4 and KWS-SS-WA-4. Recoveries were elevated due to sample matrix interference. As a result of the secondary dilutions performed on samples KWS-SU-NE-3, KWS-SU-NE-4, KWS-SU-NE-5, KWS-SS-WA-1, KWS-SS-WA-2, KWS-SS-WA-3, and KWS-SS-WA-5, the surrogate compound was diluted out, and a percent recovery could not be recorded.

All blank analyses were acceptable. Benzo(a)pyrene and napthalene were present in the method blank above the MDL but below the reporting limit.

Most matrix spike/spike duplicate (MS/MSD) recoveries and RPD values exceeded QC limits as a result of the complex sample matrix. Surrogate recoveries were elevated in the MS/MSD.

All laboratory control sample (LCS) recoveries were acceptable.

METALS
Sample Analysis
All samples were digested and analyzed within hold time. Samples KWS-SS-NE-1, KWS-SS-NE-2, KWS-SS-WA-3 and KWS-SS-WA-4 were analyzed at a ten-fold dilution for arsenic, cadmium, iron, lead, vanadium, barium, manganese, selenium, thallium and/or zinc due to the levels of iron present and resulting spectral interferences.

Calibrations
All initial and continuing calibrations were acceptable.

QC
All calibration and preparation blank analyses were acceptable. Aluminum, arsenic and potassium were present in the method blank above the MDL but below the reporting limit. Zinc was present in the soil method blank abov e the reporting limit at 1.507 mg/kg. All samples contained zinc at levels greater than thirty times the blank concentration.

All laboratory control sample (LCS) recoveries were acceptable.

MERCURY
Sample Analysis
All samples were digested and analyzed within hold time.

Samples KWS-SU-NE-1, KWS-SU-NE-3, KWSX-SU-NE-4, and KWS-SU-NE-5 required analysis at a secondary dilution for mercury due to the concentration present in the native sample.

Calibrations
All initial and continuing calibrations were acceptable.

QC
All calibration and preparation blank analyses were acceptable.

All matrix spike/spike duplicate (MS/MSD) recoveries and RPD values were acceptable.

All laboratory control sample (LCS) recoveries were acceptable.

GENERAL ANALYTICAL CHEMISTRY
Sample Analysis
All samples were analyzed within hold time.

QC
All matrix duplicates were acceptable.

Ecology and Environment, Inc.

Analytical Services Center
Lancaster, New York 14086
Phone: (716) 685-8080

Laboratory Results

NYS ELAP ID#: 10486

Lab Order: 0106170
Client: E and E Washington D.C. Office
Project: Kenilworth RI/FS

DATES REPORT

Sample ID	Client Sample ID	Collection Date	Received Date	Matrix	Test Name	TCLP Date*	Prep Date	Analysis Date
0106170-01A	KWS-SU-NE-1	06/19/2001 1:47:00 PM	6/21/2001 8:45:00 AM	Soil	Mercury Analysis in Soil by Method 7471A		07/10/2001	07/11/2001
					Metals, TAL by ICP Method 6010B		07/05/2001	08/13/2001
					PAH by Method 8310		06/29/2001	07/10/2001
					PCBs by Method 8082		06/28/2001	07/05/2001
					Percent Moisture			06/26/2001
0106170-02A	KWS-SU-NE-2	06/19/2001 2:50:00 PM			Mercury Analysis in Soil by Method 7471A		07/10/2001	07/11/2001
					Metals, TAL by ICP Method 6010B		07/05/2001	08/13/2001
					PAH by Method 8310		06/29/2001	07/11/2001
					PCBs by Method 8082		06/28/2001	07/03/2001
					Percent Moisture			06/26/2001
0106170-03A	KWS-SU-NE-3	06/19/2001 2:06:00 PM			Mercury Analysis in Soil by Method 7471A		07/10/2001	07/11/2001
					Metals, TAL by ICP Method 6010B		07/05/2001	08/13/2001
					PAH by Method 8310		06/29/2001	07/11/2001
					PCBs by Method 8082		06/28/2001	07/05/2001
					Percent Moisture			06/26/2001
0106170-04A	KWS-SU-NE-4	06/19/2001 2:19:00 PM			Mercury Analysis in Soil by Method 7471A		07/10/2001	07/11/2001
					Metals, TAL by ICP Method 6010B		07/05/2001	08/13/2001
					PAH by Method 8310		06/29/2001	07/11/2001
					PCBs by Method 8082		06/28/2001	07/05/2001
					Percent Moisture			06/26/2001
0106170-05A	KWS-SU-NE-5				Mercury Analysis in Soil by Method 7471A		07/10/2001	07/11/2001
					Metals, TAL by ICP Method 6010B		07/05/2001	08/13/2001

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*Reflects Date of TCLP Extraction Completion

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Laboratory Results

NYS ELAP ID#: 10486

Lab Order: 0106170
Client: E and E Washington D.C. Office
Project: Kenilworth RI/FS

DATES REPORT

Sample ID	Client Sample ID	Collection Date	Received Date	Matrix	Test Name	TCLP Date*	Prep Date	Analysis Date
0106170-05A	KWS-SU-NE-5	06/19/2001 2:19:00 PM	6/21/2001 8:45:00 AM	Soil	PAH by Method 8310		06/29/2001	07/11/2001
					PCBs by Method 8082		06/28/2001	07/05/2001
					Percent Moisture			06/26/2001
0106170-06A	KWS-SS-NE-1	06/19/2001 3:20:00 PM			Mercury Analysis in Soil by Method 7471A		07/10/2001	07/11/2001
					Metals, TAL by ICP Method 6010B		07/05/2001	08/13/2001
					PAH by Method 8310		06/29/2001	07/11/2001
					PCBs by Method 8082		06/28/2001	07/05/2001
					Percent Moisture			06/26/2001
0106170-07A	KWS-SS-NE-2	06/19/2001 3:40:00 PM			Mercury Analysis in Soil by Method 7471A		07/10/2001	07/11/2001
					Metals, TAL by ICP Method 6010B		07/05/2001	08/13/2001
					PAH by Method 8310		06/29/2001	07/11/2001
					PCBs by Method 8082		06/28/2001	07/04/2001
					Percent Moisture			06/26/2001
0106170-08A	KWS-SS-NE-3	06/19/2001 4:20:00 PM			Mercury Analysis in Soil by Method 7471A		07/10/2001	07/11/2001
					Metals, TAL by ICP Method 6010B		07/05/2001	08/13/2001
					PAH by Method 8310		06/29/2001	07/11/2001
					PCBs by Method 8082		06/28/2001	07/04/2001
					Percent Moisture			06/26/2001
0106170-09A	KWS-SS-NE-4	06/19/2001 4:00:00 PM			Mercury Analysis in Soil by Method 7471A		07/10/2001	07/11/2001
					Metals, TAL by ICP Method 6010B		07/05/2001	08/13/2001
					PAH by Method 8310		06/29/2001	07/10/2001
					PCBs by Method 8082		06/28/2001	07/04/2001

*Reflects Date of TCLP Extraction Completion

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Laboratory Results

NYS ELAP ID#: 10486

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Client: E and E Washington D.C. Office
Project: Kenilworth RI/FS

DATES REPORT

Sample ID	Client Sample ID	Collection Date	Received Date	Matrix	Test Name	TCLP Date*	Prep Date	Analysis Date
0106170-09A	KWS-SS-NE-4	06/19/2001 4:00:00 PM	6/21/2001 8:45:00 AM	Soil	Percent Moisture			06/26/2001
0106170-10A	KWS-SS-WA-1	06/19/2001 6:20:00 PM			Mercury Analysis in Soil by Method 7471A		07/10/2001	07/11/2001
					Metals, TAL by ICP Method 6010B		07/05/2001	08/13/2001
					PAH by Method 8310		06/29/2001	07/11/2001
					PCBs by Method 8082		06/28/2001	07/06/2001
0106170-11A	KWS-SS-WA-2	06/19/2001 5:00:00 PM			Percent Moisture			06/26/2001
					Mercury Analysis in Soil by Method 7471A		07/10/2001	07/11/2001
					Metals, TAL by ICP Method 6010B		07/05/2001	08/13/2001
					PAH by Method 8310		06/29/2001	07/11/2001
					PCBs by Method 8082		06/28/2001	07/04/2001
0106170-12A	KWS-SS-WA-3	06/19/2001 4:40:00 PM			Percent Moisture			06/26/2001
					Mercury Analysis in Soil by Method 7471A		07/10/2001	07/11/2001
					Metals, TAL by ICP Method 6010B		07/05/2001	08/13/2001
					PAH by Method 8310		06/29/2001	07/11/2001
					PCBs by Method 8082		06/28/2001	07/06/2001
0106170-13A	KWS-SS-WA-4	06/19/2001 5:50:00 PM			Percent Moisture			06/26/2001
					Mercury Analysis in Soil by Method 7471A		07/10/2001	07/11/2001
					Metals, TAL by ICP Method 6010B		07/05/2001	08/13/2001
					PAH by Method 8310		06/29/2001	07/11/2001
					PCBs by Method 8082		06/28/2001	07/04/2001
0106170-14A	KWS-SS-WA-5	06/19/2001 5:30:00 PM			Percent Moisture			06/26/2001
					Mercury Analysis in Soil by Method 7471A		07/10/2001	07/11/2001

LIMS Version #: 3.1.2.0 - 08/09/2001 9:45:00 AM

*Reflects Date of TCLP Extraction Completion

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DATES REPORT

Sample ID	Client Sample ID	Collection Date	Received Date	Matrix	Test Name	TCLP Date*	Prep Date	Analysis Date
0106170-14A	KWS-SS-WA-5	06/19/2001 5:30:00 PM	6/21/2001 8:45:00 AM	Soil	Metals, TAL by ICP Method 6010B		07/05/2001	08/13/2001
					PAH by Method 8310		06/29/2001	07/11/2001
					PCBs by Method 8082		06/28/2001	07/04/2001
					Percent Moisture			06/26/2001

*Reflects Date of TCLP Extraction Completion

GC SEMIVOLATILES

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Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106170
Project: Kenilworth RI/FS
Test Code: 1_8082_3550B_S
Batch ID: HP58902A_010629G

QC SUMMARY REPORT
SURROGATE RECOVERIES

PCBs by Method 8082

Sample ID	Type	CL10BZ2	XYL2456CLM						
0106170-01A	SAMP	0*D	95						
0106170-02A	SAMP	78	93						
0106170-03A	SAMP	0*D	0*D						
0106170-04A	SAMP	159*D	95						
0106170-05A	SAMP	0*D	0*D						
0106170-05AMS	MS	0*D	0*D						
0106170-05AMSD	MSD	0*D	0*D						
0106170-06A	SAMP	122*	119						
0106170-07A	SAMP	83	90						
0106170-08A	SAMP	82	85						
0106170-09A	SAMP	86	89						
0106170-10A	SAMP	75	98						
0106170-11A	SAMP	63	80						
0106170-12A	SAMP	150*	93						
0106170-13A	SAMP	176*	86						
0106170-14A	SAMP	102	87						
LCS-200101662	LCS	87	101						
MB-200101662	MBLK	77	85						

Acronym		Surrogate	QC Limits
CL10BZ2	=	Decachlorobiphenyl	52-115
XYL2456CLM	=	Tetrachloro-m-xylene	39-125

*** Surrogate recovery outside acceptance limits**

D - Diluted due to matrix or extended target compounds

Ecology & Environment Inc. LIMS Version 3.1.1.9 - 7/6/01 2:00:00 PM

Tuesday, July 17, 2001 12:04:50 PM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106170 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106170-01A **Sample Type:** SAMP

Client Sample ID: KWS-SU-NE-1
Alt. Client ID:
Collection Date: 6/19/01 1:47:00 PM
Matrix: SOIL **% Moist:** 23.60

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		255	µg/Kg-dry	10	7/5/01 4:17:30 PM	HP58902A_010629G	RN
Aroclor 1221	ND		510	µg/Kg-dry	10			
Aroclor 1232	ND		255	µg/Kg-dry	10			
Aroclor 1242	ND		255	µg/Kg-dry	10			
Aroclor 1248	ND		255	µg/Kg-dry	10			
Aroclor 1254	742		255	µg/Kg-dry	10			
Aroclor 1260	1300		255	µg/Kg-dry	10			
Surr:Decachlorobiphenyl	0	*D	52 - 115	%REC	10	7/5/01 4:17:30 PM	HP58902A_010629G	RN
Surr:Tetrachloro-m-xylene	95		39 - 125	%REC	10			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

Ecology and Environment, Inc.

Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SU-NE-2
Lab Order:	0106170 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/19/01 2:50:00 PM
Lab ID:	0106170-02A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 10.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		21.7	µg/Kg-dry	1	7/3/01 11:44:48 PM	HP58902A_010629G	RN
Aroclor 1221	ND		43.3	µg/Kg-dry	1			
Aroclor 1232	ND		21.7	µg/Kg-dry	1			
Aroclor 1242	ND		21.7	µg/Kg-dry	1			
Aroclor 1248	ND		21.7	µg/Kg-dry	1			
Aroclor 1254	ND		21.7	µg/Kg-dry	1			
Aroclor 1260	119		21.7	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	78		52 - 115	%REC	1	7/3/01 11:44:48 PM	HP58902A_010629G	RN
Surr:Tetrachloro-m-xylene	93		39 - 125	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106170 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106170-03A **Sample Type:** SAMP

Client Sample ID: KWS-SU-NE-3
Alt. Client ID:
Collection Date: 6/19/01 2:06:00 PM
Matrix: SOIL **% Moist:** 30.80

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		553	µg/Kg-dry	20	7/5/01 5:02:29 PM	HP58902A_010629G	RN
Aroclor 1221	ND		1110	µg/Kg-dry	20			
Aroclor 1232	ND		553	µg/Kg-dry	20			
Aroclor 1242	ND		553	µg/Kg-dry	20			
Aroclor 1248	ND		553	µg/Kg-dry	20			
Aroclor 1254	3160		553	µg/Kg-dry	20			
Aroclor 1260	2510		553	µg/Kg-dry	20			
Surr:Decachlorobiphenyl	0	*D	52 - 115	%REC	20	7/5/01 5:02:29 PM	HP58902A_010629G	RN
Surr:Tetrachloro-m-xylene	0	*D	39 - 125	%REC	20			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Laboratory Results

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SU-NE-4
Lab Order:	0106170 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/19/01 2:19:00 PM
Lab ID:	0106170-04A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 18.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		240	µg/Kg-dry	10	7/5/01 5:47:21 PM	HP58902A_010629G	RN
Aroclor 1221	ND		480	µg/Kg-dry	10			
Aroclor 1232	ND		240	µg/Kg-dry	10			
Aroclor 1242	ND		240	µg/Kg-dry	10			
Aroclor 1248	ND		240	µg/Kg-dry	10			
Aroclor 1254	1690		240	µg/Kg-dry	10			
Aroclor 1260	1010		240	µg/Kg-dry	10			
Surr:Decachlorobiphenyl	159	*D	52 - 115	%REC	10	7/5/01 5:47:21 PM	HP58902A_010629G	RN
Surr:Tetrachloro-m-xylene	95		39 - 125	%REC	10			

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier A -Result by Method of Std. Addition
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	D - Diluted due to matrix or extended target compounds
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106170 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106170-05A **Sample Type:** SAMP

Client Sample ID: KWS-SU-NE-5
Alt. Client ID:
Collection Date: 6/19/01 2:19:00 PM
Matrix: SOIL **% Moist:** 24.90

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		509	µg/Kg-dry	20	7/5/01 6:32:16 PM	HP58902A_010629G	RN
Aroclor 1221	ND		1020	µg/Kg-dry	20			
Aroclor 1232	ND		509	µg/Kg-dry	20			
Aroclor 1242	ND		509	µg/Kg-dry	20			
Aroclor 1248	ND		509	µg/Kg-dry	20			
Aroclor 1254	2340		509	µg/Kg-dry	20			
Aroclor 1260	1430		509	µg/Kg-dry	20			
Surr:Decachlorobiphenyl	0	*D	52 - 115	%REC	20	7/5/01 6:32:16 PM	HP58902A_010629G	RN
Surr:Tetrachloro-m-xylene	0	*D	39 - 125	%REC	20			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

Ecology and Environment, Inc.

Laboratory Results

Analytical Services Center
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Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106170 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106170-06A **Sample Type:** SAMP

Client Sample ID: KWS-SS-NE-1
Alt. Client ID:
Collection Date: 6/19/01 3:20:00 PM
Matrix: SOIL **% Moist:** 14.20

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		23.0	µg/Kg-dry	1	7/5/01 11:47:05 PM	HP58902A_010629G	RN
Aroclor 1221	ND		45.9	µg/Kg-dry	1			
Aroclor 1232	ND		23.0	µg/Kg-dry	1			
Aroclor 1242	122		23.0	µg/Kg-dry	1			
Aroclor 1248	ND		23.0	µg/Kg-dry	1			
Aroclor 1254	119		23.0	µg/Kg-dry	1			
Aroclor 1260	48.0		23.0	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	122	*	52 - 115	%REC	1	7/5/01 11:47:05 PM	HP58902A_010629G	RN
Surr:Tetrachloro-m-xylene	119		39 - 125	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106170 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106170-07A **Sample Type:** SAMP

Client Sample ID: KWS-SS-NE-2
Alt. Client ID:
Collection Date: 6/19/01 3:40:00 PM
Matrix: SOIL **% Moist:** 22.70

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		25.5	µg/Kg-dry	1	7/4/01 7:58:56 AM	HP58902A_010629G	RN
Aroclor 1221	ND		50.9	µg/Kg-dry	1			
Aroclor 1232	ND		25.5	µg/Kg-dry	1			
Aroclor 1242	149		25.5	µg/Kg-dry	1			
Aroclor 1248	ND		25.5	µg/Kg-dry	1			
Aroclor 1254	111		25.5	µg/Kg-dry	1			
Aroclor 1260	22.0	J	25.5	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	83		52 - 115	%REC	1	7/4/01 7:58:56 AM	HP58902A_010629G	RN
Surr:Tetrachloro-m-xylene	90		39 - 125	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Ecology and Environment, Inc.

Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106170 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106170-08A **Sample Type:** SAMP

Client Sample ID: KWS-SS-NE-3
Alt. Client ID:
Collection Date: 6/19/01 4:20:00 PM
Matrix: SOIL **% Moist:** 11.70

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		20.4	µg/Kg-dry	1	7/4/01 8:43:48 AM	HP58902A_010629G	RN
Aroclor 1221	ND		40.8	µg/Kg-dry	1			
Aroclor 1232	ND		20.4	µg/Kg-dry	1			
Aroclor 1242	ND		20.4	µg/Kg-dry	1			
Aroclor 1248	ND		20.4	µg/Kg-dry	1			
Aroclor 1254	ND		20.4	µg/Kg-dry	1			
Aroclor 1260	ND		20.4	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	82		52 - 115	%REC	1	7/4/01 8:43:48 AM	HP58902A_010629G	RN
Surr:Tetrachloro-m-xylene	85		39 - 125	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106170 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106170-09A **Sample Type:** SAMP

Client Sample ID: KWS-SS-NE-4
Alt. Client ID:
Collection Date: 6/19/01 4:00:00 PM
Matrix: SOIL **% Moist:** 15.10

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		20.2	µg/Kg-dry	1	7/4/01 9:28:43 AM	HP58902A_010629G	RN
Aroclor 1221	ND		40.5	µg/Kg-dry	1			
Aroclor 1232	ND		20.2	µg/Kg-dry	1			
Aroclor 1242	56.8		20.2	µg/Kg-dry	1			
Aroclor 1248	ND		20.2	µg/Kg-dry	1			
Aroclor 1254	38.4		20.2	µg/Kg-dry	1			
Aroclor 1260	7.37	J	20.2	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	86		52 - 115	%REC	1	7/4/01 9:28:43 AM	HP58902A_010629G	RN
Surr:Tetrachloro-m-xylene	89		39 - 125	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SS-WA-1
Lab Order:	0106170 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/19/01 6:20:00 PM
Lab ID:	0106170-10A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 10.10

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		21.1	µg/Kg-dry	1	7/6/01 12:32:08 AM	HP58902A_010629G	RN
Aroclor 1221	ND		42.2	µg/Kg-dry	1			
Aroclor 1232	ND		21.1	µg/Kg-dry	1			
Aroclor 1242	47.7		21.1	µg/Kg-dry	1			
Aroclor 1248	ND		21.1	µg/Kg-dry	1			
Aroclor 1254	123		21.1	µg/Kg-dry	1			
Aroclor 1260	105		21.1	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	75		52 - 115	%REC	1	7/6/01 12:32:08 AM	HP58902A_010629G	RN
Surr:Tetrachloro-m-xylene	98		39 - 125	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106170 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106170-11A **Sample Type:** SAMP

Client Sample ID: KWS-SS-WA-2
Alt. Client ID:
Collection Date: 6/19/01 5:00:00 PM
Matrix: SOIL **% Moist:** 12.00

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		21.1	µg/Kg-dry	1	7/4/01 10:58:37 AM	HP58902A_010629G	RN
Aroclor 1221	ND		42.3	µg/Kg-dry	1			
Aroclor 1232	ND		21.1	µg/Kg-dry	1			
Aroclor 1242	ND		21.1	µg/Kg-dry	1			
Aroclor 1248	ND		21.1	µg/Kg-dry	1			
Aroclor 1254	ND		21.1	µg/Kg-dry	1			
Aroclor 1260	22.8		21.1	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	63		52 - 115	%REC	1	7/4/01 10:58:37 AM	HP58902A_010629G	RN
Surr:Tetrachloro-m-xylene	80		39 - 125	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106170 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106170-12A **Sample Type:** SAMP

Client Sample ID: KWS-SS-WA-3
Alt. Client ID:
Collection Date: 6/19/01 4:40:00 PM
Matrix: SOIL **% Moist:** 17.30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		20.8	µg/Kg-dry	1	7/6/01 1:17:00 AM	HP58902A_010629G	RN
Aroclor 1221	ND		41.6	µg/Kg-dry	1			
Aroclor 1232	ND		20.8	µg/Kg-dry	1			
Aroclor 1242	ND		20.8	µg/Kg-dry	1			
Aroclor 1248	ND		20.8	µg/Kg-dry	1			
Aroclor 1254	150		20.8	µg/Kg-dry	1			
Aroclor 1260	9.13	J	20.8	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	150	*	52 - 115	%REC	1	7/6/01 1:17:00 AM	HP58902A_010629G	RN
Surr:Tetrachloro-m-xylene	93		39 - 125	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
25 Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106170 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106170-13A **Sample Type:** SAMP

Client Sample ID: KWS-SS-WA-4
Alt. Client ID:
Collection Date: 6/19/01 5:50:00 PM
Matrix: SOIL **% Moist:** 18.30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		24.3	µg/Kg-dry	1	7/4/01 12:28:28 PM	HP58902A_010629G	RN
Aroclor 1221	ND		48.6	µg/Kg-dry	1			
Aroclor 1232	ND		24.3	µg/Kg-dry	1			
Aroclor 1242	ND		24.3	µg/Kg-dry	1			
Aroclor 1248	ND		24.3	µg/Kg-dry	1			
Aroclor 1254	ND		24.3	µg/Kg-dry	1			
Aroclor 1260	12.6	J	24.3	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	176	*	52 - 115	%REC	1	7/4/01 12:28:28 PM	HP58902A_010629G	RN
Surr:Tetrachloro-m-xylene	86		39 - 125	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106170 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106170-14A **Sample Type:** SAMP

Client Sample ID: KWS-SS-WA-5
Alt. Client ID:
Collection Date: 6/19/01 5:30:00 PM
Matrix: SOIL **% Moist:** 12.20

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		20.5	µg/Kg-dry	1	7/4/01 1:13:23 PM	HP58902A_010629G	RN
Aroclor 1221	ND		41.0	µg/Kg-dry	1			
Aroclor 1232	ND		20.5	µg/Kg-dry	1			
Aroclor 1242	ND		20.5	µg/Kg-dry	1			
Aroclor 1248	ND		20.5	µg/Kg-dry	1			
Aroclor 1254	ND		20.5	µg/Kg-dry	1			
Aroclor 1260	21.5		20.5	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	102		52 - 115	%REC	1	7/4/01 1:13:23 PM	HP58902A_010629G	RN
Surr:Tetrachloro-m-xylene	87		39 - 125	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

Ecology and Environment, Inc.

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4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106170
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

PCBs by Method 8082

Sample ID: **MB-200101662** Client Sample ID: Test Code: *1_8082_3550B_S* Units: µg/Kg

Run Batch ID: **HP58902A_010629G** SeqNo: **380982** Analysis Date **7/3/01 2:01:10 PM** Prep Batch ID: **200101662** DF: 1 DL_No: 1 Prep Date: 6/28/01

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Aroclor 1016	ND	17.90								
A	Aroclor 1221	ND	35.70								
A	Aroclor 1232	ND	17.90								
A	Aroclor 1242	ND	17.90								
A	Aroclor 1248	ND	17.90								
A	Aroclor 1254	ND	17.90								
A	Aroclor 1260	ND	17.90								
S	Decachlorobiphenyl	4.596	0			77	52	115			
S	Tetrachloro-m-xylene	5.054	0			85	39	125			

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Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106170
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Sample Matrix Spike

PCBs by Method 8082 Test Code: *1_8082_3550B_S* Units: µg/Kg-dry

Sample ID: **0106170-05AMS** Client Sample ID: **KWS-SU-NE-5** DF: 20 DL_No: 1

Run Batch ID: **HP58902A_010629G** SeqNo: **381002** Analysis Date **7/5/01 7:17:12 PM** Prep Batch ID: **200101662** Prep Date: **6/28/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Aroclor 1016	716.9	515.0	215.2	0	333	50	150			MD
A	Aroclor 1260	2274	515.0	215.2	1430	392	50	150			MD
S	Decachlorobiphenyl	ND	0	8.595	0	0	52	115			*D
S	Tetrachloro-m-xylene	ND	0	8.595	0	0	39	125			*D

J-195

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Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106170
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Sample Matrix Spike Duplicate

PCBs by Method 8082 Test Code: *1_8082_3550B_S* Units: µg/Kg-dry

Sample ID: **0106170-05AMSD** Client Sample ID: **KWS-SU-NE-5** DF: 20 DL_No: 1

Run Batch ID: **HP58902A_010629G** SeqNo: **381001** Analysis Date **7/5/01 8:02:11 PM** Prep Batch ID: **200101662** Prep Date: 6/28/01

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Aroclor 1016	714.5	510.0	212.9	0	336	50	150	0.8	35	MD
A	Aroclor 1260	2331	510.0	212.9	1430	423	50	150	7.6	35	MD
S	Decachlorobiphenyl	ND	0	8.502	0	0	52	115	0.0	0	*D
S	Tetrachloro-m-xylene	ND	0	8.502	0	0	39	125	0.0	0	*D

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106170
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

PCBs by Method 8082 Test Code: *1_8082_3550B_S* Units: µg/Kg

Sample ID: **LCS-200101662** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **HP58902A_010629G** SeqNo: **380998** Analysis Date **7/5/01 3:32:35 PM** Prep Batch ID: **200101662** Prep Date: **6/28/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Aroclor 1016	123.6	18.80	157.3	0	79	59	119			
A	Aroclor 1260	111.2	18.80	157.3	0	71	50	150			
S	Decachlorobiphenyl	5.487	0	6.281	0	87	52	115			
S	Tetrachloro-m-xylene	6.372	0	6.281	0	101	39	125			

J-197

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Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

LIQUID CHROMATOGRAPHY

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106170
Project: Kenilworth RI/FS
Test Code: 1_8310_3550B_S
Batch ID: LC-1_010710B

QC SUMMARY REPORT
SURROGATE RECOVERIES

PAH by Method 8310

Sample ID	Type	PHEND14
0106170-01A	SAMP	54
0106170-01AMS	MS	196*D
0106170-01AMSD	MSD	159*D
0106170-02A	SAMP	59
0106170-03A	SAMP	0*D
0106170-04A	SAMP	0*D
0106170-05A	SAMP	0*D
0106170-06A	SAMP	77
0106170-07A	SAMP	148*D
0106170-08A	SAMP	173*D
0106170-10A	SAMP	0*D
0106170-11A	SAMP	0*D
0106170-12A	SAMP	0*D
0106170-13A	SAMP	143*D
0106170-14A	SAMP	0*D

Acronym	Surrogate	QC Limits
PHEND14	= Terphenyl-d14	52-123

*** Surrogate recovery outside acceptance limits**

D - Diluted due to matrix or extended target compounds

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106170
Project: Kenilworth RI/FS
Test Code: 1_8310_3550B_S
Batch ID: LC-1_010709A

QC SUMMARY REPORT
SURROGATE RECOVERIES

PAH by Method 8310

Sample ID	Type	PHEND14							
0106170-09A	SAMP	132*							
LCS-200101683	LCS	83							
MB-200101683	MBLK	74							

Acronym		Surrogate	QC Limits
PHEND14	=	Terphenyl-d14	52-123

*** Surrogate recovery outside acceptance limits**
D - Diluted due to matrix or extended target compounds

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Ecology and Environment, Inc.

Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106170 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106170-01A **Sample Type:** SAMP

Client Sample ID: KWS-SU-NE-1
Alt. Client ID:
Collection Date: 6/19/01 1:47:00 PM
Matrix: SOIL **% Moist:** 23.60

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
Acenaphthene	7770	N	508	µg/Kg-dry	5	7/10/01 9:57:36 PM	LC-1_010710B	SDC
Acenaphthylene	ND		508	µg/Kg-dry	5			
Anthracene	99.6	N	50.8	µg/Kg-dry	5			
Benz(a)anthracene	50.1	J	50.8	µg/Kg-dry	5			
Benzo(a)pyrene	463	N	50.8	µg/Kg-dry	5			
Benzo(b)fluoranthene	598	N	50.8	µg/Kg-dry	5			
Benzo(g,h,i)perylene	237	N	127	µg/Kg-dry	5			
Benzo(k)fluoranthene	266	N	50.8	µg/Kg-dry	5			
Chrysene	446	N	50.8	µg/Kg-dry	5			
Dibenz(a,h)anthracene	86.8	J	127	µg/Kg-dry	5			
Fluoranthene	1610	N	127	µg/Kg-dry	5			
Fluorene	168	N	50.8	µg/Kg-dry	5			
Indeno(1,2,3-cd)pyrene	318	N	50.8	µg/Kg-dry	5			
Naphthalene	ND		508	µg/Kg-dry	5			
Phenanthrene	413	N	50.8	µg/Kg-dry	5			
Pyrene	1140	N	127	µg/Kg-dry	5			
Surr:Terphenyl-d14	54		52 - 123	%REC	5	7/10/01 9:57:36 PM	LC-1_010710B	SDC

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Analytical Services Center
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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106170 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106170-02A **Sample Type:** SAMP

Client Sample ID: KWS-SU-NE-2
Alt. Client ID:
Collection Date: 6/19/01 2:50:00 PM
Matrix: SOIL **% Moist:** 10.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
Acenaphthene	422	J	830	µg/Kg-dry	10	7/11/01 12:01:46 AM	LC-1_010710B	SDC
Acenaphthylene	ND		830	µg/Kg-dry	10			
Anthracene	39.7	J	83.0	µg/Kg-dry	10			
Benz(a)anthracene	40.9	J	83.0	µg/Kg-dry	10			
Benzo(a)pyrene	382	N	83.0	µg/Kg-dry	10			
Benzo(b)fluoranthene	347	N	83.0	µg/Kg-dry	10			
Benzo(g,h,i)perylene	203	J	207	µg/Kg-dry	10			
Benzo(k)fluoranthene	216	N	83.0	µg/Kg-dry	10			
Chrysene	356	N	83.0	µg/Kg-dry	10			
Dibenz(a,h)anthracene	117	J	207	µg/Kg-dry	10			
Fluoranthene	910	N	207	µg/Kg-dry	10			
Fluorene	ND		83.0	µg/Kg-dry	10			
Indeno(1,2,3-cd)pyrene	197	N	83.0	µg/Kg-dry	10			
Naphthalene	ND		830	µg/Kg-dry	10			
Phenanthrene	195	N	83.0	µg/Kg-dry	10			
Pyrene	635	N	207	µg/Kg-dry	10			
Surr:Terphenyl-d14	59		52 - 123	%REC	10	7/11/01 12:01:46 AM	LC-1_010710B	SDC

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Laboratory Results

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Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SU-NE-3
Lab Order:	0106170 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/19/01 2:06:00 PM
Lab ID:	0106170-03A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 30.80

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
Acenaphthene	42600	N	2160	µg/Kg-dry	20	7/11/01 12:43:10 AM	LC-1_010710B	SDC
Acenaphthylene	ND		2160	µg/Kg-dry	20			
Anthracene	25.8	J	216	µg/Kg-dry	20			
Benz(a)anthracene	ND		216	µg/Kg-dry	20			
Benzo(a)pyrene	509	N	216	µg/Kg-dry	20			
Benzo(b)fluoranthene	493	N	216	µg/Kg-dry	20			
Benzo(g,h,i)perylene	169	J	541	µg/Kg-dry	20			
Benzo(k)fluoranthene	129	J	216	µg/Kg-dry	20			
Chrysene	436	N	216	µg/Kg-dry	20			
Dibenz(a,h)anthracene	942	N	541	µg/Kg-dry	20			
Fluoranthene	1290	N	541	µg/Kg-dry	20			
Fluorene	1950	N	216	µg/Kg-dry	20			
Indeno(1,2,3-cd)pyrene	250	N	216	µg/Kg-dry	20			
Naphthalene	ND		2160	µg/Kg-dry	20			
Phenanthrene	318	N	216	µg/Kg-dry	20			
Pyrene	902	N	541	µg/Kg-dry	20			
Surr:Terphenyl-d14	0	*D	52 - 123	%REC	20	7/11/01 12:43:10 AM	LC-1_010710B	SDC

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106170 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106170-04A **Sample Type:** SAMP

Client Sample ID: KWS-SU-NE-4
Alt. Client ID:
Collection Date: 6/19/01 2:19:00 PM
Matrix: SOIL **% Moist:** 18.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310 1_8310_3550B_S								
Acenaphthene	16600	N	1900	µg/Kg-dry	20	7/11/01 1:24:35 AM	LC-1_010710B	SDC
Acenaphthylene	ND		1900	µg/Kg-dry	20			
Anthracene	ND		190	µg/Kg-dry	20			
Benz(a)anthracene	ND		190	µg/Kg-dry	20			
Benzo(a)pyrene	99.7	J	190	µg/Kg-dry	20			
Benzo(b)fluoranthene	121	J	190	µg/Kg-dry	20			
Benzo(g,h,i)perylene	ND		474	µg/Kg-dry	20			
Benzo(k)fluoranthene	59.3	J	190	µg/Kg-dry	20			
Chrysene	ND		190	µg/Kg-dry	20			
Dibenz(a,h)anthracene	837	N	474	µg/Kg-dry	20			
Fluoranthene	394	J	474	µg/Kg-dry	20			
Fluorene	721	N	190	µg/Kg-dry	20			
Indeno(1,2,3-cd)pyrene	ND		190	µg/Kg-dry	20			
Naphthalene	ND		1900	µg/Kg-dry	20			
Phenanthrene	77.4	J	190	µg/Kg-dry	20			
Pyrene	260	J	474	µg/Kg-dry	20			
Surr:Terphenyl-d14	0	*D	52 - 123	%REC	20	7/11/01 1:24:35 AM	LC-1_010710B	SDC

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

Ecology and Environment, Inc.

Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106170 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106170-05A **Sample Type:** SAMP

Client Sample ID: KWS-SU-NE-5
Alt. Client ID:
Collection Date: 6/19/01 2:19:00 PM
Matrix: SOIL **% Moist:** 24.90

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
Acenaphthene	26400	N	2040	µg/Kg-dry	20	7/11/01 2:05:59 AM	LC-1_010710B	SDC
Acenaphthylene	ND		2040	µg/Kg-dry	20			
Anthracene	ND		204	µg/Kg-dry	20			
Benz(a)anthracene	ND		204	µg/Kg-dry	20			
Benzo(a)pyrene	ND		204	µg/Kg-dry	20			
Benzo(b)fluoranthene	147	J	204	µg/Kg-dry	20			
Benzo(g,h,i)perylene	ND		511	µg/Kg-dry	20			
Benzo(k)fluoranthene	80.4	J	204	µg/Kg-dry	20			
Chrysene	ND		204	µg/Kg-dry	20			
Dibenz(a,h)anthracene	447	J	511	µg/Kg-dry	20			
Fluoranthene	605	N	511	µg/Kg-dry	20			
Fluorene	1160	N	204	µg/Kg-dry	20			
Indeno(1,2,3-cd)pyrene	ND		204	µg/Kg-dry	20			
Naphthalene	ND		2040	µg/Kg-dry	20			
Phenanthrene	87.8	J	204	µg/Kg-dry	20			
Pyrene	ND		511	µg/Kg-dry	20			
Surr:Terphenyl-d14	0	*D	52 - 123	%REC	20	7/11/01 2:05:59 AM	LC-1_010710B	SDC

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106170 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106170-06A **Sample Type:** SAMP

Client Sample ID: KWS-SS-NE-1
Alt. Client ID:
Collection Date: 6/19/01 3:20:00 PM
Matrix: SOIL **% Moist:** 14.20

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
Acenaphthene	697	J	890	µg/Kg-dry	10	7/11/01 4:51:38 AM	LC-1_010710B	SDC
Acenaphthylene	ND		890	µg/Kg-dry	10			
Anthracene	211	N	89.0	µg/Kg-dry	10			
Benz(a)anthracene	214	N	89.0	µg/Kg-dry	10			
Benzo(a)pyrene	681	N	89.0	µg/Kg-dry	10			
Benzo(b)fluoranthene	688	N	89.0	µg/Kg-dry	10			
Benzo(g,h,i)perylene	542	N	222	µg/Kg-dry	10			
Benzo(k)fluoranthene	378	N	89.0	µg/Kg-dry	10			
Chrysene	707	N	89.0	µg/Kg-dry	10			
Dibenz(a,h)anthracene	75.9	J	222	µg/Kg-dry	10			
Fluoranthene	2570	N	222	µg/Kg-dry	10			
Fluorene	49.8	J	89.0	µg/Kg-dry	10			
Indeno(1,2,3-cd)pyrene	432	N	89.0	µg/Kg-dry	10			
Naphthalene	ND		890	µg/Kg-dry	10			
Phenanthrene	752	N	89.0	µg/Kg-dry	10			
Pyrene	2710	N	222	µg/Kg-dry	10			
Surr:Terphenyl-d14	77		52 - 123	%REC	10	7/11/01 4:51:38 AM	LC-1_010710B	SDC

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106170 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106170-07A **Sample Type:** SAMP

Client Sample ID: KWS-SS-NE-2
Alt. Client ID:
Collection Date: 6/19/01 3:40:00 PM
Matrix: SOIL **% Moist:** 22.70

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
Acenaphthene	ND		193	µg/Kg-dry	2	7/11/01 9:41:18 AM	LC-1_010710B	SDC
Acenaphthylene	ND		193	µg/Kg-dry	2			
Anthracene	129	N	19.3	µg/Kg-dry	2			
Benz(a)anthracene	111	N	19.3	µg/Kg-dry	2			
Benzo(a)pyrene	65.5	N	19.3	µg/Kg-dry	2			
Benzo(b)fluoranthene	134	N	19.3	µg/Kg-dry	2			
Benzo(g,h,i)perylene	26.2	J	48.2	µg/Kg-dry	2			
Benzo(k)fluoranthene	117	N	19.3	µg/Kg-dry	2			
Chrysene	ND		19.3	µg/Kg-dry	2			
Dibenz(a,h)anthracene	184	N	48.2	µg/Kg-dry	2			
Fluoranthene	1280	N	48.2	µg/Kg-dry	2			
Fluorene	132	N	19.3	µg/Kg-dry	2			
Indeno(1,2,3-cd)pyrene	85.7	N	19.3	µg/Kg-dry	2			
Naphthalene	1200	N	193	µg/Kg-dry	2			
Phenanthrene	548	N	19.3	µg/Kg-dry	2			
Pyrene	842	N	48.2	µg/Kg-dry	2			
Surr:Terphenyl-d14	148	*D	52 - 123	%REC	2	7/11/01 9:41:18 AM	LC-1_010710B	SDC

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106170 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106170-08A **Sample Type:** SAMP

Client Sample ID: KWS-SS-NE-3
Alt. Client ID:
Collection Date: 6/19/01 4:20:00 PM
Matrix: SOIL **% Moist:** 11.70

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
Acenaphthene	708	N	335	µg/Kg-dry	4	7/11/01 5:33:00 AM	LC-1_010710B	SDC
Acenaphthylene	ND		335	µg/Kg-dry	4			
Anthracene	159	N	33.5	µg/Kg-dry	4			
Benz(a)anthracene	327	N	33.5	µg/Kg-dry	4			
Benzo(a)pyrene	255	N	33.5	µg/Kg-dry	4			
Benzo(b)fluoranthene	303	N	33.5	µg/Kg-dry	4			
Benzo(g,h,l)perylene	170	N	83.7	µg/Kg-dry	4			
Benzo(k)fluoranthene	173	N	33.5	µg/Kg-dry	4			
Chrysene	416	N	33.5	µg/Kg-dry	4			
Dibenz(a,h)anthracene	169	N	83.7	µg/Kg-dry	4			
Fluoranthene	1230	N	83.7	µg/Kg-dry	4			
Fluorene	54.4	N	33.5	µg/Kg-dry	4			
Indeno(1,2,3-cd)pyrene	154	N	33.5	µg/Kg-dry	4			
Naphthalene	ND		335	µg/Kg-dry	4			
Phenanthrene	497	N	33.5	µg/Kg-dry	4			
Pyrene	992	N	83.7	µg/Kg-dry	4			
Surr:Terphenyl-d14	173	*D	52 - 123	%REC	4	7/11/01 5:33:00 AM	LC-1_010710B	SDC

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SS-NE-4
Lab Order:	0106170 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/19/01 4:00:00 PM
Lab ID:	0106170-09A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 15.10

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
Acenaphthene	ND		84.6	µg/Kg-dry	1	7/10/01 10:31:07 AM	LC-1_010709A	SDC
Acenaphthylene	171	N	84.6	µg/Kg-dry	1			
Anthracene	16.6	N	8.46	µg/Kg-dry	1			
Benz(a)anthracene	98.7	N	8.46	µg/Kg-dry	1			
Benzo(a)pyrene	59.2	N	8.46	µg/Kg-dry	1			
Benzo(b)fluoranthene	63.5	N	8.46	µg/Kg-dry	1			
Benzo(g,h,i)perylene	33.1	N	21.2	µg/Kg-dry	1			
Benzo(k)fluoranthene	39.5	N	8.46	µg/Kg-dry	1			
Chrysene	103	N	8.46	µg/Kg-dry	1			
Dibenz(a,h)anthracene	27.1	N	21.2	µg/Kg-dry	1			
Fluoranthene	510	N	21.2	µg/Kg-dry	1			
Fluorene	17.6	N	8.46	µg/Kg-dry	1			
Indeno(1,2,3-cd)pyrene	38.1	N	8.46	µg/Kg-dry	1			
Naphthalene	226	N	84.6	µg/Kg-dry	1			
Phenanthrene	133	N	8.46	µg/Kg-dry	1			
Pyrene	336	N	21.2	µg/Kg-dry	1			
Surr:Terphenyl-d14	132	*	52 - 123	%REC	1	7/10/01 10:31:07 AM	LC-1_010709A	SDC

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier, A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106170 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106170-10A **Sample Type:** SAMP

Client Sample ID: KWS-SS-WA-1
Alt. Client ID:
Collection Date: 6/19/01 6:20:00 PM
Matrix: SOIL **% Moist:** 10.10

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
Acenaphthene	ND		8190	µg/Kg-dry	50	7/11/01 6:14:24 AM	LC-1_010710B	SDC
Acenaphthylene	ND		8190	µg/Kg-dry	50			
Anthracene	ND		819	µg/Kg-dry	50			
Benz(a)anthracene	168	J	819	µg/Kg-dry	50			
Benzo(a)pyrene	899	N	819	µg/Kg-dry	50			
Benzo(b)fluoranthene	559	J	819	µg/Kg-dry	50			
Benzo(g,h,i)perylene	1450	J	2050	µg/Kg-dry	50			
Benzo(k)fluoranthene	268	J	819	µg/Kg-dry	50			
Chrysene	499	J	819	µg/Kg-dry	50			
Dibenz(a,h)anthracene	ND		2050	µg/Kg-dry	50			
Fluoranthene	2880	N	2050	µg/Kg-dry	50			
Fluorene	ND		819	µg/Kg-dry	50			
Indeno(1,2,3-cd)pyrene	264	J	819	µg/Kg-dry	50			
Naphthalene	ND		8190	µg/Kg-dry	50			
Phenanthrene	958	N	819	µg/Kg-dry	50			
Pyrene	664	J	2050	µg/Kg-dry	50			
Surr:Terphenyl-d14	0	*D	52 - 123	%REC	50	7/11/01 6:14:24 AM	LC-1_010710B	SDC

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Laboratory Results

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Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106170 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106170-11A **Sample Type:** SAMP

Client Sample ID: KWS-SS-WA-2
Alt. Client ID:
Collection Date: 6/19/01 5:00:00 PM
Matrix: SOIL **% Moist:** 12.00

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
Acenaphthene	16200	N	8530	µg/Kg-dry	100	7/11/01 6:55:47 AM	LC-1_010710B	SDC
Acenaphthylene	ND		8530	µg/Kg-dry	100			
Anthracene	1740	N	853	µg/Kg-dry	100			
Benz(a)anthracene	5860	N	853	µg/Kg-dry	100			
Benzo(a)pyrene	6250	N	853	µg/Kg-dry	100			
Benzo(b)fluoranthene	6370	N	853	µg/Kg-dry	100			
Benzo(g,h,i)perylene	4430	N	2130	µg/Kg-dry	100			
Benzo(k)fluoranthene	3820	N	853	µg/Kg-dry	100			
Chrysene	7090	N	853	µg/Kg-dry	100			
Dibenz(a,h)anthracene	ND		2130	µg/Kg-dry	100			
Fluoranthene	24400	N	2130	µg/Kg-dry	100			
Fluorene	ND		853	µg/Kg-dry	100			
Indeno(1,2,3-cd)pyrene	4110	N	853	µg/Kg-dry	100			
Naphthalene	ND		8530	µg/Kg-dry	100			
Phenanthrene	6410	N	853	µg/Kg-dry	100			
Pyrene	19900	N	2130	µg/Kg-dry	100			
Surr:Terphenyl-d14	0	*D	52 - 123	%REC	100	7/11/01 6:55:47 AM	LC-1_010710B	SDC

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106170 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106170-12A **Sample Type:** SAMP

Client Sample ID: KWS-SS-WA-3
Alt. Client ID:
Collection Date: 6/19/01 4:40:00 PM
Matrix: SOIL **% Moist:** 17.30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
Acenaphthene	ND		1800	µg/Kg-dry	20	7/11/01 7:37:11 AM	LC-1_010710B	SDC
Acenaphthylene	ND		1800	µg/Kg-dry	20			
Anthracene	85.4	J	180	µg/Kg-dry	20			
Benz(a)anthracene	89.6	J	180	µg/Kg-dry	20			
Benzo(a)pyrene	306	N	180	µg/Kg-dry	20			
Benzo(b)fluoranthene	354	N	180	µg/Kg-dry	20			
Benzo(g,h,i)perylene	144	J	450	µg/Kg-dry	20			
Benzo(k)fluoranthene	211	N	180	µg/Kg-dry	20			
Chrysene	346	N	180	µg/Kg-dry	20			
Dibenz(a,h)anthracene	302	J	450	µg/Kg-dry	20			
Fluoranthene	1450	N	450	µg/Kg-dry	20			
Fluorene	ND		180	µg/Kg-dry	20			
Indeno(1,2,3-cd)pyrene	156	J	180	µg/Kg-dry	20			
Naphthalene	ND		1800	µg/Kg-dry	20			
Phenanthrene	503	N	180	µg/Kg-dry	20			
Pyrene	983	N	450	µg/Kg-dry	20			
Surr:Terphenyl-d14	0	*D	52 - 123	%REC	20	7/11/01 7:37:11 AM	LC-1_010710B	SDC

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Laboratory Results

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	KWS-SS-WA-4
Lab Order:	0106170 CPID: 001096.GT05.01..	Alt. Client ID:	
Project:	Kenilworth RI/FS	Collection Date:	6/19/01 5:50:00 PM
Lab ID:	0106170-13A Sample Type: SAMP	Matrix:	SOIL % Moist: 18.30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
Acenaphthene	206	N	187	µg/Kg-dry	2	7/11/01 8:18:32 AM	LC-1_010710B	SDC
Acenaphthylene	216	N	187	µg/Kg-dry	2			
Anthracene	28.9	N	18.7	µg/Kg-dry	2			
Benz(a)anthracene	117	N	18.7	µg/Kg-dry	2			
Benzo(a)pyrene	113	N	18.7	µg/Kg-dry	2			
Benzo(b)fluoranthene	123	N	18.7	µg/Kg-dry	2			
Benzo(g,h,i)perylene	61.5	N	46.8	µg/Kg-dry	2			
Benzo(k)fluoranthene	109	N	18.7	µg/Kg-dry	2			
Chrysene	150	N	18.7	µg/Kg-dry	2			
Dibenz(a,h)anthracene	ND		46.8	µg/Kg-dry	2			
Fluoranthene	518	N	46.8	µg/Kg-dry	2			
Fluorene	13.7	J	18.7	µg/Kg-dry	2			
Indeno(1,2,3-cd)pyrene	65.3	N	18.7	µg/Kg-dry	2			
Naphthalene	ND		187	µg/Kg-dry	2			
Phenanthrene	158	N	18.7	µg/Kg-dry	2			
Pyrene	149	N	46.8	µg/Kg-dry	2			
Surr:Terphenyl-d14	143	*D	52 - 123	%REC	2	7/11/01 8:18:32 AM	LC-1_010710B	SDC

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106170 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106170-14A **Sample Type:** SAMP

Client Sample ID: KWS-SS-WA-5
Alt. Client ID:
Collection Date: 6/19/01 5:30:00 PM
Matrix: SOIL
% Moist: 12.20

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
Acenaphthene	4720	N	1740	µg/Kg-dry	20	7/11/01 8:59:55 AM	LC-1_010710B	SDC
Acenaphthylene	875	J	1740	µg/Kg-dry	20			
Anthracene	189	N	174	µg/Kg-dry	20			
Benz(a)anthracene	894	N	174	µg/Kg-dry	20			
Benzo(a)pyrene	873	N	174	µg/Kg-dry	20			
Benzo(b)fluoranthene	1310	N	174	µg/Kg-dry	20			
Benzo(g,h,i)perylene	660	N	436	µg/Kg-dry	20			
Benzo(k)fluoranthene	649	N	174	µg/Kg-dry	20			
Chrysene	1110	N	174	µg/Kg-dry	20			
Dibenz(a,h)anthracene	ND		436	µg/Kg-dry	20			
Fluoranthene	3700	N	436	µg/Kg-dry	20			
Fluorene	ND		174	µg/Kg-dry	20			
Indeno(1,2,3-cd)pyrene	684	N	174	µg/Kg-dry	20			
Naphthalene	3250	N	1740	µg/Kg-dry	20			
Phenanthrene	611	N	174	µg/Kg-dry	20			
Pyrene	2260	N	436	µg/Kg-dry	20			
Surr:Terphenyl-d14	0	*D	52 - 123	%REC	20	7/11/01 8:59:55 AM	LC-1_010710B	SDC

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106170
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

PAH by Method 8310

Test Code: *1_8310_3550B_S* Units: µg/Kg

Sample ID: **MB-200101683** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **LC-1_010709A** SeqNo: **378918** Analysis Date **7/9/01 5:57:33 PM** Prep Batch ID: **200101683** Prep Date: **6/29/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	1-Methylnaphthalene	ND	75.30								
A	2-Methylnaphthalene	ND	75.30								
A	Acenaphthene	ND	75.30								
A	Acenaphthylene	ND	75.30								
A	Anthracene	ND	7.530								
A	Benz(a)anthracene	ND	7.530								
A	Benzo(a)pyrene	2.131	7.530								J
A	Benzo(b)fluoranthene	ND	7.530								
A	Benzo(g,h,i)perylene	ND	18.80								
A	Benzo(k)fluoranthene	ND	7.530								
A	Chrysene	ND	7.530								
A	Dibenz(a,h)anthracene	ND	18.80								
A	Fluoranthene	ND	18.80								
A	Fluorene	ND	7.530								
A	Indeno(1,2,3-cd)pyrene	ND	7.530								
A	Naphthalene	24.26	75.30								J
A	Phenanthrene	ND	7.530								
A	Pyrene	ND	18.80								
S	Terphenyl-d14	699.6	0			74	52	123			

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106170
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Sample Matrix Spike

PAH by Method 8310

Sample ID: **0106170-01AMS** Client Sample ID: **KWS-SU-NE-1** Test Code: *1_8310_3550B_S* Units: µg/Kg-dry

Run Batch ID: **LC-1_010710B** SeqNo: **380693** Analysis Date **7/10/01 10:39:00 PM** Prep Batch ID: **200101683** DF: 5 DL_No: 1 Prep Date: **6/29/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Acenaphthene	6729	502.0	1881	7765	-55	23	117			MD
A	Acenaphthylene	1736	502.0	1881	0	92	45	92			
A	Anthracene	100.8	50.20	87.79	99.64	1	51	100			MD
A	Benz(a)anthracene	331.1	50.20	188.1	50.13	149	63	107			MD
A	Benzo(a)pyrene	528.7	50.20	188.1	462.8	35	54	111			MD
A	Benzo(b)fluoranthene	527.8	50.20	188.1	597.7	-37	63	110			MD
A	Benzo(g,h,i)perylene	367.6	125.0	501.7	236.7	26	54	101			MD
A	Benzo(k)fluoranthene	397.3	50.20	188.1	265.9	70	60	106			
A	Chrysene	374.1	50.20	188.1	446.2	-38	63	106			MD
A	Dibenz(a,h)anthracene	356.8	125.0	501.7	86.80	54	32	122			
A	Fluoranthene	1320	125.0	501.7	1615	-59	63	108			MD
A	Fluorene	150.4	50.20	188.1	168.5	-10	39	105			MD
A	Indeno(1,2,3-cd)pyrene	283.0	50.20	188.1	317.6	-18	55	101			MD
A	Naphthalene	1370	502.0	1881	0	73	42	99			
A	Phenanthrene	373.0	50.20	188.1	412.6	-21	55	102			MD
A	Pyrene	1099	125.0	501.7	1142	-8	61	105			MD
S	Terphenyl-d14	2454	0	1254	0	196	52	123			*D

50

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106170
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Sample Matrix Spike Duplicate

PAH by Method 8310 Test Code: *1_8310_3550B_S* Units: µg/Kg-dry

Sample ID: **0106170-01AMSD** Client Sample ID: **KWS-SU-NE-1** DF: 5 DL_No: 1

Run Batch ID: **LC-1_010710B** SeqNo: **380692** Analysis Date **7/10/01 11:20:23 PM** Prep Batch ID: **200101683** Prep Date: **6/29/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Acenaphthene	10820	511.0	1917	7765	159	23	117	411.4	35	MRD
A	Acenaphthylene	1688	511.0	1917	0	88	45	92	4.6	35	
A	Anthracene	83.27	51.10	89.45	99.64	-18	51	100	230.8	35	MRD
A	Benz(a)anthracene	339.5	51.10	191.7	50.13	151	63	107	1.1	35	MD
A	Benzo(a)pyrene	373.3	51.10	191.7	462.8	-47	54	111	1404.5	35	MRD
A	Benzo(b)fluoranthene	450.6	51.10	191.7	597.7	-77	63	110	69.6	35	MRD
A	Benzo(g,h,i)perylene	384.5	128.0	511.1	236.7	29	54	101	10.2	35	MD
A	Benzo(k)fluoranthene	291.8	51.10	191.7	265.9	14	60	106	135.2	35	MRD
A	Chrysene	447.3	51.10	191.7	446.2	1	63	106	205.9	35	MRD
A	Dibenz(a,h)anthracene	626.1	128.0	511.1	86.80	106	32	122	64.9	35	R
A	Fluoranthene	1288	128.0	511.1	1615	-64	63	108	8.3	35	MD
A	Fluorene	646.8	51.10	191.7	168.5	250	39	105	216.0	35	MRD
A	Indeno(1,2,3-cd)pyrene	276.5	51.10	191.7	317.6	-21	55	101	15.1	35	MD
A	Naphthalene	2152	511.0	1917	0	112	42	99	42.6	35	MRD
A	Phenanthrene	341.1	51.10	191.7	412.6	-37	55	102	55.7	35	MRD
A	Pyrene	1213	128.0	511.1	1142	14	61	105	825.6	35	MRD
S	Terphenyl-d14	2034	0	1278	0	159	52	123	0.0	0	*D

J2-17

5A

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106170
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

PAH by Method 8310

Sample ID: **LCS-200101683** Client Sample ID: Test Code: *1_8310_3550B_S* Units: µg/Kg
Run Batch ID: **LC-1_010709A** SeqNo: **378940** Analysis Date **7/9/01 6:38:57 PM** Prep Batch ID: 200101683 DF: 1 DL_No: 1 Prep Date: 6/29/01

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Acenaphthene	810.9	71.30	1337	0	61	23	117			
A	Acenaphthylene	720.8	71.30	1337	0	54	45	92			
A	Anthracene	35.56	7.130	62.39	0	57	51	100			
A	Benz(a)anthracene	103.1	7.130	133.7	0	77	63	107			
A	Benzo(a)pyrene	80.31	7.130	133.7	0	60	54	111			
A	Benzo(b)fluoranthene	106.8	7.130	133.7	0	80	63	110			
A	Benzo(g,h,i)perylene	238.6	17.80	356.5	0	67	54	101			
A	Benzo(k)fluoranthene	108.7	7.130	133.7	0	81	60	106			
A	Chrysene	108.9	7.130	133.7	0	81	63	106			
A	Dibenz(a,h)anthracene	257.5	17.80	356.5	0	72	32	122			
A	Fluoranthene	270.0	17.80	356.5	0	76	63	108			
A	Fluorene	86.46	7.130	133.7	0	65	39	105			
A	Indeno(1,2,3-cd)pyrene	94.23	7.130	133.7	0	70	55	101			
A	Naphthalene	719.4	71.30	1337	0	54	42	99			
A	Phenanthrene	87.01	7.130	133.7	0	65	55	102			
A	Pyrene	263.0	17.80	356.5	0	74	61	105			
S	Terphenyl-d14	740.5	0	891.3	0	83	52	123			

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Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

METALS

53

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106170 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106170-01A **Sample Type:** SAMP

Client Sample ID: KWS-SU-NE-1
Alt. Client ID:
Collection Date: 6/19/01 1:47:00 PM
Matrix: SOIL **% Moist:** 23.60

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B 1_6010B_TAL_S								
Aluminum	7400		13.1	mg/Kg-dry	1	8/8/01 3:00:52 AM	OPTIMA3300_010807H	SHT
Antimony	0.570	J	1.31	mg/Kg-dry	1			
Arsenic	4.39		1.31	mg/Kg-dry	1			
Barium	263		2.62	mg/Kg-dry	1			
Beryllium	0.884		0.654	mg/Kg-dry	1			
Cadmium	3.56		0.654	mg/Kg-dry	1			
Calcium	6140		65.4	mg/Kg-dry	1			
Chromium	100		1.31	mg/Kg-dry	1			
Cobalt	7.91		2.62	mg/Kg-dry	1			
Copper	171		2.62	mg/Kg-dry	1			
Iron	20400		6.54	mg/Kg-dry	1			
Lead	192		0.654	mg/Kg-dry	1			
Magnesium	2000		65.4	mg/Kg-dry	1			
Manganese	295		1.31	mg/Kg-dry	1			
Nickel	24.3		2.62	mg/Kg-dry	1			
Potassium	1550		131	mg/Kg-dry	1			
Selenium	2.91		1.31	mg/Kg-dry	1			
Silver	29.0		1.31	mg/Kg-dry	1			
Sodium	77.2	J	131	mg/Kg-dry	1			
Thallium	ND		1.31	mg/Kg-dry	1			
Vanadium	55.4		2.62	mg/Kg-dry	1			
Zinc	390		1.31	mg/Kg-dry	1	8/13/01 8:25:28 PM	OPTIMA3300_010813G	

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.2.0 - 8/9/01 9:45:00 AM

Ecology and Environment, Inc.

Laboratory Results

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4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106170 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106170-02A **Sample Type:** SAMP

Client Sample ID: KWS-SU-NE-2
Alt. Client ID:
Collection Date: 6/19/01 2:50:00 PM
Matrix: SOIL **% Moist:** 10.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_TAL_S								
Aluminum	10700		10.5	mg/Kg-dry	1	8/8/01 3:05:09 AM	OPTIMA3300_010807H	SHT
Antimony	ND		1.05	mg/Kg-dry	1			
Arsenic	1.91		1.05	mg/Kg-dry	1			
Barium	82.4		2.11	mg/Kg-dry	1			
Beryllium	0.857		0.526	mg/Kg-dry	1			
Cadmium	0.284	J	0.526	mg/Kg-dry	1			
Calcium	11900		52.6	mg/Kg-dry	1			
Chromium	39.0		1.05	mg/Kg-dry	1			
Cobalt	14.3		2.11	mg/Kg-dry	1			
Copper	28.8		2.11	mg/Kg-dry	1			
Iron	21700		5.26	mg/Kg-dry	1			
Lead	28.7		0.526	mg/Kg-dry	1			
Magnesium	6960		52.6	mg/Kg-dry	1			
Manganese	486		1.05	mg/Kg-dry	1			
Nickel	39.0		2.11	mg/Kg-dry	1			
Potassium	1810		105	mg/Kg-dry	1			
Selenium	3.72		1.05	mg/Kg-dry	1			
Silver	ND		1.05	mg/Kg-dry	1			
Sodium	63.0	J	105	mg/Kg-dry	1			
Thallium	ND		1.05	mg/Kg-dry	1			
Vanadium	46.2		2.11	mg/Kg-dry	1			
Zinc	63.7		1.05	mg/Kg-dry	1	8/13/01 8:28:23 PM	OPTIMA3300_010813G	

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106170 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106170-03A **Sample Type:** SAMP

Client Sample ID: KWS-SU-NE-3
Alt. Client ID:
Collection Date: 6/19/01 2:06:00 PM
Matrix: SOIL **% Moist:** 30.80

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B 1_6010B_TAL_S								
Aluminum	8660		14.5	mg/Kg-dry	1	8/8/01 3:09:27 AM	OPTIMA3300_010807H	SHT
Antimony	1.03	J	1.45	mg/Kg-dry	1			
Arsenic	6.40		1.45	mg/Kg-dry	1			
Barium	505		2.89	mg/Kg-dry	1			
Beryllium	0.756		0.723	mg/Kg-dry	1			
Cadmium	8.73		0.723	mg/Kg-dry	1			
Calcium	10600		72.3	mg/Kg-dry	1			
Chromium	394		1.45	mg/Kg-dry	1			
Cobalt	8.04		2.89	mg/Kg-dry	1			
Copper	406		2.89	mg/Kg-dry	1			
Iron	21700		7.23	mg/Kg-dry	1			
Lead	366		0.723	mg/Kg-dry	1			
Magnesium	2210		72.3	mg/Kg-dry	1			
Manganese	267		1.45	mg/Kg-dry	1			
Nickel	31.4		2.89	mg/Kg-dry	1			
Potassium	708		145	mg/Kg-dry	1			
Selenium	1.58		1.45	mg/Kg-dry	1			
Silver	79.3		1.45	mg/Kg-dry	1			
Sodium	97.7	J	145	mg/Kg-dry	1			
Thallium	ND		1.45	mg/Kg-dry	1			
Vanadium	105		2.89	mg/Kg-dry	1			
Zinc	831		1.45	mg/Kg-dry	1	8/13/01 8:31:21 PM	OPTIMA3300_010813G	

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.2.0 - 8/9/01 9:45:00 AM

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SU-NE-4
Lab Order:	0106170 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/19/01 2:19:00 PM
Lab ID:	0106170-04A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 18.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_TAL_S								
Aluminum	6990		12.0	mg/Kg-dry	1	8/8/01 3:13:45 AM	OPTIMA3300_010807H	SHT
Antimony	0.478	J	1.20	mg/Kg-dry	1			
Arsenic	4.76		1.20	mg/Kg-dry	1			
Barium	328		2.40	mg/Kg-dry	1			
Beryllium	0.630		0.601	mg/Kg-dry	1			
Cadmium	5.10		0.601	mg/Kg-dry	1			
Calcium	4080		60.1	mg/Kg-dry	1			
Chromium	256		1.20	mg/Kg-dry	1			
Cobalt	7.68		2.40	mg/Kg-dry	1			
Copper	236		2.40	mg/Kg-dry	1			
Iron	16400		6.01	mg/Kg-dry	1			
Lead	222		0.601	mg/Kg-dry	1			
Magnesium	1620		60.1	mg/Kg-dry	1			
Manganese	265		1.20	mg/Kg-dry	1			
Nickel	21.1		2.40	mg/Kg-dry	1			
Potassium	464		120	mg/Kg-dry	1			
Selenium	1.51		1.20	mg/Kg-dry	1			
Silver	49.0		1.20	mg/Kg-dry	1			
Sodium	50.9	J	120	mg/Kg-dry	1			
Thallium	ND		1.20	mg/Kg-dry	1			
Vanadium	47.2		2.40	mg/Kg-dry	1			
Zinc	530		1.20	mg/Kg-dry	1	8/13/01 8:34:11 PM	OPTIMA3300_010813G	

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.2.0 - 8/9/01 9:45:00 AM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106170 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106170-05A **Sample Type:** SAMP

Client Sample ID: KWS-SU-NE-5
Alt. Client ID:
Collection Date: 6/19/01 2:19:00 PM
Matrix: SOIL **% Moist:** 24.90

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_TAL_S								
Aluminum	7610		11.3	mg/Kg-dry	1	8/8/01 3:18:04 AM	OPTIMA3300_010807H	SHT
Antimony	1.14		1.13	mg/Kg-dry	1			
Arsenic	6.33		1.13	mg/Kg-dry	1			
Barium	411		2.26	mg/Kg-dry	1			
Beryllium	0.700		0.564	mg/Kg-dry	1			
Cadmium	6.24		0.564	mg/Kg-dry	1			
Calcium	12100		56.4	mg/Kg-dry	1			
Chromium	362		1.13	mg/Kg-dry	1			
Cobalt	7.59		2.26	mg/Kg-dry	1			
Copper	284		2.26	mg/Kg-dry	1			
Iron	18200		5.64	mg/Kg-dry	1			
Lead	316		0.564	mg/Kg-dry	1			
Magnesium	5620		56.4	mg/Kg-dry	1			
Manganese	258		1.13	mg/Kg-dry	1			
Nickel	31.5		2.26	mg/Kg-dry	1			
Potassium	498		113	mg/Kg-dry	1			
Selenium	3.75		1.13	mg/Kg-dry	1			
Silver	68.5		1.13	mg/Kg-dry	1			
Sodium	69.7	J	113	mg/Kg-dry	1			
Thallium	ND		1.13	mg/Kg-dry	1			
Vanadium	67.2		2.26	mg/Kg-dry	1			
Zinc	628		1.13	mg/Kg-dry	1	8/13/01 8:37:00 PM	OPTIMA3300_010813G	

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.2.0 - 8/9/01 9:45:00 AM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	KWS-SS-NE-1
Lab Order:	0106170 CPID: 001096.GT05.01..	Alt. Client ID:	
Project:	Kenilworth RI/FS	Collection Date:	6/19/01 3:20:00 PM
Lab ID:	0106170-06A Sample Type: SAMP	Matrix:	SOIL % Moist: 14.20

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_TAL_S								
Aluminum	19100		11.0	mg/Kg-dry	1	8/8/01 3:22:21 AM	OPTIMA3300_010807H	SHT
Antimony	0.591	J	1.10	mg/Kg-dry	1			
Arsenic	13.2		11.0	mg/Kg-dry	10	8/13/01 6:57:03 PM	OPTIMA3300_010813E	
Barium	374		2.20	mg/Kg-dry	1	8/8/01 3:22:21 AM	OPTIMA3300_010807H	
Beryllium	1.95		0.550	mg/Kg-dry	1			
Cadmium	3.15	J	5.50	mg/Kg-dry	10	8/13/01 6:57:03 PM	OPTIMA3300_010813E	
Calcium	10700		55.0	mg/Kg-dry	1	8/8/01 3:22:21 AM	OPTIMA3300_010807H	
Chromium	52.2		1.10	mg/Kg-dry	1			
Cobalt	14.8		2.20	mg/Kg-dry	1			
Copper	152		2.20	mg/Kg-dry	1			
Iron	69100		55.0	mg/Kg-dry	10	8/13/01 6:57:03 PM	OPTIMA3300_010813E	
Lead	378		5.50	mg/Kg-dry	10			
Magnesium	2930		55.0	mg/Kg-dry	1	8/8/01 3:22:21 AM	OPTIMA3300_010807H	
Manganese	812		1.10	mg/Kg-dry	1			
Nickel	35.6		2.20	mg/Kg-dry	1			
Potassium	2740		110	mg/Kg-dry	1			
Selenium	6.30		1.10	mg/Kg-dry	1			
Silver	ND		1.10	mg/Kg-dry	1			
Sodium	731		110	mg/Kg-dry	1			
Thallium	ND		1.10	mg/Kg-dry	1			
Vanadium	58.3		22.0	mg/Kg-dry	10	8/13/01 6:57:03 PM	OPTIMA3300_010813E	
Zinc	1010		1.10	mg/Kg-dry	1	8/13/01 8:39:50 PM	OPTIMA3300_010813G	

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
S - Single Column Analysis

LIMS Version #: 3.1.2.0 - 8/9/01 9:45:00 AM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106170 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106170-07A **Sample Type:** SAMP

Client Sample ID: KWS-SS-NE-2
Alt. Client ID:
Collection Date: 6/19/01 3:40:00 PM
Matrix: SOIL **% Moist:** 22.70

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_TAL_S								
Aluminum	3680		11.2	mg/Kg-dry	1	8/8/01 3:26:42 AM	OPTIMA3300_010807H	SHT
Antimony	1.25		1.12	mg/Kg-dry	1			
Arsenic	7.46	J	11.2	mg/Kg-dry	10	8/13/01 7:01:19 PM	OPTIMA3300_010813E	
Barium	203		2.23	mg/Kg-dry	1	8/8/01 3:26:42 AM	OPTIMA3300_010807H	
Beryllium	0.260	J	0.558	mg/Kg-dry	1			
Cadmium	2.20	J	5.58	mg/Kg-dry	10	8/13/01 7:01:19 PM	OPTIMA3300_010813E	
Calcium	16000		55.8	mg/Kg-dry	1	8/8/01 3:26:42 AM	OPTIMA3300_010807H	
Chromium	34.3		1.12	mg/Kg-dry	1			
Cobalt	5.82		2.23	mg/Kg-dry	1			
Copper	67.7		2.23	mg/Kg-dry	1			
Iron	62900		55.8	mg/Kg-dry	10	8/13/01 7:01:19 PM	OPTIMA3300_010813E	
Lead	722		5.58	mg/Kg-dry	10			
Magnesium	1210		55.8	mg/Kg-dry	1	8/8/01 3:26:42 AM	OPTIMA3300_010807H	
Manganese	386		1.12	mg/Kg-dry	1			
Nickel	22.7		2.23	mg/Kg-dry	1			
Potassium	350		112	mg/Kg-dry	1			
Selenium	6.19		1.12	mg/Kg-dry	1			
Silver	ND		1.12	mg/Kg-dry	1			
Sodium	164		112	mg/Kg-dry	1			
Thallium	ND		1.12	mg/Kg-dry	1			
Vanadium	16.3	J	22.3	mg/Kg-dry	10	8/13/01 7:01:19 PM	OPTIMA3300_010813E	
Zinc	850		1.12	mg/Kg-dry	1	8/13/01 8:42:41 PM	OPTIMA3300_010813G	

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - [illegible] Column Analysis

LIMS Version #: 3.1.2.0 - 8/9/01 9:45:00 AM

Ecology and Environment, Inc.

Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SS-NE-3
Lab Order:	0106170 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/19/01 4:20:00 PM
Lab ID:	0106170-08A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 11.70

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_TAL_S								
Aluminum	7830		10.3	mg/Kg-dry	1	8/8/01 3:44:55 AM	OPTIMA3300_010807H	SHT
Antimony	ND		1.03	mg/Kg-dry	1			
Arsenic	2.77		1.03	mg/Kg-dry	1			
Barium	63.8		2.06	mg/Kg-dry	1			
Beryllium	0.804		0.515	mg/Kg-dry	1			
Cadmium	0.252	J	0.515	mg/Kg-dry	1			
Calcium	1550		51.5	mg/Kg-dry	1			
Chromium	18.6		1.03	mg/Kg-dry	1			
Cobalt	9.59		2.06	mg/Kg-dry	1			
Copper	17.0		2.06	mg/Kg-dry	1			
Iron	20800		5.15	mg/Kg-dry	1			
Lead	27.4		0.515	mg/Kg-dry	1			
Magnesium	1570		51.5	mg/Kg-dry	1			
Manganese	234		1.03	mg/Kg-dry	1			
Nickel	12.8		2.06	mg/Kg-dry	1			
Potassium	685		103	mg/Kg-dry	1			
Selenium	1.84		1.03	mg/Kg-dry	1			
Silver	ND		1.03	mg/Kg-dry	1			
Sodium	64.6	J	103	mg/Kg-dry	1			
Thallium	ND		1.03	mg/Kg-dry	1			
Vanadium	24.8		2.06	mg/Kg-dry	1			
Zinc	48.1		1.03	mg/Kg-dry	1	8/13/01 8:51:46 PM	OPTIMA3300_010813G	

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
61 Single Column Analysis

LIMS Version #: 3.1.2.0 - 8/9/01 9:45:00 AM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106170 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106170-09A **Sample Type:** SAMP

Client Sample ID: KWS-SS-NE-4
Alt. Client ID:
Collection Date: 6/19/01 4:00:00 PM
Matrix: SOIL **% Moist:** 15.10

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_TAL_S								
Aluminum	8660		11.5	mg/Kg-dry	1	8/8/01 3:49:15 AM	OPTIMA3300_010807H	SHT
Antimony	ND		1.15	mg/Kg-dry	1			
Arsenic	4.89		1.15	mg/Kg-dry	1			
Barium	68.7		2.31	mg/Kg-dry	1			
Beryllium	0.986		0.577	mg/Kg-dry	1			
Cadmium	0.382	J	0.577	mg/Kg-dry	1			
Calcium	3390		57.7	mg/Kg-dry	1			
Chromium	26.6		1.15	mg/Kg-dry	1			
Cobalt	8.81		2.31	mg/Kg-dry	1			
Copper	25.4		2.31	mg/Kg-dry	1			
Iron	37200		5.77	mg/Kg-dry	1			
Lead	58.7		0.577	mg/Kg-dry	1			
Magnesium	1600		57.7	mg/Kg-dry	1			
Manganese	266		1.15	mg/Kg-dry	1			
Nickel	11.7		2.31	mg/Kg-dry	1			
Potassium	792		115	mg/Kg-dry	1			
Selenium	2.85		1.15	mg/Kg-dry	1			
Silver	ND		1.15	mg/Kg-dry	1			
Sodium	129		115	mg/Kg-dry	1			
Thallium	ND		1.15	mg/Kg-dry	1			
Vanadium	25.8		2.31	mg/Kg-dry	1			
Zinc	112		1.15	mg/Kg-dry	1	8/13/01 8:54:39 PM	OPTIMA3300_010813G	

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
S - Single Column Analysis

LIMS Version #: 3.1.2.0 - 8/9/01 9:45:00 AM

Ecology and Environment, Inc.

Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SS-WA-1
Lab Order:	0106170 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/19/01 6:20:00 PM
Lab ID:	0106170-10A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 10.10

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_TAL_S								
Aluminum	4740		10.3	mg/Kg-dry	1	8/8/01 3:53:33 AM	OPTIMA3300_010807H	SHT
Antimony	0.814	J	1.03	mg/Kg-dry	1			
Arsenic	4.65		1.03	mg/Kg-dry	1			
Barium	165		2.06	mg/Kg-dry	1			
Beryllium	0.468	J	0.515	mg/Kg-dry	1			
Cadmium	0.624		0.515	mg/Kg-dry	1			
Calcium	45800		51.5	mg/Kg-dry	1			
Chromium	19.6		1.03	mg/Kg-dry	1			
Cobalt	5.95		2.06	mg/Kg-dry	1			
Copper	62.6		2.06	mg/Kg-dry	1			
Iron	16100		5.15	mg/Kg-dry	1			
Lead	302		0.515	mg/Kg-dry	1			
Magnesium	2810		51.5	mg/Kg-dry	1			
Manganese	326		1.03	mg/Kg-dry	1			
Nickel	14.2		2.06	mg/Kg-dry	1			
Potassium	773		103	mg/Kg-dry	1			
Selenium	9.78		1.03	mg/Kg-dry	1			
Silver	0.771	J	1.03	mg/Kg-dry	1			
Sodium	131		103	mg/Kg-dry	1			
Thallium	ND		1.03	mg/Kg-dry	1			
Vanadium	25.1		2.06	mg/Kg-dry	1			
Zinc	148		1.03	mg/Kg-dry	1	8/13/01 8:57:32 PM	OPTIMA3300_010813G	

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier A -Result by Method of Std. Addition
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	D - Diluted due to matrix or extended target compounds
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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LIMS Version #: 3.1.2.0 - 8/9/01 9:45:00 AM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106170 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106170-11A **Sample Type:** SAMP

Client Sample ID: KWS-SS-WA-2
Alt. Client ID:
Collection Date: 6/19/01 5:00:00 PM
Matrix: SOIL **% Moist:** 12.00

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_TAL_S								
Aluminum	9350		9.97	mg/Kg-dry	1	8/8/01 3:57:44 AM	OPTIMA3300_010807H	SHT
Antimony	ND		0.997	mg/Kg-dry	1			
Arsenic	3.66		0.997	mg/Kg-dry	1			
Barium	92.3		1.99	mg/Kg-dry	1			
Beryllium	0.935		0.498	mg/Kg-dry	1			
Cadmium	0.379	J	0.498	mg/Kg-dry	1			
Calcium	7790		49.8	mg/Kg-dry	1			
Chromium	25.9		0.997	mg/Kg-dry	1			
Cobalt	12.0		1.99	mg/Kg-dry	1			
Copper	29.3		1.99	mg/Kg-dry	1			
Iron	24500		4.98	mg/Kg-dry	1			
Lead	60.5		0.498	mg/Kg-dry	1			
Magnesium	3320		49.8	mg/Kg-dry	1			
Manganese	261		0.997	mg/Kg-dry	1			
Nickel	23.3		1.99	mg/Kg-dry	1			
Potassium	1510		99.7	mg/Kg-dry	1			
Selenium	3.41		0.997	mg/Kg-dry	1			
Silver	ND		0.997	mg/Kg-dry	1			
Sodium	107		99.7	mg/Kg-dry	1			
Thallium	ND		0.997	mg/Kg-dry	1			
Vanadium	32.1		1.99	mg/Kg-dry	1			
Zinc	98.9		0.997	mg/Kg-dry	1	8/13/01 9:00:26 PM	OPTIMA3300_010813G	

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.2.0 - 8/9/01 9:45:00 AM

Ecology and Environment, Inc.

Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SS-WA-3
Lab Order:	0106170 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/19/01 4:40:00 PM
Lab ID:	0106170-12A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 17.30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_TAL_S								
Aluminum	2610		11.9	mg/Kg-dry	1	8/8/01 4:01:55 AM	OPTIMA3300_010807H	SHT
Antimony	62.3		1.19	mg/Kg-dry	1			
Arsenic	39.3		11.9	mg/Kg-dry	10	8/13/01 7:06:13 PM	OPTIMA3300_010813E	
Barium	5000		23.7	mg/Kg-dry	10			
Beryllium	ND		0.593	mg/Kg-dry	1	8/8/01 4:01:55 AM	OPTIMA3300_010807H	
Cadmium	3.21	J	5.93	mg/Kg-dry	10	8/13/01 7:06:13 PM	OPTIMA3300_010813E	
Calcium	22300		59.3	mg/Kg-dry	1	8/8/01 4:01:55 AM	OPTIMA3300_010807H	
Chromium	295		1.19	mg/Kg-dry	1			
Cobalt	21.8		2.37	mg/Kg-dry	1			
Copper	687		2.37	mg/Kg-dry	1			
Iron	286000		59.3	mg/Kg-dry	10	8/13/01 7:06:13 PM	OPTIMA3300_010813E	
Lead	10500		5.93	mg/Kg-dry	10			
Magnesium	1940		59.3	mg/Kg-dry	1	8/8/01 4:01:55 AM	OPTIMA3300_010807H	
Manganese	1570		11.9	mg/Kg-dry	10	8/13/01 7:06:13 PM	OPTIMA3300_010813E	
Nickel	118		2.37	mg/Kg-dry	1	8/8/01 4:01:55 AM	OPTIMA3300_010807H	
Potassium	403		119	mg/Kg-dry	1			
Selenium	10.6	J	11.9	mg/Kg-dry	10	8/13/01 7:06:13 PM	OPTIMA3300_010813E	
Silver	ND		1.19	mg/Kg-dry	1	8/8/01 4:01:55 AM	OPTIMA3300_010807H	
Sodium	776		119	mg/Kg-dry	1			
Thallium	ND		11.9	mg/Kg-dry	10	8/13/01 7:06:13 PM	OPTIMA3300_010813E	
Vanadium	28.7		23.7	mg/Kg-dry	10			
Zinc	2290		11.9	mg/Kg-dry	10			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.2.0 - 8/9/01 9:45:00 AM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106170 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106170-13A **Sample Type:** SAMP

Client Sample ID: KWS-SS-WA-4
Alt. Client ID:
Collection Date: 6/19/01 5:50:00 PM
Matrix: SOIL **% Moist:** 18.30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B 1_6010B_TAL_S								
Aluminum	6270		12.0	mg/Kg-dry	1	8/8/01 4:05:34 AM	OPTIMA3300_010807H	SHT
Antimony	6.77		1.20	mg/Kg-dry	1			
Arsenic	14.8		12.0	mg/Kg-dry	10	8/13/01 7:11:47 PM	OPTIMA3300_010813E	
Barium	2440		2.40	mg/Kg-dry	1	8/8/01 4:05:34 AM	OPTIMA3300_010807H	
Beryllium	0.532	J	0.600	mg/Kg-dry	1			
Cadmium	1.55	J	6.00	mg/Kg-dry	10	8/13/01 7:11:47 PM	OPTIMA3300_010813E	
Calcium	11800		60.0	mg/Kg-dry	1	8/8/01 4:05:34 AM	OPTIMA3300_010807H	
Chromium	139		1.20	mg/Kg-dry	1			
Cobalt	16.3		2.40	mg/Kg-dry	1			
Copper	538		2.40	mg/Kg-dry	1			
Iron	169000		60.0	mg/Kg-dry	10	8/13/01 7:11:47 PM	OPTIMA3300_010813E	
Lead	3300		6.00	mg/Kg-dry	10			
Magnesium	1400		60.0	mg/Kg-dry	1	8/8/01 4:05:34 AM	OPTIMA3300_010807H	
Manganese	1470		12.0	mg/Kg-dry	10	8/13/01 7:11:47 PM	OPTIMA3300_010813E	
Nickel	88.5		2.40	mg/Kg-dry	1	8/8/01 4:05:34 AM	OPTIMA3300_010807H	
Potassium	689		120	mg/Kg-dry	1			
Selenium	13.3		12.0	mg/Kg-dry	10	8/13/01 7:11:47 PM	OPTIMA3300_010813E	
Silver	ND		1.20	mg/Kg-dry	1	8/8/01 4:05:34 AM	OPTIMA3300_010807H	
Sodium	317		120	mg/Kg-dry	1			
Thallium	ND		12.0	mg/Kg-dry	10	8/13/01 7:11:47 PM	OPTIMA3300_010813E	
Vanadium	33.6		24.0	mg/Kg-dry	10			
Zinc	1670		12.0	mg/Kg-dry	10			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.2.0 - 8/9/01 9:45:00 AM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	KWS-SS-WA-5
Lab Order:	0106170 CPID: 001096.GT05.01..	Alt. Client ID:	
Project:	Kenilworth RI/FS	Collection Date:	6/19/01 5:30:00 PM
Lab ID:	0106170-14A Sample Type: SAMP	Matrix:	SOIL % Moist: 12.20

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
ICP METALS ANALYSIS BY METHOD 6010B								
1_6010B_TAL_S								
Aluminum	5860		11.2	mg/Kg-dry	1	8/8/01 4:09:50 AM	OPTIMA3300_010807H	SHT
Antimony	1.57		1.12	mg/Kg-dry	1			
Arsenic	5.27		1.12	mg/Kg-dry	1			
Barium	177		2.23	mg/Kg-dry	1			
Beryllium	0.384	J	0.558	mg/Kg-dry	1			
Cadmium	0.940		0.558	mg/Kg-dry	1			
Calcium	17500		55.8	mg/Kg-dry	1			
Chromium	27.6		1.12	mg/Kg-dry	1			
Cobalt	4.44		2.23	mg/Kg-dry	1			
Copper	1420		2.23	mg/Kg-dry	1			
Iron	22800		5.58	mg/Kg-dry	1			
Lead	1770		0.558	mg/Kg-dry	1			
Magnesium	3230		55.8	mg/Kg-dry	1			
Manganese	621		1.12	mg/Kg-dry	1			
Nickel	62.3		2.23	mg/Kg-dry	1			
Potassium	568		112	mg/Kg-dry	1			
Selenium	4.30		1.12	mg/Kg-dry	1			
Silver	ND		1.12	mg/Kg-dry	1			
Sodium	628		112	mg/Kg-dry	1			
Thallium	ND		1.12	mg/Kg-dry	1			
Vanadium	27.9		2.23	mg/Kg-dry	1			
Zinc	500		1.12	mg/Kg-dry	1	8/13/01 8:09:07 PM	OPTIMA3300_010813G	

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier A -Result by Method of Std. Addition
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	D - Diluted due to matrix or extended target compounds
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106170
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

Metals, TAL by ICP Method 6010B

Test Code: *1_6010B_TAL_S* Units: mg/Kg

Sample ID: **MB-200101718** Client Sample ID:

DF: 1 DL_No: 1

Run Batch ID: **OPTIMA3300_010807H** SeqNo: **392940** Analysis Date **8/8/01 2:51:46 AM** Prep Batch ID: **200101718** Prep Date: **7/5/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Aluminum	3.134	10.00								
A	Antimony	ND	1.000								J
A	Arsenic	0.4571	1.000								
A	Barium	ND	2.000								J
A	Beryllium	ND	0.5000								
A	Cadmium	ND	0.5000								
A	Calcium	ND	50.00								
A	Chromium	ND	1.000								
A	Cobalt	ND	2.000								
A	Copper	ND	2.000								
A	Iron	ND	5.000								
A	Lead	ND	0.5000								
A	Magnesium	ND	50.00								
A	Manganese	ND	1.000								
A	Nickel	ND	2.000								
A	Potassium	8.780	100.0								
A	Selenium	ND	1.000								J
A	Silver	ND	1.000								
A	Sodium	ND	100.0								
A	Thallium	ND	1.000								
A	Vanadium	ND	2.000								

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106170
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

Metals, TAL by ICP Method 6010B Test Code: *1_6010B_TAL_S* Units: mg/Kg

Sample ID: **MB-200101718** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **OPTIMA3300_010813G** SeqNo: **395790** Analysis Date **8/13/01 8:19:00 PM** Prep Batch ID: **200101718** Prep Date: **7/5/01**

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Zinc	1.507	1.000								

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Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106170
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

Metals, TAL by ICP Method 6010B

Sample ID: **LCS-200101718** Client Sample ID: Test Code: *1_6010B_TAL_S* Units: mg/Kg

Run Batch ID: **OPTIMA3300_010807H** SeqNo: **392941** Analysis Date **8/8/01 2:56:38 AM** Prep Batch ID: **200101718** DF: 1 DL_No: 1 Prep Date: **7/5/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Aluminum	109.2	10.00	100.0	0	109	80	120			
A	Antimony	100.7	1.000	100.0	0	101	80	120			
A	Arsenic	108.4	1.000	100.0	0	108	80	120			
A	Barium	104.3	2.000	100.0	0	104	80	120			
A	Beryllium	104.2	0.5000	100.0	0	104	80	120			
A	Cadmium	102.8	0.5000	100.0	0	103	80	120			
A	Calcium	1128	50.00	1000	0	113	80	120			
A	Chromium	100.8	1.000	100.0	0	101	80	120			
A	Cobalt	102.4	2.000	100.0	0	102	80	120			
A	Copper	103.4	2.000	100.0	0	103	80	120			
A	Iron	106.7	5.000	100.0	0	107	80	120			
A	Lead	102.9	0.5000	100.0	0	103	80	120			
A	Magnesium	1039	50.00	1000	0	104	80	120			
A	Manganese	108.4	1.000	100.0	0	108	80	120			
A	Nickel	103.4	2.000	100.0	0	103	80	120			
A	Potassium	1024	100.0	1000	0	102	80	120			
A	Selenium	103.2	1.000	100.0	0	103	80	120			
A	Silver	5.446	1.000	5.000	0	109	80	120			
A	Sodium	1057	100.0	1000	0	106	80	120			
A	Thallium	102.2	1.000	100.0	0	102	80	120			
A	Vanadium	100.9	2.000	100.0	0	101	80	120			

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Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106170
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

Metals, TAL by ICP Method 6010B — Test Code: *1_6010B_TAL_S* — Units: mg/Kg

Sample ID: **LCS-200101718** — Client Sample ID: — DF: 1 — DL_No: 1

Run Batch ID: **OPTIMA3300_010813G** — SeqNo: **395791** — Analysis Date **8/13/01 8:22:33 PM** — Prep Batch ID: **200101718** — Prep Date: **7/5/01**

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Zinc	102.7	1.000	100.0	0	103	80	120			B

J-238

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Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit
J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

MERCURY

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Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SU-NE-1
Lab Order:	0106170 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/19/01 1:47:00 PM
Lab ID:	0106170-01A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 23.60

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A								
1_7471A_HG_S								
Mercury	3.05		0.178	mg/Kg-dry	3	7/11/01 1:04:54 PM	LEEMAN_010711C	JLW

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	**KWS-SU-NE-2**
Lab Order:	0106170 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/19/01 2:50:00 PM
Lab ID:	**0106170-02A** **Sample Type:** SAMP	**Matrix:**	SOIL

% Moist: 10.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A								
1_7471A_HG_S								
Mercury	0.0578		0.0523	mg/Kg-dry	1	7/11/01 11:27:57 AM	LEEMAN_010711C	JLW

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Laboratory Results

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4493 Walden Avenue
Lancaster, New York 14086-

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106170 CPID: 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106170-03A Sample Type: SAMP

Client Sample ID: KWS-SU-NE-3
Alt. Client ID:
Collection Date: 6/19/01 2:06:00 PM
Matrix: SOIL % Moist: 30.80

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A								
1_7471A_HG_S								
Mercury	7.45		0.677	mg/Kg-dry	10	7/11/01 1:06:22 PM	LEEMAN_010711C	JLW

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-808

CLIENT: E and E Washington D.C. Office
Lab Order: 0106170 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106170-04A **Sample Type:** SAMP

Client Sample ID: KWS-SU-NE-4
Alt. Client ID:
Collection Date: 6/19/01 2:19:00 PM
Matrix: SOIL **% Moist:** 18.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A								
1_7471A_HG_S								
Mercury	5.17		0.484	mg/Kg-dry	10	7/11/01 1:07:36 PM	LEEMAN_010711C	JLW

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

Tuesday, July 17, 2001 2:34:45 pm

Ecology and Environment, Inc.

Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	KWS-SU-NE-5
Lab Order:	0106170 CPID: 001096.GT05.01..	Alt. Client ID:	
Project:	Kenilworth RI/FS	Collection Date:	6/19/01 2:19:00 PM
Lab ID:	0106170-05A Sample Type: SAMP	Matrix:	SOIL % Moist: 24.90

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A								
1_7471A_HG_S								
Mercury	6.40		0.644	mg/Kg-dry	10	7/11/01 1:08:51 PM	LEEMAN_010711C	JLW

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

Tuesday, July 17, 2001 9:34:46 AM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	KWS-SS-NE-1
Lab Order:	0106170 CPID: 001096.GT05.01..	Alt. Client ID:	
Project:	Kenilworth RI/FS	Collection Date:	6/19/01 3:20:00 PM
Lab ID:	0106170-06A Sample Type: SAMP	Matrix:	SOIL % Moist: 14.20

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.144		0.0473	mg/Kg-dry	1	7/11/01 11:36:21 AM	LEEMAN_010711C	JLW

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Ecology and Environment, Inc.

Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SS-NE-2
Lab Order:	0106170 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/19/01 3:40:00 PM
Lab ID:	0106170-07A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 22.70

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A								
1_7471A_HG_S								
Mercury	0.344		0.0571	mg/Kg-dry	1	7/11/01 11:37:45 AM	LEEMAN_010711C	JLW

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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4493 Walden Avenue
Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SS-NE-3
Lab Order:	0106170 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/19/01 4:20:00 PM
Lab ID:	**0106170-08A** **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 11.70

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A								
1_7471A_HG_S								
Mercury	0.101		0.0459	mg/Kg-dry	1	7/11/01 11:39:07 AM	LEEMAN_010711C	JLW

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier A -Result by Method of Std. Addition
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	D - Diluted due to matrix or extended target compounds
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106170 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106170-09A **Sample Type:** SAMP

Client Sample ID: KWS-SS-NE-4
Alt. Client ID:
Collection Date: 6/19/01 4:00:00 PM
Matrix: SOIL **% Moist:** 15.10

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A								
1_7471A_HG_S								
Mercury	0.311		0.0465	mg/Kg-dry	1	7/11/01 11:41:42 AM	LEEMAN_010711C	JLW

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

Ecology and Environment, Inc.

Analytical Services Center

4493 Walden Avenue
Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SS-WA-1
Lab Order:	0106170 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/19/01 6:20:00 PM
Lab ID:	0106170-10A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 10.10

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A								
1_7471A_HG_S								
Mercury	0.265		0.0451	mg/Kg-dry	1	7/11/01 11:42:56 AM	LEEMAN_010711C	JLW

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SS-WA-2
Lab Order:	0106170 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/19/01 5:00:00 PM
Lab ID:	0106170-11A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 12.00

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A								
1_7471A_HG_S								
Mercury	0.230		0.0501	mg/Kg-dry	1	7/11/01 11:44:10 AM	LEEMAN_010711C	JLW

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier A -Result by Method of Std. Addition
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	D - Diluted due to matrix or extended target compounds
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

83

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SS-WA-3
Lab Order:	0106170 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/19/01 4:40:00 PM
Lab ID:	**0106170-12A** **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 17.30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A								
1_7471A_HG_S								
Mercury	0.636		0.0567	mg/Kg-dry	1	7/11/01 11:45:53 AM	LEEMAN_010711C	JLW

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier A -Result by Method of Std. Addition
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	D - Diluted due to matrix or extended target compounds
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SS-WA-4
Lab Order:	0106170 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/19/01 5:50:00 PM
Lab ID:	0106170-13A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 18.30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A								
1_7471A_HG_S								
Mercury	0.287		0.0574	mg/Kg-dry	1	7/11/01 11:49:55 AM	LEEMAN_010711C	JLW

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SS-WA-5
Lab Order:	0106170 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/19/01 5:30:00 PM
Lab ID:	0106170-14A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 12.20

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A								
1_7471A_HG_S								
Mercury	0.512		0.0569	mg/Kg-dry	1	7/11/01 11:51:19 AM	LEEMAN_010711C	JLW

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier A -Result by Method of Std. Addition
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	D - Diluted due to matrix or extended target compounds
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106170
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

Mercury Analysis in Soil by Method 7471A Test Code: *1_7471A_HG_S* Units: mg/Kg

Sample ID: **MB-200101748** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **LEEMAN_010711C** SeqNo: **380590** Analysis Date **7/11/01 11:14:14 AM** Prep Batch ID: **200101748** Prep Date: **7/10/01**

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Mercury	ND	0.05000								

J-255

87

Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106170
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

Mercury Analysis in Soil by Method 7471A

Test Code: *1_7471A_HG_S* Units: mg/Kg

Sample ID: **LCS-200101748** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **LEEMAN_010711C** SeqNo: **380591** Analysis Date **7/11/01 11:15:30 AM** Prep Batch ID: **200101748** Prep Date: **7/10/01**

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Mercury	0.3240	0.05000	0.3330	0	97	68	151			

88

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Laboratory Results

YS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106170
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Sample Matrix Spike

Mercury Analysis in Soil by Method 7471A Test Code: *1_7471A_HG_S* Units: mg/Kg-dry

Sample ID: **0106170-14AS**

Run Batch ID: **LEEMAN_010711C** SeqNo: **380616** Analysis Date **7/11/01 11:52:45 AM** Prep Batch ID: **200101748** Prep Date: **7/10/01**

	Analyte	Result	PQL	SPK Added	Orig Result	%REC	%RPD
A	Mercury	0.9484	0.05690	0.3793	0.5118	115	

J-257

89

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated; E - Result exceeds Highest Calibration Standard

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Laboratory Results

YS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106170
Project: Kenilworth RI/FS

QC SUMMARY REPORT

Sample Matrix Spike Duplicate

Mercury Analysis in Soil by Method 7471A Test Code: *1_7471A_HG_S* Units: mg/Kg-dry

Sample ID: **0106170-14AS1**

Run Batch ID: **LEEMAN_010711C** SeqNo: **380617** Analysis Date **7/11/01 11:54:00 AM** Prep Batch ID: **200101748** Prep Date: **7/10/01**

Analyte	Result	PQL	SPK Added	Orig Result	%REC	%RPD
A Mercury	0.8853	0.05690	0.3793	0.5118	98	15.6

90

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated; E - Result exceeds Highest Calibration Standard

GENERAL ANALYTICAL CHEMISTRY

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Laboratory Results

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SU-NE-1
Lab Order:	0106170 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/19/01 1:47:00 PM
Lab ID:	**0106170-01A** **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	23.6		0.100	wt%	1	6/26/01	OHAUS_PMOIST_010626A	AO

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 6/28/01 6:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	KWS-SU-NE-2
Lab Order:	0106170 CPID: 001096.GT05.01..	Alt. Client ID:	
Project:	Kenilworth RI/FS	Collection Date:	6/19/01 2:50:00 PM
Lab ID:	0106170-02A Sample Type: SAMP	Matrix:	SOIL % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	10.4		0.100	wt%	1	6/26/01	OHAUS_PMOIST_010626A	AO

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106170 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106170-03A **Sample Type:** SAMP

Client Sample ID: KWS-SU-NE-3
Alt. Client ID:
Collection Date: 6/19/01 2:06:00 PM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	30.8		0.100	wt%	1	6/26/01	OHAUS_PMOIST_010626A	AO

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 6/28/01 6:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	KWS-SU-NE-4
Lab Order:	0106170 CPID: 001096.GT05.01..	Alt. Client ID:	
Project:	Kenilworth RI/FS	Collection Date:	6/19/01 2:19:00 PM
Lab ID:	0106170-04A Sample Type: SAMP	Matrix:	SOIL % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	18.4		0.100	wt%	1	6/26/01	OHAUS PMOIST 010626A	AC

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SU-NE-5
Lab Order:	0106170 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/19/01 2:19:00 PM
Lab ID:	**0106170-05A** **Sample Type:** SAMP	**Matrix:**	SOIL % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	24.9		0.100	wt%	1	6/26/01	OHAUS_PMOIST_010626A	AO

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 6/28/01 6:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	KWS-SS-NE-1
Lab Order:	0106170 CPID: 001096.GT05.01..	Alt. Client ID:	
Project:	Kenilworth RI/FS	Collection Date:	6/19/01 3:20:00 PM
Lab ID:	0106170-06A Sample Type: SAMP	Matrix:	SOIL % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	14.2		0.100	wt%	1	6/26/01	OHAUS_PMOIST_010626A	AO

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SS-NE-2
Lab Order:	0106170 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/19/01 3:40:00 PM
Lab ID:	**0106170-07A** **Sample Type:** SAMP	**Matrix:** SOIL	**% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	22.7		0.100	wt%	1	6/26/01	OHAUS_PMOIST_010626A	AO

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 6/28/01 6:00:00 PM

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Laboratory Results

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106170 CPID: 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106170-08A Sample Type: SAMP

Client Sample ID: KWS-SS-NE-3
Alt. Client ID:
Collection Date: 6/19/01 4:20:00 PM
Matrix: SOIL % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	11.7		0.100	wt%	1	6/26/01	OHAUS PMOIST 010626A	AO

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

99

LIMS Version #: 3.1.1.9 - 6/28/01 6:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SS-NE-4
Lab Order:	0106170 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/19/01 4:00:00 PM
Lab ID:	0106170-09A **Sample Type:** SAMP	**Matrix:**	SOIL % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	15.1		0.100	wt%	1	6/26/01	OHAUS_PMOIST_010626A	AO

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 6/28/01 6:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	KWS-SS-WA-1
Lab Order:	0106170 CPID: 001096.GT05.01..	Alt. Client ID:	
Project:	Kenilworth RI/FS	Collection Date:	6/19/01 6:20:00 PM
Lab ID:	0106170-10A Sample Type: SAMP	Matrix:	SOIL % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	10.1		0.100	wt%	1	6/26/01	OHAUS_PMOIST_010626A	AO

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Client Sample ID: KWS-SS-WA-2
Lab Order: 0106170 **CPID:** 001096.GT05.01..
Alt. Client ID:
Project: Kenilworth RI/FS
Collection Date: 6/19/01 5:00:00 PM
Lab ID: 0106170-11A **Sample Type:** SAMP
Matrix: SOIL
% Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	12.0		0.100	wt%	1	6/26/01	OHAUS_PMOIST_010626A	AO

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

1.2

LIMS Version #: 3.1.1.9 - 6/28/01 6:00:00 PM

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Laboratory Results

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	KWS-SS-WA-3
Lab Order:	0106170 CPID: 001096.GT05.01..	Alt. Client ID:	
Project:	Kenilworth RI/FS	Collection Date:	6/19/01 4:40:00 PM
Lab ID:	0106170-12A Sample Type: SAMP	Matrix:	SOIL % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	17.3		0.100	wt%	1	6/26/01	OHAUS_PMOIST_010626A	AO

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 6/28/01 6:00:00 PM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SS-WA-4
Lab Order:	0106170 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/19/01 5:50:00 PM
Lab ID:	0106170-13A **Sample Type:** SAMP	**Matrix:**	SOIL % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	18.3		0.100	wt%	1	6/26/01	OHAUS_PMOIST_010626A	AO

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 6/28/01 6:00:00 PM

Ecology and Environment, Inc.

Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SS-WA-5
Lab Order:	0106170 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/19/01 5:30:00 PM
Lab ID:	0106170-14A **Sample Type:** SAMP	**Matrix:**	SOIL % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	12.2		0.100	wt%	1	6/26/01	OHAUS_PMOIST_010626A	AO

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 6/28/01 6:00:00 PM

Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106170
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Sample Duplicate

Percent Moisture Test Code: *PMOIST* Units: wt%

Sample ID: **0106170-14A** Client Sample ID: **KWS-SS-WA-5** DF: 1 DL_No: 1

Run Batch ID: **OHAUS_PMOIST_010626A** SeqNo: **372359** Analysis Date **6/26/01** Prep Batch ID: **010626170r** Prep Date: **6/26/01**

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Percent Moisture	9.367	0.1000		12.23				26.5	35	

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Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

August 24, 2001

Mr. Nate Gahr
E and E Washington D.C. Office
1700 North Moore St.
Suite 1610
Arlington, VA 22209

RE: Kenilworth RI/FS
Work Order No.: **0106162**

Dear Mr. Nate Gahr,

Ecology and Environment, Inc. received 16 samples on Thursday, June 21, 2001 for the analyses presented in the following report.

You will receive an invoice under separate cover.

E & E will retain the samples addressed in this report for 30 days, unless otherwise instructed by the client. If additional storage is requested, the storage fee is $1.00 per sample container per month, to accrue until the client authorizes sample destruction.

Sincerely,

Tony Bogolin
Project Manager

CC:
Enclosures as note

CHAIN OF CUSTODY RECORD

ASC analytical services center

Ecology and Environment, Inc., Analytical Services Center
4493 Walden Avenue, Lancaster, New York, 14086, Tel: 716/685-8080, Fax 716/685-0852
Where Scientific Excellence and Efficiency Meet

Cooler No: 3
Lab:

Page: 1 of 2

PROJECT No: 001096 G10F01
SITE NAME: KENILWORTH SOUTH PARK RIFS
LOCATION: (Include State) DC
CLIENT: NPS - GSA
PROJECT MANAGER: T. PASCA
OFFICE No: 703-522-6065
FIELD TEAM LEADER: M BOUZINAC
PHONE No: 703-522-6065
SAMPLERS: (PRINT) M BOUZINAC H ALOIS

CONTAINER TYPE AND PRESERVATIVE: 8 oz
REQUESTED ANALYSIS: PCBs

TURNAROUND TIME: 24-HOUR, 48-HOUR, 1-WEEK, STANDARD, RUSH (RUSH ____ days), OTHER

(FOR LAB USE ONLY)
Lab Job No:
Report type:
Batch QC: Yes No

DATE	TIME	SAMPLE ID	SAMPLE MATRIX	CHECK FOR MS/MSD	SAMPLE TYPE	No. OF CONTAINERS	OVA/HNU READINGS (PPM)	BEGINNING DEPTH (FEET BGS)	ENDING DEPTH (FEET BGS)	REMARKS
6/20/01	1020	KWS-SU-BK-1	SS			1				
	1025	KWS-SU-BK-2				1				
	1035	KWS-SU-BK-3				1				
	1045	KWS-SU-BK-4				1				
	1105	KWS-SU-BK-5				1				
	1135	KWS-SU-BK-6				1				
	1210	KWS-SU-BK-7				1				
	1250	KWS-SU-BK-8				1				
	1313	KWS-SU-BK-9				1				

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	Ship Via:	Date:	Temperature Blank Info. Enclosed: Yes No
M Bouzinac	6/20/01 1730					
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	BL/Airbill Number:		(FOR LAB USE ONLY) Date: ____ Time: ____ Temperature: ____ °C
		[signature]	6/21/01 845			

Distrib: White - Lab original Yellow - Field team leader

J-277

J881297

CHAIN OF CUSTODY RECORD

ASC analytical services center

Ecology and Environment, Inc., Analytical Services Center
4493 Walden Avenue, Lancaster, New York, 14086, Tel: 716/685-8080, Fax 716/685-0852
Where Scientific Excellence and Efficiency Meet

Cooler No: 3
Lab:

PROJECT No: 001091.GT05.01
SITE NAME: KENILWORTH SOUTH PARK RIFS
LOCATION: (Include State) DC
CLIENT: NPS - GSA
PROJECT MANAGER: J PASCH
OFFICE No: 703-522-6015
FIELD TEAM LEADER: M BOUZINAC
PHONE No: 703-522-6015
SAMPLERS: (PRINT) M BOUZINAC H. ALDIS

CONTAINER TYPE AND PRESERVATIVE: 8oz; 1L amber; 1L amber; 1L clear/amber

TURNAROUND TIME: 24-HOUR ☐ 48-HOUR ☐ 1-WEEK ☒ STANDARD ☐ RUSH (RUSH) ____ days OTHER ____

(FOR LAB USE ONLY)
Lab Job No:
Report type:
Batch QC: Yes No

DATE	TIME	SAMPLE ID	SAMPLE MATRIX	CHECK FOR MS/MSD	SAMPLE TYPE	No. OF CONTAINERS	PCB	PCB	PAHs	TAL Metals				OVA/HNU READINGS (PPM)	BEGINNING DEPTH (FEET BGS)	ENDING DEPTH (FEET BGS)	REMARKS
6/20/01	1500	KWS-SV-BK-10	SD			1	V										
↓	1135	KWS-RS			R	3		V	V	V							

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	Ship Via:	Date:
M Bouzinac	6/20/01 1730				
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	BL/Airbill Number:	
		[signature]	6/21/01 845		

Temperature Blank Info. Enclosed: Yes No
(FOR LAB USE ONLY) Date: ____ Time: ____ Temperature: ____ °C

Distribution: White - Lab original Yellow - Field team leader

3

CHAIN OF CUSTODY RECORD

ASC analytical services center

Ecology and Environment, Inc., Analytical Services Center
4493 Walden Avenue, Lancaster, New York, 14086, Tel: 716/685-8080, Fax 716/685-0852
Where Scientific Excellence and Efficiency Meet

Cooler No: 2
Lab:

Page: 1 of 1

PROJECT No: 001096-4105-01
SITE NAME: KENILWORTH PARK SOUTH RIFS
LOCATION: (Include State) DC
CLIENT: NPS-GSA
PROJECT MANAGER: J. PASCH
OFFICE No: 703-522-6065
FIELD TEAM LEADER: J BOUZINAE ~~N. GAHR~~
PHONE No: 703-522-6065
SAMPLERS: (PRINT) N-GAHR

CONTAINER TYPE AND PRESERVATIVE: 1 L Poly/HNO3

REQUESTED ANALYSIS: TAL METALS

TURNAROUND TIME: 24-HOUR, 48-HOUR, 1-WEEK, STANDARD, RUSH (RUSH ____ days), OTHER ____

(FOR LAB USE ONLY)
Lab Job No:
Report type:
Batch QC: Yes No

DATE	TIME	SAMPLE ID	SAMPLE MATRIX	CHECK FOR MS/MSD	SAMPLE TYPE	No. OF CONTAINERS	TAL METALS	OVA/HNU READINGS (PPM)	BEGINNING DEPTH (FEET BGS)	ENDING DEPTH (FEET BGS)	REMARKS
6/18/01	12:49	KW-MW-01	GW			1	↓				
6/18/01	16:39	KW-MW-02	GW			1	↓				
6/18/01	15:30	KW-MW-03	GW			1	↓				
6/19/01	10:07	KW-MW-04	GW			1	↓				
6/19/01	12:10	KW-MW-05	GW			1	↓				

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	Ship Via:	Date:	Temperature Blank Info. Enclosed: Yes No
[signature]	6/20/01 0800					
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	BL/Airbill Number:		(FOR LAB USE ONLY) Date: ____ Time: ____ Temperature: ____ °C
		[signature]	6/21/01 845	8287.5467.7090		

Distribution: White - Lab original Yellow - Field team leader

4

Cooler Receipt Form

PACKAGE RECEIPT #: 8006 NUMBER OF COOLERS: 1 DATE RECEIVED: 6/21/01

E & E PROJECT #: _____ PROJECT OR SITE NAME: E+E Va

CIRCLE ONE

A. Preliminary Examination Phase

1. Did coolers come with airbill or packing slip? YES NO NA

   Enter carrier here and print airbill # below: *(Circle One)* FedEx Airborne Client Other

   Ship as high hazard or dangerous goods YES NO NA

2. Did cooler(s) have custody seals? YES NO NA
3. Were custody seals unbroken and intact on receipt? YES NO* NA
4. Were custody seals dated and signed? YES NO NA
5. Sign here to acknowledge receipt of cooler (s): [signature]

   Date cooler(s) opened: 6/21/01 C-O-C numbers: _____

   Cooler(s) opened by (print): J Henderson Signature: [signature]

6. Were the C-O-C forms received? YES NO* NA
7. Was the project identifiable from the C-O-C form? YES NO* NA
   If YES, enter the project number and name in the heading above.

Please record Temperature Blank Vial or Cooler Temperature for Each Cooler, Range (2 - 6C)* NJDEP must be ≤4C

AIRBILL #	TEMP. °C	AIRBILL #	TEMP. °C	AIRBILL #	TEMP. °C
8287546 7090	4.5				

Thermometer # 129 Correction Factor 0 * If No or Temperature Outside of Acceptable Range, prepare a PM Notification form.

B. Unpacking Phase

8. Was enough packing material used in cooler(s)? YES NO NA
   Type of material: ☐ Vermiculite ☒ Bubble Wrap ☐ Other
9. If required, was enough ice used? YES NO NA
   If YES, type of ice used: ☒ Wet ☐ Dry ☐ Blue ☐ Other
10. Was a temperature blank vial included inside cooler(s)? YES NO NA
    If YES, indicate temperature blank vial temperature in table above. If NO, indicate cooler temperature in table above.
11. Were all containers sealed in separate plastic bags? YES NO* NA
12. Did all containers arrive unbroken and in good condition? YES NO
13. Samples stored in W Cooler before Login Phase? Date/Time: _____
    If yes: Signature In: _____ Date/Time: _____
    Signature Out: _____

C. Login Phase

Samples Logged in By (print): Karen Oakley Signature: [signature] Date: 6/21/01

14. Were all container labels complete (e.g. date, time preserved)? YES NO* NA
15. Were all C-O-C forms filled out properly in ink and signed? YES NO* NA
16. Did the C-O-C form agree with containers received? YES NO* NA
17. Were the correct containers used for the tests requested? YES NO* NA
18. Were the correct preservatives listed on the sample labels? YES NO* NA
19. Was a sufficient sample volume sent for the tests requested? YES NO* NA
20. Were all volatile samples received without head space? YES NO* NA

5

*Prepare a PM Notification form.

1 Forms & Lists Final\F_024.ene\Rev \Approval Date5/1/00Last Update:

Cooler Receipt Form

PACKAGE RECEIPT #: 8007 NUMBER OF COOLERS: 1 DATE RECEIVED: 6/21/01

E & E PROJECT #: _____ PROJECT OR SITE NAME: E&E Va

A. Preliminary Examination Phase

CIRCLE ONE

1. Did coolers come with airbill or packing slip? _____ YES NO NA

   Enter carrier here and print airbill # below: *(Circle One)* FedEx Airborne Client Other

   Ship as high hazard or dangerous goods

2. Did cooler(s) have custody seals? _____ YES NO NA
3. Were custody seals unbroken and intact on receipt? _____ YES NO NA
4. Were custody seals dated and signed? _____ YES NO* NA
5. Sign here to acknowledge receipt of cooler (s): _____ YES NO NA

   Date cooler(s) opened: 6/21/01 C-O-C numbers: _____

   Cooler(s) opened by (print): J Henderson Signature: _____

6. Were the C-O-C forms received? _____ YES NO* NA
7. Was the project identifiable from the C-O-C form? _____ YES NO* NA

   If YES, enter the project number and name in the heading above. YES NO* NA

Please record Temperature Blank Vial or Cooler Temperature for Each Cooler, Range (2 - 6C)* NJDEP must be ≤4C

AIRBILL #	TEMP. °C	AIRBILL #	TEMP. °C	AIRBILL #	TEMP. °C
828754677089	5.0				

Thermometer # 129 Correction Factor 0 * If No or Temperature Outside of Acceptable Range, prepare a PM Notification form.

B. Unpacking Phase

8. Was enough packing material used in cooler(s)? _____ YES NO NA

   Type of material: ☐ Vermiculite ☒ Bubble Wrap ☒ Other

9. If required, was enough ice used? _____ YES NO NA

   If YES, type of ice used: ☒ Wet ☐ Dry ☐ Blue ☐ Other

10. Was a temperature blank vial included inside cooler(s)? _____ YES NO NA

    If YES, indicate temperature blank vial temperature in table above. If NO, indicate cooler temperature in table above.

11. Were all containers sealed in separate plastic bags? _____ YES NO NA
12. Did all containers arrive unbroken and in good condition? _____ YES NO* NA
13. Samples stored in W Cooler before Login Phase? _____ YES NO

    If yes: Signature In: _____ Date/Time: _____

    Signature Out: _____ Date/Time: _____

C. Login Phase

Samples Logged in By (print): Kevin Oakley Signature: _____ Date: 6/21/01

14. Were all container labels complete (e.g. date, time preserved)? _____ YES NO* NA
15. Were all C-O-C forms filled out properly in ink and signed? _____ YES NO* NA
16. Did the C-O-C form agree with containers received? _____ YES NO* NA
17. Were the correct containers used for the tests requested? _____ YES NO* NA
18. Were the correct preservatives listed on the sample labels? _____ YES NO* NA
19. Was a sufficient sample volume sent for the tests requested? _____ YES NO* NA
20. Were all volatile samples received without head space? _____ YES NO* NA
    YES NO NA

*Prepare a PM Notification form.

Forms & Lists Final\F_024 ene\Rev \Approval Date5/1/00Last Update:

Ecology and Environment, Inc.
Analytical Services Center
Lancaster, New York 14086
Phone: (716) 685-8080

Laboratory Results

NYS ELAP ID#: 10486

CLIENT: E and E Washington D.C. Office
Project: Kenilworth RI/FS
Lab Order: 0106162

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition

GC SEMIVOLATILES
PCB
The columns used for analysis were an RTX-5 (column 1) and an RTX-35 (column 2), both 30 meters long and 0.53 mm in diameter, with a 1.0 um film thickness. A 2-ul injection was performed on all samples, QC, and standards.

Sample Analysis
All samples were extracted and analyzed within hold time.

Calibrations
All initial and continuing calibrations were acceptable.

No manual integrations were required.

QC
All surrogate recoveries were within acceptable limits except soil samples KWS-SU-BK-2 and KWS-SU-BK-8 which had elevated recoveries for the surrogate DCB.

All blank analyses were acceptable.

All laboratory control sample (LCS) recoveries were acceptable.

HPLC
PAH
The column used for analysis was either a PAH Hypersil (Keystone Scientific, Inc.) and a Envirosep-PP (Phenonmenex), with particle sizes of 3 uM and 5uM, respectively. A 25-ul injection was performed on all samples, QC, and standards.

Use of Method 8310 presupposes a high expectation of finding the specific compounds of interest. No HPLC column has been developed for the confirmation of PAH""s. All positive results are flagged "N" as not confirmed.

Sample Analysis
All samples were extracted and analyzed within hold time...

Calibrations

All initial and continuing calibrations were acceptable...

No manual integrations were performed .

QC
All surrogate recoveries were within acceptable limits.

All blank analyses were acceptable. Benzo(a)pyrene and dibenz(a,h)anthracene were present in the method blank above the MDL but below the reporting limit. The sample contained only these two compounds at slightly higher levels.

All laboratory control sample (LCS) recoveries were acceptable. RPDs for benzo(g,h,i)perylene and dibenz(a,h)anthracene were high for the LCS/LCSD pair.

METALS
Sample Analysis
All samples were digested and analyzed within hold time.

Potassium and/or sodium were analyzed at a five-fold dilution for all samples except KWS-RS to bring the concentration within the calibrated range of the instrument.

Calibrations
All initial and continuing calibrations were acceptable.

QC
All calibration and preparation blank analyses were acceptable. Copper was present in the method blank at a concentration greater than the MDL but less than the reporting limit.

All laboratory control sample (LCS) recoveries were acceptable.

MERCURY
Sample Analysis
All samples were digested and analyzed within hold time.

Calibrations
All initial and continuing calibrations were acceptable.

QC
All calibration and preparation blank analyses were acceptable.

The matrix spike/spike duplicate analyses of sample KW-MW-05 had low spike recovery for mercury at 67% and 69% respectively. RPD criteria was met.

All laboratory control sample (LCS) recoveries were acceptable.

GENERAL ANALYTICAL CHEMISTRY
Sample Analysis

CLIENT:	E and E Washington D.C. Office	**CASE NARRATIVE**
Project:	Kenilworth RI/FS	
Lab Order:	0106162	

All samples were analyzed within hold time.

QC
All matrix duplicates were acceptable.

Ecology and Environment, Inc.

Analytical Services Center
Lancaster, New York 14086
Phone: (716) 685-8080

Laboratory Results

NYS ELAP ID#: 10486

Lab Order: 0106162
Client: E and E Washington D.C. Office
Project: Kenilworth RI/FS

DATES REPORT

Sample ID	Client Sample ID	Collection Date	Received Date	Matrix	Test Name	TCLP Date*	Prep Date	Analysis Date
0106162-01A	KWS-SU-BK-1	06/20/2001 10:20:00 AM	6/21/2001 8:45:00 AM	Soil	PCBs by Method 8082		06/28/2001	07/03/2001
					Percent Moisture			06/25/2001
0106162-02A	KWS-SU-BK-2	06/20/2001 10:25:00 AM			PCBs by Method 8082		06/28/2001	07/03/2001
					Percent Moisture			06/25/2001
0106162-03A	KWS-SU-BK-3	06/20/2001 10:35:00 AM			PCBs by Method 8082		06/28/2001	07/03/2001
					Percent Moisture			06/25/2001
0106162-04A	KWS-SU-BK-4	06/20/2001 10:45:00 AM			PCBs by Method 8082		06/28/2001	07/03/2001
					Percent Moisture			06/25/2001
0106162-05A	KWS-SU-BK-5	06/20/2001 11:05:00 AM			PCBs by Method 8082		06/28/2001	07/03/2001
					Percent Moisture			06/25/2001
0106162-06A	KWS-SU-BK-6	06/20/2001 11:35:00 AM			PCBs by Method 8082		06/28/2001	07/03/2001
					Percent Moisture			06/25/2001
0106162-07A	KWS-SU-BK-7	06/20/2001 12:10:00 PM			PCBs by Method 8082		06/28/2001	07/03/2001
					Percent Moisture			06/25/2001
0106162-08A	KWS-SU-BK-8	06/20/2001 12:50:00 PM			PCBs by Method 8082		06/28/2001	07/03/2001
					Percent Moisture			06/25/2001
0106162-09A	KWS-SU-BK-9	06/20/2001 1:13:00 PM			PCBs by Method 8082		06/28/2001	07/03/2001
					Percent Moisture			06/25/2001
0106162-10A	KWS-SU-BK-10	06/20/2001 3:00:00 PM			PCBs by Method 8082		06/28/2001	07/03/2001
					Percent Moisture			06/25/2001

*Reflects Date of TCLP Extraction Completion

Ecology and Environment, Inc.
Analytical Services Center
Lancaster, New York 14086
Phone: (716) 685-8080

Laboratory Results

NYS ELAP ID#: 10486

Lab Order: 0106162
Client: E and E Washington D.C. Office
Project: Kenilworth RI/FS

DATES REPORT

Sample ID	Client Sample ID	Collection Date	Received Date	Matrix	Test Name	TCLP Date*	Prep Date	Analysis Date
0106162-11A	KWS-RS	06/20/2001 11:35:00 AM	6/21/2001 8:45:00 AM	Water	PAH by Method 8310		06/22/2001	06/30/2001
					PCBs by Method 8082		06/26/2001	06/27/2001
0106162-11B					Dissolved Mercury in Water by Method 7470A		06/25/2001	06/26/2001
					Dissolved Metals, TAL by ICP Method 6010B		07/02/2001	08/22/2001
0106162-12A	KW-MW-01	06/18/2001 12:49:00 PM			Dissolved Mercury in Water by Method 7470A		06/25/2001	06/26/2001
					Dissolved Metals, TAL by ICP Method 6010B		07/02/2001	08/22/2001
0106162-13A	KW-MW-02	06/18/2001 4:39:00 PM			Dissolved Mercury in Water by Method 7470A		06/25/2001	06/26/2001
					Dissolved Metals, TAL by ICP Method 6010B		07/02/2001	08/22/2001
0106162-14A	KW-MW-03	06/18/2001 3:30:00 PM			Dissolved Mercury in Water by Method 7470A		06/25/2001	06/26/2001
					Dissolved Metals, TAL by ICP Method 6010B		07/02/2001	08/22/2001
0106162-15A	KW-MW-04	06/19/2001 10:07:00 AM			Dissolved Mercury in Water by Method 7470A		06/25/2001	06/26/2001
					Dissolved Metals, TAL by ICP Method 6010B		07/02/2001	08/22/2001
0106162-16A	KW-MW-05	06/19/2001 12:10:00 PM			Dissolved Mercury in Water by Method 7470A		06/25/2001	06/26/2001
					Dissolved Metals, TAL by ICP Method 6010B		07/02/2001	08/22/2001

*Reflects Date of TCLP Extraction Completion

GC SEMIVOLATILES

12

SOIL

13

Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106162
Project: Kenilworth RI/FS
Test Code: 1_8082_3550B_S
Batch ID: HP58902A_010629E

QC SUMMARY REPORT SURROGATE RECOVERIES

PCBs by Method 8082

Sample ID	Type	CL10BZ2	XYL2456CLM
0106162-01A	SAMP	95	93
0106162-02A	SAMP	117*	103
0106162-03A	SAMP	91	91
0106162-04A	SAMP	95	97
0106162-05A	SAMP	96	95
0106162-06A	SAMP	92	97
0106162-07A	SAMP	106	96
0106162-08A	SAMP	120*	99
0106162-09A	SAMP	96	103
0106162-10A	SAMP	61	82
LCS-200101661	LCS	103	103
MB-200101661	MBLK	102	94

Acronym		Surrogate	QC Limits
CL10BZ2	=	Decachlorobiphenyl	52-115
XYL2456CLM	=	Tetrachloro-m-xylene	39-125

*** Surrogate recovery outside acceptance limits**
D - Diluted due to matrix or extended target compounds

Ecology and Environment, Inc.

Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	KWS-SU-BK-1
Lab Order:	0106162 CPID: 001096.GT05.01..	Alt. Client ID:	
Project:	Kenilworth RI/FS	Collection Date:	6/20/01 10:20:00
Lab ID:	0106162-01A Sample Type: SAMP	Matrix:	SOIL % Moist: 12.90

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		21.6	µg/Kg-dry	1	7/3/01 02:01:30	HP58902A_010629E	RN
Aroclor 1221	ND		43.2	µg/Kg-dry	1			
Aroclor 1232	ND		21.6	µg/Kg-dry	1			
Aroclor 1242	ND		21.6	µg/Kg-dry	1			
Aroclor 1248	ND		21.6	µg/Kg-dry	1			
Aroclor 1254	ND		21.6	µg/Kg-dry	1			
Aroclor 1260	38.4		21.6	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	95		52 - 115	%REC	1	7/3/01 02:01:30	HP58902A_010629E	RN
Surr:Tetrachloro-m-xylene	93		39 - 125	%REC	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106162 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106162-02A **Sample Type:** SAMP

Client Sample ID: KWS-SU-BK-2
Alt. Client ID:
Collection Date: 6/20/01 10:25:00
Matrix: SOIL **% Moist:** 5.68

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		20.7	µg/Kg-dry	1	7/3/01 02:46:29	HP58902A_010629E	RN
Aroclor 1221	ND		41.3	µg/Kg-dry	1			
Aroclor 1232	ND		20.7	µg/Kg-dry	1			
Aroclor 1242	ND		20.7	µg/Kg-dry	1			
Aroclor 1248	ND		20.7	µg/Kg-dry	1			
Aroclor 1254	ND		20.7	µg/Kg-dry	1			
Aroclor 1260	ND		20.7	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	117	*	52 - 115	%REC	1	7/3/01 02:46:29	HP58902A_010629E	RN
Surr:Tetrachloro-m-xylene	103		39 - 125	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 14:00:00

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Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	KWS-SU-BK-3
Lab Order:	0106162 CPID: 001096.GT05.01..	Alt. Client ID:	
Project:	Kenilworth RI/FS	Collection Date:	6/20/01 10:35:00
Lab ID:	0106162-03A Sample Type: SAMP	Matrix:	SOIL % Moist: 20.50

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		25.1	µg/Kg-dry	1	7/3/01 03:31:36	HP58902A_010629E	RN
Aroclor 1221	ND		50.3	µg/Kg-dry	1			
Aroclor 1232	ND		25.1	µg/Kg-dry	1			
Aroclor 1242	ND		25.1	µg/Kg-dry	1			
Aroclor 1248	ND		25.1	µg/Kg-dry	1			
Aroclor 1254	ND		25.1	µg/Kg-dry	1			
Aroclor 1260	30.5		25.1	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	91		52 - 115	%REC	1	7/3/01 03:31:36	HP58902A_010629E	RN
Surr:Tetrachloro-m-xylene	91		39 - 125	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 14:00:00

16A

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106162 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106162-04A **Sample Type:** SAMP

Client Sample ID: KWS-SU-BK-4
Alt. Client ID:
Collection Date: 6/20/01 10:45:00
Matrix: SOIL **% Moist:** 20.80

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		24.2	µg/Kg-dry	1	7/3/01 04:16:38	HP58902A_010629E	RN
Aroclor 1221	ND		48.4	µg/Kg-dry	1			
Aroclor 1232	ND		24.2	µg/Kg-dry	1			
Aroclor 1242	ND		24.2	µg/Kg-dry	1			
Aroclor 1248	ND		24.2	µg/Kg-dry	1			
Aroclor 1254	ND		24.2	µg/Kg-dry	1			
Aroclor 1260	ND		24.2	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	95		52 - 115	%REC	1	7/3/01 04:16:38	HP58902A_010629E	RN
Surr:Tetrachloro-m-xylene	97		39 - 125	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 14:00:00

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	KWS-SU-BK-5
Lab Order:	0106162 CPID: 001096.GT05.01..	Alt. Client ID:	
Project:	Kenilworth RI/FS	Collection Date:	6/20/01 11:05:00
Lab ID:	0106162-05A Sample Type: SAMP	Matrix:	SOIL % Moist: 12.70

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		21.6	µg/Kg-dry	1	7/3/01 05:01:37	HP58902A_010629E	RN
Aroclor 1221	ND		43.2	µg/Kg-dry	1			
Aroclor 1232	ND		21.6	µg/Kg-dry	1			
Aroclor 1242	ND		21.6	µg/Kg-dry	1			
Aroclor 1248	ND		21.6	µg/Kg-dry	1			
Aroclor 1254	ND		21.6	µg/Kg-dry	1			
Aroclor 1260	185		21.6	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	96		52 - 115	%REC	1	7/3/01 05:01:37	HP58902A_010629E	RN
Surr:Tetrachloro-m-xylene	95		39 - 125	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 7/6/01 14:00:00

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106162 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106162-06A **Sample Type:** SAMP

Client Sample ID: KWS-SU-BK-6
Alt. Client ID:
Collection Date: 6/20/01 11:35:00
Matrix: SOIL
% Moist: 12.70

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		22.0	µg/Kg-dry	1	7/3/01 05:46:40	HP58902A_010629E	RN
Aroclor 1221	ND		43.9	µg/Kg-dry	1			
Aroclor 1232	ND		22.0	µg/Kg-dry	1			
Aroclor 1242	ND		22.0	µg/Kg-dry	1			
Aroclor 1248	ND		22.0	µg/Kg-dry	1			
Aroclor 1254	ND		22.0	µg/Kg-dry	1			
Aroclor 1260	ND		22.0	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	92		52 - 115	%REC	1	7/3/01 05:46:40	HP58902A_010629E	RN
Surr:Tetrachloro-m-xylene	97		39 - 125	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 14:00:00

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Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106162 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106162-07A **Sample Type:** SAMP

Client Sample ID: KWS-SU-BK-7
Alt. Client ID:
Collection Date: 6/20/01 12:10:00
Matrix: SOIL **% Moist:** 16.80

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		22.0	µg/Kg-dry	1	7/3/01 06:31:42	HP58902A_010629E	RN
Aroclor 1221	ND		44.0	µg/Kg-dry	1			
Aroclor 1232	ND		22.0	µg/Kg-dry	1			
Aroclor 1242	ND		22.0	µg/Kg-dry	1			
Aroclor 1248	ND		22.0	µg/Kg-dry	1			
Aroclor 1254	ND		22.0	µg/Kg-dry	1			
Aroclor 1260	ND		22.0	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	106		52 - 115	%REC	1	7/3/01 06:31:42	HP58902A_010629E	RN
Surr:Tetrachloro-m-xylene	96		39 - 125	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 14:00:00

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Analytical Services Center
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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106162 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106162-08A **Sample Type:** SAMP

Client Sample ID: KWS-SU-BK-8
Alt. Client ID:
Collection Date: 6/20/01 12:50:00
Matrix: SOIL **% Moist:** 17.60

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		24.2	µg/Kg-dry	1	7/3/01 07:16:41	HP58902A_010629E	RN
Aroclor 1221	ND		48.3	µg/Kg-dry	1			
Aroclor 1232	ND		24.2	µg/Kg-dry	1			
Aroclor 1242	ND		24.2	µg/Kg-dry	1			
Aroclor 1248	ND		24.2	µg/Kg-dry	1			
Aroclor 1254	ND		24.2	µg/Kg-dry	1			
Aroclor 1260	124		24.2	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	120	*	52 - 115	%REC	1	7/3/01 07:16:41	HP58902A_010629E	RN
Surr:Tetrachloro-m-xylene	99		39 - 125	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 14:00:00

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Ecology and Environment, Inc.

Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106162 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106162-09A **Sample Type:** SAMP

Client Sample ID: KWS-SU-BK-9
Alt. Client ID:
Collection Date: 6/20/01 13:13:00
Matrix: SOIL **% Moist:** 21.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		25.2	µg/Kg-dry	1	7/3/01 11:01:36	HP58902A_010629E	RN
Aroclor 1221	ND		50.4	µg/Kg-dry	1			
Aroclor 1232	ND		25.2	µg/Kg-dry	1			
Aroclor 1242	ND		25.2	µg/Kg-dry	1			
Aroclor 1248	ND		25.2	µg/Kg-dry	1			
Aroclor 1254	ND		25.2	µg/Kg-dry	1			
Aroclor 1260	124		25.2	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	96		52 - 115	%REC	1	7/3/01 11:01:36	HP58902A_010629E	RN
Surr:Tetrachloro-m-xylene	103		39 - 125	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106162 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106162-10A **Sample Type:** SAMP

Client Sample ID: KWS-SU-BK-10
Alt. Client ID:
Collection Date: 6/20/01 15:00:00
Matrix: SOIL **% Moist:** 40.20

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		31.3	µg/Kg-dry	1	7/3/01 11:46:31	HP58902A_010629E	RN
Aroclor 1221	ND		62.6	µg/Kg-dry	1			
Aroclor 1232	ND		31.3	µg/Kg-dry	1			
Aroclor 1242	ND		31.3	µg/Kg-dry	1			
Aroclor 1248	ND		31.3	µg/Kg-dry	1			
Aroclor 1254	278		31.3	µg/Kg-dry	1			
Aroclor 1260	194		31.3	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	61		52 - 115	%REC	1	7/3/01 11:46:31	HP58902A_010629E	RN
Surr:Tetrachloro-m-xylene	82		39 - 125	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 14:00:00

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Analytical Services Center
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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106162
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

PCBs by Method 8082 Test Code: *1_8082_3550B_S* Units: µg/Kg

Sample ID: **MB-200101661** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **HP58902A_010629E** SeqNo: **377566** Analysis Date **7/2/01 14:46:25** Prep Batch ID: **200101661** Prep Date: **6/28/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Aroclor 1016	ND	18.90								
A	Aroclor 1221	ND	37.70								
A	Aroclor 1232	ND	18.90								
A	Aroclor 1242	ND	18.90								
A	Aroclor 1248	ND	18.90								
A	Aroclor 1254	ND	18.90								
A	Aroclor 1260	ND	18.90								
S	Decachlorobiphenyl	6.422	0			102	52	115			
S	Tetrachloro-m-xylene	5.935	0			94	39	125			

J-302

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Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106162
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

PCBs by Method 8082

Sample ID: **LCS-200101661** Client Sample ID: Test Code: *1_8082_3550B_S* Units: µg/Kg

Run Batch ID: **HP58902A_010629E** SeqNo: **377565** Analysis Date **7/2/01 14:01:33** Prep Batch ID: **200101661** DF: 1 DL_No: 1 Prep Date: 6/28/01

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Aroclor 1016	139.5	19.50	162.6	0	86	59	119			
A	Aroclor 1260	137.9	19.50	162.6	0	85	50	150			
S	Decachlorobiphenyl	6.674	0	6.495	0	103	52	115			
S	Tetrachloro-m-xylene	6.711	0	6.495	0	103	39	125			

Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

WATER

Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106162
Project: Kenilworth RI/FS
Test Code: 1_8082_3510C_W
Batch ID: HP58901B_010627C

QC SUMMARY REPORT SURROGATE RECOVERIES

PCBs by Method 8082

Sample ID	Type	CL10BZ2	XYL2456CLM
0106162-11A	SAMP	107	98
LCS-200101613	LCS	98	92
LCSD-200101613	LCSD	106	86
MB-200101613	MBLK	91	75

Acronym		Surrogate	QC Limits
CL10BZ2	=	Decachlorobiphenyl	18-112
XYL2456CLM	=	Tetrachloro-m-xylene	32-110

*** Surrogate recovery outside acceptance limits**
D - Diluted due to matrix or extended target compounds

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Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-RS
Lab Order:	0106162 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/20/01 11:35:00
Lab ID:	0106162-11A **Sample Type:** SAMP	**Matrix:**	WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3510C_W								
Aroclor 1016	ND		0.500	µg/L	1	6/27/01 16:39:58	HP58901B_010627C	RN
Aroclor 1221	ND		1.00	µg/L	1			
Aroclor 1232	ND		0.500	µg/L	1			
Aroclor 1242	ND		0.500	µg/L	1			
Aroclor 1248	ND		0.500	µg/L	1			
Aroclor 1254	ND		0.500	µg/L	1			
Aroclor 1260	ND		0.500	µg/L	1			
Surr:Decachlorobiphenyl	107		18 - 112	%REC	1	6/27/01 16:39:58	HP58901B_010627C	RN
Surr:Tetrachloro-m-xylene	98		32 - 110	%REC	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106162
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

PCBs by Method 8082

Sample ID: **MB-200101613** Client Sample ID: Test Code: *1_8082_3510C_W* Units: µg/L
Run Batch ID: **HP58901B_010627C** SeqNo: **379533** Analysis Date **6/27/01 11:13:17** Prep Batch ID: **200101613** DF: 1 DL_No: 1 Prep Date: **6/26/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Aroclor 1016	ND	0.5000								
A	Aroclor 1221	ND	1.000								
A	Aroclor 1232	ND	0.5000								
A	Aroclor 1242	ND	0.5000								
A	Aroclor 1248	ND	0.5000								
A	Aroclor 1254	ND	0.5000								
A	Aroclor 1260	ND	0.5000								
S	Decachlorobiphenyl	0.1821	0			91	18	112			
S	Tetrachloro-m-xylene	0.1490	0			75	32	110			

J-309

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Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106162
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

PCBs by Method 8082

Test Code: *1_8082_3510C_W* Units: µg/L

Sample ID: **LCS-200101613** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **HP58901B_010627C** SeqNo: **379534** Analysis Date **6/27/01 11:54:18** Prep Batch ID: **200101613** Prep Date: **6/26/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Aroclor 1016	4.378	0.5000	5.000	0	88	50	124			
A	Aroclor 1260	4.621	0.5000	5.000	0	92	52	127			
S	Decachlorobiphenyl	0.1970	0	0.2000	0	98	18	112			
S	Tetrachloro-m-xylene	0.1835	0	0.2000	0	92	32	110			

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Laboratory Results

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Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106162
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike Duplicate

PCBs by Method 8082

Sample ID: **LCSD-200101613** Client Sample ID: Test Code: *1_8082_3510C_W* Units: µg/L

Run Batch ID: **HP58901B_010627C** SeqNo: **379535** Analysis Date **6/27/01 12:35:08** Prep Batch ID: **200101613** DF: 1 DL_No: 1 Prep Date: **6/26/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Aroclor 1016	4.348	0.5000	5.000	0	87	50	124	0.7	30	
A	Aroclor 1260	4.501	0.5000	5.000	0	90	52	127	2.6	30	
S	Decachlorobiphenyl	0.2126	0	0.2000	0	106	18	112	0.0	0	
S	Tetrachloro-m-xylene	0.1721	0	0.2000	0	86	32	110	0.0	0	

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Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

LIQUID CHROMATOGRAPHY

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Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106162
Project: Kenilworth RI/FS
Test Code: I_8310_3520C_W
Batch ID: LC-I_010630A

QC SUMMARY REPORT SURROGATE RECOVERIES

PAH by Method 8310

Sample ID	Type	PHEND14							
0106162-11A	SAMP	96							
LCS-200101580	LCS	94							
LCSD-200101580	LCSD	87							
MB-200101580	MBLK	92							

Acronym		Surrogate	QC Limits
PHEND14	=	Terphenyl-d14	53-126

*** Surrogate recovery outside acceptance limits**
D - Diluted due to matrix or extended target compounds

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	KWS-RS
Lab Order:	0106162 CPID: 001096.GT05.01..	Alt. Client ID:	
Project:	Kenilworth RI/FS	Collection Date:	6/20/01 11:35:00 AM
Lab ID:	0106162-11A Sample Type: SAMP	Matrix:	WATER % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3520C_W								
Acenaphthene	ND		2.00	µg/L	1	6/30/01 8:30:28 PM	LC-1_010630A	SDC
Acenaphthylene	ND		2.00	µg/L	1			
Anthracene	ND		0.200	µg/L	1			
Benz(a)anthracene	ND		0.200	µg/L	1			
Benzo(a)pyrene	0.196	J	0.200	µg/L	1			
Benzo(b)fluoranthene	ND		0.200	µg/L	1			
Benzo(g,h,i)perylene	ND		0.500	µg/L	1			
Benzo(k)fluoranthene	ND		0.200	µg/L	1			
Chrysene	ND		0.200	µg/L	1			
Dibenz(a,h)anthracene	0.594	N	0.500	µg/L	1			
Fluoranthene	ND		0.500	µg/L	1			
Fluorene	ND		0.200	µg/L	1			
Indeno(1,2,3-cd)pyrene	ND		0.200	µg/L	1			
Naphthalene	ND		2.00	µg/L	1			
Phenanthrene	ND		0.200	µg/L	1			
Pyrene	ND		0.500	µg/L	1			
Surr:Terphenyl-d14	96		53 - 126	%REC	1	6/30/01 8:30:28 PM	LC-1_010630A	SDC

Definitions:
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H - Value exceeds Maximum Contaminant Level
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E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106162
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

PAH by Method 8310

Sample ID: **MB-200101580** Client Sample ID: Test Code: *1_8310_3520C_W* Units: µg/L

Run Batch ID: **LC-1_010630A** SeqNo: **375143** Analysis Date: **6/30/01 4:22:01 PM** Prep Batch ID: **200101580** DF: 1 DL_No: 1 Prep Date: 6/22/01

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	1-Methylnaphthalene	ND	2.000								
A	2-Methylnaphthalene	ND	2.000								
A	Acenaphthene	ND	2.000								
A	Acenaphthylene	ND	2.000								
A	Anthracene	ND	0.2000								
A	Benz(a)anthracene	ND	0.2000								
A	Benzo(a)pyrene	0.07913	0.2000								J
A	Benzo(b)fluoranthene	ND	0.2000								
A	Benzo(g,h,i)perylene	ND	0.5000								
A	Benzo(k)fluoranthene	ND	0.2000								
A	Chrysene	ND	0.2000								
A	Dibenz(a,h)anthracene	0.2378	0.5000								J
A	Fluoranthene	ND	0.5000								
A	Fluorene	ND	0.2000								
A	Indeno(1,2,3-cd)pyrene	ND	0.2000								
A	Naphthalene	ND	2.000								
A	Phenanthrene	ND	0.2000								
A	Pyrene	ND	0.5000								
S	Terphenyl-d14	27.58	0			92	53	126			

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106162
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

PAH by Method 8310

Test Code: *1_8310_3520C_W* Units: µg/L

Sample ID: **LCS-200101580** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **LC-1_010630A** SeqNo: **375150** Analysis Date: **6/30/01 5:03:26 PM** Prep Batch ID: **200101580** Prep Date: **6/22/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Acenaphthene	38.11	2.000	45.00	0	85	36	122			
A	Acenaphthylene	34.77	2.000	45.00	0	77	35	114			
A	Anthracene	1.741	0.2000	2.100	0	83	54	116			
A	Benz(a)anthracene	4.188	0.2000	4.500	0	93	69	119			
A	Benzo(a)pyrene	3.448	0.2000	4.500	0	77	39	139			
A	Benzo(b)fluoranthene	4.331	0.2000	4.500	0	96	46	137			
A	Benzo(g,h,i)perylene	9.401	0.5000	12.00	0	78	50	120			
A	Benzo(k)fluoranthene	4.472	0.2000	4.500	0	99	47	122			
A	Chrysene	4.359	0.2000	4.500	0	97	68	113			
A	Dibenz(a,h)anthracene	8.627	0.5000	12.00	0	72	40	120			
A	Fluoranthene	11.58	0.5000	12.00	0	97	65	120			
A	Fluorene	4.016	0.2000	4.500	0	89	47	110			
A	Indeno(1,2,3-cd)pyrene	4.045	0.2000	4.500	0	90	16	125			
A	Naphthalene	35.65	2.000	45.00	0	79	25	115			
A	Phenanthrene	4.078	0.2000	4.500	0	91	59	113			
A	Pyrene	11.11	0.5000	12.00	0	93	68	116			
S	Terphenyl-d14	28.28	0	30.00	0	94	53	126			

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106162
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike Duplicate

PAH by Method 8310

Sample ID: **LCSD-200101580** Client Sample ID: Test Code: *1_8310_3520C_W* Units: µg/L

Run Batch ID: **LC-1_010630A** SeqNo: **375149** Analysis Date: **6/30/01 5:44:52 PM** Prep Batch ID: **200101580** DF: 1 DL_No: 1 Prep Date: **6/22/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Acenaphthene	37.88	2.000	45.00	0	84	36	122	0.6	20	
A	Acenaphthylene	34.25	2.000	45.00	0	76	35	114	1.5	20	
A	Anthracene	1.663	0.2000	2.100	0	79	54	116	4.5	20	
A	Benz(a)anthracene	4.026	0.2000	4.500	0	89	69	119	3.9	20	
A	Benzo(a)pyrene	3.307	0.2000	4.500	0	73	39	139	4.2	20	
A	Benzo(b)fluoranthene	4.175	0.2000	4.500	0	93	46	137	3.7	20	
A	Benzo(g,h,i)perylene	7.069	0.5000	12.00	0	59	50	120	28.3	20	R
A	Benzo(k)fluoranthene	4.281	0.2000	4.500	0	95	47	122	4.4	20	
A	Chrysene	4.215	0.2000	4.500	0	94	68	113	3.3	20	
A	Dibenz(a,h)anthracene	6.142	0.5000	12.00	0	51	40	120	33.7	20	R
A	Fluoranthene	11.27	0.5000	12.00	0	94	65	120	2.7	20	
A	Fluorene	3.923	0.2000	4.500	0	87	47	110	2.3	20	
A	Indeno(1,2,3-cd)pyrene	3.676	0.2000	4.500	0	82	16	125	9.6	20	
A	Naphthalene	35.18	2.000	45.00	0	78	25	115	1.3	20	
A	Phenanthrene	3.966	0.2000	4.500	0	88	59	113	2.8	20	
A	Pyrene	10.77	0.5000	12.00	0	90	68	116	3.1	20	
S	Terphenyl-d14	26.24	0	30.00	0	87	53	126	0.0	0	

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Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

METALS

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: E and E Washington D.C. Office
Lab Order: 0106162 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106162-11B **Sample Type:** SAMP **Matrix:** Water

Client Sample ID: KWS-RS
Alt. Client ID:
Collection Date: 6/20/01 11:35:00 AM **% Moist:**
est Code: 1_6010B_TAL_D_W

ICP METALS ANALYSIS BY METHOD 6010B (DISSOLVED) **Method:** SW6010B **Prep Method:** SW3010A

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
Aluminum	245		200	µg/L	1	8/21/01 9:29:54 PM	OPTIMA_010821N	SHT
Antimony	ND		10.0	µg/L	1	8/22/01 7:08:57 PM	OPTIMA_010822G	
Arsenic	ND		25.0	µg/L	1	8/21/01 9:29:54 PM	OPTIMA_010821N	
Barium	ND		20.0	µg/L	1			
Beryllium	ND		5.00	µg/L	1			
Cadmium	ND		5.00	µg/L	1			
Calcium	639	J	1500	µg/L	1			
Chromium	ND		10.0	µg/L	1			
Cobalt	ND		20.0	µg/L	1			
Copper	12.7	J	20.0	µg/L	1			
Iron	79.8	J	200	µg/L	1			
Lead	ND		5.00	µg/L	1			
Magnesium	ND		600	µg/L	1			
Manganese	2.99	J	10.0	µg/L	1			
Nickel	ND		20.0	µg/L	1			
Potassium	34.4	J	500	µg/L	1	8/22/01 7:08:57 PM	OPTIMA_010822G	
Selenium	7.85	J	20.0	µg/L	1	8/21/01 9:29:54 PM	OPTIMA_010821N	
Silver	ND		10.0	µg/L	1			
Sodium	ND		1500	µg/L	1	8/22/01 7:08:57 PM	OPTIMA_010822G	
Thallium	ND		20.0	µg/L	1	8/21/01 9:29:54 PM	OPTIMA_010821N	
Vanadium	ND		20.0	µg/L	1			
Zinc	7.00	J	10.0	µg/L	1			

Definitions:
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B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: E and E Washington D.C. Office
Lab Order: 0106162 CPID: 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106162-12A Sample Type: SAMP Matrix: Water

Client Sample ID: KW-MW-01
Alt. Client ID:
Collection Date: 6/18/01 12:49:00 PM % Moist:
est Code: 1_6010B_TAL_D_W

ICP METALS ANALYSIS BY METHOD 6010B (DISSOLVED) Method: SW6010B Prep Method: SW3010A

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
Aluminum	969		200	µg/L	1	8/21/01 9:33:24 PM	OPTIMA_010821N	SHT
Antimony	13.1		10.0	µg/L	1	8/22/01 7:12:27 PM	OPTIMA_010822G	
Arsenic	9.63	J	25.0	µg/L	1	8/21/01 9:33:24 PM	OPTIMA_010821N	
Barium	459		20.0	µg/L	1			
Beryllium	ND		5.00	µg/L	1			
Cadmium	ND		5.00	µg/L	1			
Calcium	81700		1500	µg/L	1			
Chromium	11.9		10.0	µg/L	1			
Cobalt	4.69	J	20.0	µg/L	1			
Copper	10.4	J	20.0	µg/L	1			
Iron	45900		200	µg/L	1			
Lead	ND		5.00	µg/L	1			
Magnesium	56300		600	µg/L	1			
Manganese	3180		10.0	µg/L	1			
Nickel	ND		20.0	µg/L	1			
Potassium	66100		2500	µg/L	5	8/23/01 10:35:25 AM	OPTIMA_010823B	
Selenium	8.05	J	20.0	µg/L	1	8/21/01 9:33:24 PM	OPTIMA_010821N	
Silver	ND		10.0	µg/L	1			
Sodium	162000		1500	µg/L	1	8/22/01 7:12:27 PM	OPTIMA_010822G	
Thallium	ND		20.0	µg/L	1	8/21/01 9:33:24 PM	OPTIMA_010821N	
Vanadium	3.05	J	20.0	µg/L	1			
Zinc	14.4		10.0	µg/L	1			

Definitions:
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B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: E and E Washington D.C. Office
Lab Order: 0106162 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106162-13A **Sample Type:** SAMP **Matrix:** Water

Client Sample ID: KW-MW-02
Alt. Client ID:
Collection Date: 6/18/01 4:39:00 PM **% Moist:**
est Code: 1_6010B_TAL_D_W

ICP METALS ANALYSIS BY METHOD 6010B (DISSOLVED) **Method:** SW6010B **Prep Method:** SW3010A

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
Aluminum	859		200	µg/L	1	8/21/01 9:37:05 PM	OPTIMA_010821N	SHT
Antimony	14.0		10.0	µg/L	1	8/22/01 7:16:08 PM	OPTIMA_010822G	
Arsenic	ND		25.0	µg/L	1	8/21/01 9:37:05 PM	OPTIMA_010821N	
Barium	2130		20.0	µg/L	1			
Beryllium	ND		5.00	µg/L	1			
Cadmium	ND		5.00	µg/L	1			
Calcium	68300		1500	µg/L	1			
Chromium	4.28	J	10.0	µg/L	1			
Cobalt	ND		20.0	µg/L	1			
Copper	14.5	J	20.0	µg/L	1			
Iron	49800		200	µg/L	1			
Lead	6.46		5.00	µg/L	1			
Magnesium	50000		600	µg/L	1			
Manganese	258		10.0	µg/L	1			
Nickel	ND		20.0	µg/L	1			
Potassium	64900		2500	µg/L	5	8/23/01 10:38:19 AM	OPTIMA_010823B	
Selenium	13.3	J	20.0	µg/L	1	8/21/01 9:37:05 PM	OPTIMA_010821N	
Silver	ND		10.0	µg/L	1			
Sodium	140000		1500	µg/L	1	8/22/01 7:16:08 PM	OPTIMA_010822G	
Thallium	ND		20.0	µg/L	1	8/21/01 9:37:05 PM	OPTIMA_010821N	
Vanadium	3.07	J	20.0	µg/L	1			
Zinc	45.0		10.0	µg/L	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: E and E Washington D.C. Office
Lab Order: 0106162 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106162-14A **Sample Type:** SAMP **Matrix:** Water

Client Sample ID: KW-MW-03
Alt. Client ID:
Collection Date: 6/18/01 3:30:00 PM **% Moist:**
est Code: 1_6010B_TAL_D_W

ICP METALS ANALYSIS BY METHOD 6010B (DISSOLVED) **Method:** SW6010B **Prep Method:** SW3010A

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
Aluminum	187	J	200	µg/L	1	8/21/01 9:40:44 PM	OPTIMA_010821N	SHT
Antimony	5.55	J	10.0	µg/L	1	8/22/01 7:19:47 PM	OPTIMA_010822G	
Arsenic	25.8		25.0	µg/L	1	8/21/01 9:40:44 PM	OPTIMA_010821N	
Barium	349		20.0	µg/L	1			
Beryllium	ND		5.00	µg/L	1			
Cadmium	ND		5.00	µg/L	1			
Calcium	64500		1500	µg/L	1			
Chromium	ND		10.0	µg/L	1			
Cobalt	5.68	J	20.0	µg/L	1			
Copper	5.36	J	20.0	µg/L	1			
Iron	16400		200	µg/L	1			
Lead	ND		5.00	µg/L	1			
Magnesium	41400		600	µg/L	1			
Manganese	1290		10.0	µg/L	1			
Nickel	57.5		20.0	µg/L	1			
Potassium	87600		2500	µg/L	5	8/23/01 10:41:35 AM	OPTIMA_010823B	
Selenium	9.04	J	20.0	µg/L	1	8/21/01 9:40:44 PM	OPTIMA_010821N	
Silver	ND		10.0	µg/L	1			
Sodium	246000		7500	µg/L	5	8/23/01 10:41:35 AM	OPTIMA_010823B	
Thallium	ND		20.0	µg/L	1	8/21/01 9:40:44 PM	OPTIMA_010821N	
Vanadium	ND		20.0	µg/L	1			
Zinc	9.29	J	10.0	µg/L	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: E and E Washington D.C. Office
Lab Order: 0106162 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106162-15A **Sample Type:** SAMP **Matrix:** Water

Client Sample ID: KW-MW-04
Alt. Client ID:
Collection Date: 6/19/01 10:07:00 AM **% Moist:**
est Code: 1_6010B_TAL_D_W

ICP METALS ANALYSIS BY METHOD 6010B (DISSOLVED) **Method:** SW6010B **Prep Method:** SW3010A

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
Aluminum	404		200	µg/L	1	8/21/01 9:44:26 PM	OPTIMA_010821N	SHT
Antimony	2.63	J	10.0	µg/L	1	8/22/01 7:23:24 PM	OPTIMA_010822G	
Arsenic	15.3	J	25.0	µg/L	1	8/21/01 9:44:26 PM	OPTIMA_010821N	
Barium	345		20.0	µg/L	1			
Beryllium	ND		5.00	µg/L	1			
Cadmium	ND		5.00	µg/L	1			
Calcium	41300		1500	µg/L	1			
Chromium	ND		10.0	µg/L	1			
Cobalt	ND		20.0	µg/L	1			
Copper	20.4		20.0	µg/L	1			
Iron	1390		200	µg/L	1			
Lead	3.77	J	5.00	µg/L	1			
Magnesium	41400		600	µg/L	1			
Manganese	252		10.0	µg/L	1			
Nickel	24.5		20.0	µg/L	1			
Potassium	153000		2500	µg/L	5	8/23/01 10:45:46 AM	OPTIMA_010823B	
Selenium	8.23	J	20.0	µg/L	1	8/21/01 9:44:26 PM	OPTIMA_010821N	
Silver	ND		10.0	µg/L	1			
Sodium	564000		7500	µg/L	5	8/23/01 10:45:46 AM	OPTIMA_010823B	
Thallium	ND		20.0	µg/L	1	8/21/01 9:44:26 PM	OPTIMA_010821N	
Vanadium	8.60	J	20.0	µg/L	1			
Zinc	18.1		10.0	µg/L	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: E and E Washington D.C. Office
Lab Order: 0106162 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106162-16A **Sample Type:** SAMP **Matrix:** Water

Client Sample ID: KW-MW-05
Alt. Client ID:
Collection Date: 6/19/01 12:10:00 PM **% Moist:**
est Code: 1_6010B_TAL_D_W

ICP METALS ANALYSIS BY METHOD 6010B (DISSOLVED) **Method:** SW6010B **Prep Method:** SW3010A

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
Aluminum	144	J	200	µg/L	1	8/21/01 9:48:03 PM	OPTIMA_010821N	SHT
Antimony	2.67	J	10.0	µg/L	1	8/22/01 7:27:01 PM	OPTIMA_010822G	
Arsenic	ND		25.0	µg/L	1	8/21/01 9:48:03 PM	OPTIMA_010821N	
Barium	191		20.0	µg/L	1			
Beryllium	ND		5.00	µg/L	1			
Cadmium	ND		5.00	µg/L	1			
Calcium	68000		1500	µg/L	1			
Chromium	ND		10.0	µg/L	1			
Cobalt	ND		20.0	µg/L	1			
Copper	9.33	J	20.0	µg/L	1			
Iron	5930		200	µg/L	1			
Lead	3.49	J	5.00	µg/L	1			
Magnesium	31200		600	µg/L	1			
Manganese	1070		10.0	µg/L	1			
Nickel	ND		20.0	µg/L	1			
Potassium	66800		2500	µg/L	5	8/23/01 10:49:25 AM	OPTIMA_010823B	
Selenium	8.31	J	20.0	µg/L	1	8/21/01 9:48:03 PM	OPTIMA_010821N	
Silver	ND		10.0	µg/L	1			
Sodium	376000		7500	µg/L	5	8/23/01 10:49:25 AM	OPTIMA_010823B	
Thallium	ND		20.0	µg/L	1	8/21/01 9:48:03 PM	OPTIMA_010821N	
Vanadium	6.04	J	20.0	µg/L	1			
Zinc	19.4		10.0	µg/L	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106162
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

Dissolved Metals, TAL by ICP Method 6010B

Test Code: *1_6010B_TAL_D_W* Units: µg/L

Sample ID: **MB-200101689** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **OPTIMA_010821N** SeqNo: **400617** Analysis Date **8/21/01 9:22:43 PM** Prep Batch ID: **200101689** Prep Date: **7/2/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Aluminum	ND	200.0								
A	Arsenic	ND	25.00								
A	Barium	ND	20.00								
A	Beryllium	ND	5.000								
A	Cadmium	ND	5.000								
A	Calcium	ND	1500								
A	Chromium	ND	10.00								
A	Cobalt	ND	20.00								
A	Copper	4.229	20.00								
A	Iron	ND	200.0								J
A	Lead	ND	5.000								
A	Magnesium	ND	600.0								
A	Manganese	ND	10.00								
A	Nickel	ND	20.00								
A	Selenium	ND	20.00								
A	Silver	ND	10.00								
A	Thallium	ND	20.00								
A	Vanadium	ND	20.00								
A	Zinc	ND	10.00								

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106162
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

Dissolved Metals, TAL by ICP Method 6010B Test Code: *1_6010B_TAL_D_W* Units: µg/L

Sample ID: **MB-200101689** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **OPTIMA_010822G** SeqNo: **401157** Analysis Date **8/22/01 7:01:57 PM** Prep Batch ID: **200101689** Prep Date: **7/2/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Antimony	ND	10.00								
A	Potassium	ND	500.0								
A	Sodium	ND	1500								

J-330

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Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106162
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

Dissolved Metals, TAL by ICP Method 6010B

Test Code: *1_6010B_TAL_D_W* Units: µg/L

Sample ID: **LCS-200101689** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **OPTIMA_010821N** SeqNo: **400618** Analysis Date **8/21/01 9:26:13 PM** Prep Batch ID: **200101689** Prep Date: **7/2/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Aluminum	1068	200.0	1000	0	107	80	120			
A	Arsenic	1074	25.00	1000	0	107	80	120			
A	Barium	1041	20.00	1000	0	104	80	120			
A	Beryllium	1014	5.000	1000	0	101	80	120			
A	Cadmium	1021	5.000	1000	0	102	80	120			
A	Calcium	11110	1500	10000	0	111	80	120			
A	Chromium	1024	10.00	1000	0	102	80	120			
A	Cobalt	1033	20.00	1000	0	103	80	120			
A	Copper	1023	20.00	1000	0	102	80	120			
A	Iron	1055	200.0	1000	0	105	80	120			
A	Lead	1025	5.000	1000	0	103	80	120			
A	Magnesium	10170	600.0	10000	0	102	80	120			
A	Manganese	1024	10.00	1000	0	102	80	120			
A	Nickel	1028	20.00	1000	0	103	80	120			
A	Selenium	995.4	20.00	1000	0	100	80	120			
A	Silver	48.68	10.00	50.00	0	97	80	120			
A	Thallium	1020	20.00	1000	0	102	80	120			
A	Vanadium	999.7	20.00	1000	0	100	80	120			
A	Zinc	1024	10.00	1000	0	102	80	120			

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Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit
J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106162
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

Dissolved Metals, TAL by ICP Method 6010B Test Code: *1_6010B_TAL_D_W* Units: µg/L

Sample ID: **LCS-200101689** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **OPTIMA_010822G** SeqNo: **401158** Analysis Date **8/22/01 7:05:27 PM** Prep Batch ID: **200101689** Prep Date: **7/2/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Antimony	1021	10.00	1000	0	102	80	120			
A	Potassium	9548	500.0	10000	0	95	80	120			
A	Sodium	10690	1500	10000	0	107	80	120			

J-332

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Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

MERCURY

Ecology and Environment, Inc.

Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106162 CPID: 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106162-11B Sample Type: SAMP

Client Sample ID: KWS-RS
Alt. Client ID:
Collection Date: 6/20/01 11:35:00 AM
Matrix: WATER % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DISSOLVED MERCURY IN WATER BY METHOD 7470A								
1_7470A_HG_D_W								
Mercury	ND		0.200	µg/L	1	6/26/01 1:57:12 PM	LEEMAN_010626B	JLW

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	KW-MW-01
Lab Order:	0106162 CPID: 001096.GT05.01..	Alt. Client ID:	
Project:	Kenilworth RI/FS	Collection Date:	6/18/01 12:49:00 PM
Lab ID:	0106162-12A Sample Type: SAMP	Matrix:	WATER % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DISSOLVED MERCURY IN WATER BY METHOD 7470A 1_7470A_HG_D_W								
Mercury	ND		0.200	µg/L	1	6/26/01 2:01:26 PM	LEEMAN_010626B	JLW

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 6/28/01 2:00:00 AM

Thursday, June 28, 2001 2:2[illegible] PM

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Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	KW-MW-02
Lab Order:	0106162 CPID: 001096.GT05.01..	Alt. Client ID:	
Project:	Kenilworth RI/FS	Collection Date:	6/18/01 4:39:00 PM
Lab ID:	0106162-13A Sample Type: SAMP	Matrix:	WATER % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DISSOLVED MERCURY IN WATER BY METHOD 7470A								
1_7470A_HG_D_W								
Mercury	ND		0.200	µg/L	1	6/26/01 2:02:40 PM	LEEMAN_010626B	JLW

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106162 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106162-14A **Sample Type:** SAMP

Client Sample ID: KW-MW-03
Alt. Client ID:
Collection Date: 6/18/01 3:30:00 PM
Matrix: WATER
% Moist: -

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DISSOLVED MERCURY IN WATER BY METHOD 7470A 1_7470A_HG_D_W								
Mercury	ND		0.200	µg/L	1	6/26/01 2:04:09 PM	LEEMAN_010626B	JLW

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 6/28/01 2:00:00 AM

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Laboratory Results

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Lancaster, New York 14086-

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	KW-MW-04
Lab Order:	0106162 CPID: 001096.GT05.01..	Alt. Client ID:	
Project:	Kenilworth RI/FS	Collection Date:	6/19/01 10:07:00 AM
Lab ID:	0106162-15A Sample Type: SAMP	Matrix:	WATER % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DISSOLVED MERCURY IN WATER BY METHOD 7470A								
1_7470A_HG_D_W								
Mercury	ND		0.200	µg/L	1	6/26/01 2:05:23 PM	LEEMAN_010626B	JLW

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
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Ecology and Environment, Inc.

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4493 Walden Avenue
Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	KW-MW-05
Lab Order:	0106162 CPID: 001096.GT05.01..	Alt. Client ID:	
Project:	Kenilworth RI/FS	Collection Date:	6/19/01 12:10:00 PM
Lab ID:	0106162-16A Sample Type: SAMP	Matrix:	WATER % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DISSOLVED MERCURY IN WATER BY METHOD 7470A 1_7470A_HG_D_W								
Mercury	ND		0.200	µg/L	1	6/26/01 2:06:51 PM	LEEMAN_010626B	JLW

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 6/28/01 2:00:00 AM

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106162
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

Dissolved Mercury in Water by Method 7470A

Test Code: *1_7470A_HG_D_W* Units: µg/L

Sample ID: **CK6PBW** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **LEEMAN_010626B** SeqNo: **371953** Analysis Date: **6/26/01 1:45:01 PM** Prep Batch ID: **200101597** Prep Date: **6/25/01**

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Mercury	ND	0.2000								

J-341

50

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106162
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

Dissolved Mercury in Water by Method 7470A

Sample ID: **CK3LCSW** Client Sample ID: Test Code: *1_7470A_HG_D_W* Units: µg/L

Run Batch ID: **LEEMAN_010626B** SeqNo: **371954** Analysis Date: **6/26/01 1:46:20 PM** Prep Batch ID: **200101597** DF: 1 DL_No: 1 Prep Date: 6/25/01

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Mercury	1.002	0.2000	1.000	0	100	80	120			

J-342

57

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106162
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Sample Matrix Spike

Dissolved Mercury in Water by Method 7470A Test Code: *1_7470A_HG_D_W* Units: µg/L

Sample ID: **0106162-16AS**

Run Batch ID: **LEEMAN_010626B** SeqNo: **371970** Analysis Date: **6/26/01 2:08:07 PM** Prep Batch ID: **200101597** Prep Date: **6/25/01**

Analyte	Result	PQL	SPK Added	Orig Result	%REC	%RPD
Mercury	0.6729	0.2000	1.000	0	67	

A J-343

51
00

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below reporting limits
1 - Represents RSD Limit for Quad Analysis
* - LCS Recovery outside limits
B - Analyte detected in the associated Method Blank
NC - Not Calculated
M - Matrix Spike Recovery outside limits
E - Result exceeds Highest Calibration Standard
RL -Reporting Limit
R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106162
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Sample Matrix Spike Duplicate

Dissolved Mercury in Water by Method 7470A

Sample ID: **0106162-16AS1** Test Code: *1_7470A_HG_D_W* Units: µg/L

Run Batch ID: **LEEMAN_010626B** SeqNo: **371971** Analysis Date: **6/26/01 2:09:30 PM** Prep Batch ID: **200101597** Prep Date: **6/25/01**

Analyte	Result	PQL	SPK Added	Orig Result	%REC	%RPD
A Mercury	0.6861	0.2000	1.000	0	69	1.9

59

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below reporting limits
1 - Represents RSD Limit for Quad Analysis
* - LCS Recovery outside limits
B - Analyte detected in the associated Method Blank
NC - Not Calculated
M - Matrix Spike Recovery outside limits
E - Result exceeds Highest Calibration Standard
RL -Reporting Limit
R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)

GENERAL ANALYTICAL CHEMISTRY

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SU-BK-1
Lab Order:	0106162 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/20/01 10:20:00 AM
Lab ID:	0106162-01A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	12.9		0.100	wt%	1	6/25/01	OHAUS_PMOIST_010625B	AO

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 6/21/01 8:45:00 PM

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Laboratory Results

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NYS ELAP ID#: 10486
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CLIENT:	E and E Washington D.C. Office	Client Sample ID:	KWS-SU-BK-2
Lab Order:	0106162 CPID: 001096.GT05.01..	Alt. Client ID:	
Project:	Kenilworth RI/FS	Collection Date:	6/20/01 10:25:00 AM
Lab ID:	0106162-02A Sample Type: SAMP	Matrix:	SOIL % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	5.68		0.100	wt%	1	6/25/01	OHAUS_PMOIST_010625B	AO

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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CLIENT: E and E Washington D.C. Office
Lab Order: 0106162 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106162-03A **Sample Type:** SAMP

Client Sample ID: KWS-SU-BK-3
Alt. Client ID:
Collection Date: 6/20/01 10:35:00 AM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	20.5		0.100	wt%	1	6/25/01	OHAUS_PMOIST_010625B	AO

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 6/21/01 8:45:00 PM

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CLIENT: E and E Washington D.C. Office
Lab Order: 0106162 CPID: 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106162-04A Sample Type: SAMP

Client Sample ID: KWS-SU-BK-4
Alt. Client ID:
Collection Date: 6/20/01 10:45:00 AM
Matrix: SOIL % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	20.8		0.100	wt%	1	6/25/01	OHAUS_PMOIST_010625B	AO

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Laboratory Results

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Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106162 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106162-05A **Sample Type:** SAMP

Client Sample ID: KWS-SU-BK-5
Alt. Client ID:
Collection Date: 6/20/01 11:05:00 AM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	12.7		0.100	wt%	1	6/25/01	OHAUS_PMOIST_010625B	AO

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106162 CPID: 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106162-06A Sample Type: SAMP

Client Sample ID: KWS-SU-BK-6
Alt. Client ID:
Collection Date: 6/20/01 11:35:00 AM
Matrix: SOIL % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	12.7		0.100	wt%	1	6/25/01	OHAUS_PMOIST_010625B	AO

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Laboratory Results

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CLIENT: E and E Washington D.C. Office
Lab Order: 0106162 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106162-07A **Sample Type:** SAMP

Client Sample ID: KWS-SU-BK-7
Alt. Client ID:
Collection Date: 6/20/01 12:10:00 PM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	16.8		0.100	wt%	1	6/25/01	OHAUS_PMOIST_010625B	AO

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 6/21/01 8:45:00 PM

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Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	KWS-SU-BK-8
Lab Order:	0106162 CPID: 001096.GT05.01..	Alt. Client ID:	
Project:	Kenilworth RI/FS	Collection Date:	6/20/01 12:50:00 PM
Lab ID:	0106162-08A Sample Type: SAMP	Matrix:	SOIL % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	17.6		0.100	wt%	1	6/25/01	OHAUS_PMOIST_010625B	AO

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

Ecology and Environment, Inc.

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106162 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106162-09A **Sample Type:** SAMP

Client Sample ID: KWS-SU-BK-9
Alt. Client ID:
Collection Date: 6/20/01 1:13:00 PM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	21.4		0.100	wt%	1	6/25/01	OHAUS_PMOIST_010625B	AO

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 6/21/01 8:45:00 PM

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Laboratory Results

Analytical Services Center
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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106162 CPID: 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106162-10A Sample Type: SAMP

Client Sample ID: KWS-SU-BK-10
Alt. Client ID:
Collection Date: 6/20/01 3:00:00 PM
Matrix: SOIL % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	40.2		0.100	wt%	1	6/25/01	OHAUS_PMOIST_010625B	AO

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106162
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Sample Duplicate

Percent Moisture

Sample ID: **0106151-20A** Client Sample ID: **1300-X19(6)** Test Code: *PMOIST* Units: wt%

Run Batch ID: **OHAUS_PMOIST_010625B** SeqNo: **369900** Analysis Date **6/25/01** Prep Batch ID: **010625170r** DF: 1 DL_No: 1 Prep Date: **6/25/01**

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Percent Moisture	11.60	0.1000		12.65				8.7	35	

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106162
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Sample Duplicate

Percent Moisture

Test Code: *PMOIST* Units: wt%

Sample ID: **0106152-19B** Client Sample ID: **1300-X8(3)** DF: 1 DL_No: 1

Run Batch ID: **OHAUS_PMOIST_010625B** SeqNo: **369920** Analysis Date **6/25/01** Prep Batch ID: **010625170r** Prep Date: **6/25/01**

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Percent Moisture	20.89	0.1000		21.08				0.9	35	

J-358

2

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106162
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Sample Duplicate

Percent Moisture

Sample ID: **0106163-03A** Client Sample ID: **1300-X7(4)** Test Code: *PMOIST* Units: wt%

Run Batch ID: **OHAUS_PMOIST_010625B** SeqNo: **369940** Analysis Date **6/25/01** Prep Batch ID: **010625170r** DF: 1 DL_No: 1 Prep Date: **6/25/01**

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Percent Moisture	19.02	0.1000		22.03				14.7	35	

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106162
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Sample Duplicate

Percent Moisture

Test Code: *PMOIST* Units: wt%

Sample ID: **0106163-20A** Client Sample ID: **1300-X4(6)** DF: 1 DL_No: 1

Run Batch ID: **OHAUS_PMOIST_010625B** SeqNo: **369958** Analysis Date **6/25/01** Prep Batch ID: **010625170r** Prep Date: **6/25/01**

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Percent Moisture	5.079	0.1000		5.036				0.9	35	

J-360

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

August 24, 2001

Mr. Nate Gahr
E and E Washington D.C. Office
1700 North Moore St.
Suite 1610
Arlington, VA 22209

RE: Kenilworth RI/FS
CostPoint ID: **001096.GT05.01..**

Work Order No.: **0106179**

Dear Mr. Nate Gahr,

Ecology and Environment, Inc. received 7 samples on Saturday, June 23, 2001 for the analyses presented in the following report.

E & E will retain the samples addressed in this report for 30 days, unless otherwise instructed by the client. If additional storage is requested, the storage fee is $1.00 per sample container per month, to accrue until the client authorizes sample destruction.

Sincerely,

Tony Bogolin
Project Manager

CC:
Enclosures as note

This report ends on page 31

CHAIN OF CUSTODY RECORD

ASC analytical services center

Ecology and Environment, Inc., Analytical Services Center
4493 Walden Avenue, Lancaster, New York, 14086, Tel: 716/685-8080, Fax 716/685-0852
Where Scientific Excellence and Efficiency Meet

Cooler No: _____
Lab: _____

Page: ____ of ____

PROJECT No: CD1096 GT05.01

SITE NAME: KENILWORTH RI/FS

LOCATION: (Include State) KENILWORTH PARK WASHINGTON D.C.

CLIENT: NATIONAL PARK SERVICE

PROJECT MANAGER: John Pasch

OFFICE No: W. D.C.

FIELD TEAM LEADER: Nathan Gahr

PHONE No: WDC

SAMPLERS: (PRINT) NATHAN GAHR NOAL McMahon

CONTAINER TYPE AND PRESERVATIVE: 1L POLY HNO3

REQUESTED ANALYSIS: TAL MN TAL

TURNAROUND TIME: 24-HOUR ☐ 48-HOUR ☐ 1-WEEK ☐ STANDARD ☒ RUSH (RUSH) _____ days OTHER _____

(FOR LAB USE ONLY) Lab Job No: Report type: Batch QC: Yes No

DATE	TIME	SAMPLE ID	SAMPLE MATRIX	CHECK FOR MS/MSD	SAMPLE TYPE	No. OF CONTAINERS	TAL MN TAL	OVA/HNU READINGS (PPM)	BEGINNING DEPTH (FEET BGS)	ENDING DEPTH (FEET BGS)	REMARKS
6/21/01	1050	KWS-MW-6	GW		O	1	✓				
	1245	KWS-MW-10			O						
	1431	KWS-MW-11			O						
6/22/01	0941	KWS-MW-9			O						
	1258	KWS-MW-8			O						
	1258	KWS-MW-8 DUP			D						
	1415	KWS-MW-7	✓		O	✓	✓				

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	Ship Via:	Date:
[signature]	6/22/01 15:00			FED EX	22 JUN 01
Relinquished By: (Signature)	**Date/Time:**	**Received By: (Signature)**	**Date/Time:**	**BL/Airbill Number:**	
		[signature]	6/23/01 1000	8287-5767-6	

Temperature Blank Info. Enclosed: (Yes) No

(FOR LAB USE ONLY) Date: _____ Time: _____ Temperature: _____ °C

Distr: White - Lab original Yellow - Field team leader

0881297

Cooler Receipt Form

PACKAGE RECEIPT #: 8014 NUMBER OF COOLERS: 1 DATE RECEIVED: 6/23/01

E & E PROJECT #: _____ PROJECT OR SITE NAME: Kenilworth

A. Preliminary Examination Phase

CIRCLE ONE

1. Did coolers come with airbill or packing slip? _____ YES NO NA

   Enter carrier here and print airbill # below: *(Circle One)* FedEx Airborne Client Other

   Ship as high hazard or dangerous goods YES NO NA

2. Did cooler(s) have custody seals? _____ YES NO NA
3. Were custody seals unbroken and intact on receipt? _____ YES NO* NA
4. Were custody seals dated and signed? _____ YES NO NA
5. Sign here to acknowledge receipt of cooler (s): _____

   Date cooler(s) opened: 6/23/01 C-O-C numbers: _____

   Cooler(s) opened by (print): J Henderson Signature: _____

6. Were the C-O-C forms received? _____ YES NO* NA
7. Was the project identifiable from the C-O-C form? _____ YES NO* NA
   If YES, enter the project number and name in the heading above.

Please record Temperature Blank Vial or Cooler Temperature for Each Cooler, Range (2 - 6C)* NJDEP must be ≤4C

AIRBILL #	TEMP. °C	AIRBILL #	TEMP. °C	AIRBILL #	TEMP. °C
8287546 77078	5.0				

Thermometer # 129 Correction Factor 0 * If No or Temperature Outside of Acceptable Range, prepare a PM Notification form.

B. Unpacking Phase

8. Was enough packing material used in cooler(s)? _____ YES NO NA
   Type of material: ☐ Vermiculite ☒ Bubble Wrap ☒ Other
9. If required, was enough ice used? _____ YES NO NA
   If YES, type of ice used: ☒ Wet ☐ Dry ☐ Blue ☐ Other
10. Was a temperature blank vial included inside cooler(s)? _____ YES NO NA
    If YES, indicate temperature blank vial temperature in table above. If NO, indicate cooler temperature in table above.
11. Were all containers sealed in separate plastic bags? _____ YES NO NA
12. Did all containers arrive unbroken and in good condition? _____ YES NO* NA
13. Samples stored in W Cooler before Login Phase? _____ YES NO* JWH
    If yes: Signature In: _____ Date/Time: 6/23/01 1200
    Signature Out: _____ Date/Time: 6/25/01 800

C. Login Phase

Samples Logged in By (print): J Henderson Signature: _____ Date: 6/25/01

14. Were all container labels complete (e.g. date, time preserved)? _____ YES NO* NA
15. Were all C-O-C forms filled out properly in ink and signed? _____ YES NO* NA
16. Did the C-O-C form agree with containers received? _____ YES NO* NA
17. Were the correct containers used for the tests requested? _____ YES NO* NA
18. Were the correct preservatives listed on the sample labels? _____ YES NO* NA
19. Was a sufficient sample volume sent for the tests requested? _____ YES NO* NA
20. Were all volatile samples received without head space? _____ YES NO* NA

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*Prepare a PM Notification form.

Forms & Lists Final\F_024.ene\Rev \Approval Date5/1/00Last Update:

Ecology and Environment, Inc.
Analytical Services Center
Lancaster, New York 14086
Phone: (716) 685-8080

Laboratory Results

NYS ELAP ID#: 10486

CLIENT:	E and E Washington D.C. Office
Project:	Kenilworth RI/FS
Lab Order:	0106179

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition

METALS
Sample Analysis
All samples were digested and analyzed within hold time.

Potassium and sodium were analyzed at a five-fold dilution for all samples except KWS-MW-10 and KW-MW-11 to bring the concentrations within the calibrated range of the instrument.

Calibrations
All initial and continuing calibrations were acceptable.

QC
All calibration and preparation blank analyses were acceptable. Copper was present in the method blank at a concentration greater than the MDL but less than the reporting limit.

All matrix spike/spike duplicate (MS/MSD) recoveries and RPD values were acceptable except for aluminum which was high and silver which was low in the MS/MSD of sample KWS-MW-7. Sodium and potassium recoveries and RPDs were also high in the MS. The concentration of these two elements in the sample was greater than six times the spike amount added.

All laboratory control sample (LCS) recoveries were acceptable.

MERCURY
Sample Analysis
All samples were digested and analyzed within hold time.

Calibrations
All initial and continuing calibrations were acceptable.

QC
All calibration and preparation blank analyses were acceptable.

All laboratory control sample (LCS) recoveries were acceptable.

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Laboratory Results

NYS ELAP ID#: 10486

Lab Order: 0106179
Client: E and E Washington D.C. Office
Project: Kenilworth RI/FS

DATES REPORT

Sample ID	Client Sample ID	Collection Date	Received Date	Matrix	Test Name	TCLP Date*	Prep Date	Analysis Date
0106179-01A	KWS-MW-6	06/21/2001 10:50:00 AM	5/23/2001 10:00:00 AI	Water	Dissolved Mercury in Water by Method 7470A		07/06/2001	07/09/2001
					Dissolved Metals, TAL by ICP Method 6010B		07/02/2001	08/22/2001
0106179-02A	KWS-MW-10	06/21/2001 12:45:00 PM			Dissolved Mercury in Water by Method 7470A		07/06/2001	07/09/2001
					Dissolved Metals, TAL by ICP Method 6010B		07/02/2001	08/22/2001
0106179-03A	KWS-MW-11	06/21/2001 2:31:00 PM			Dissolved Mercury in Water by Method 7470A		07/06/2001	07/09/2001
					Dissolved Metals, TAL by ICP Method 6010B		07/02/2001	08/22/2001
0106179-04A	KWS-MW-9	06/22/2001 9:41:00 AM			Dissolved Mercury in Water by Method 7470A		07/06/2001	07/09/2001
					Dissolved Metals, TAL by ICP Method 6010B		07/02/2001	08/22/2001
0106179-05A	KWS-MW-8	06/22/2001 12:58:00 PM			Dissolved Mercury in Water by Method 7470A		07/06/2001	07/09/2001
					Dissolved Metals, TAL by ICP Method 6010B		07/02/2001	08/22/2001
0106179-06A	KWS-MW-8DUP				Dissolved Mercury in Water by Method 7470A		07/06/2001	07/09/2001
					Dissolved Metals, TAL by ICP Method 6010B		07/02/2001	08/22/2001
0106179-07A	KWS-MW-7	06/22/2001 2:15:00 PM			Dissolved Mercury in Water by Method 7470A		07/06/2001	07/09/2001
					Dissolved Metals, TAL by ICP Method 6010B		07/02/2001	08/22/2001

J-366

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LIMS Version #: 3.1.2.1 [illegible]

*Reflects Date of TCLP Extraction Completion

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Laboratory Results

NYS ELAP ID#: 10486
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Client: E and E Washington D.C. Office
Lab Order: 0106179 CPID: 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106179-01A Sample Type: SAMP Matrix: Water

Client Sample ID: KWS-MW-6
Alt. Client ID:
Collection Date: 6/21/01 10:50:00 AM % Moist:
est Code: 1_6010B_TAL_D_W

ICP METALS ANALYSIS BY METHOD 6010B (DISSOLVED) Method: SW6010B Prep Method: SW3010A

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
Aluminum	587		200	µg/L	1	8/21/01 9:51:42 PM	OPTIMA_010821N	SHT
Antimony	ND		10.0	µg/L	1	8/22/01 7:37:46 PM	OPTIMA_010822G	
Arsenic	ND		25.0	µg/L	1	8/21/01 9:51:42 PM	OPTIMA_010821N	
Barium	245		20.0	µg/L	1			
Beryllium	ND		5.00	µg/L	1			
Cadmium	ND		5.00	µg/L	1			
Calcium	54100		1500	µg/L	1			
Chromium	10.0		10.0	µg/L	1			
Cobalt	4.97	J	20.0	µg/L	1			
Copper	58.1		20.0	µg/L	1			
Iron	6840		200	µg/L	1			
Lead	ND		5.00	µg/L	1			
Magnesium	20800		600	µg/L	1			
Manganese	1780		10.0	µg/L	1			
Nickel	121		20.0	µg/L	1			
Potassium	43000		2500	µg/L	5	8/23/01 10:59:49 AM	OPTIMA_010823B	
Selenium	ND		20.0	µg/L	1	8/21/01 9:51:42 PM	OPTIMA_010821N	
Silver	ND		10.0	µg/L	1			
Sodium	314000		7500	µg/L	5	8/23/01 10:59:49 AM	OPTIMA_010823B	
Thallium	ND		20.0	µg/L	1	8/21/01 9:51:42 PM	OPTIMA_010821N	
Vanadium	8.27	J	20.0	µg/L	1			
Zinc	74.8		10.0	µg/L	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: E and E Washington D.C. Office
Lab Order: 0106179 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106179-02A **Sample Type:** SAMP **Matrix:** Water

Client Sample ID: KWS-MW-10
Alt. Client ID:
Collection Date: 6/21/01 12:45:00 PM **% Moist:**
est Code: 1_6010B_TAL_D_W

ICP METALS ANALYSIS BY METHOD 6010B (DISSOLVED) **Method:** SW6010B **Prep Method:** SW3010A

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
Aluminum	ND		200	µg/L	1	8/21/01 10:02:23 PM	OPTIMA_010821N	SHT
Antimony	13.0		10.0	µg/L	1	8/22/01 7:41:26 PM	OPTIMA_010822G	
Arsenic	ND		25.0	µg/L	1	8/21/01 10:02:23 PM	OPTIMA_010821N	
Barium	1310		20.0	µg/L	1			
Beryllium	ND		5.00	µg/L	1			
Cadmium	ND		5.00	µg/L	1			
Calcium	117000		1500	µg/L	1			
Chromium	ND		10.0	µg/L	1			
Cobalt	ND		20.0	µg/L	1			
Copper	20.4		20.0	µg/L	1			
Iron	38000		200	µg/L	1			
Lead	53.4		5.00	µg/L	1			
Magnesium	34600		600	µg/L	1			
Manganese	310		10.0	µg/L	1			
Nickel	13.8	J	20.0	µg/L	1			
Potassium	17300		500	µg/L	1	8/22/01 7:41:26 PM	OPTIMA_010822G	
Selenium	12.1	J	20.0	µg/L	1	8/21/01 10:02:23 PM	OPTIMA_010821N	
Silver	ND		10.0	µg/L	1			
Sodium	50600		1500	µg/L	1	8/22/01 7:41:26 PM	OPTIMA_010822G	
Thallium	ND		20.0	µg/L	1	8/21/01 10:02:23 PM	OPTIMA_010821N	
Vanadium	ND		20.0	µg/L	1			
Zinc	16.7		10.0	µg/L	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: E and E Washington D.C. Office
Client Sample ID: KWS-MW-11
Lab Order: 0106179 **CPID:** 001096.GT05.01..
Alt. Client ID:
Project: Kenilworth RI/FS
Collection Date: 6/21/01 2:31:00 PM **% Moist:**
Lab ID: 0106179-03A **Sample Type:** SAMP **Matrix:** Water **est Code:** 1_6010B_TAL_D_W

ICP METALS ANALYSIS BY METHOD 6010B (DISSOLVED) **Method:** SW6010B **Prep Method:** SW3010A

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
Aluminum	ND		200	µg/L	1	8/21/01 10:06:07 PM	OPTIMA_010821N	SHT
Antimony	8.26	J	10.0	µg/L	1	8/22/01 7:45:13 PM	OPTIMA_010822G	
Arsenic	13.7	J	25.0	µg/L	1	8/21/01 10:06:07 PM	OPTIMA_010821N	
Barium	6880		20.0	µg/L	1			
Beryllium	ND		5.00	µg/L	1			
Cadmium	ND		5.00	µg/L	1			
Calcium	123000		1500	µg/L	1			
Chromium	ND		10.0	µg/L	1			
Cobalt	ND		20.0	µg/L	1			
Copper	ND		20.0	µg/L	1			
Iron	27400		200	µg/L	1			
Lead	3.62	J	5.00	µg/L	1			
Magnesium	35500		600	µg/L	1			
Manganese	74.6		10.0	µg/L	1			
Nickel	ND		20.0	µg/L	1			
Potassium	16800		500	µg/L	1	8/22/01 7:45:13 PM	OPTIMA_010822G	
Selenium	8.22	J	20.0	µg/L	1	8/21/01 10:06:07 PM	OPTIMA_010821N	
Silver	ND		10.0	µg/L	1			
Sodium	44000		1500	µg/L	1	8/22/01 7:45:13 PM	OPTIMA_010822G	
Thallium	ND		20.0	µg/L	1	8/21/01 10:06:07 PM	OPTIMA_010821N	
Vanadium	ND		20.0	µg/L	1			
Zinc	13.6		10.0	µg/L	1			

Definitions:
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R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: E and E Washington D.C. Office
Lab Order: 0106179 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106179-04A **Sample Type:** SAMP **Matrix:** Water

Client Sample ID: KWS-MW-9
Alt. Client ID:
Collection Date: 6/22/01 9:41:00 AM **% Moist:**
est Code: 1_6010B_TAL_D_W

ICP METALS ANALYSIS BY METHOD 6010B (DISSOLVED) **Method:** SW6010B **Prep Method:** SW3010A

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
Aluminum	ND		200	µg/L	1	8/21/01 10:09:50 PM	OPTIMA_010821N	SHT
Antimony	6.33	J	10.0	µg/L	1	8/22/01 7:49:01 PM	OPTIMA_010822G	
Arsenic	ND		25.0	µg/L	1	8/21/01 10:09:50 PM	OPTIMA_010821N	
Barium	1290		20.0	µg/L	1			
Beryllium	ND		5.00	µg/L	1			
Cadmium	ND		5.00	µg/L	1			
Calcium	102000		1500	µg/L	1			
Chromium	ND		10.0	µg/L	1			
Cobalt	ND		20.0	µg/L	1			
Copper	ND		20.0	µg/L	1			
Iron	23500		200	µg/L	1			
Lead	ND		5.00	µg/L	1			
Magnesium	29100		600	µg/L	1			
Manganese	140		10.0	µg/L	1			
Nickel	ND		20.0	µg/L	1			
Potassium	49700		2500	µg/L	5	8/23/01 11:02:50 AM	OPTIMA_010823B	
Selenium	9.25	J	20.0	µg/L	1	8/21/01 10:09:50 PM	OPTIMA_010821N	
Silver	ND		10.0	µg/L	1			
Sodium	187000		7500	µg/L	5	8/23/01 11:02:50 AM	OPTIMA_010823B	
Thallium	ND		20.0	µg/L	1	8/21/01 10:09:50 PM	OPTIMA_010821N	
Vanadium	ND		20.0	µg/L	1			
Zinc	5.26	J	10.0	µg/L	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: E and E Washington D.C. Office
Client Sample ID: KWS-MW-8
Lab Order: 0106179 **CPID:** 001096.GT05.01..
Alt. Client ID:
Project: Kenilworth RI/FS
Collection Date: 6/22/01 12:58:00 PM **% Moist:**
Lab ID: 0106179-05A **Sample Type:** SAMP **Matrix:** Water **est Code:** 1_6010B_TAL_D_W

ICP METALS ANALYSIS BY METHOD 6010B (DISSOLVED) **Method:** SW6010B **Prep Method:** SW3010A

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
Aluminum	ND		200	µg/L	1	8/21/01 10:13:31 PM	OPTIMA_010821N	SHT
Antimony	ND		10.0	µg/L	1	8/22/01 7:52:42 PM	OPTIMA_010822G	
Arsenic	9.89	J	25.0	µg/L	1	8/21/01 10:13:31 PM	OPTIMA_010821N	
Barium	1230		20.0	µg/L	1			
Beryllium	ND		5.00	µg/L	1			
Cadmium	ND		5.00	µg/L	1			
Calcium	36700		1500	µg/L	1			
Chromium	ND		10.0	µg/L	1			
Cobalt	ND		20.0	µg/L	1			
Copper	ND		20.0	µg/L	1			
Iron	7160		200	µg/L	1			
Lead	ND		5.00	µg/L	1			
Magnesium	65700		600	µg/L	1			
Manganese	38.7		10.0	µg/L	1			
Nickel	ND		20.0	µg/L	1			
Potassium	104000		2500	µg/L	5	8/23/01 11:06:01 AM	OPTIMA_010823B	
Selenium	9.64	J	20.0	µg/L	1	8/21/01 10:13:31 PM	OPTIMA_010821N	
Silver	ND		10.0	µg/L	1			
Sodium	431000		7500	µg/L	5	8/23/01 11:06:01 AM	OPTIMA_010823B	
Thallium	ND		20.0	µg/L	1	8/21/01 10:13:31 PM	OPTIMA_010821N	
Vanadium	ND		20.0	µg/L	1			
Zinc	7.88	J	10.0	µg/L	1			

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E - Value above quantitation range
Surr - Denotes Surrogate Compound
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Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: E and E Washington D.C. Office
Lab Order: 0106179 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106179-06A **Sample Type:** SAMP **Matrix:** Water

Client Sample ID: KWS-MW-8DUP
Alt. Client ID:
Collection Date: 6/22/01 12:58:00 PM **% Moist:**
est Code: 1_6010B_TAL_D_W

ICP METALS ANALYSIS BY METHOD 6010B (DISSOLVED) **Method:** SW6010B **Prep Method:** SW3010A

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
Aluminum	ND		200	µg/L	1	8/21/01 10:17:13 PM	OPTIMA_010821N	SHT
Antimony	ND		10.0	µg/L	1	8/22/01 7:56:22 PM	OPTIMA_010822G	
Arsenic	9.50	J	25.0	µg/L	1	8/21/01 10:17:13 PM	OPTIMA_010821N	
Barium	1240		20.0	µg/L	1			
Beryllium	ND		5.00	µg/L	1			
Cadmium	ND		5.00	µg/L	1			
Calcium	37000		1500	µg/L	1			
Chromium	ND		10.0	µg/L	1			
Cobalt	ND		20.0	µg/L	1			
Copper	ND		20.0	µg/L	1			
Iron	7220		200	µg/L	1			
Lead	ND		5.00	µg/L	1			
Magnesium	66400		600	µg/L	1			
Manganese	39.3		10.0	µg/L	1			
Nickel	ND		20.0	µg/L	1			
Potassium	104000		2500	µg/L	5	8/23/01 11:09:01 AM	OPTIMA_010823B	
Selenium	7.76	J	20.0	µg/L	1	8/21/01 10:17:13 PM	OPTIMA_010821N	
Silver	ND		10.0	µg/L	1			
Sodium	441000		7500	µg/L	5	8/23/01 11:09:01 AM	OPTIMA_010823B	
Thallium	ND		20.0	µg/L	1	8/21/01 10:17:13 PM	OPTIMA_010821N	
Vanadium	ND		20.0	µg/L	1			
Zinc	8.15	J	10.0	µg/L	1			

Definitions:
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J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
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R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: E and E Washington D.C. Office
Client Sample ID: KWS-MW-7
Lab Order: 0106179 **CPID:** 001096.GT05.01..
Alt. Client ID:
Project: Kenilworth RI/FS
Collection Date: 6/22/01 2:15:00 PM **% Moist:**
Lab ID: 0106179-07A **Sample Type:** SAMP **Matrix:** Water **est Code:** 1_6010B_TAL_D_W

ICP METALS ANALYSIS BY METHOD 6010B (DISSOLVED) **Method:** SW6010B **Prep Method:** SW3010A

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
Aluminum	1250		200	µg/L	1	8/21/01 10:20:54 PM	OPTIMA_010821N	SHT
Antimony	ND		10.0	µg/L	1	8/22/01 8:00:03 PM	OPTIMA_010822G	
Arsenic	ND		25.0	µg/L	1	8/21/01 10:20:54 PM	OPTIMA_010821N	
Barium	782		20.0	µg/L	1			
Beryllium	ND		5.00	µg/L	1			
Cadmium	ND		5.00	µg/L	1			
Calcium	19700		1500	µg/L	1			
Chromium	3.79	J	10.0	µg/L	1			
Cobalt	ND		20.0	µg/L	1			
Copper	9.31	J	20.0	µg/L	1			
Iron	3780		200	µg/L	1			
Lead	24.3		5.00	µg/L	1			
Magnesium	19500		600	µg/L	1			
Manganese	52.0		10.0	µg/L	1			
Nickel	ND		20.0	µg/L	1			
Potassium	61200		2500	µg/L	5	8/23/01 11:12:03 AM	OPTIMA_010823B	
Selenium	7.72	J	20.0	µg/L	1	8/21/01 10:20:54 PM	OPTIMA_010821N	
Silver	ND		10.0	µg/L	1			
Sodium	176000		7500	µg/L	5	8/23/01 11:12:03 AM	OPTIMA_010823B	
Thallium	ND		20.0	µg/L	1	8/21/01 10:20:54 PM	OPTIMA_010821N	
Vanadium	3.08	J	20.0	µg/L	1			
Zinc	70.7		10.0	µg/L	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
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CLIENT: E and E Washington D.C. Office
Work Order: 0106179
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

Dissolved Metals, TAL by ICP Method 6010B Test Code: *1_6010B_TAL_D_W* Units: µg/L

Sample ID: **MB-200101689** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **OPTIMA_010821N** SeqNo: **400617** Analysis Date **8/21/01 9:22:43 PM** Prep Batch ID: **200101689** Prep Date: **7/2/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Aluminum	ND	200.0								
A	Arsenic	ND	25.00								
A	Barium	ND	20.00								
A	Beryllium	ND	5.000								
A	Cadmium	ND	5.000								
A	Calcium	ND	1500								
A	Chromium	ND	10.00								
A	Cobalt	ND	20.00								
A	Copper	4.229	20.00								J
A	Iron	ND	200.0								
A	Lead	ND	5.000								
A	Magnesium	ND	600.0								
A	Manganese	ND	10.00								
A	Nickel	ND	20.00								
A	Selenium	ND	20.00								
A	Silver	ND	10.00								
A	Thallium	ND	20.00								
A	Vanadium	ND	20.00								
A	Zinc	ND	10.00								

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Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106179
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

Dissolved Metals, TAL by ICP Method 6010B Test Code: *1_6010B_TAL_D_W* Units: µg/L

Sample ID: **MB-200101689** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **OPTIMA_010822G** SeqNo: **401157** Analysis Date **8/22/01 7:01:57 PM** Prep Batch ID: **200101689** Prep Date: **7/2/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Antimony	ND	10.00								
A	Potassium	ND	500.0								
A	Sodium	ND	1500								

J-375

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Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

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Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106179
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

Dissolved Metals, TAL by ICP Method 6010B Test Code: *1_6010B_TAL_D_W* Units: µg/L

Sample ID: **LCS-200101689** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **OPTIMA_010821N** SeqNo: **400618** Analysis Date **8/21/01 9:26:13 PM** Prep Batch ID: **200101689** Prep Date: **7/2/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Aluminum	1068	200.0	1000	0	107	80	120			
A	Arsenic	1074	25.00	1000	0	107	80	120			
A	Barium	1041	20.00	1000	0	104	80	120			
A	Beryllium	1014	5.000	1000	0	101	80	120			
A	Cadmium	1021	5.000	1000	0	102	80	120			
A	Calcium	11110	1500	10000	0	111	80	120			
A	Chromium	1024	10.00	1000	0	102	80	120			
A	Cobalt	1033	20.00	1000	0	103	80	120			
A	Copper	1023	20.00	1000	0	102	80	120			
A	Iron	1055	200.0	1000	0	105	80	120			
A	Lead	1025	5.000	1000	0	103	80	120			
A	Magnesium	10170	600.0	10000	0	102	80	120			
A	Manganese	1024	10.00	1000	0	102	80	120			
A	Nickel	1028	20.00	1000	0	103	80	120			
A	Selenium	995.4	20.00	1000	0	100	80	120			
A	Silver	48.68	10.00	50.00	0	97	80	120			
A	Thallium	1020	20.00	1000	0	102	80	120			
A	Vanadium	999.7	20.00	1000	0	100	80	120			
A	Zinc	1024	10.00	1000	0	102	80	120			

Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

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Work Order: 0106179
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

Dissolved Metals, TAL by ICP Method 6010B Test Code: *1_6010B_TAL_D_W* Units: µg/L

Sample ID: **LCS-200101689** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **OPTIMA_010822G** SeqNo: **401158** Analysis Date **8/22/01 7:05:27 PM** Prep Batch ID: **200101689** Prep Date: **7/2/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Antimony	1021	10.00	1000	0	102	80	120			
A	Potassium	9548	500.0	10000	0	95	80	120			
A	Sodium	10690	1500	10000	0	107	80	120			

J-377

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Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

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Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106179
Project: Kenilworth RI/FS

QC SUMMARY REPORT

Sample Matrix Spike

Dissolved Metals, TAL by ICP Method 6010B Test Code: *1_6010B_TAL_D_W* Units: µg/L

Sample ID: **0106179-07AS**

Run Batch ID: **OPTIMA_010821N** SeqNo: **400634** Analysis Date **8/21/01 10:24:35 PM** Prep Batch ID: **200101689** Prep Date: **7/2/01**

	Analyte	Result	PQL	SPK Added	Orig Result	%REC	%RPD
A	Aluminum	2693	200.0	1000	1255	144	
A	Arsenic	1105	25.00	1000	0	110	
A	Barium	1816	20.00	1000	782.3	103	
A	Beryllium	1038	5.000	1000	0	104	
A	Cadmium	1027	5.000	1000	0	103	
A	Calcium	31110	1500	10000	19740	114	
A	Chromium	1025	10.00	1000	3.790	102	
A	Cobalt	1018	20.00	1000	0	102	
A	Copper	1111	20.00	1000	9.310	110	
A	Iron	4869	200.0	1000	3781	109	
A	Lead	1057	5.000	1000	24.26	103	
A	Magnesium	30120	600.0	10000	19510	106	
A	Manganese	1066	10.00	1000	52.04	101	
A	Nickel	1030	20.00	1000	0	103	
A	Selenium	1010	20.00	1000	7.725	100	
A	Silver	35.54	10.00	50.00	0	71	
A	Thallium	994.2	20.00	1000	0	99	
A	Vanadium	1016	20.00	1000	3.081	101	
A	Zinc	1109	10.00	1000	70.66	104	

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; RL -Reporting Limit
J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated; E - Result exceeds Highest Calibration Standard

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Laboratory Results

YS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106179
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Sample Matrix Spike

Dissolved Metals, TAL by ICP Method 6010B

Test Code: *1_6010B_TAL_D_W* Units: µg/L

Sample ID: **0106179-07AS**
Run Batch ID: **OPTIMA_010823B** SeqNo: **401271** Analysis Date **8/23/01 11:15:05 AM** Prep Batch ID: **200101689** Prep Date: **7/2/01**

	Analyte	Result	PQL	SPK Added	Orig Result	%REC	%RPD
A	Potassium	74280	2500	10000	61190	131	
A	Sodium	193500	7500	10000	176300	172	

Dissolved Metals, TAL by ICP Method 6010B

Test Code: *1_6010B_TAL_D_W* Units: µg/L

Sample ID: **0106179-07AS**
Run Batch ID: **OPTIMA_010822G** SeqNo: **401174** Analysis Date **8/22/01 8:03:52 PM** Prep Batch ID: **200101689** Prep Date: **7/2/01**

	Analyte	Result	PQL	SPK Added	Orig Result	%REC	%RPD
A	Antimony	977.1	10.00	1000	0	98	

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Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below reporting limits
1 - Represents RSD Limit for Quad Analysis
* - LCS Recovery outside limits
B - Analyte detected in the associated Method Blank
NC - Not Calculated
M - Matrix Spike Recovery outside limits
E - Result exceeds Highest Calibration Standard
RL -Reporting Limit
R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)

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4493 Walden Avenue
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Laboratory Results

YS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106179
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Sample Matrix Spike Duplicate

Dissolved Metals, TAL by ICP Method 6010B Test Code: *1_6010B_TAL_D_W* Units: µg/L

Sample ID: **0106179-07AS1**

Run Batch ID: **OPTIMA_010821N** SeqNo: **400635** Analysis Date **8/21/01 10:28:12 PM** Prep Batch ID: **200101689** Prep Date: **7/2/01**

	Analyte	Result	PQL	SPK Added	Orig Result	%REC	%RPD
A	Aluminum	2623	200.0	1000	1255	137	4.9
A	Arsenic	1086	25.00	1000	0	109	1.7
A	Barium	1797	20.00	1000	782.3	101	1.9
A	Beryllium	1018	5.000	1000	0	102	1.9
A	Cadmium	1022	5.000	1000	0	102	0.5
A	Calcium	30370	1500	10000	19740	106	6.8
A	Chromium	1024	10.00	1000	3.790	102	0.0
A	Cobalt	1010	20.00	1000	0	101	0.8
A	Copper	1109	20.00	1000	9.310	110	0.1
A	Iron	4817	200.0	1000	3781	104	4.8
A	Lead	1041	5.000	1000	24.26	102	1.6
A	Magnesium	29780	600.0	10000	19510	103	3.3
A	Manganese	1061	10.00	1000	52.04	101	0.5
A	Nickel	1025	20.00	1000	0	103	0.5
A	Selenium	995.5	20.00	1000	7.725	99	1.5
A	Silver	35.10	10.00	50.00	0	70	1.3
A	Thallium	983.1	20.00	1000	0	98	1.1
A	Vanadium	1010	20.00	1000	3.081	101	0.6
A	Zinc	1101	10.00	1000	70.66	103	0.8

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Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; RL -Reporting Limit
J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated; E - Result exceeds Highest Calibration Standard

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Laboratory Results

YS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106179
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Sample Matrix Spike Duplicate

Dissolved Metals, TAL by ICP Method 6010B

Test Code: *1_6010B_TAL_D_W* Units: µg/L

Sample ID: **0106179-07AS1**

Run Batch ID: **OPTIMA_010823B** SeqNo: **401272** Analysis Date **8/23/01 11:18:05 AM** Prep Batch ID: **200101689** Prep Date: **7/2/01**

	Analyte	Result	PQL	SPK Added	Orig Result	%REC	%RPD
A	Potassium	69220	2500	10000	61190	80	48.0
A	Sodium	184100	7500	10000	176300	78	74.5

Dissolved Metals, TAL by ICP Method 6010B

Test Code: *1_6010B_TAL_D_W* Units: µg/L

Sample ID: **0106179-07AS1**

Run Batch ID: **OPTIMA_010822G** SeqNo: **401175** Analysis Date **8/22/01 8:07:34 PM** Prep Batch ID: **200101689** Prep Date: **7/2/01**

	Analyte	Result	PQL	SPK Added	Orig Result	%REC	%RPD
A	Antimony	961.2	10.00	1000	0	96	1.6

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Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below reporting limits
1 - Represents RSD Limit for Quad Analysis
* - LCS Recovery outside limits
B - Analyte detected in the associated Method Blank
NC - Not Calculated
M - Matrix Spike Recovery outside limits
E - Result exceeds Highest Calibration Standard
RL -Reporting Limit
R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)

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Laboratory Results

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Lancaster, New York 14086-

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-MW-6
Lab Order:	0106179 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/21/01 10:50:00 AM
Lab ID:	0106179-01A **Sample Type:** SAMP	**Matrix:**	WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DISSOLVED MERCURY IN WATER BY METHOD 7470A								
1_7470A_HG_D_W								
Mercury	ND		0.200	µg/L	1	7/9/01 10:43:43 AM	LEEMAN_010709C	JLW

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106179 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106179-02A **Sample Type:** SAMP

Client Sample ID: KWS-MW-10
Alt. Client ID:
Collection Date: 6/21/01 12:45:00 PM
Matrix: WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DISSOLVED MERCURY IN WATER BY METHOD 7470A 1_7470A_HG_D_W								
Mercury	ND		0.200	µg/L	1	7/9/01 10:45:05 AM	LEEMAN_010709C	JLW

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Laboratory Results

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Lancaster, New York 14086-

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106179 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106179-03A **Sample Type:** SAMP

Client Sample ID: KWS-MW-11
Alt. Client ID:
Collection Date: 6/21/01 2:31:00 PM
Matrix: WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DISSOLVED MERCURY IN WATER BY METHOD 7470A								
1_7470A_HG_D_W								
Mercury	ND		0.200	µg/L	1	7/9/01 10:46:39 AM	LEEMAN_010709C	JLW

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106179 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106179-04A **Sample Type:** SAMP

Client Sample ID: KWS-MW-9
Alt. Client ID:
Collection Date: 6/22/01 9:41:00 AM
Matrix: WATER
% Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DISSOLVED MERCURY IN WATER BY METHOD 7470A 1_7470A_HG_D_W								
Mercury	ND		0.200	µg/L	1	7/9/01 10:47:52 AM	LEEMAN_010709C	JLW

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106179 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106179-05A **Sample Type:** SAMP

Client Sample ID: KWS-MW-8
Alt. Client ID:
Collection Date: 6/22/01 12:58:00 PM
Matrix: WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DISSOLVED MERCURY IN WATER BY METHOD 7470A								
1_7470A_HG_D_W								
Mercury	ND		0.200	µg/L	1	7/9/01 10:49:05 AM	LEEMAN_010709C	JLW

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106179 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106179-06A **Sample Type:** SAMP

Client Sample ID: KWS-MW-8DUP
Alt. Client ID:
Collection Date: 6/22/01 12:58:00 PM
Matrix: WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DISSOLVED MERCURY IN WATER BY METHOD 7470A								
1_7470A_HG_D_W								
Mercury	ND		0.200	µg/L	1	7/9/01 10:50:18 AM	LEEMAN_010709C	JLW

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Ecology and Environment, Inc.

Laboratory Results

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Lancaster, New York 14086-

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-MW-7
Lab Order:	0106179 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/22/01 2:15:00 PM
Lab ID:	0106179-07A **Sample Type:** SAMP	**Matrix:**	WATER **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DISSOLVED MERCURY IN WATER BY METHOD 7470A								
1_7470A_HG_D_W								
Mercury	ND		0.200	µg/L	1	7/9/01 10:51:41 AM	LEEMAN_010709C	JLW

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

29

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106179
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

Dissolved Mercury in Water by Method 7470A

Sample ID: **MB-200101737** Client Sample ID: Test Code: *1_7470A_HG_D_W* Units: µg/L

Run Batch ID: **LEEMAN_010709C** SeqNo: **379183** Analysis Date: **7/9/01 10:40:31 AM** Prep Batch ID: **200101737** DF: 1 DL_No: 1 Prep Date: **7/6/01**

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Mercury	ND	0.2000								

30

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106179
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

Dissolved Mercury in Water by Method 7470A Test Code: *1_7470A_HG_D_W* Units: µg/L

Sample ID: **LCS-200101737** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **LEEMAN_010709C** SeqNo: **379184** Analysis Date: **7/9/01 10:41:59 AM** Prep Batch ID: **200101737** Prep Date: **7/6/01**

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Mercury	0.9878	0.2000	1.000	0	99	80	120			

J-390

31

Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

August 27, 2001

Mr. Nate Gahr
E and E Washington D.C. Office
1700 North Moore St.
Suite 1610
Arlington, VA 22209

RE: Kenilworth RI/FS
CostPoint ID: **001096.GT05.01..**

Work Order No.: **0106169**

Dear Mr. Nate Gahr,

Ecology and Environment, Inc. received 15 samples on Thursday, June 21, 2001 for the analyses presented in the following report.

E & E will retain the samples addressed in this report for 30 days, unless otherwise instructed by the client. If additional storage is requested, the storage fee is $1.00 per sample container per month, to accrue until the client authorizes sample destruction.

Sincerely,

Tony Bogolin
Project Manager

CC:
Enclosures as note

This report ends on page 161

CHAIN OF CUSTODY RECORD

ASC analytical services center

Ecology and Environment, Inc., Analytical Services Center
4493 Walden Avenue, Lancaster, New York, 14086, Tel: 716/685-8080, Fax 716/685-0852
Where Scientific Excellence and Efficiency Meet

Cooler No: 1
Lab:

Page: 1 of 4

PROJECT No: 001096-GT05-01
SITE NAME: KENILWORTH PARK SOUTH RIFS
LOCATION: (Include State) VA DC
CLIENT: NPS-GSA
PROJECT MANAGER: J. PASCH
OFFICE No: 703-522-6065
FIELD TEAM LEADER: ~~NATE GAHRM~~ ~~NOEL MCMAHON~~
PHONE No: MURIEL BOUZINAC 703-522-6065
SAMPLERS: (PRINT) M. BOUZINAC / N McMAHON / N GAHR

CONTAINER TYPE AND PRESERVATIVE: 8oz GLASS

REQUESTED ANALYSIS: FULL TCLP; TAL METALS

TURNAROUND TIME: 24-HOUR ☐ 48-HOUR ☐ 1-WEEK ☐ STANDARD ☐ RUSH ☐ (RUSH) RUSH _____ days OTHER _____

(FOR LAB USE ONLY) Lab Job No: Report type: Batch QC: Yes No

	DATE	TIME	SAMPLE ID	SAMPLE MATRIX	CHECK FOR MS/MSD	SAMPLE TYPE	No. OF CONTAINERS	OVA/HNU READINGS (PPM)	BEGINNING DEPTH (FEET BGS)	ENDING DEPTH (FEET BGS)	REMARKS
-	6/19/2001	10:15	KWS-SS-OL-1	SB			1				
-	6/19/2001	10:30	KWS-SS-OL-2	SB			1				
-	6/19/2001	11:00	KWS-SS-OL-3	SB			1				
-	6/19/2001	11:30	KWS-SS-OL-4	SB			1				
-	6/19/2001	12:25	KWS-SS-OL-5	SB			1				
-	6/19/2001	12:25	KWS-SS-OL-6	SB		D	1				
TB		~~10:07~~	~~KW-MW-04~~	GW			1				
TB		~~12:10~~	~~KW-MW-05~~	GW			1				

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	Ship Via:	Date:	Temperature Blank Info. Enclosed: Yes No
M Bouzinac	6/20/01 0800					(FOR LAB USE ONLY)
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	BL/Airbill Number:		Date: Time:
			6/21/01 845	8287 5467 6807		Temperature: °C

Distribution: White - Lab original Yellow - Field team leader

0881297

J-391a

CHAIN OF CUSTODY RECORD

ASC analytical services center

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4493 Walden Avenue, Lancaster, New York, 14086, Tel: 716/685-8080, Fax 716/685-0852
Where Scientific Excellence and Efficiency Meet

Cooler No: 1
Lab:

PROJECT No: GT05
SITE NAME: KENILWORTH PARK SOUTH RIPS
LOCATION: (Include State) DC
CLIENT: NPS - NATIONAL CAP. REGION
PROJECT MANAGER: JOHN PASCH
OFFICE No: 703-522-6065
FIELD TEAM LEADER: M BOUZINAC ~~NATE GARNER~~
PHONE No: 703-522-6065
SAMPLERS: (PRINT) M. BOUZINAC / N. MCMAHON / N. GARNER

CONTAINER TYPE AND PRESERVATIVE: 4oz glass, 4oz glass, 4oz glass, 4oz glass

REQUESTED ANALYSIS: TAL METALS, TCL PB Bs, PAHs, FULL TCLP

TURNAROUND TIME: 24-HOUR, 48-HOUR, 1-WEEK, STANDARD, RUSH ____ days, OTHER ____

(FOR LAB USE ONLY) Lab Job No: Report type: Batch QC: Yes No

DATE	TIME	SAMPLE ID	SAMPLE MATRIX	CHECK FOR MS/MSD	SAMPLE TYPE	No. OF CONTAINERS	TAL METALS	TCL PB Bs	PAHs	FULL TCLP				OVA/HNU READINGS (PPM)	BEGINNING DEPTH (FEET BGS)	ENDING DEPTH (FEET BGS)	REMARKS
6/18/2001	11:50	KWS.SS.AR.1	SB			1	✓	✓	✓								
	1410	KWS.SS.AR.2				1											
	1240	KWS.SS.AR.3				1											
	1440	KWS.SS.AR.4				1											
	1540	KWS.SS.AR.5				1											
	1500	KWS.SS.AR.6			D	1	✓	✓	✓								
	1620	KWS.SS.NL.1				1				✓							
	1650	KWS.SS.NL.2				1											
	1700	KWS.SS.NL.3	✓			1				✓							

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	Ship Via:	Date:	Temperature Blank Info. Enclosed: Yes No
M Bouzinac	6/20/01 0800					(FOR LAB USE ONLY)
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time: 6/21/01 845	BL/Airbill Number: 82875467 6807		Date: ____ Time: ____ Temperature: ____ °C

Distribution: White - Lab original Yellow - Field team leader

J-391b

Cooler Receipt Form

PACKAGE RECEIPT #: 8005 NUMBER OF COOLERS: 1 DATE RECEIVED: 6/21/01

E & E PROJECT #: _____ PROJECT OR SITE NAME: E&E Va

A. Preliminary Examination Phase

CIRCLE ONE

1. Did coolers come with airbill or packing slip? _____ YES NO NA

   Enter carrier here and print airbill # below: *(Circle One)* FedEx Airborne Client Other

   Ship as high hazard or dangerous goods YES NO NA

2. Did cooler(s) have custody seals? _____ YES NO NA
3. Were custody seals unbroken and intact on receipt? _____ YES NO* NA
4. Were custody seals dated and signed? _____ YES NO NA
5. Sign here to acknowledge receipt of cooler (s): _____

   Date cooler(s) opened: 6/21/01 C-O-C numbers: _____

   Cooler(s) opened by (print): J Henderson Signature: _____

6. Were the C-O-C forms received? _____ YES NO* NA
7. Was the project identifiable from the C-O-C form? _____ YES NO* NA
   If YES, enter the project number and name in the heading above.

Please record Temperature Blank Vial or Cooler Temperature for Each Cooler, Range (2 - 6C)* NJDEP must be ≤4C

AIRBILL #	TEMP. °C	AIRBILL #	TEMP. °C	AIRBILL #	TEMP. °C
8287546768 07	4.0				

Thermometer # 129 Correction Factor 0 * If No or Temperature Outside of Acceptable Range, prepare a PM Notification form.

B. Unpacking Phase

8. Was enough packing material used in cooler(s)? _____ YES NO NA
   Type of material: ☐ Vermiculite ☒ Bubble Wrap ☒ Other
9. If required, was enough ice used? _____ YES NO NA
   If YES, type of ice used: ☒ Wet ☐ Dry ☐ Blue ☐ Other
10. Was a temperature blank vial included inside cooler(s)? _____ YES NO NA
    If YES, indicate temperature blank vial temperature in table above. If NO, indicate cooler temperature in table above.
11. Were all containers sealed in separate plastic bags? _____ YES NO NA
12. Did all containers arrive unbroken and in good condition? _____ YES NO* NA
13. Samples stored in W Cooler before Login Phase? YES NO
    If yes: Signature In: _____ Date/Time: _____

    Signature Out: _____ Date/Time: _____

C. Login Phase

Samples Logged in By (print): Kevin Oakley Signature: Kevin Oakley Date: 6/21/01

14. Were all container labels complete (e.g. date, time preserved)? _____ YES NO* NA
15. Were all C-O-C forms filled out properly in ink and signed? _____ YES NO* NA
16. Did the C-O-C form agree with containers received? _____ YES NO* NA
17. Were the correct containers used for the tests requested? _____ YES NO* NA
18. Were the correct preservatives listed on the sample labels? _____ YES NO* NA
19. Was a sufficient sample volume sent for the tests requested? _____ YES NO* NA
20. Were all volatile samples received without head space? _____ YES NO* NA

*Prepare a PM Notification form.

Forms & Lists Final\F_024 ene\Rev \Approval Date5/1/00Last Update

4

Ecology and Environment, Inc.
Analytical Services Center
Lancaster, New York 14086
Phone: (716) 685-8080

Laboratory Results

NYS ELAP ID#: 10486

CLIENT: E and E Washington D.C. Office
Project: Kenilworth RI/FS
Lab Order: 0106169

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition

GCMS VOLATILES
A DB624 column from J&W that is 30-m long, 0.53 mm wide, and has a 3-um film thickness was used for the volatile analyses. A 30-cm TEKMAR #5 Trap was used for the volatile analyses consisting of approximately 1 cm of OV-1 packing, approximately 8 cm of Tenax, approximately 8 cm of silica gel, and approximately 8 cm of activated charcoal.

TCLP Analysis
All samples were analyzed within hold time.

Calibration and Tunes
All initial and continuing calibrations were acceptable.

Manual integrations were not required.

QC
All surrogate recoveries were within acceptable limits.

All blank analyses were acceptable.

All laboratory control sample (LCS) recoveries were acceptable.

All internal standard area responses were acceptable.

GCMS SEMIVOLATILES
A RESTEK (Rtx-5ms) column, which is 30-m long, 0.25-mm wide, and has a 0.5-micron film thickness, was used for the semivolatile analyses. The column contains 5% diphenyl and 95% dimethylpolysiloxane.

TCLP Analysis
All samples were extracted and analyzed within hold times.

Calibration and Tunes
All initial and continuing calibrations were acceptable.

Manual integrations were not required.

QC

All surrogate recoveries were within acceptable limits.

All blank analyses were acceptable. The blank and samples were run on 2 different instruments so the blank is reported twice.

All laboratory control sample (LCS) recoveries were acceptable..

All internal standard area responses were acceptable.

GC SEMIVOLATILES
TCLP PESTICIDE
The columns used for analysis were an RTX-5 (column 1) and an RTX-35 (column 2), both 30 meters long and 0.53 mm in diameter, with a 1.0 um film thickness. A 2-ul injection was performed on all samples, QC, and standards.

Sample Analysis
All samples were extracted and analyzed within hold time.

Calibrations
All initial and continuing calibrations were acceptable.

Manual integrations were not required.

QC
All surrogate recoveries were within acceptable limits.

All blank analyses were acceptable.

All laboratory control sample (LCS) recoveries were acceptable.

TCLP HERBICIDE
The columns used for analysis were an RTX-5 (column 1) and an RTX-35 (column 2), both 30 meters long and 0.53 mm in diameter, with a 1.0 um film thickness. A 2-ul injection was performed on all samples, QC, and standards.

Sample Analysis
All samples were extracted and analyzed within hold time.

Calibrations
All initial and continuing calibrations were acceptable.

Manual integrations were not required.

QC
All surrogate recoveries were within acceptable limits.

All blank analyses were acceptable.

All laboratory control sample (LCS) recoveries were acceptable.

PCB
The columns used for analysis were an RTX-5, 30 meters long and 0.53 mm in diameter, with a 1.0 um film thickness. A 2-ul injection was performed on all samples, QC, and standards.

Sample Analysis
All samples were extracted and analyzed within hold time.

Calibrations
All initial and continuing calibrations were acceptable.

Manual integrations were not required.

QC
All surrogate recoveries were within acceptable limits.

All blank analyses were acceptable.

All laboratory control sample (LCS) recoveries were acceptable.

HPLC
PAH
The column used for analysis was an Envirosep-PP (Phenonmenex), with particle size 5uM. A 25-ul injection was performed on all samples, QC, and standards.

Use of Method 8310 presupposes a high expectation of finding the specific compounds of interest. No HPLC column has been developed for the confirmation of PAH"s. All positive results are flagged "N" as not confirmed.

Sample Analysis
All samples were extracted and analyzed within hold time. Samples KWS-SS-AR-2, KWS-SS-AR-3 and KWS-SS-AR-5 were analyzed at secondary dilutions due to the levels of target compounds present.

Calibrations
All initial and continuing calibrations were acceptable.

Manual integrations were performed on most samples and some of the CCV"s , to negate false area resulting from an elevated baseline.

QC
All surrogate recoveries were within acceptable limits except for samples KWS-SS-AR-2 and KWS-SS-AR-3 which were elevated due to matrix interferences.

All blank analyses were acceptable. Benzo(a)pyrene and napthalene were present in the method blank above the MDL but below the reporting limit.

All laboratory control sample (LCS) recoveries were acceptable.

METALS
Sample Analysis
All samples were digested and analyzed within hold time. Soil samples KWS-SS-AR-4, KWS-SS-AR-5 and KWS-SS-AR-6 were analyzed at a dilution for several elements to remove matrix interferences and/or to bring elements within the calibrated range of the instrument.

Calibrations
All initial and continuing calibrations were acceptable.

QC
All calibration and preparation blank analyses were acceptable. Aluminum, arsenic and iron were present in the soil method blank above the MDL but below the reporting limit.

Several matrix spike/spike duplicate (MS/MSD) recoveries and RPD values for soil sample KWS-SS-AR-6 were outside QC limits. Aluminum, barium, calcium, copper, manganese, silver, iron, lead and zinc were present in the samples at concentrations four of more times greater than the spike amount added.

All laboratory control sample (LCS) recoveries were acceptable.

MERCURY
Sample Analysis
All samples were digested and analyzed within hold time.

Calibrations
All initial and continuing calibrations were acceptable.

QC
All calibration and preparation blank analyses were acceptable.

All laboratory control sample (LCS) recoveries were acceptable.

GENERAL ANALYTICAL CHEMISTRY
Sample Analysis
All samples were analyzed within hold time.

QC
All matrix duplicates were acceptable.

Ecology and Environment, Inc.
Analytical Services Center
Lancaster, New York 14086
Phone: (716) 685-8080

Laboratory Results

NYS ELAP ID#: 10486

Lab Order: 0106169
Client: E and E Washington D.C. Office
Project: Kenilworth RI/FS

DATES REPORT

Sample ID	Client Sample ID	Collection Date	Received Date	Matrix	Test Name	TCLP Date*	Prep Date	Analysis Date
0106169-01A	KWS-SS-OL-1	06/19/2001 10:15:00 AM	6/21/2001 8:45:00 AM	Soil	TCLP Herbicides by Method 8151A	06/26/2001	06/28/2001	07/03/2001
					TCLP Mercury by Method 7470A	06/26/2001	07/05/2001	07/06/2001
					TCLP Metals by ICP Method 6010B	06/26/2001	06/29/2001	07/23/2001
					TCLP Pesticides by Method 8081A	06/26/2001	06/27/2001	06/30/2001
					TCLP Semivolatile Organics by Method 8270C	06/26/2001	06/29/2001	07/03/2001
					TCLP VOCs by Method 8260B	06/28/2001		06/29/2001
0106169-02A	KWS-SS-OL-2	06/19/2001 10:30:00 AM			TCLP Herbicides by Method 8151A	06/26/2001	06/28/2001	07/03/2001
					TCLP Mercury by Method 7470A	06/26/2001	07/05/2001	07/06/2001
					TCLP Metals by ICP Method 6010B	06/26/2001	06/29/2001	07/23/2001
					TCLP Pesticides by Method 8081A	06/26/2001	06/27/2001	06/30/2001
					TCLP Semivolatile Organics by Method 8270C	06/26/2001	06/29/2001	07/03/2001
					TCLP VOCs by Method 8260B	06/28/2001		06/29/2001
0106169-03A	KWS-SS-OL-3	06/19/2001 11:00:00 AM			TCLP Herbicides by Method 8151A	06/26/2001	06/28/2001	07/03/2001
					TCLP Mercury by Method 7470A	06/26/2001	07/05/2001	07/06/2001
					TCLP Metals by ICP Method 6010B	06/26/2001	06/29/2001	07/24/2001
					TCLP Pesticides by Method 8081A	06/26/2001	06/27/2001	06/30/2001
					TCLP Semivolatile Organics by Method 8270C	06/26/2001	06/29/2001	07/03/2001
					TCLP VOCs by Method 8260B	06/28/2001		06/29/2001
0106169-04A	KWS-SS-OL-4	06/19/2001 11:30:00 AM			TCLP Herbicides by Method 8151A	06/26/2001	06/28/2001	07/03/2001
					TCLP Mercury by Method 7470A	06/26/2001	07/05/2001	07/06/2001
					TCLP Metals by ICP Method 6010B	06/26/2001	06/29/2001	07/24/2001
					TCLP Pesticides by Method 8081A	06/26/2001	06/27/2001	06/30/2001

*Reflects Date of TCLP Extraction Completion

Ecology and Environment, Inc.

Analytical Services Center
Lancaster, New York 14086
Phone: (716) 685-8080

Laboratory Results

NYS ELAP ID#: 10486

Lab Order: 0106169
Client: E and E Washington D.C. Office
Project: Kenilworth RI/FS

DATES REPORT

Sample ID	Client Sample ID	Collection Date	Received Date	Matrix	Test Name	TCLP Date*	Prep Date	Analysis Date
0106169-04A	KWS-SS-OL-4	06/19/2001 11:30:00 AM	6/21/2001 8:45:00 AM	Soil	TCLP Semivolatile Organics by Method 8270C	06/26/2001	06/29/2001	07/03/2001
					TCLP VOCs by Method 8260B	06/28/2001		06/29/2001
0106169-05A	KWS-SS-OL-5	06/19/2001 12:25:00 PM			TCLP Herbicides by Method 8151A	06/26/2001	06/28/2001	07/03/2001
					TCLP Mercury by Method 7470A	06/26/2001	07/05/2001	07/06/2001
					TCLP Metals by ICP Method 6010B	06/26/2001	06/29/2001	07/24/2001
					TCLP Pesticides by Method 8081A	06/26/2001	06/27/2001	06/30/2001
					TCLP Semivolatile Organics by Method 8270C	06/26/2001	06/29/2001	07/03/2001
					TCLP VOCs by Method 8260B	06/29/2001		07/03/2001
0106169-06A	KWS-SS-OL-6				TCLP Herbicides by Method 8151A	06/26/2001	06/28/2001	07/03/2001
					TCLP Mercury by Method 7470A	06/26/2001	07/05/2001	07/06/2001
					TCLP Metals by ICP Method 6010B	06/26/2001	06/29/2001	07/24/2001
					TCLP Pesticides by Method 8081A	06/26/2001	06/27/2001	06/30/2001
					TCLP Semivolatile Organics by Method 8270C	06/26/2001	06/29/2001	07/03/2001
					TCLP VOCs by Method 8260B	06/29/2001		07/03/2001
0106169-07A	KWS-SS-AR-1	06/18/2001 11:50:00 AM			Mercury Analysis in Soil by Method 7471A		07/10/2001	07/11/2001
					Metals, TAL by ICP Method 6010B		07/03/2001	08/16/2001
					PAH by Method 8310		06/29/2001	07/09/2001
					PCBs by Method 8082		06/28/2001	07/03/2001
					Percent Moisture			06/26/2001
0106169-08A	KWS-SS-AR-2	06/18/2001 2:10:00 PM			Mercury Analysis in Soil by Method 7471A		07/10/2001	07/11/2001
					Metals, TAL by ICP Method 6010B		07/03/2001	08/16/2001
					PAH by Method 8310		06/29/2001	07/10/2001

*Reflects Date of TCLP Extraction Completion

Ecology and Environment, Inc.
Analytical Services Center
Lancaster, New York 14086
Phone: (716) 685-8080

Laboratory Results

NYS ELAP ID#: 10486

Lab Order: 0106169
Client: E and E Washington D.C. Office
Project: Kenilworth RI/FS

DATES REPORT

Sample ID	Client Sample ID	Collection Date	Received Date	Matrix	Test Name	TCLP Date*	Prep Date	Analysis Date
0106169-08A	KWS-SS-AR-2	06/18/2001 2:10:00 PM	6/21/2001 8:45:00 AM	Soil	PCBs by Method 8082		06/28/2001	07/03/2001
					Percent Moisture			06/26/2001
0106169-09A	KWS-SS-AR-3	06/18/2001 12:40:00 PM			Mercury Analysis in Soil by Method 7471A		07/10/2001	07/11/2001
					Metals, TAL by ICP Method 6010B		07/03/2001	08/16/2001
					PAH by Method 8310		06/29/2001	07/10/2001
					PCBs by Method 8082		06/28/2001	07/03/2001
					Percent Moisture			06/26/2001
0106169-10A	KWS-SS-AR-4	06/18/2001 2:40:00 PM			Mercury Analysis in Soil by Method 7471A		07/10/2001	07/11/2001
					Metals, TAL by ICP Method 6010B		07/03/2001	08/16/2001
					PAH by Method 8310		06/29/2001	07/09/2001
					PCBs by Method 8082		06/28/2001	07/03/2001
					Percent Moisture			06/26/2001
0106169-11A	KWS-SS-AR-5	06/18/2001 3:40:00 PM			Mercury Analysis in Soil by Method 7471A		07/10/2001	07/11/2001
					Metals, TAL by ICP Method 6010B		07/03/2001	08/16/2001
					PAH by Method 8310		06/29/2001	07/10/2001
					PCBs by Method 8082		06/28/2001	07/03/2001
					Percent Moisture			06/26/2001
0106169-12A	KWS-SS-AR-6	06/18/2001 3:00:00 PM			Mercury Analysis in Soil by Method 7471A		07/10/2001	07/11/2001
					Metals, TAL by ICP Method 6010B		07/03/2001	08/16/2001
					PAH by Method 8310		06/29/2001	07/09/2001
					PCBs by Method 8082		06/28/2001	07/03/2001
					Percent Moisture			06/26/2001

*Reflects Date of TCLP Extraction Completion

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Ecology and Environment, Inc.

Analytical Services Center
Lancaster, New York 14086
Phone: (716) 685-8080

Laboratory Results

NYS ELAP ID#: 10486

Lab Order: 0106169
Client: E and E Washington D.C. Office
Project: Kenilworth RI/FS

DATES REPORT

Sample ID	Client Sample ID	Collection Date	Received Date	Matrix	Test Name	TCLP Date*	Prep Date	Analysis Date
0106169-13A	KWS-SS-NL-1	06/18/2001 4:20:00 PM	6/21/2001 8:45:00 AM	Soil	TCLP Herbicides by Method 8151A	06/26/2001	06/28/2001	07/03/2001
					TCLP Mercury by Method 7470A	06/26/2001	07/05/2001	07/06/2001
					TCLP Metals by ICP Method 6010B	06/26/2001	06/29/2001	07/24/2001
					TCLP Pesticides by Method 8081A	06/26/2001	06/27/2001	06/30/2001
					TCLP Semivolatile Organics by Method 8270C	06/26/2001	06/29/2001	07/03/2001
					TCLP VOCs by Method 8260B	06/29/2001		07/03/2001
0106169-14A	KWS-SS-NL-2	06/18/2001 4:50:00 PM			TCLP Herbicides by Method 8151A	06/26/2001	06/28/2001	07/03/2001
					TCLP Mercury by Method 7470A	06/26/2001	07/05/2001	07/06/2001
					TCLP Metals by ICP Method 6010B	06/26/2001	06/29/2001	07/24/2001
					TCLP Pesticides by Method 8081A	06/26/2001	06/27/2001	06/30/2001
					TCLP Semivolatile Organics by Method 8270C	06/26/2001	06/29/2001	07/03/2001
					TCLP VOCs by Method 8260B	06/29/2001		07/03/2001
0106169-15A	KWS-SS-NL-3	06/18/2001 5:00:00 PM			TCLP Herbicides by Method 8151A	06/26/2001	06/28/2001	07/03/2001
					TCLP Mercury by Method 7470A	06/26/2001	07/05/2001	07/06/2001
					TCLP Metals by ICP Method 6010B	06/26/2001	06/29/2001	07/24/2001
					TCLP Pesticides by Method 8081A	06/26/2001	06/27/2001	06/30/2001
					TCLP Semivolatile Organics by Method 8270C	06/26/2001	06/29/2001	07/08/2001
					TCLP VOCs by Method 8260B	06/29/2001		07/03/2001

*Reflects Date of TCLP Extraction Completion

GCMS VOLATILES

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Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS
Test Code: 1_1311_8260B_L
Batch ID: NILES_010628D

QC SUMMARY REPORT SURROGATE RECOVERIES

TCLP VOCs by Method 8260B

Sample ID	Type	BR4FBZ	BZMED8	DCA12D4					
0106169-01A	SAMP	90	102	89					
0106169-02A	SAMP	89	104	90					
0106169-03A	SAMP	89	102	90					
0106169-04A	SAMP	88	102	90					
LCS-1423-80-1	LCS	89	105	90					
MB-1423-80-1	MBLK	91	102	92					
MB-200101633	CLPMBL	89	102	91					

Acronym		Surrogate	QC Limits
BR4FBZ	=	4-Bromofluorobenzene	87-115
BZMED8	=	Toluene-d8	85-115
DCA12D4	=	1,2-Dichloroethane-d4	82-124

*** Surrogate recovery outside acceptance limits**

D - Diluted due to matrix or extended target compounds

Ecology & Environment Inc. LIMS Version 3.1.2.0 - 7/31/01 2:00:00 PM Wednesday, August 01, 2001 3:59:35 PM

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Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS
Test Code: 1_1311_8260B_L
Batch ID: NILES_010703A

QC SUMMARY REPORT
SURROGATE RECOVERIES

TCLP VOCs by Method 8260B

Sample ID	Type	BR4FBZ	BZMED8	DCA12D4
0106169-05A	SAMP	90	102	92
0106169-06A	SAMP	89	102	91
0106169-13A	SAMP	90	102	90
0106169-14A	SAMP	90	101	90
0106169-15A	SAMP	90	102	91
LCS-1423-82-1	LCS	93	105	90
MB-200101650	CLPMBLI	92	102	90
MBLK-1423-82-1	MBLK	92	102	92

Acronym		Surrogate	QC Limits
BR4FBZ	=	4-Bromofluorobenzene	87-115
BZMED8	=	Toluene-d8	85-115
DCA12D4	=	1,2-Dichloroethane-d4	82-124

* Surrogate recovery outside acceptance limits

D - Diluted due to matrix or extended target compounds

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SS-OL-1
Lab Order:	0106169 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/19/01 10:15:00 AM
Lab ID:	**0106169-01A** **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP VOLATILE ORGANIC COMPOUNDS BY METHOD 8260B								
1_1311_8260B_L								
1,1-Dichloroethene	ND		0.0500	mg/L	10	6/29/01 3:02:00 AM	NILES_010628D	MRD
1,2-Dichloroethane	ND		0.0500	mg/L	10			
2-Butanone	ND		0.100	mg/L	10			
Benzene	ND		0.0500	mg/L	10			
Carbon tetrachloride	ND		0.0500	mg/L	10			
Chlorobenzene	ND		0.0500	mg/L	10			
Chloroform	ND		0.0500	mg/L	10			
Tetrachloroethene	ND		0.0500	mg/L	10			
Trichloroethene	ND		0.0500	mg/L	10			
Vinyl chloride	ND		0.100	mg/L	10			
Surr:1,2-Dichloroethane-d4	89		82 - 124	%REC	10	6/29/01 3:02:00 AM	NILES_010628D	MRD
Surr:4-Bromofluorobenzene	90		87 - 115	%REC	10			
Surr:Toluene-d8	102		85 - 115	%REC	10			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compound.
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	KWS-SS-OL-2
Lab Order:	0106169 CPID: 001096.GT05.01..	Alt. Client ID:	
Project:	Kenilworth RI/FS	Collection Date:	6/19/01 10:30:00 AM
Lab ID:	0106169-02A Sample Type: SAMP	Matrix:	SOIL % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP VOLATILE ORGANIC COMPOUNDS BY METHOD 8260B								
1_1311_8260B_L								
1,1-Dichloroethene	ND		0.0500	mg/L	10	6/29/01 3:31:00 AM	NILES_010628D	MRD
1,2-Dichloroethane	ND		0.0500	mg/L	10			
2-Butanone	ND		0.100	mg/L	10			
Benzene	ND		0.0500	mg/L	10			
Carbon tetrachloride	ND		0.0500	mg/L	10			
Chlorobenzene	ND		0.0500	mg/L	10			
Chloroform	ND		0.0500	mg/L	10			
Tetrachloroethene	ND		0.0500	mg/L	10			
Trichloroethene	ND		0.0500	mg/L	10			
Vinyl chloride	ND		0.100	mg/L	10			
Surr:1,2-Dichloroethane-d4	90		82 - 124	%REC	10	6/29/01 3:31:00 AM	NILES_010628D	MRD
Surr:4-Bromofluorobenzene	89		87 - 115	%REC	10			
Surr:Toluene-d8	104		85 - 115	%REC	10			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1 1.9 - 7/6/01 2:00:00 PM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	KWS-SS-OL-3
Lab Order:	0106169 CPID: 001096.GT05.01..	Alt. Client ID:	
Project:	Kenilworth RI/FS	Collection Date:	6/19/01 11:00:00 AM
Lab ID:	0106169-03A Sample Type: SAMP	Matrix:	SOIL % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP VOLATILE ORGANIC COMPOUNDS BY METHOD 8260B								
1_1311_8260B_L								
1,1-Dichloroethene	ND		0.0500	mg/L	10	6/29/01 4:00:00 AM	NILES_010628D	MRD
1,2-Dichloroethane	ND		0.0500	mg/L	10			
2-Butanone	ND		0.100	mg/L	10			
Benzene	ND		0.0500	mg/L	10			
Carbon tetrachloride	ND		0.0500	mg/L	10			
Chlorobenzene	ND		0.0500	mg/L	10			
Chloroform	ND		0.0500	mg/L	10			
Tetrachloroethene	ND		0.0500	mg/L	10			
Trichloroethene	ND		0.0500	mg/L	10			
Vinyl chloride	ND		0.100	mg/L	10			
Surr:1,2-Dichloroethane-d4	90		82 - 124	%REC	10	6/29/01 4:00:00 AM	NILES_010628D	MRD
Surr:4-Bromofluorobenzene	89		87 - 115	%REC	10			
Surr:Toluene-d8	102		85 - 115	%REC	10			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Client Sample ID: KWS-SS-OL-4
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Alt. Client ID:
Project: Kenilworth RI/FS
Collection Date: 6/19/01 11:30:00 AM
Lab ID: 0106169-04A **Sample Type:** SAMP **Matrix:** SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP VOLATILE ORGANIC COMPOUNDS BY METHOD 8260B								
1_1311_8260B_L								
1,1-Dichloroethene	ND		0.0500	mg/L	10	6/29/01 4:29:00 AM	NILES_010628D	MRD
1,2-Dichloroethane	ND		0.0500	mg/L	10			
2-Butanone	ND		0.100	mg/L	10			
Benzene	ND		0.0500	mg/L	10			
Carbon tetrachloride	ND		0.0500	mg/L	10			
Chlorobenzene	ND		0.0500	mg/L	10			
Chloroform	ND		0.0500	mg/L	10			
Tetrachloroethene	ND		0.0500	mg/L	10			
Trichloroethene	ND		0.0500	mg/L	10			
Vinyl chloride	ND		0.100	mg/L	10			
Surr:1,2-Dichloroethane-d4	90		82 - 124	%REC	10	6/29/01 4:29:00 AM	NILES_010628D	MRD
Surr:4-Bromofluorobenzene	88		87 - 115	%REC	10			
Surr:Toluene-d8	102		85 - 115	%REC	10			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

Ecology and Environment, Inc.

Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	KWS-SS-OL-5
Lab Order:	0106169 CPID: 001096.GT05.01..	Alt. Client ID:	
Project:	Kenilworth RI/FS	Collection Date:	6/19/01 12:25:00 PM
Lab ID:	0106169-05A Sample Type: SAMP	Matrix:	SOIL % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP VOLATILE ORGANIC COMPOUNDS BY METHOD 8260B								
1_1311_8260B_L								
1,1-Dichloroethene	ND		0.0500	mg/L	10	7/3/01 2:16:00 PM	NILES_010703A	RMJ
1,2-Dichloroethane	ND		0.0500	mg/L	10			
2-Butanone	ND		0.100	mg/L	10			
Benzene	ND		0.0500	mg/L	10			
Carbon tetrachloride	ND		0.0500	mg/L	10			
Chlorobenzene	ND		0.0500	mg/L	10			
Chloroform	ND		0.0500	mg/L	10			
Tetrachloroethene	ND		0.0500	mg/L	10			
Trichloroethene	ND		0.0500	mg/L	10			
Vinyl chloride	ND		0.100	mg/L	10			
Surr:1,2-Dichloroethane-d4	92		82 - 124	%REC	10	7/3/01 2:16:00 PM	NILES_010703A	RMJ
Surr:4-Bromofluorobenzene	90		87 - 115	%REC	10			
Surr:Toluene-d8	102		85 - 115	%REC	10			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	KWS-SS-OL-6
Lab Order:	0106169 CPID: 001096.GT05.01..	Alt. Client ID:	
Project:	Kenilworth RI/FS	Collection Date:	6/19/01 12:25:00 PM
Lab ID:	0106169-06A Sample Type: SAMP	Matrix:	SOIL % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP VOLATILE ORGANIC COMPOUNDS BY METHOD 8260B 1_1311_8260B_L								
1,1-Dichloroethene	ND		0.0500	mg/L	10	7/3/01 2:45:00 PM	NILES_010703A	RMJ
1,2-Dichloroethane	ND		0.0500	mg/L	10			
2-Butanone	ND		0.100	mg/L	10			
Benzene	ND		0.0500	mg/L	10			
Carbon tetrachloride	ND		0.0500	mg/L	10			
Chlorobenzene	ND		0.0500	mg/L	10			
Chloroform	ND		0.0500	mg/L	10			
Tetrachloroethene	ND		0.0500	mg/L	10			
Trichloroethene	ND		0.0500	mg/L	10			
Vinyl chloride	ND		0.100	mg/L	10			
Surr:1,2-Dichloroethane-d4	91		82 - 124	%REC	10	7/3/01 2:45:00 PM	NILES_010703A	RMJ
Surr:4-Bromofluorobenzene	89		87 - 115	%REC	10			
Surr:Toluene-d8	102		85 - 115	%REC	10			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	KWS-SS-NL-1
Lab Order:	0106169 CPID: 001096.GT05.01..	Alt. Client ID:	
Project:	Kenilworth RI/FS	Collection Date:	6/18/01 4:20:00 PM
Lab ID:	0106169-13A Sample Type: SAMP	Matrix: SOIL	% Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP VOLATILE ORGANIC COMPOUNDS BY METHOD 8260B								
1_1311_8260B_L								
1,1-Dichloroethene	ND		0.0500	mg/L	10	7/3/01 3:14:00 PM	NILES_010703A	RMJ
1,2-Dichloroethane	ND		0.0500	mg/L	10			
2-Butanone	ND		0.100	mg/L	10			
Benzene	ND		0.0500	mg/L	10			
Carbon tetrachloride	ND		0.0500	mg/L	10			
Chlorobenzene	ND		0.0500	mg/L	10			
Chloroform	ND		0.0500	mg/L	10			
Tetrachloroethene	ND		0.0500	mg/L	10			
Trichloroethene	ND		0.0500	mg/L	10			
Vinyl chloride	ND		0.100	mg/L	10			
Surr:1,2-Dichloroethane-d4	90		82 - 124	%REC	10	7/3/01 3:14:00 PM	NILES_010703A	RMJ
Surr:4-Bromofluorobenzene	90		87 - 115	%REC	10			
Surr:Toluene-d8	102		85 - 115	%REC	10			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106169 CPID: 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106169-14A Sample Type: SAMP

Client Sample ID: KWS-SS-NL-2
Alt. Client ID:
Collection Date: 6/18/01 4:50:00 PM
Matrix: SOIL % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP VOLATILE ORGANIC COMPOUNDS BY METHOD 8260B								
1_1311_8260B_L								
1,1-Dichloroethene	ND		0.0500	mg/L	10	7/3/01 3:43:00 PM	NILES_010703A	RMJ
1,2-Dichloroethane	ND		0.0500	mg/L	10			
2-Butanone	ND		0.100	mg/L	10			
Benzene	ND		0.0500	mg/L	10			
Carbon tetrachloride	ND		0.0500	mg/L	10			
Chlorobenzene	ND		0.0500	mg/L	10			
Chloroform	ND		0.0500	mg/L	10			
Tetrachloroethene	ND		0.0500	mg/L	10			
Trichloroethene	ND		0.0500	mg/L	10			
Vinyl chloride	ND		0.100	mg/L	10			
Surr:1,2-Dichloroethane-d4	90		82 - 124	%REC	10	7/3/01 3:43:00 PM	NILES_010703A	RMJ
Surr:4-Bromofluorobenzene	90		87 - 115	%REC	10			
Surr:Toluene-d8	101		85 - 115	%REC	10			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

Ecology and Environment, Inc.

Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	KWS-SS-NL-3
Lab Order:	0106169 CPID: 001096.GT05.01..	Alt. Client ID:	
Project:	Kenilworth RI/FS	Collection Date:	6/18/01 5:00:00 PM
Lab ID:	0106169-15A Sample Type: SAMP	Matrix:	SOIL % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP VOLATILE ORGANIC COMPOUNDS BY METHOD 8260B								
1_1311_8260B_L								
1,1-Dichloroethene	ND		0.0500	mg/L	10	7/3/01 4:12:00 PM	NILES_010703A	RMJ
1,2-Dichloroethane	ND		0.0500	mg/L	10			
2-Butanone	ND		0.100	mg/L	10			
Benzene	ND		0.0500	mg/L	10			
Carbon tetrachloride	ND		0.0500	mg/L	10			
Chlorobenzene	ND		0.0500	mg/L	10			
Chloroform	ND		0.0500	mg/L	10			
Tetrachloroethene	ND		0.0500	mg/L	10			
Trichloroethene	ND		0.0500	mg/L	10			
Vinyl chloride	ND		0.100	mg/L	10			
Surr:1,2-Dichloroethane-d4	91		82 - 124	%REC	10	7/3/01 4:12:00 PM	NILES_010703A	RMJ
Surr:4-Bromofluorobenzene	90		87 - 115	%REC	10			
Surr:Toluene-d8	102		85 - 115	%REC	10			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

TCLP VOCs by Method 8260B

Test Code: *1_1311_8260B_L* Units: mg/L

Sample ID: **MB-1423-80-1** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **NILES_010628D** SeqNo: **374081** Analysis Date **6/28/01 11:08:00 PM** Prep Batch ID: **R18695** Prep Date:

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	1,1-Dichloroethene	ND	0.005000								
A	1,2-Dichloroethane	ND	0.005000								
A	2-Butanone	ND	0.01000								
A	Benzene	ND	0.005000								
A	Carbon tetrachloride	ND	0.005000								
A	Chlorobenzene	ND	0.005000								
A	Chloroform	ND	0.005000								
A	Tetrachloroethene	ND	0.005000								
A	Trichloroethene	ND	0.005000								
A	Vinyl chloride	ND	0.01000								
S	1,2-Dichloroethane-d4	0.04619	0			92	82	124			
S	4-Bromofluorobenzene	0.04555	0			91	87	115			
S	Toluene-d8	0.05102	0			102	85	115			

J-414

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Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

Ecology and Environment, Inc.
Analytical Services Center
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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

TCLP VOCs by Method 8260B Test Code: *1_1311_8260B_L* Units: mg/L

Sample ID: **MBLK-1423-82-1** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **NILES_010703A** SeqNo: **377070** Analysis Date **7/3/01 1:00:00 PM** Prep Batch ID: **R18848** Prep Date:

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	1,1-Dichloroethene	ND	0.005000								
A	1,2-Dichloroethane	ND	0.005000								
A	2-Butanone	ND	0.01000								
A	Benzene	ND	0.005000								
A	Carbon tetrachloride	ND	0.005000								
A	Chlorobenzene	ND	0.005000								
A	Chloroform	ND	0.005000								
A	Tetrachloroethene	ND	0.005000								
A	Trichloroethene	ND	0.005000								
A	Vinyl chloride	ND	0.01000								
S	1,2-Dichloroethane-d4	0.04617	0			92	82	124			
S	4-Bromofluorobenzene	0.04590	0			92	87	115			
S	Toluene-d8	0.05100	0			102	85	115			

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Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
TCLP Leachate Blank

TCLP VOCs by Method 8260B Test Code: *1_1311_8260B_L* Units: mg/L

Sample ID: **MB-200101633** Client Sample ID: DF: 10 DL_No: 1

Run Batch ID: **NILES_010628D** SeqNo: **374080** Analysis Date **6/29/01 2:33:00 AM** Prep Batch ID: **R18695** Prep Date:

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	1,1-Dichloroethene	ND	0.05000								
A	1,2-Dichloroethane	ND	0.05000								
A	2-Butanone	ND	0.1000								
A	Benzene	ND	0.05000								
A	Carbon tetrachloride	ND	0.05000								
A	Chlorobenzene	ND	0.05000								
A	Chloroform	ND	0.05000								
A	Tetrachloroethene	ND	0.05000								
A	Trichloroethene	ND	0.05000								
A	Vinyl chloride	ND	0.1000								
S	1,2-Dichloroethane-d4	0.4528	0			91	82	124			
S	4-Bromofluorobenzene	0.4448	0			89	87	115			
S	Toluene-d8	0.5089	0			102	85	115			

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Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
TCLP Leachate Blank

TCLP VOCs by Method 8260B Test Code: *1_1311_8260B_L* Units: mg/L

Sample ID: **MB-200101650** Client Sample ID: DF: 10 DL_No: 1

Run Batch ID: **NILES_010703A** SeqNo: **377068** Analysis Date **7/3/01 1:47:00 PM** Prep Batch ID: **R18848** Prep Date:

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	1,1-Dichloroethene	ND	0.05000								
A	1,2-Dichloroethane	ND	0.05000								
A	2-Butanone	ND	0.1000								
A	Benzene	ND	0.05000								
A	Carbon tetrachloride	ND	0.05000								
A	Chlorobenzene	ND	0.05000								
A	Chloroform	ND	0.05000								
A	Tetrachloroethene	ND	0.05000								
A	Trichloroethene	ND	0.05000								
A	Vinyl chloride	ND	0.1000								
S	1,2-Dichloroethane-d4	0.4499	0			90	82	124			
S	4-Bromofluorobenzene	0.4590	0			92	87	115			
S	Toluene-d8	0.5094	0			102	85	115			

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Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

TCLP VOCs by Method 8260B

Sample ID: **LCS-1423-80-1** Client Sample ID: Test Code: *1_1311_8260B_L* Units: mg/L

Run Batch ID: NILES_010628D SeqNo: 374076 Analysis Date 6/28/01 10:09:00 PM Prep Batch ID: R18695 DF: 1 DL_No: 1 Prep Date:

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	1,1-Dichloroethene	0.05938	0.005000	0.05000	0	119	61	135			
A	1,2-Dichloroethane	0.04419	0.005000	0.05000	0	88	80	134			
A	2-Butanone	0.04535	0.01000	0.05000	0	91	46	169			
A	Benzene	0.05141	0.005000	0.05000	0	103	82	131			
A	Carbon tetrachloride	0.04940	0.005000	0.05000	0	99	81	132			
A	Chlorobenzene	0.05121	0.005000	0.05000	0	102	77	128			
A	Chloroform	0.04882	0.005000	0.05000	0	98	81	130			
A	Tetrachloroethene	0.05079	0.005000	0.05000	0	102	76	127			
A	Trichloroethene	0.04710	0.005000	0.05000	0	94	82	120			
A	Vinyl chloride	0.05716	0.01000	0.05000	0	114	43	159			
S	1,2-Dichloroethane-d4	0.04505	0	0.05000	0	90	82	124			
S	4-Bromofluorobenzene	0.04446	0	0.05000	0	89	87	115			
S	Toluene-d8	0.05244	0	0.05000	0	105	85	115			

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Analytical Services Center
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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

TCLP VOCs by Method 8260B Test Code: *1_1311_8260B_L* Units: mg/L

Sample ID: **LCS-1423-82-1** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **NILES_010703A** SeqNo: **377053** Analysis Date **7/3/01 12:03:00 PM** Prep Batch ID: **R18848** Prep Date:

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	1,1-Dichloroethene	0.05629	0.005000	0.05000	0	113	61	135			
A	1,2-Dichloroethane	0.04192	0.005000	0.05000	0	84	80	134			
A	2-Butanone	0.04046	0.01000	0.05000	0	81	46	169			
A	Benzene	0.04623	0.005000	0.05000	0	92	82	131			
A	Carbon tetrachloride	0.04560	0.005000	0.05000	0	91	81	132			
A	Chlorobenzene	0.04652	0.005000	0.05000	0	93	77	128			
A	Chloroform	0.04482	0.005000	0.05000	0	90	81	130			
A	Tetrachloroethene	0.04665	0.005000	0.05000	0	93	76	127			
A	Trichloroethene	0.04354	0.005000	0.05000	0	87	82	120			
A	Vinyl chloride	0.05182	0.01000	0.05000	0	104	43	159			
S	1,2-Dichloroethane-d4	0.04520	0	0.05000	0	90	82	124			
S	4-Bromofluorobenzene	0.04627	0	0.05000	0	93	87	115			
S	Toluene-d8	0.05251	0	0.05000	0	105	85	115			

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Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

GCMS SEMIVOLATILES

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4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS
Test Code: 1_1311_8270C_L
Batch ID: BONNIE_010703A

QC SUMMARY REPORT SURROGATE RECOVERIES

TCLP Semivolatile Organics by Method 8270C

Sample ID	Type	NO2BZD5	PH246BR	PH2F	PHD5	PHEN2F	PHEND14		
0106169-01A	SAMP	67	81	44	37	72	76		
0106169-02A	SAMP	75	76	41	28	72	73		
0106169-03A	SAMP	70	72	55	44	67	63		
0106169-04A	SAMP	74	75	40	28	71	72		
0106169-05A	SAMP	60	60	34	25	58	62		
0106169-06A	SAMP	67	53	32	24	59	65		
0106169-13A	SAMP	73	66	41	27	67	65		
0106169-14A	SAMP	67	56	34	24	68	65		
LCS-200101682	LCS	61	60	35	25	62	65		
LCSD-200101682	LCSD	80	79	45	31	80	80		
MB-200101682	MBLK	59	61	37	27	63	64		
TB-200101593	CLPMBLI	70	75	43	31	69	74		
~~TB-200101648~~	~~CLPMBLI~~	~~72~~	~~75~~	~~44~~	~~33~~	~~67~~	~~68~~	BB 8/1/01	

Acronym		Surrogate	QC Limits
NO2BZD5	=	Nitrobenzene-d5	33-117
PH246BR	=	2,4,6-Tribromophenol	40-153
PH2F	=	2-Fluorophenol	10-125
PHD5	=	Phenol-d5	10-125
PHEN2F	=	2-Fluorobiphenyl	39-116
PHEND14	=	Terphenyl-d14	27-135

*** Surrogate recovery outside acceptance limits**

D - Diluted due to matrix or extended target compounds

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS
Test Code: 1_1311_8270C_L
Batch ID: KIM_010708A

QC SUMMARY REPORT
SURROGATE RECOVERIES

TCLP Semivolatile Organics by Method 8270C

Sample ID	Type	NO2BZD5	PH246BR	PH2F	PHD5	PHEN2F	PHEND14		
0106169-15A	SAMP	56	59	30	23	56	72		
MB-200101682	MBLK	57	56	28	22	54	66		

Acronym		Surrogate	QC Limits
NO2BZD5	=	Nitrobenzene-d5	33-117
PH246BR	=	2,4,6-Tribromophenol	40-153
PH2F	=	2-Fluorophenol	10-125
PHD5	=	Phenol-d5	10-125
PHEN2F	=	2-Fluorobiphenyl	39-116
PHEND14	=	Terphenyl-d14	27-135

* Surrogate recovery outside acceptance limits

D - Diluted due to matrix or extended target compounds

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: **0106169-01A** **Sample Type:** SAMP

Client Sample ID: KWS-SS-OL-1
Alt. Client ID:
Collection Date: 6/19/01 10:15:00 AM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP SEMIVOLATILE ORGANICS BY METHOD 8270C								
1_1311_8270C_L								
1,4-Dichlorobenzene	ND		0.100	mg/L	1	7/3/01 6:38:00 PM	BONNIE_010703A	MEI
2,4,5-Trichlorophenol	ND		0.500	mg/L	1			
2,4,6-Trichlorophenol	ND		0.100	mg/L	1			
2,4-Dinitrotoluene	ND		0.100	mg/L	1			
2-Methylphenol	ND		0.100	mg/L	1			
4-Methylphenol/3-Methylphenol	ND		0.200	mg/L	1			
Hexachlorobenzene	ND		0.100	mg/L	1			
Hexachlorobutadiene	ND		0.100	mg/L	1			
Hexachloroethane	ND		0.100	mg/L	1			
Nitrobenzene	ND		0.100	mg/L	1			
Pentachlorophenol	ND		0.500	mg/L	1			
Pyridine	ND		1.00	mg/L	1			
Surr:2,4,6-Tribromophenol	81		40 - 153	%REC	1	7/3/01 6:38:00 PM	BONNIE_010703A	MEI
Surr:2-Fluorobiphenyl	72		39 - 116	%REC	1			
Surr:2-Fluorophenol	44		10 - 125	%REC	1			
Surr:Nitrobenzene-d5	67		33 - 117	%REC	1			
Surr:Phenol-d5	37		10 - 125	%REC	1			
Surr:Terphenyl-d14	76		27 - 135	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Client Sample ID: KWS-SS-OL-2
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Alt. Client ID:
Project: Kenilworth RI/FS
Collection Date: 6/19/01 10:30:00 AM
Lab ID: 0106169-02A **Sample Type:** SAMP
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP SEMIVOLATILE ORGANICS BY METHOD 8270C 1_1311_8270C_L								
1,4-Dichlorobenzene	ND		0.100	mg/L	1	7/3/01 7:24:00 PM	BONNIE_010703A	MEI
2,4,5-Trichlorophenol	ND		0.500	mg/L	1			
2,4,6-Trichlorophenol	ND		0.100	mg/L	1			
2,4-Dinitrotoluene	ND		0.100	mg/L	1			
2-Methylphenol	ND		0.100	mg/L	1			
4-Methylphenol/3-Methylphenol	ND		0.200	mg/L	1			
Hexachlorobenzene	ND		0.100	mg/L	1			
Hexachlorobutadiene	ND		0.100	mg/L	1			
Hexachloroethane	ND		0.100	mg/L	1			
Nitrobenzene	ND		0.100	mg/L	1			
Pentachlorophenol	ND		0.500	mg/L	1			
Pyridine	ND		1.00	mg/L	1			
Surr:2,4,6-Tribromophenol	76		40 - 153	%REC	1	7/3/01 7:24:00 PM	BONNIE_010703A	MEI
Surr:2-Fluorobiphenyl	72		39 - 116	%REC	1			
Surr:2-Fluorophenol	41		10 - 125	%REC	1			
Surr:Nitrobenzene-d5	75		33 - 117	%REC	1			
Surr:Phenol-d5	28		10 - 125	%REC	1			
Surr:Terphenyl-d14	73		27 - 135	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106169-03A **Sample Type:** SAMP

Client Sample ID: KWS-SS-OL-3
Alt. Client ID:
Collection Date: 6/19/01 11:00:00 AM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP SEMIVOLATILE ORGANICS BY METHOD 8270C 1_1311_8270C_L								
1,4-Dichlorobenzene	ND		0.100	mg/L	1	7/3/01 8:10:00 PM	BONNIE_010703A	MEI
2,4,5-Trichlorophenol	ND		0.500	mg/L	1			
2,4,6-Trichlorophenol	ND		0.100	mg/L	1			
2,4-Dinitrotoluene	ND		0.100	mg/L	1			
2-Methylphenol	ND		0.100	mg/L	1			
4-Methylphenol/3-Methylphenol	ND		0.200	mg/L	1			
Hexachlorobenzene	ND		0.100	mg/L	1			
Hexachlorobutadiene	ND		0.100	mg/L	1			
Hexachloroethane	ND		0.100	mg/L	1			
Nitrobenzene	ND		0.100	mg/L	1			
Pentachlorophenol	ND		0.500	mg/L	1			
Pyridine	ND		1.00	mg/L	1			
Surr:2,4,6-Tribromophenol	72		40 - 153	%REC	1	7/3/01 8:10:00 PM	BONNIE_010703A	MEI
Surr:2-Fluorobiphenyl	67		39 - 116	%REC	1			
Surr:2-Fluorophenol	55		10 - 125	%REC	1			
Surr:Nitrobenzene-d5	70		33 - 117	%REC	1			
Surr:Phenol-d5	44		10 - 125	%REC	1			
Surr:Terphenyl-d14	63		27 - 135	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Client Sample ID: KWS-SS-OL-4
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Alt. Client ID:
Project: Kenilworth RI/FS
Collection Date: 6/19/01 11:30:00 AM
Lab ID: 0106169-04A **Sample Type:** SAMP
Matrix: SOIL
% Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP SEMIVOLATILE ORGANICS BY METHOD 8270C								
1_1311_8270C_L								
1,4-Dichlorobenzene	ND		0.100	mg/L	1	7/3/01 8:55:00 PM	BONNIE_010703A	MEI
2,4,5-Trichlorophenol	ND		0.500	mg/L	1			
2,4,6-Trichlorophenol	ND		0.100	mg/L	1			
2,4-Dinitrotoluene	ND		0.100	mg/L	1			
2-Methylphenol	ND		0.100	mg/L	1			
4-Methylphenol/3-Methylphenol	ND		0.200	mg/L	1			
Hexachlorobenzene	ND		0.100	mg/L	1			
Hexachlorobutadiene	ND		0.100	mg/L	1			
Hexachloroethane	ND		0.100	mg/L	1			
Nitrobenzene	ND		0.100	mg/L	1			
Pentachlorophenol	ND		0.500	mg/L	1			
Pyridine	ND		1.00	mg/L	1			
Surr:2,4,6-Tribromophenol	75		40 - 153	%REC	1	7/3/01 8:55:00 PM	BONNIE_010703A	MEI
Surr:2-Fluorobiphenyl	71		39 - 116	%REC	1			
Surr:2-Fluorophenol	40		10 - 125	%REC	1			
Surr:Nitrobenzene-d5	74		33 - 117	%REC	1			
Surr:Phenol-d5	28		10 - 125	%REC	1			
Surr:Terphenyl-d14	72		27 - 135	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SS-OL-5
Lab Order:	0106169 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/19/01 12:25:00 PM
Lab ID:	0106169-05A **Sample Type:** SAMP	**Matrix:**	SOIL % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP SEMIVOLATILE ORGANICS BY METHOD 8270C 1_1311_8270C_L								
1,4-Dichlorobenzene	ND		0.100	mg/L	1	7/3/01 9:41:00 PM	BONNIE_010703A	MEI
2,4,5-Trichlorophenol	ND		0.500	mg/L	1			
2,4,6-Trichlorophenol	ND		0.100	mg/L	1			
2,4-Dinitrotoluene	ND		0.100	mg/L	1			
2-Methylphenol	ND		0.100	mg/L	1			
4-Methylphenol/3-Methylphenol	ND		0.200	mg/L	1			
Hexachlorobenzene	ND		0.100	mg/L	1			
Hexachlorobutadiene	ND		0.100	mg/L	1			
Hexachloroethane	ND		0.100	mg/L	1			
Nitrobenzene	ND		0.100	mg/L	1			
Pentachlorophenol	ND		0.500	mg/L	1			
Pyridine	ND		1.00	mg/L	1			
Surr:2,4,6-Tribromophenol	60		40 - 153	%REC	1	7/3/01 9:41:00 PM	BONNIE_010703A	MEI
Surr:2-Fluorobiphenyl	58		39 - 116	%REC	1			
Surr:2-Fluorophenol	34		10 - 125	%REC	1			
Surr:Nitrobenzene-d5	60		33 - 117	%REC	1			
Surr:Phenol-d5	25		10 - 125	%REC	1			
Surr:Terphenyl-d14	62		27 - 135	%REC	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Client Sample ID: KWS-SS-OL-6
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Alt. Client ID:
Project: Kenilworth RI/FS
Collection Date: 6/19/01 12:25:00 PM
Lab ID: 0106169-06A **Sample Type:** SAMP
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP SEMIVOLATILE ORGANICS BY METHOD 8270C 1_1311_8270C_L								
1,4-Dichlorobenzene	ND		0.100	mg/L	1	7/3/01 10:26:00 PM	BONNIE_010703A	MEI
2,4,5-Trichlorophenol	ND		0.500	mg/L	1			
2,4,6-Trichlorophenol	ND		0.100	mg/L	1			
2,4-Dinitrotoluene	ND		0.100	mg/L	1			
2-Methylphenol	ND		0.100	mg/L	1			
4-Methylphenol/3-Methylphenol	ND		0.200	mg/L	1			
Hexachlorobenzene	ND		0.100	mg/L	1			
Hexachlorobutadiene	ND		0.100	mg/L	1			
Hexachloroethane	ND		0.100	mg/L	1			
Nitrobenzene	ND		0.100	mg/L	1			
Pentachlorophenol	ND		0.500	mg/L	1			
Pyridine	ND		1.00	mg/L	1			
Surr:2,4,6-Tribromophenol	53		40 - 153	%REC	1	7/3/01 10:26:00 PM	BONNIE_010703A	MEI
Surr:2-Fluorobiphenyl	59		39 - 116	%REC	1			
Surr:2-Fluorophenol	32		10 - 125	%REC	1			
Surr:Nitrobenzene-d5	67		33 - 117	%REC	1			
Surr:Phenol-d5	24		10 - 125	%REC	1			
Surr:Terphenyl-d14	65		27 - 135	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SS-NL-1
Lab Order:	0106169 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/18/01 4:20:00 PM
Lab ID:	0106169-13A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP SEMIVOLATILE ORGANICS BY METHOD 8270C 1_1311_8270C_L								
1,4-Dichlorobenzene	ND		0.100	mg/L	1	7/3/01 11:12:00 PM	BONNIE_010703A	MEI
2,4,5-Trichlorophenol	ND		0.500	mg/L	1			
2,4,6-Trichlorophenol	ND		0.100	mg/L	1			
2,4-Dinitrotoluene	ND		0.100	mg/L	1			
2-Methylphenol	ND		0.100	mg/L	1			
4-Methylphenol/3-Methylphenol	ND		0.200	mg/L	1			
Hexachlorobenzene	ND		0.100	mg/L	1			
Hexachlorobutadiene	ND		0.100	mg/L	1			
Hexachloroethane	ND		0.100	mg/L	1			
Nitrobenzene	ND		0.100	mg/L	1			
Pentachlorophenol	ND		0.500	mg/L	1			
Pyridine	ND		1.00	mg/L	1			
Surr:2,4,6-Tribromophenol	66		40 - 153	%REC	1	7/3/01 11:12:00 PM	BONNIE_010703A	MEI
Surr:2-Fluorobiphenyl	67		39 - 116	%REC	1			
Surr:2-Fluorophenol	41		10 - 125	%REC	1			
Surr:Nitrobenzene-d5	73		33 - 117	%REC	1			
Surr:Phenol-d5	27		10 - 125	%REC	1			
Surr:Terphenyl-d14	65		27 - 135	%REC	1			

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106169-14A **Sample Type:** SAMP

Client Sample ID: KWS-SS-NL-2
Alt. Client ID:
Collection Date: 6/18/01 4:50:00 PM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP SEMIVOLATILE ORGANICS BY METHOD 8270C 1_1311_8270C_L								
1,4-Dichlorobenzene	ND		0.100	mg/L	1	7/3/01 11:59:00 PM	BONNIE_010703A	MEI
2,4,5-Trichlorophenol	ND		0.500	mg/L	1			
2,4,6-Trichlorophenol	ND		0.100	mg/L	1			
2,4-Dinitrotoluene	ND		0.100	mg/L	1			
2-Methylphenol	ND		0.100	mg/L	1			
4-Methylphenol/3-Methylphenol	ND		0.200	mg/L	1			
Hexachlorobenzene	ND		0.100	mg/L	1			
Hexachlorobutadiene	ND		0.100	mg/L	1			
Hexachloroethane	ND		0.100	mg/L	1			
Nitrobenzene	ND		0.100	mg/L	1			
Pentachlorophenol	ND		0.500	mg/L	1			
Pyridine	ND		1.00	mg/L	1			
Surr:2,4,6-Tribromophenol	56		40 - 153	%REC	1	7/3/01 11:59:00 PM	BONNIE_010703A	MEI
Surr:2-Fluorobiphenyl	68		39 - 116	%REC	1			
Surr:2-Fluorophenol	34		10 - 125	%REC	1			
Surr:Nitrobenzene-d5	67		33 - 117	%REC	1			
Surr:Phenol-d5	24		10 - 125	%REC	1			
Surr:Terphenyl-d14	65		27 - 135	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106169-15A **Sample Type:** SAMP

Client Sample ID: KWS-SS-NL-3
Alt. Client ID:
Collection Date: 6/18/01 5:00:00 PM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP SEMIVOLATILE ORGANICS BY METHOD 8270C 1_1311_8270C_L								
1,4-Dichlorobenzene	ND		0.100	mg/L	1	7/9/01 2:12:00 PM	KIM_010708A	MEI
2,4,5-Trichlorophenol	ND		0.500	mg/L	1			
2,4,6-Trichlorophenol	ND		0.100	mg/L	1			
2,4-Dinitrotoluene	ND		0.100	mg/L	1			
2-Methylphenol	ND		0.100	mg/L	1			
4-Methylphenol/3-Methylphenol	ND		0.200	mg/L	1			
Hexachlorobenzene	ND		0.100	mg/L	1			
Hexachlorobutadiene	ND		0.100	mg/L	1			
Hexachloroethane	ND		0.100	mg/L	1			
Nitrobenzene	ND		0.100	mg/L	1			
Pentachlorophenol	ND		0.500	mg/L	1			
Pyridine	ND		1.00	mg/L	1			
Surr:2,4,6-Tribromophenol	59		40 - 153	%REC	1	7/9/01 2:12:00 PM	KIM_010708A	MEI
Surr:2-Fluorobiphenyl	56		39 - 116	%REC	1			
Surr:2-Fluorophenol	30		10 - 125	%REC	1			
Surr:Nitrobenzene-d5	56		33 - 117	%REC	1			
Surr:Phenol-d5	23		10 - 125	%REC	1			
Surr:Terphenyl-d14	72		27 - 135	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

TCLP Semivolatile Organics by Method 8270C Test Code: *1_1311_8270C_L* Units: **mg/L**

Sample ID: **MB-200101682** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **BONNIE_010703A** SeqNo: **375818** Analysis Date: **7/3/01 2:46:00 PM** Prep Batch ID: **200101682** Prep Date: **6/29/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	1,4-Dichlorobenzene	ND	0.1000								
A	2,4,5-Trichlorophenol	ND	0.5000								
A	2,4,6-Trichlorophenol	ND	0.1000								
A	2,4-Dinitrotoluene	ND	0.1000								
A	2-Methylphenol	ND	0.1000								
A	4-Methylphenol/3-Methylphenol	ND	0.2000								
A	Hexachlorobenzene	ND	0.1000								
A	Hexachlorobutadiene	ND	0.1000								
A	Hexachloroethane	ND	0.1000								
A	Nitrobenzene	ND	0.1000								
A	Pentachlorophenol	ND	0.5000								
A	Pyridine	ND	1.000								
S	2,4,6-Tribromophenol	0.1816	0			61	40	153			
S	2-Fluorobiphenyl	0.1577	0			63	39	116			
S	2-Fluorophenol	0.1104	0			37	10	125			
S	Nitrobenzene-d5	0.1477	0			59	33	117			
S	Phenol-d5	0.08056	0			27	10	125			
S	Terphenyl-d14	0.1596	0			64	27	135			

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J-434

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Laboratory Results

NYS ELAP ID#: 10486

Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office

Work Order: 0106169

Project: Kenilworth RI/FS

QC SUMMARY REPORT

Method Blank

TCLP Semivolatile Organics by Method 8270C Test Code: *1_1311_8270C_L* Units: mg/L

Sample ID: **MB-200101682** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **KIM_010708A** SeqNo: **378562** Analysis Date: **7/8/01 1:27:00 PM** Prep Batch ID: **200101682** Prep Date: **6/29/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	1,4-Dichlorobenzene	ND	0.1000								
A	2,4,5-Trichlorophenol	ND	0.5000								
A	2,4,6-Trichlorophenol	ND	0.1000								
A	2,4-Dinitrotoluene	ND	0.1000								
A	2-Methylphenol	ND	0.1000								
A	4-Methylphenol/3-Methylphenol	ND	0.2000								
A	Hexachlorobenzene	ND	0.1000								
A	Hexachlorobutadiene	ND	0.1000								
A	Hexachloroethane	ND	0.1000								
A	Nitrobenzene	ND	0.1000								
A	Pentachlorophenol	ND	0.5000								
A	Pyridine	ND	1.000								
S	2,4,6-Tribromophenol	0.1667	0			56	40	153			
S	2-Fluorobiphenyl	0.1353	0			54	39	116			
S	2-Fluorophenol	0.08541	0			28	10	125			
S	Nitrobenzene-d5	0.1414	0			57	33	117			
S	Phenol-d5	0.06477	0			22	10	125			
S	Terphenyl-d14	0.1656	0			66	27	135			

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Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT

TCLP Leachate Blank

TCLP Semivolatile Organics by Method 8270C Test Code: *1_1311_8270C_L* Units: mg/L

Sample ID: **TB-200101593** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **BONNIE_010703A** SeqNo: **375824** Analysis Date: **7/3/01 5:05:00 PM** Prep Batch ID: **200101682** Prep Date: **6/29/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	1,4-Dichlorobenzene	ND	0.1000								
A	2,4,5-Trichlorophenol	ND	0.5000								
A	2,4,6-Trichlorophenol	ND	0.1000								
A	2,4-Dinitrotoluene	ND	0.1000								
A	2-Methylphenol	ND	0.1000								
A	4-Methylphenol/3-Methylphenol	ND	0.2000								
A	Hexachlorobenzene	ND	0.1000								
A	Hexachlorobutadiene	ND	0.1000								
A	Hexachloroethane	ND	0.1000								
A	Nitrobenzene	ND	0.1000								
A	Pentachlorophenol	ND	0.5000								
A	Pyridine	ND	1.000								
S	2,4,6-Tribromophenol	0.2250	0			75	40	153			
S	2-Fluorobiphenyl	0.1728	0			69	39	116			
S	2-Fluorophenol	0.1285	0			43	10	125			
S	Nitrobenzene-d5	0.1756	0			70	33	117			
S	Phenol-d5	0.09360	0			31	10	125			
S	Terphenyl-d14	0.1840	0			74	27	135			

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Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

TCLP Semivolatile Organics by Method 8270C Test Code: *1_1311_8270C_L* Units: mg/L

Sample ID: **LCS-200101682** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **BONNIE_010703A** SeqNo: **375826** Analysis Date: **7/3/01 3:32:00 PM** Prep Batch ID: **200101682** Prep Date: **6/29/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	1,4-Dichlorobenzene	0.07762	0.1000	0.1500	0	52	25	85			J
A	2,4,5-Trichlorophenol	0.08843	0.5000	0.1500	0	59	26	89			J
A	2,4,6-Trichlorophenol	0.08365	0.1000	0.1500	0	56	23	92			J
A	2,4-Dinitrotoluene	0.06664	0.1000	0.1500	0	44	29	96			J
A	2-Methylphenol	0.07922	0.1000	0.1500	0	53	34	83			J
A	4-Methylphenol/3-Methylphenol	0.1454	0.2000	0.3000	0	48	34	81			J
A	Hexachlorobenzene	0.04959	0.1000	0.1500	0	33	10	113			J
A	Hexachlorobutadiene	0.07025	0.1000	0.1500	0	47	12	87			J
A	Hexachloroethane	0.06397	0.1000	0.1500	0	43	21	81			J
A	Nitrobenzene	0.08092	0.1000	0.1500	0	54	27	95			J
A	Pentachlorophenol	0.08033	0.5000	0.1500	0	54	12	101			J
A	Pyridine	0.04303	1.000	0.1500	0	29	15	68			J
S	2,4,6-Tribromophenol	0.1805	0	0.3000	0	60	40	153			
S	2-Fluorobiphenyl	0.1549	0	0.2500	0	62	39	116			
S	2-Fluorophenol	0.1055	0	0.3000	0	35	10	125			
S	Nitrobenzene-d5	0.1513	0	0.2500	0	61	33	117			
S	Phenol-d5	0.07408	0	0.3000	0	25	10	125			
S	Terphenyl-d14	0.1629	0	0.2500	0	65	27	135			

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Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike Duplicate

TCLP Semivolatile Organics by Method 8270C Test Code: *1_1311_8270C_L* Units: mg/L

Sample ID: **LCSD-200101682** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **BONNIE_010703A** SeqNo: **375825** Analysis Date: **7/3/01 4:19:00 PM** Prep Batch ID: **200101682** Prep Date: **6/29/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	1,4-Dichlorobenzene	0.09283	0.1000	0.1500	0	62	25	85	17.8	35	J
A	2,4,5-Trichlorophenol	0.1138	0.5000	0.1500	0	76	26	89	25.1	35	J
A	2,4,6-Trichlorophenol	0.1112	0.1000	0.1500	0	74	23	92	28.3	35	
A	2,4-Dinitrotoluene	0.08950	0.1000	0.1500	0	60	29	96	29.3	35	J
A	2-Methylphenol	0.09567	0.1000	0.1500	0	64	34	83	18.8	35	J
A	4-Methylphenol/3-Methylphenol	0.1868	0.2000	0.3000	0	62	34	81	24.9	35	J
A	Hexachlorobenzene	0.06308	0.1000	0.1500	0	42	10	113	23.9	35	J
A	Hexachlorobutadiene	0.09304	0.1000	0.1500	0	62	12	87	27.9	35	J
A	Hexachloroethane	0.08101	0.1000	0.1500	0	54	21	81	23.5	35	J
A	Nitrobenzene	0.1129	0.1000	0.1500	0	75	27	95	33.0	35	
A	Pentachlorophenol	0.1063	0.5000	0.1500	0	71	12	101	27.8	35	J
A	Pyridine	0.04475	1.000	0.1500	0	30	15	68	3.9	35	J
S	2,4,6-Tribromophenol	0.2383	0	0.3000	0	79	40	153	0.0	0	
S	2-Fluorobiphenyl	0.2010	0	0.2500	0	80	39	116	0.0	0	
S	2-Fluorophenol	0.1360	0	0.3000	0	45	10	125	0.0	0	
S	Nitrobenzene-d5	0.1988	0	0.2500	0	80	33	117	0.0	0	
S	Phenol-d5	0.09314	0	0.3000	0	31	10	125	0.0	0	
S	Terphenyl-d14	0.1989	0	0.2500	0	80	27	135	0.0	0	

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Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

GC SEMIVOLATILES

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS
Test Code: 1_1311_8081A_L
Batch ID: HP68902B_010629B

QC SUMMARY REPORT SURROGATE RECOVERIES

TCLP Pesticides by Method 8081A

Sample ID	Type	CL10BZ2	XYL2456CLM
0106169-01A	SAMP	81	60
0106169-02A	SAMP	63	70
0106169-03A	SAMP	53	62
0106169-04A	SAMP	36	61
0106169-05A	SAMP	73	67
0106169-06A	SAMP	74	56
0106169-13A	SAMP	97	68
0106169-14A	SAMP	91	70
0106169-15A	SAMP	97	69
LCS-200101642	LCS	81	57
LCSD-200101642	LCSD	76	76
MB-200101642	MBLK	71	70
TB-200101593	CLPMBLI	91	68

Acronym		Surrogate	QC Limits
CL10BZ2	=	Decachlorobiphenyl	20-150
XYL2456CLM	=	Tetrachloro-m-xylene	44-135

*** Surrogate recovery outside acceptance limits**

D - Diluted due to matrix or extended target compounds

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106169-01A **Sample Type:** SAMP

Client Sample ID: KWS-SS-OL-1
Alt. Client ID:
Collection Date: 6/19/01 10:15:00 AM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP PESTICIDES BY METHOD 8081								
1_1311_8081A_L								
Chlordane	ND		0.0200	mg/L	20	6/30/01 1:18:07 PM	HP68902B_010629B	RN
Endrin	ND		0.005	mg/L	20			
gamma-BHC	ND		0.0025	mg/L	20			
Heptachlor	ND		0.0025	mg/L	20			
Heptachlor epoxide	ND		0.005	mg/L	20			
Methoxychlor	ND		0.0200	mg/L	20			
Toxaphene	ND		0.100	mg/L	20			
Surr:Decachlorobiphenyl	81		20 - 150	%REC	20	6/30/01 1:18:07 PM	HP68902B_010629B	RN
Surr:Tetrachloro-m-xylene	60		44 - 135	%REC	20			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Client Sample ID: KWS-SS-OL-2
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Alt. Client ID:
Project: Kenilworth RI/FS
Collection Date: 6/19/01 10:30:00 AM
Lab ID: 0106169-02A **Sample Type:** SAMP
Matrix: SOIL
% Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP PESTICIDES BY METHOD 8081 1_1311_8081A_L								
Chlordane	ND		0.0200	mg/L	20	6/30/01 1:57:43 PM	HP68902B_010629B	RN
Endrin	ND		0.005	mg/L	20			
gamma-BHC	ND		0.0025	mg/L	20			
Heptachlor	ND		0.0025	mg/L	20			
Heptachlor epoxide	ND		0.005	mg/L	20			
Methoxychlor	ND		0.0200	mg/L	20			
Toxaphene	ND		0.100	mg/L	20			
Surr:Decachlorobiphenyl	63		20 - 150	%REC	20	6/30/01 1:57:43 PM	HP68902B_010629B	RN
Surr:Tetrachloro-m-xylene	70		44 - 135	%REC	20			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Client Sample ID: KWS-SS-OL-3
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Alt. Client ID:
Project: Kenilworth RI/FS
Collection Date: 6/19/01 11:00:00 AM
Lab ID: 0106169-03A **Sample Type:** SAMP
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP PESTICIDES BY METHOD 8081								
1_1311_8081A_L								
Chlordane	ND		0.0200	mg/L	20	6/30/01 2:37:20 PM	HP68902B_010629B	RN
Endrin	ND		0.005	mg/L	20			
gamma-BHC	ND		0.0025	mg/L	20			
Heptachlor	ND		0.0025	mg/L	20			
Heptachlor epoxide	ND		0.005	mg/L	20			
Methoxychlor	ND		0.0200	mg/L	20			
Toxaphene	ND		0.100	mg/L	20			
Surr:Decachlorobiphenyl	53		20 - 150	%REC	20	6/30/01 2:37:20 PM	HP68902B_010629B	RN
Surr:Tetrachloro-m-xylene	62		44 - 135	%REC	20			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Client Sample ID: KWS-SS-OL-4
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Alt. Client ID:
Project: Kenilworth RI/FS
Collection Date: 6/19/01 11:30:00 AM
Lab ID: 0106169-04A **Sample Type:** SAMP **Matrix:** SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP PESTICIDES BY METHOD 8081								
1_1311_8081A_L								
Chlordane	ND		0.0200	mg/L	20	6/30/01 3:16:56 PM	HP68902B_010629B	RN
Endrin	ND		0.005	mg/L	20			
gamma-BHC	ND		0.0025	mg/L	20			
Heptachlor	ND		0.0025	mg/L	20			
Heptachlor epoxide	ND		0.005	mg/L	20			
Methoxychlor	ND		0.0200	mg/L	20			
Toxaphene	ND		0.100	mg/L	20			
Surr:Decachlorobiphenyl	36		20 - 150	%REC	20	6/30/01 3:16:56 PM	HP68902B_010629B	RN
Surr:Tetrachloro-m-xylene	61		44 - 135	%REC	20			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Client Sample ID: KWS-SS-OL-5
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Alt. Client ID:
Project: Kenilworth RI/FS
Collection Date: 6/19/01 12:25:00 PM
Lab ID: 0106169-05A **Sample Type:** SAMP
Matrix: SOIL
% Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP PESTICIDES BY METHOD 8081								
1_1311_8081A_L								
Chlordane	ND		0.0200	mg/L	20	6/30/01 3:56:33 PM	HP68902B_010629B	RN
Endrin	ND		0.005	mg/L	20			
gamma-BHC	ND		0.0025	mg/L	20			
Heptachlor	ND		0.0025	mg/L	20			
Heptachlor epoxide	ND		0.005	mg/L	20			
Methoxychlor	ND		0.0200	mg/L	20			
Toxaphene	ND		0.100	mg/L	20			
Surr:Decachlorobiphenyl	73		20 - 150	%REC	20	6/30/01 3:56:33 PM	HP68902B_010629B	RN
Surr:Tetrachloro-m-xylene	67		44 - 135	%REC	20			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Client Sample ID: KWS-SS-OL-6
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Alt. Client ID:
Project: Kenilworth RI/FS
Collection Date: 6/19/01 12:25:00 PM
Lab ID: 0106169-06A **Sample Type:** SAMP
Matrix: SOIL
% Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP PESTICIDES BY METHOD 8081								
1_1311_8081A_L								
Chlordane	ND		0.0200	mg/L	20	6/30/01 7:14:34 PM	HP68902B_010629B	RN
Endrin	ND		0.005	mg/L	20			
gamma-BHC	ND		0.0025	mg/L	20			
Heptachlor	ND		0.0025	mg/L	20			
Heptachlor epoxide	ND		0.005	mg/L	20			
Methoxychlor	ND		0.0200	mg/L	20			
Toxaphene	ND		0.100	mg/L	20			
Surr:Decachlorobiphenyl	74		20 - 150	%REC	20	6/30/01 7:14:34 PM	HP68902B_010629B	RN
Surr:Tetrachloro-m-xylene	56		44 - 135	%REC	20			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Client Sample ID: KWS-SS-NL-1
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Alt. Client ID:
Project: Kenilworth RI/FS
Collection Date: 6/18/01 4:20:00 PM
Lab ID: 0106169-13A **Sample Type:** SAMP
Matrix: SOIL
% Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP PESTICIDES BY METHOD 8081								
1_1311_8081A_L								
Chlordane	ND		0.0200	mg/L	20	6/30/01 7:54:09 PM	HP68902B_010629B	RN
Endrin	ND		0.005	mg/L	20			
gamma-BHC	ND		0.0025	mg/L	20			
Heptachlor	ND		0.0025	mg/L	20			
Heptachlor epoxide	ND		0.005	mg/L	20			
Methoxychlor	ND		0.0200	mg/L	20			
Toxaphene	ND		0.100	mg/L	20			
Surr:Decachlorobiphenyl	97		20 - 150	%REC	20	6/30/01 7:54:09 PM	HP68902B_010629B	RN
Surr:Tetrachloro-m-xylene	68		44 - 135	%REC	20			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106169-14A **Sample Type:** SAMP

Client Sample ID: KWS-SS-NL-2
Alt. Client ID:
Collection Date: 6/18/01 4:50:00 PM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP PESTICIDES BY METHOD 8081								
1_1311_8081A_L								
Chlordane	ND		0.0200	mg/L	20	6/30/01 8:33:43 PM	HP68902B_010629B	RN
Endrin	ND		0.005	mg/L	20			
gamma-BHC	ND		0.0025	mg/L	20			
Heptachlor	ND		0.0025	mg/L	20			
Heptachlor epoxide	ND		0.005	mg/L	20			
Methoxychlor	ND		0.0200	mg/L	20			
Toxaphene	ND		0.100	mg/L	20			
Surr:Decachlorobiphenyl	91		20 - 150	%REC	20	6/30/01 8:33:43 PM	HP68902B_010629B	RN
Surr:Tetrachloro-m-xylene	70		44 - 135	%REC	20			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Client Sample ID: KWS-SS-NL-3
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Alt. Client ID:
Project: Kenilworth RI/FS
Collection Date: 6/18/01 5:00:00 PM
Lab ID: 0106169-15A **Sample Type:** SAMP
Matrix: SOIL
% Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP PESTICIDES BY METHOD 8081								
1_1311_8081A_L								
Chlordane	ND		0.0200	mg/L	20	6/30/01 9:13:16 PM	HP68902B_0106298	RN
Endrin	ND		0.005	mg/L	20			
gamma-BHC	ND		0.0025	mg/L	20			
Heptachlor	ND		0.0025	mg/L	20			
Heptachlor epoxide	ND		0.005	mg/L	20			
Methoxychlor	ND		0.0200	mg/L	20			
Toxaphene	ND		0.100	mg/L	20			
Surr:Decachlorobiphenyl	97		20 - 150	%REC	20	6/30/01 9:13:16 PM	HP68902B_0106298	RN
Surr:Tetrachloro-m-xylene	69		44 - 135	%REC	20			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

Ecology and Environment, Inc.

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

TCLP Pesticides by Method 8081A Test Code: *1_1311_8081A_L* Units: **mg/L**

Sample ID: **MB-200101642** Client Sample ID: DF: 20 DL_No: 1

Run Batch ID: **HP68902B_010629B** SeqNo: **380969** Analysis Date **6/30/01 1:25:43 AM** Prep Batch ID: **200101642** Prep Date: **6/27/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Chlordane	ND	0.004000								
A	Endrin	ND	0.001000								
A	gamma-BHC	ND	0.0005000								
A	Heptachlor	ND	0.0005000								
A	Heptachlor epoxide	ND	0.001000								
A	Methoxychlor	ND	0.004000								
A	Toxaphene	ND	0.02000								
S	Decachlorobiphenyl	0.002840	0			71	20	150			
S	Tetrachloro-m-xylene	0.002800	0			70	44	135			

J-451

59

Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
TCLP Leachate Blank

TCLP Pesticides by Method 8081A Test Code: *1_1311_8081A_L* Units: mg/L

Sample ID: **TB-200101593** Client Sample ID: DF: 20 DL_No: 1

Run Batch ID: **HP68902B_010629B** SeqNo: **381003** Analysis Date **6/30/01 6:02:57 AM** Prep Batch ID: **200101642** Prep Date: **6/27/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Chlordane	ND	0.004000								
A	Endrin	ND	0.001000								
A	gamma-BHC	ND	0.0005000								
A	Heptachlor	ND	0.0005000								
A	Heptachlor epoxide	ND	0.001000								
A	Methoxychlor	ND	0.004000								
A	Toxaphene	ND	0.02000								
S	Decachlorobiphenyl	0.003640	0			91	20	150			
S	Tetrachloro-m-xylene	0.002700	0			68	44	135			

60

Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

TCLP Pesticides by Method 8081A Test Code: *1_1311_8081A_L* Units: mg/L

Sample ID: **LCS-200101642** Client Sample ID: DF: 20 DL_No: 1

Run Batch ID: **HP68902B_010629B** SeqNo: **380996** Analysis Date **6/30/01 2:44:56 AM** Prep Batch ID: **200101642** Prep Date: **6/27/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Endrin	0.006044	0.001000	0.008000	0	76	50	150			
A	gamma-BHC	0.006684	0.0005000	0.008000	0	84	50	150			
A	Heptachlor	0.005910	0.0005000	0.008000	0	74	50	150			
A	Heptachlor epoxide	0.006301	0.001000	0.008000	0	79	50	150			
A	Methoxychlor	0.007148	0.004000	0.008000	0	89	50	150			
S	Decachlorobiphenyl	0.003240	0	0.004000	0	81	20	150			
S	Tetrachloro-m-xylene	0.002280	0	0.004000	0	57	44	135			

Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

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Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike Duplicate

TCLP Pesticides by Method 8081A Test Code: *1_1311_8081A_L* Units: mg/L

Sample ID: **LCSD-200101642** Client Sample ID: DF: 20 DL_No: 1

Run Batch ID: **HP68902B_010629B** SeqNo: **380997** Analysis Date **6/30/01 4:04:07 AM** Prep Batch ID: **200101642** Prep Date: **6/27/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Endrin	0.006390	0.001000	0.008000	0	80	50	150	5.6	35	
A	gamma-BHC	0.007329	0.0005000	0.008000	0	92	50	150	9.2	35	
A	Heptachlor	0.006848	0.0005000	0.008000	0	86	50	150	14.7	35	
A	Heptachlor epoxide	0.006884	0.001000	0.008000	0	86	50	150	8.8	35	
A	Methoxychlor	0.007221	0.004000	0.008000	0	90	50	150	1.0	35	
S	Decachlorobiphenyl	0.003040	0	0.004000	0	76	20	150	0.0	0	
S	Tetrachloro-m-xylene	0.003020	0	0.004000	0	76	44	135	0.0	0	

J-454

62

Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS
Test Code: 1_1311_8151A_L
Batch ID: HP58901A_010702B

QC SUMMARY REPORT SURROGATE RECOVERIES

TCLP Herbicides by Method 8151A

Sample ID	Type	24DCPHYAA
0106169-01A	SAMP	83
0106169-02A	SAMP	83
0106169-03A	SAMP	87
0106169-04A	SAMP	83
0106169-05A	SAMP	87
0106169-06A	SAMP	89
0106169-13A	SAMP	86
0106169-14A	SAMP	83
0106169-15A	SAMP	84
LCS-200101644	LCS	87
LCSD-200101644	LCSD	87
MB-200101644	MBLK	82
TB-200101593	CLPMBLI	84

Acronym		Surrogate	QC Limits
24DCPHYAA	=	DCAA	55-130

*** Surrogate recovery outside acceptance limits**

D - Diluted due to matrix or extended target compounds

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106169-01A **Sample Type:** SAMP

Client Sample ID: KWS-SS-OL-1
Alt. Client ID:
Collection Date: 6/19/01 10:15:00 AM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP HERBICIDES BY METHOD 8151A								
1_1311_8151A_L								
2,4,5-TP (Silvex)	ND		0.0250	mg/L	100	7/3/01 6:10:44 AM	HP58901A_010702B	RN
2,4-D	ND		0.250	mg/L	100			
Surr:DCAA	83		55 - 130	%REC	100	7/3/01 6:10:44 AM	HP58901A_010702B	RN

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Client Sample ID: KWS-SS-OL-2
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Alt. Client ID:
Project: Kenilworth RI/FS
Collection Date: 6/19/01 10:30:00 AM
Lab ID: 0106169-02A **Sample Type:** SAMP
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP HERBICIDES BY METHOD 8151A								
1_1311_8151A_L								
2,4,5-TP (Silvex)	ND		0.0250	mg/L	100	7/3/01 6:47:27 AM	HP58901A_010702B	RN
2,4-D	ND		0.250	mg/L	100			
Surr:DCAA	83		55 - 130	%REC	100	7/3/01 6:47:27 AM	HP58901A_010702B	RN

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106169-03A **Sample Type:** SAMP

Client Sample ID: KWS-SS-OL-3
Alt. Client ID:
Collection Date: 6/19/01 11:00:00 AM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP HERBICIDES BY METHOD 8151A								
1_1311_8151A_L								
2,4,5-TP (Silvex)	ND		0.0250	mg/L	100	7/3/01 7:24:09 AM	HP58901A_010702B	RN
2,4-D	ND		0.250	mg/L	100			
Surr:DCAA	87		55 - 130	%REC	100	7/3/01 7:24:09 AM	HP58901A_010702B	RN

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Laboratory Results

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Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106169-04A **Sample Type:** SAMP

Client Sample ID: KWS-SS-OL-4
Alt. Client ID:
Collection Date: 6/19/01 11:30:00 AM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP HERBICIDES BY METHOD 8151A								
1_1311_8151A_L								
2,4,5-TP (Silvex)	ND		0.0250	mg/L	100	7/3/01 8:00:44 AM	HP58901A_010702B	RN
2,4-D	ND		0.250	mg/L	100			
Surr:DCAA	83		55 - 130	%REC	100	7/3/01 8:00:44 AM	HP58901A_010702B	RN

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Client Sample ID: KWS-SS-OL-5
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Alt. Client ID:
Project: Kenilworth RI/FS
Collection Date: 6/19/01 12:25:00 PM
Lab ID: 0106169-05A **Sample Type:** SAMP
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP HERBICIDES BY METHOD 8151A								
1_1311_8151A_L								
2,4,5-TP (Silvex)	ND		0.0250	mg/L	100	7/3/01 8:37:26 AM	HP58901A_010702B	RN
2,4-D	ND		0.250	mg/L	100			
Surr:DCAA	87		55 - 130	%REC	100	7/3/01 8:37:26 AM	HP58901A_010702B	RN

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106169-06A **Sample Type:** SAMP

Client Sample ID: KWS-SS-OL-6
Alt. Client ID:
Collection Date: 6/19/01 12:25:00 PM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP HERBICIDES BY METHOD 8151A								
1_1311_8151A_L								
2,4,5-TP (Silvex)	ND		0.0250	mg/L	100	7/3/01 9:14:04 AM	HP58901A_010702B	RN
2,4-D	ND		0.250	mg/L	100			
Surr:DCAA	89		55 - 130	%REC	100	7/3/01 9:14:04 AM	HP58901A_010702B	RN

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Laboratory Results

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Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106169-13A **Sample Type:** SAMP

Client Sample ID: KWS-SS-NL-1
Alt. Client ID:
Collection Date: 6/18/01 4:20:00 PM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP HERBICIDES BY METHOD 8151A								
1_1311_8151A_L								
2,4,5-TP (Silvex)	ND		0.0250	mg/L	100	7/3/01 9:50:47 AM	HP5890I1A_010702B	RN
2,4-D	ND		0.250	mg/L	100			
Surr:DCAA	86		55 - 130	%REC	100	7/3/01 9:50:47 AM	HP5890I1A_010702B	RN

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Client Sample ID: KWS-SS-NL-2
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Alt. Client ID:
Project: Kenilworth RI/FS
Collection Date: 6/18/01 4:50:00 PM
Lab ID: 0106169-14A **Sample Type:** SAMP
Matrix: SOIL
% Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP HERBICIDES BY METHOD 8151A								
1_1311_8151A_L								
2,4,5-TP (Silvex)	ND		0.0250	mg/L	100	7/3/01 10:27:21 AM	HP58901A_010702B	RN
2,4-D	ND		0.250	mg/L	100			
Surr:DCAA	83		55 - 130	%REC	100	7/3/01 10:27:21 AM	HP58901A_010702B	RN

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Client Sample ID: KWS-SS-NL-3
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Alt. Client ID:
Project: Kenilworth RI/FS
Collection Date: 6/18/01 5:00:00 PM
Lab ID: 0106169-15A **Sample Type:** SAMP
Matrix: SOIL
% Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP HERBICIDES BY METHOD 8151A								
1_1311_8151A_L								
2,4,5-TP (Silvex)	ND		0.0250	mg/L	100	7/3/01 11:04:00 AM	HP58901A_010702B	RN
2,4-D	ND		0.250	mg/L	100			
Surr:DCAA	84		55 - 130	%REC	100	7/3/01 11:04:00 AM	HP58901A_010702B	RN

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

TCLP Herbicides by Method 8151A Test Code: *1_1311_8151A_L* Units: **mg/L**

Sample ID: **MB-200101644** Client Sample ID: DF: 100 DL_No: 1

Run Batch ID: **HP58901A_010702B** SeqNo: **381304** Analysis Date **7/3/01 2:30:39 AM** Prep Batch ID: **200101644** Prep Date: **6/28/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	2,4,5-TP (Silvex)	ND	0.002500								
A	2,4-D	ND	0.02500								
S	DCAA	0.06570	0			82	55	130			

J-465

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Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
TCLP Leachate Blank

TCLP Herbicides by Method 8151A Test Code: *1_1311_8151A_L* Units: mg/L

Sample ID: **TB-200101593** Client Sample ID: DF: 100 DL_No: 1

Run Batch ID: **HP58901A_010702B** SeqNo: **381313** Analysis Date **7/3/01 4:20:41 AM** Prep Batch ID: **200101644** Prep Date: **6/28/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	2,4,5-TP (Silvex)	ND	0.02500								
A	2,4-D	ND	0.2500								
S	DCAA	0.6750	0			84	55	130			

Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

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4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

TCLP Herbicides by Method 8151A Test Code: *1_1311_8151A_L* Units: mg/L

Sample ID: **LCS-200101644** Client Sample ID: DF: 100 DL_No: 1

Run Batch ID: **HP58901A_010702B** SeqNo: **381315** Analysis Date **7/3/01 3:07:21 AM** Prep Batch ID: **200101644** Prep Date: **6/28/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	2,4,5-TP (Silvex)	0.01010	0.002500	0.01000	0	101	73	120			
A	2,4-D	0.08620	0.02500	0.1000	0	86	74	120			
S	DCAA	0.06930	0	0.08000	0	87	55	130			

Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike Duplicate

TCLP Herbicides by Method 8151A Test Code: *1_1311_8151A_L* Units: mg/L

Sample ID: **LCSD-200101644** Client Sample ID: DF: 100 DL_No: 1

Run Batch ID: **HP58901A_010702B** SeqNo: **381314** Analysis Date **7/3/01 3:43:59 AM** Prep Batch ID: **200101644** Prep Date: 6/28/01

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	2,4,5-TP (Silvex)	0.01000	0.002500	0.01000	0	100	73	120	1.0	0	
A	2,4-D	0.08610	0.02500	0.1000	0	86	74	120	0.1	0	
S	DCAA	0.06930	0	0.08000	0	87	55	130	0.0	0	

Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS
Test Code: 1_8082_3550B_S
Batch ID: HP58902A_010629G

QC SUMMARY REPORT SURROGATE RECOVERIES

PCBs by Method 8082

Sample ID	Type	CL10BZ2	XYL2456CLM
0106169-07A	SAMP	84	93
0106169-08A	SAMP	91	94
0106169-09A	SAMP	88	93
0106169-10A	SAMP	87	98
0106169-11A	SAMP	66	96
0106169-12A	SAMP	69	87
LCS-200101662	LCS	87	101
MB-200101662	MBLK	77	85

Acronym		Surrogate	QC Limits
CL10BZ2	=	Decachlorobiphenyl	52-115
XYL2456CLM	=	Tetrachloro-m-xylene	39-125

*** Surrogate recovery outside acceptance limits**

D - Diluted due to matrix or extended target compounds

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4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Client Sample ID: KWS-SS-AR-1
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Alt. Client ID:
Project: Kenilworth RI/FS
Collection Date: 6/18/01 11:50:00 AM
Lab ID: 0106169-07A **Sample Type:** SAMP **Matrix:** SOIL **% Moist:** 6.62

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		21.2	µg/Kg-dry	1	7/3/01 3:31:00 PM	HP58902A_010629G	RN
Aroclor 1221	ND		42.4	µg/Kg-dry	1			
Aroclor 1232	ND		21.2	µg/Kg-dry	1			
Aroclor 1242	ND		21.2	µg/Kg-dry	1			
Aroclor 1248	ND		21.2	µg/Kg-dry	1			
Aroclor 1254	ND		21.2	µg/Kg-dry	1			
Aroclor 1260	7.85	J	21.2	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	84		52 - 115	%REC	1	7/3/01 3:31:00 PM	HP58902A_010629G	RN
Surr:Tetrachloro-m-xylene	93		39 - 125	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Client Sample ID: KWS-SS-AR-2
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Alt. Client ID:
Project: Kenilworth RI/FS
Collection Date: 6/18/01 2:10:00 PM
Lab ID: 0106169-08A **Sample Type:** SAMP
Matrix: SOIL **% Moist:** 24.20

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		25.4	µg/Kg-dry	1	7/3/01 4:15:52 PM	HP58902A_010629G	RN
Aroclor 1221	ND		50.8	µg/Kg-dry	1			
Aroclor 1232	ND		25.4	µg/Kg-dry	1			
Aroclor 1242	ND		25.4	µg/Kg-dry	1			
Aroclor 1248	ND		25.4	µg/Kg-dry	1			
Aroclor 1254	55.7		25.4	µg/Kg-dry	1			
Aroclor 1260	22.4	J	25.4	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	91		52 - 115	%REC	1	7/3/01 4:15:52 PM	HP58902A_010629G	RN
Surr:Tetrachloro-m-xylene	94		39 - 125	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106169-09A **Sample Type:** SAMP

Client Sample ID: KWS-SS-AR-3
Alt. Client ID:
Collection Date: 6/18/01 12:40:00 PM
Matrix: SOIL **% Moist:** 15.30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		22.2	µg/Kg-dry	1	7/3/01 5:00:44 PM	HP58902A_010629G	RN
Aroclor 1221	ND		44.4	µg/Kg-dry	1			
Aroclor 1232	ND		22.2	µg/Kg-dry	1			
Aroclor 1242	ND		22.2	µg/Kg-dry	1			
Aroclor 1248	ND		22.2	µg/Kg-dry	1			
Aroclor 1254	71.8		22.2	µg/Kg-dry	1			
Aroclor 1260	32.3		22.2	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	88		52 - 115	%REC	1	7/3/01 5:00:44 PM	HP58902A_010629G	RN
Surr:Tetrachloro-m-xylene	93		39 - 125	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106169-10A **Sample Type:** SAMP

Client Sample ID: KWS-SS-AR-4
Alt. Client ID:
Collection Date: 6/18/01 2:40:00 PM
Matrix: SOIL **% Moist:** 21.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		21.9	µg/Kg-dry	1	7/3/01 5:45:33 PM	HP58902A_010629G	RN
Aroclor 1221	ND		43.8	µg/Kg-dry	1			
Aroclor 1232	ND		21.9	µg/Kg-dry	1			
Aroclor 1242	ND		21.9	µg/Kg-dry	1			
Aroclor 1248	ND		21.9	µg/Kg-dry	1			
Aroclor 1254	51.8		21.9	µg/Kg-dry	1			
Aroclor 1260	ND		21.9	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	87		52 - 115	%REC	1	7/3/01 5:45:33 PM	HP58902A_010629G	RN
Surr:Tetrachloro-m-xylene	98		39 - 125	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Client Sample ID: KWS-SS-AR-5
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Alt. Client ID:
Project: Kenilworth RI/FS
Collection Date: 6/18/01 3:40:00 PM
Lab ID: 0106169-11A **Sample Type:** SAMP
Matrix: SOIL **% Moist:** 18.30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		23.6	µg/Kg-dry	1	7/3/01 9:30:09 PM	HP58902A_010629G	RN
Aroclor 1221	ND		47.1	µg/Kg-dry	1			
Aroclor 1232	ND		23.6	µg/Kg-dry	1			
Aroclor 1242	ND		23.6	µg/Kg-dry	1			
Aroclor 1248	ND		23.6	µg/Kg-dry	1			
Aroclor 1254	87.9		23.6	µg/Kg-dry	1			
Aroclor 1260	55.7		23.6	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	66		52 - 115	%REC	1	7/3/01 9:30:09 PM	HP58902A_010629G	RN
Surr:Tetrachloro-m-xylene	96		39 - 125	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106169-12A **Sample Type:** SAMP

Client Sample ID: KWS-SS-AR-6
Alt. Client ID:
Collection Date: 6/18/01 3:00:00 PM
Matrix: SOIL **% Moist:** 27.30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PCB ANALYSIS BY METHOD 8082								
1_8082_3550B_S								
Aroclor 1016	ND		26.3	µg/Kg-dry	1	7/3/01 10:15:01 PM	HP58902A_010629G	RN
Aroclor 1221	ND		52.6	µg/Kg-dry	1			
Aroclor 1232	ND		26.3	µg/Kg-dry	1			
Aroclor 1242	ND		26.3	µg/Kg-dry	1			
Aroclor 1248	ND		26.3	µg/Kg-dry	1			
Aroclor 1254	66.5		26.3	µg/Kg-dry	1			
Aroclor 1260	61.8		26.3	µg/Kg-dry	1			
Surr:Decachlorobiphenyl	69		52 - 115	%REC	1	7/3/01 10:15:01 PM	HP58902A_010629G	RN
Surr:Tetrachloro-m-xylene	87		39 - 125	%REC	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

Ecology and Environment, Inc.

Analytical Services Center
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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

PCBs by Method 8082 Test Code: *1_8082_3550B_S* Units: µg/Kg

Sample ID: **MB-200101662** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **HP58902A_010629G** SeqNo: **380982** Analysis Date **7/3/01 2:01:10 PM** Prep Batch ID: **200101662** Prep Date: **6/28/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Aroclor 1016	ND	17.90								
A	Aroclor 1221	ND	35.70								
A	Aroclor 1232	ND	17.90								
A	Aroclor 1242	ND	17.90								
A	Aroclor 1248	ND	17.90								
A	Aroclor 1254	ND	17.90								
A	Aroclor 1260	ND	17.90								
S	Decachlorobiphenyl	4.596	0			77	52	115			
S	Tetrachloro-m-xylene	5.054	0			85	39	125			

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Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

PCBs by Method 8082 Test Code: *1_8082_3550B_S* Units: µg/Kg

Sample ID: **LCS-200101662** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **HP58902A_010629G** SeqNo: **380998** Analysis Date **7/5/01 3:32:35 PM** Prep Batch ID: **200101662** Prep Date: **6/28/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Aroclor 1016	123.6	18.80	157.3	0	79	59	119			
A	Aroclor 1260	111.2	18.80	157.3	0	71	50	150			
S	Decachlorobiphenyl	5.487	0	6.281	0	87	52	115			
S	Tetrachloro-m-xylene	6.372	0	6.281	0	101	39	125			

J-479

Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

LIQUID CHROMATOGRAPHY

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Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS
Test Code: 1_8310_3550B_S
Batch ID: LC-1_010709A

QC SUMMARY REPORT
SURROGATE RECOVERIES

PAH by Method 8310

Sample ID	Type	PHEND14							
0106169-07A	SAMP	89							
0106169-10A	SAMP	91							
0106169-12A	SAMP	55							
LCS-200101683	LCS	83							
MB-200101683	MBLK	74							

Acronym		Surrogate	QC Limits
PHEND14	=	Terphenyl-d14	52-123

*** Surrogate recovery outside acceptance limits**
D - Diluted due to matrix or extended target compounds

Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS
Test Code: 1_8310_3550B_S
Batch ID: LC-1_010710A

QC SUMMARY REPORT
SURROGATE RECOVERIES

PAH by Method 8310

Sample ID	Type	PHEND14							
0106169-08A	SAMP	187*D							
0106169-09A	SAMP	139*D							
0106169-11A	SAMP	96							

Acronym		Surrogate	QC Limits
PHEND14	=	Terphenyl-d14	52-123

*** Surrogate recovery outside acceptance limits**
D - Diluted due to matrix or extended target compounds

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Client Sample ID: KWS-SS-AR-1
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Alt. Client ID:
Project: Kenilworth RI/FS
Collection Date: 6/18/01 11:50:00 AM
Lab ID: 0106169-07A **Sample Type:** SAMP **Matrix:** SOIL **% Moist:** 6.62

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
Acenaphthene	94.6	N	81.3	µg/Kg-dry	1	7/9/01 7:20:22 PM	LC-1_010709A	SDC
Acenaphthylene	30.7	J	81.3	µg/Kg-dry	1			
Anthracene	ND		8.13	µg/Kg-dry	1			
Benz(a)anthracene	5.95	J	8.13	µg/Kg-dry	1			
Benzo(a)pyrene	8.82	N	8.13	µg/Kg-dry	1			
Benzo(b)fluoranthene	9.25	N	8.13	µg/Kg-dry	1			
Benzo(g,h,i)perylene	5.39	J	20.3	µg/Kg-dry	1			
Benzo(k)fluoranthene	5.61	J	8.13	µg/Kg-dry	1			
Chrysene	6.24	J	8.13	µg/Kg-dry	1			
Dibenz(a,h)anthracene	ND		20.3	µg/Kg-dry	1			
Fluoranthene	24.3	N	20.3	µg/Kg-dry	1			
Fluorene	ND		8.13	µg/Kg-dry	1			
Indeno(1,2,3-cd)pyrene	4.90	J	8.13	µg/Kg-dry	1			
Naphthalene	ND		81.3	µg/Kg-dry	1			
Phenanthrene	6.06	J	8.13	µg/Kg-dry	1			
Pyrene	19.1	J	20.3	µg/Kg-dry	1			
Surr:Terphenyl-d14	89		52 - 123	%REC	1	7/9/01 7:20:22 PM	LC-1_010709A	SDC

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486

Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SS-AR-2
Lab Order:	0106169 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/18/01 2:10:00 PM
Lab ID:	**0106169-08A** **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 24.20

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
Acenaphthene	1380	N	205	µg/Kg-dry	2	7/10/01 7:53:21 PM	LC-1_010710A	SDC
Acenaphthylene	ND		205	µg/Kg-dry	2			
Anthracene	86.4	N	20.5	µg/Kg-dry	2			
Benz(a)anthracene	280	N	20.5	µg/Kg-dry	2			
Benzo(a)pyrene	296	N	20.5	µg/Kg-dry	2			
Benzo(b)fluoranthene	275	N	20.5	µg/Kg-dry	2			
Benzo(g,h,i)perylene	175	N	51.3	µg/Kg-dry	2			
Benzo(k)fluoranthene	163	N	20.5	µg/Kg-dry	2			
Chrysene	339	N	20.5	µg/Kg-dry	2			
Dibenz(a,h)anthracene	29.1	J	51.3	µg/Kg-dry	2			
Fluoranthene	1130	N	51.3	µg/Kg-dry	2			
Fluorene	49.6	N	20.5	µg/Kg-dry	2			
Indeno(1,2,3-cd)pyrene	163	N	20.5	µg/Kg-dry	2			
Naphthalene	ND		205	µg/Kg-dry	2			
Phenanthrene	387	N	20.5	µg/Kg-dry	2			
Pyrene	817	N	51.3	µg/Kg-dry	2			
Surr:Terphenyl-d14	187	*D	52 - 123	%REC	2	7/10/01 7:53:21 PM	LC-1_010710A	SDC

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compound
N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SS-AR-3
Lab Order:	0106169 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/18/01 12:40:00 PM
Lab ID:	0106169-09A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 15.30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
Acenaphthene	521	N	351	µg/Kg-dry	4	7/10/01 8:34:45 PM	LC-1_010710A	SDC
Acenaphthylene	ND		351	µg/Kg-dry	4			
Anthracene	2.93	J	35.1	µg/Kg-dry	4			
Benz(a)anthracene	104	N	35.1	µg/Kg-dry	4			
Benzo(a)pyrene	231	N	35.1	µg/Kg-dry	4			
Benzo(b)fluoranthene	167	N	35.1	µg/Kg-dry	4			
Benzo(g,h,i)perylene	228	N	87.8	µg/Kg-dry	4			
Benzo(k)fluoranthene	130	N	35.1	µg/Kg-dry	4			
Chrysene	159	N	35.1	µg/Kg-dry	4			
Dibenz(a,h)anthracene	243	N	87.8	µg/Kg-dry	4			
Fluoranthene	677	N	87.8	µg/Kg-dry	4			
Fluorene	ND		35.1	µg/Kg-dry	4			
Indeno(1,2,3-cd)pyrene	190	N	35.1	µg/Kg-dry	4			
Naphthalene	ND		351	µg/Kg-dry	4			
Phenanthrene	111	N	35.1	µg/Kg-dry	4			
Pyrene	638	N	87.8	µg/Kg-dry	4			
Surr:Terphenyl-d14	139	*D	52 - 123	%REC	4	7/10/01 8:34:45 PM	LC-1_010710A	SDC

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

Ecology and Environment, Inc.

Analytical Services Center

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Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106169-10A **Sample Type:** SAMP

Client Sample ID: KWS-SS-AR-4
Alt. Client ID:
Collection Date: 6/18/01 2:40:00 PM
Matrix: SOIL **% Moist:** 21.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
Acenaphthene	71.4	J	98.5	µg/Kg-dry	1	7/9/01 9:24:35 PM	LC-1_010709A	SDC
Acenaphthylene	30.8	J	98.5	µg/Kg-dry	1			
Anthracene	1.23	J	9.85	µg/Kg-dry	1			
Benz(a)anthracene	11.5	N	9.85	µg/Kg-dry	1			
Benzo(a)pyrene	16.4	N	9.85	µg/Kg-dry	1			
Benzo(b)fluoranthene	9.85	J	9.85	µg/Kg-dry	1			
Benzo(g,h,i)perylene	15.6	J	24.6	µg/Kg-dry	1			
Benzo(k)fluoranthene	11.1	N	9.85	µg/Kg-dry	1			
Chrysene	14.8	N	9.85	µg/Kg-dry	1			
Dibenz(a,h)anthracene	ND		24.6	µg/Kg-dry	1			
Fluoranthene	50.9	N	24.6	µg/Kg-dry	1			
Fluorene	ND		9.85	µg/Kg-dry	1			
Indeno(1,2,3-cd)pyrene	12.3	N	9.85	µg/Kg-dry	1			
Naphthalene	ND		98.5	µg/Kg-dry	1			
Phenanthrene	14.8	N	9.85	µg/Kg-dry	1			
Pyrene	35.7	N	24.6	µg/Kg-dry	1			
Surr:Terphenyl-d14	91		52 - 123	%REC	1	7/9/01 9:24:35 PM	LC-1_010709A	SDC

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compound
N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SS-AR-5
Lab Order:	0106169 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/18/01 3:40:00 PM
Lab ID:	0106169-11A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 18.30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
Acenaphthene	ND		939	µg/Kg-dry	10	7/10/01 9:16:10 PM	LC-1_010710A	SDC
Acenaphthylene	ND		939	µg/Kg-dry	10			
Anthracene	ND		93.9	µg/Kg-dry	10			
Benz(a)anthracene	74.4	J	93.9	µg/Kg-dry	10			
Benzo(a)pyrene	344	N	93.9	µg/Kg-dry	10			
Benzo(b)fluoranthene	133	N	93.9	µg/Kg-dry	10			
Benzo(g,h,i)perylene	82.2	J	235	µg/Kg-dry	10			
Benzo(k)fluoranthene	ND		93.9	µg/Kg-dry	10			
Chrysene	74.4	J	93.9	µg/Kg-dry	10			
Dibenz(a,h)anthracene	791	N	235	µg/Kg-dry	10			
Fluoranthene	207	J	235	µg/Kg-dry	10			
Fluorene	192	N	93.9	µg/Kg-dry	10			
Indeno(1,2,3-cd)pyrene	62.6	J	93.9	µg/Kg-dry	10			
Naphthalene	ND		939	µg/Kg-dry	10			
Phenanthrene	35.2	J	93.9	µg/Kg-dry	10			
Pyrene	106	J	235	µg/Kg-dry	10			
Surr:Terphenyl-d14	96		52 - 123	%REC	10	7/10/01 9:16:10 PM	LC-1_010710A	SDC

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier A -Result by Method of Std. Addition
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	D - Diluted due to matrix or extended target compounds
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Client Sample ID: KWS-SS-AR-6
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Alt. Client ID:
Project: Kenilworth RI/FS
Collection Date: 6/18/01 3:00:00 PM
Lab ID: 0106169-12A **Sample Type:** SAMP
Matrix: SOIL **% Moist:** 27.30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
DETERMINATION OF PAH BY METHOD 8310								
1_8310_3550B_S								
Acenaphthene	630	N	108	µg/Kg-dry	1	7/9/01 10:47:23 PM	LC-1_010709A	SDC
Acenaphthylene	344	N	108	µg/Kg-dry	1			
Anthracene	3.60	J	10.8	µg/Kg-dry	1			
Benz(a)anthracene	42.4	N	10.8	µg/Kg-dry	1			
Benzo(a)pyrene	221	N	10.8	µg/Kg-dry	1			
Benzo(b)fluoranthene	72.9	N	10.8	µg/Kg-dry	1			
Benzo(g,h,i)perylene	19.5	J	27.0	µg/Kg-dry	1			
Benzo(k)fluoranthene	115	N	10.8	µg/Kg-dry	1			
Chrysene	94.4	N	10.8	µg/Kg-dry	1			
Dibenz(a,h)anthracene	64.2	N	27.0	µg/Kg-dry	1			
Fluoranthene	250	N	27.0	µg/Kg-dry	1			
Fluorene	192	N	10.8	µg/Kg-dry	1			
Indeno(1,2,3-cd)pyrene	30.4	N	10.8	µg/Kg-dry	1			
Naphthalene	ND		108	µg/Kg-dry	1			
Phenanthrene	36.7	N	10.8	µg/Kg-dry	1			
Pyrene	61.1	N	27.0	µg/Kg-dry	1			
Surr:Terphenyl-d14	55		52 - 123	%REC	1	7/9/01 10:47:23 PM	LC-1_010709A	SDC

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compoun
N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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4493 Walden Avenue
Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

PAH by Method 8310 Test Code: *1_8310_3550B_S* Units: **µg/Kg**

Sample ID: **MB-200101683** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **LC-1_010709A** SeqNo: **378918** Analysis Date: **7/9/01 5:57:33 PM** Prep Batch ID: **200101683** Prep Date: **6/29/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	1-Methylnaphthalene	ND	75.30								
A	2-Methylnaphthalene	ND	75.30								
A	Acenaphthene	ND	75.30								
A	Acenaphthylene	ND	75.30								
A	Anthracene	ND	7.530								
A	Benz(a)anthracene	ND	7.530								
A	Benzo(a)pyrene	2.131	7.530								J
A	Benzo(b)fluoranthene	ND	7.530								
A	Benzo(g,h,i)perylene	ND	18.80								
A	Benzo(k)fluoranthene	ND	7.530								
A	Chrysene	ND	7.530								
A	Dibenz(a,h)anthracene	ND	18.80								
A	Fluoranthene	ND	18.80								
A	Fluorene	ND	7.530								
A	Indeno(1,2,3-cd)pyrene	ND	7.530								
A	Naphthalene	24.26	75.30								J
A	Phenanthrene	ND	7.530								
A	Pyrene	ND	18.80								
S	Terphenyl-d14	699.6	0			74	52	123			

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Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

Ecology and Environment, Inc.

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Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

PAH by Method 8310 Test Code: *1_8310_3550B_S* Units: µg/Kg

Sample ID: **LCS-200101683** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **LC-1_010709A** SeqNo: **378940** Analysis Date: **7/9/01 6:38:57 PM** Prep Batch ID: **200101683** Prep Date: **6/29/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Acenaphthene	810.9	71.30	1337	0	61	23	117			
A	Acenaphthylene	720.8	71.30	1337	0	54	45	92			
A	Anthracene	35.56	7.130	62.39	0	57	51	100			
A	Benz(a)anthracene	103.1	7.130	133.7	0	77	63	107			
A	Benzo(a)pyrene	80.31	7.130	133.7	0	60	54	111			
A	Benzo(b)fluoranthene	106.8	7.130	133.7	0	80	63	110			
A	Benzo(g,h,i)perylene	238.6	17.80	356.5	0	67	54	101			
A	Benzo(k)fluoranthene	108.7	7.130	133.7	0	81	60	106			
A	Chrysene	108.9	7.130	133.7	0	81	63	106			
A	Dibenz(a,h)anthracene	257.5	17.80	356.5	0	72	32	122			
A	Fluoranthene	270.0	17.80	356.5	0	76	63	108			
A	Fluorene	86.46	7.130	133.7	0	65	39	105			
A	Indeno(1,2,3-cd)pyrene	94.23	7.130	133.7	0	70	55	101			
A	Naphthalene	719.4	71.30	1337	0	54	42	99			
A	Phenanthrene	87.01	7.130	133.7	0	65	55	102			
A	Pyrene	263.0	17.80	356.5	0	74	61	105			
S	Terphenyl-d14	740.5	0	891.3	0	83	52	123			

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Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

METALS

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: E and E Washington D.C. Office
Client Sample ID: KWS-SS-OL-1
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Alt. Client ID:
Project: Kenilworth RI/FS
Collection Date: 6/19/01 10:15:00 AM **% Moist:**
Lab ID: 0106169-01A **Sample Type:** SAMP **Matrix:** Soil **est Code:** 1_1311_6010B_L

TCLP METALS ANALYSIS BY METHOD 6010B **Method:** SW1311_6010B **Prep Method:** SW3010A

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
Arsenic	ND		0.300	mg/L	1	7/20/01 5:23:31 PM	OPTIMA3300_010720F	SHT
Barium	1.73		0.0600	mg/L	1	7/23/01 4:39:27 PM	OPTIMA3300_010723C	
Cadmium	0.00990	J	0.0150	mg/L	1	7/20/01 5:23:31 PM	OPTIMA3300_010720F	
Chromium	0.0105	J	0.0300	mg/L	1			
Lead	1.86		0.150	mg/L	1			
Selenium	ND		0.300	mg/L	1	7/23/01 4:39:27 PM	OPTIMA3300_010723C	
Silver	ND		0.0300	mg/L	1	7/20/01 5:23:31 PM	OPTIMA3300_010720F	

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: E and E Washington D.C. Office
Client Sample ID: KWS-SS-OL-2
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Alt. Client ID:
Project: Kenilworth RI/FS
Collection Date: 6/19/01 10:30:00 AM **% Moist:**
Lab ID: 0106169-02A **Sample Type:** SAMP **Matrix:** Soil **est Code:** 1_1311_6010B_L

TCLP METALS ANALYSIS BY METHOD 6010B **Method:** SW1311_6010B **Prep Method:** SW3010A

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
Arsenic	ND		0.300	mg/L	1	7/20/01 5:28:03 PM	OPTIMA3300_010720F	SHT
Barium	2.49		0.0600	mg/L	1	7/23/01 4:43:40 PM	OPTIMA3300_010723C	
Cadmium	0.00414	J	0.0150	mg/L	1	7/20/01 5:28:03 PM	OPTIMA3300_010720F	
Chromium	0.0177	J	0.0300	mg/L	1			
Lead	0.206		0.150	mg/L	1			
Selenium	ND		0.300	mg/L	1	7/23/01 4:43:40 PM	OPTIMA3300_010723C	
Silver	ND		0.0300	mg/L	1	7/20/01 5:28:03 PM	OPTIMA3300_010720F	

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: E and E Washington D.C. Office
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106169-03A **Sample Type:** SAMP **Matrix:** Soil

Client Sample ID: KWS-SS-OL-3
Alt. Client ID:
Collection Date: 6/19/01 11:00:00 AM **% Moist:**
est Code: 1_1311_6010B_L

TCLP METALS ANALYSIS BY METHOD 6010B **Method:** SW1311_6010B **Prep Method:** SW3010A

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
Arsenic	ND		0.300	mg/L	1	7/20/01 5:42:23 PM	OPTIMA3300_010720F	SHT
Barium	0.979		0.0600	mg/L	1	7/24/01 10:15:23 AM	OPTIMA3300_010724B	
Cadmium	ND		0.0150	mg/L	1	7/20/01 5:42:23 PM	OPTIMA3300_010720F	
Chromium	0.00564	J	0.0300	mg/L	1			
Lead	0.0536	J	0.150	mg/L	1			
Selenium	0.0132	J	0.300	mg/L	1	7/24/01 10:15:23 AM	OPTIMA3300_010724B	
Silver	ND		0.0300	mg/L	1	7/20/01 5:42:23 PM	OPTIMA3300_010720F	

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: E and E Washington D.C. Office
Client Sample ID: KWS-SS-OL-4
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Alt. Client ID:
Project: Kenilworth RI/FS
Collection Date: 6/19/01 11:30:00 AM **% Moist:**
Lab ID: 0106169-04A **Sample Type:** SAMP **Matrix:** Soil **est Code:** 1_1311_6010B_L

TCLP METALS ANALYSIS BY METHOD 6010B **Method:** SW1311_6010B **Prep Method:** SW3010A

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
Arsenic	ND		0.300	mg/L	1	7/20/01 5:48:04 PM	OPTIMA3300_010720F	SHT
Barium	3.05		0.0600	mg/L	1	7/24/01 10:21:24 AM	OPTIMA3300_010724B	
Cadmium	ND		0.0150	mg/L	1	7/20/01 5:48:04 PM	OPTIMA3300_010720F	
Chromium	0.0186	J	0.0300	mg/L	1			
Lead	0.0452	J	0.150	mg/L	1			
Selenium	ND		0.300	mg/L	1	7/24/01 10:21:24 AM	OPTIMA3300_010724B	
Silver	ND		0.0300	mg/L	1	7/20/01 5:48:04 PM	OPTIMA3300_010720F	

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: E and E Washington D.C. Office
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106169-05A **Sample Type:** SAMP **Matrix:** Soil

Client Sample ID: KWS-SS-OL-5
Alt. Client ID:
Collection Date: 6/19/01 12:25:00 PM **% Moist:**
est Code: 1_1311_6010B_L

TCLP METALS ANALYSIS BY METHOD 6010B **Method:** SW1311_6010B **Prep Method:** SW3010A

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
Arsenic	ND		0.300	mg/L	1	7/20/01 5:53:48 PM	OPTIMA3300_010720F	SHT
Barium	3.97		0.0600	mg/L	1	7/24/01 10:25:00 AM	OPTIMA3300_010724B	
Cadmium	0.00355	J	0.0150	mg/L	1	7/20/01 5:53:48 PM	OPTIMA3300_010720F	
Chromium	0.0129	J	0.0300	mg/L	1			
Lead	3.04		0.150	mg/L	1			
Selenium	ND		0.300	mg/L	1	7/24/01 10:25:00 AM	OPTIMA3300_010724B	
Silver	ND		0.0300	mg/L	1	7/20/01 5:53:48 PM	OPTIMA3300_010720F	

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: E and E Washington D.C. Office
Client Sample ID: KWS-SS-OL-6
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Alt. Client ID:
Project: Kenilworth RI/FS
Collection Date: 6/19/01 12:25:00 PM **% Moist:**
Lab ID: 0106169-06A **Sample Type:** SAMP **Matrix:** Soil **est Code:** 1_1311_6010B_L

TCLP METALS ANALYSIS BY METHOD 6010B **Method:** SW1311_6010B **Prep Method:** SW3010A

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
Arsenic	ND		0.300	mg/L	1	7/20/01 5:58:20 PM	OPTIMA3300_010720F	SHT
Barium	3.25		0.0600	mg/L	1	7/24/01 10:29:31 AM	OPTIMA3300_010724B	
Cadmium	0.00170	J	0.0150	mg/L	1	7/20/01 5:58:20 PM	OPTIMA3300_010720F	
Chromium	0.0176	J	0.0300	mg/L	1			
Lead	0.272		0.150	mg/L	1			
Selenium	ND		0.300	mg/L	1	7/24/01 10:29:31 AM	OPTIMA3300_010724B	
Silver	ND		0.0300	mg/L	1	7/20/01 5:58:20 PM	OPTIMA3300_010720F	

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: E and E Washington D.C. Office
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106169-13A **Sample Type:** SAMP **Matrix:** Soil

Client Sample ID: KWS-SS-NL-1
Alt. Client ID:
Collection Date: 6/18/01 4:20:00 PM **% Moist:**
est Code: 1_1311_6010B_L

TCLP METALS ANALYSIS BY METHOD 6010B **Method:** SW1311_6010B **Prep Method:** SW3010A

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
Arsenic	ND		0.300	mg/L	1	7/20/01 6:04:04 PM	OPTIMA3300_010720F	SHT
Barium	0.346		0.0600	mg/L	1	7/24/01 10:33:23 AM	OPTIMA3300_010724B	
Cadmium	0.00284	J	0.0150	mg/L	1	7/20/01 6:04:04 PM	OPTIMA3300_010720F	
Chromium	ND		0.0300	mg/L	1			
Lead	0.111	J	0.150	mg/L	1			
Selenium	0.0182	J	0.300	mg/L	1	7/24/01 10:33:23 AM	OPTIMA3300_010724B	
Silver	ND		0.0300	mg/L	1	7/20/01 6:04:04 PM	OPTIMA3300_010720F	

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: E and E Washington D.C. Office
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106169-14A **Sample Type:** SAMP **Matrix:** Soil

Client Sample ID: KWS-SS-NL-2
Alt. Client ID:
Collection Date: 6/18/01 4:50:00 PM **% Moist:**
est Code: 1_1311_6010B_L

TCLP METALS ANALYSIS BY METHOD 6010B

Method: SW1311_6010B **Prep Method:** SW3010A

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
Arsenic	ND		0.300	mg/L	1	7/20/01 6:08:35 PM	OPTIMA3300_010720F	SHT
Barium	0.336		0.0600	mg/L	1	7/24/01 10:37:54 AM	OPTIMA3300_010724B	
Cadmium	ND		0.0150	mg/L	1	7/20/01 6:08:35 PM	OPTIMA3300_010720F	
Chromium	ND		0.0300	mg/L	1			
Lead	0.0200	J	0.150	mg/L	1			
Selenium	ND		0.300	mg/L	1	7/24/01 10:37:54 AM	OPTIMA3300_010724B	
Silver	ND		0.0300	mg/L	1	7/20/01 6:08:35 PM	OPTIMA3300_010720F	

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Phone: (716) 685-8080

Client: E and E Washington D.C. Office
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106169-15A **Sample Type:** SAMP **Matrix:** Soil

Client Sample ID: KWS-SS-NL-3
Alt. Client ID:
Collection Date: 6/18/01 5:00:00 PM **% Moist:**
est Code: 1_1311_6010B_L

TCLP METALS ANALYSIS BY METHOD 6010B **Method:** SW1311_6010B **Prep Method:** SW3010A

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
Arsenic	ND		0.300	mg/L	1	7/20/01 6:13:09 PM	OPTIMA3300_010720F	SHT
Barium	0.379		0.0600	mg/L	1	7/24/01 10:42:26 AM	OPTIMA3300_010724B	
Cadmium	ND		0.0150	mg/L	1	7/20/01 6:13:09 PM	OPTIMA3300_010720F	
Chromium	ND		0.0300	mg/L	1			
Lead	0.0648	J	0.150	mg/L	1			
Selenium	ND		0.300	mg/L	1	7/24/01 10:42:26 AM	OPTIMA3300_010724B	
Silver	ND		0.0300	mg/L	1	7/20/01 6:13:09 PM	OPTIMA3300_010720F	

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

TCLP Metals by ICP Method 6010B Test Code: *1_1311_6010B_L* Units: mg/L

Sample ID: **MB-200101671** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **OPTIMA3300_010720F** SeqNo: **385947** Analysis Date **7/20/01 4:52:35 PM** Prep Batch ID: **200101671** Prep Date: **6/29/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Arsenic	ND	0.3000								
A	Cadmium	ND	0.01500								
A	Chromium	ND	0.03000								
A	Lead	ND	0.1500								
A	Silver	ND	0.03000								

J-504

109

Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

TCLP Metals by ICP Method 6010B Test Code: *1_1311_6010B_L* Units: mg/L

Sample ID: **MB-200101671** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **OPTIMA3300_010723C** SeqNo: **386447** Analysis Date **7/23/01 4:09:14 PM** Prep Batch ID: **200101671** Prep Date: **6/29/01**

Analyte		Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Barium	ND	0.06000								
A	Selenium	ND	0.3000								

J-505

110

Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
TCLP Leachate Blank

TCLP Metals by ICP Method 6010B Test Code: *1_1311_6010B_L* Units: mg/L

Sample ID: **TB-200101593** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **OPTIMA3300_010720F** SeqNo: **385948** Analysis Date **7/20/01 4:57:05 PM** Prep Batch ID: **200101671** Prep Date: **6/29/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Arsenic	ND	0.3000								
A	Cadmium	ND	0.01500								
A	Chromium	ND	0.03000								
A	Lead	ND	0.1500								
A	Silver	ND	0.03000								

J-506

111

Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
TCLP Leachate Blank

TCLP Metals by ICP Method 6010B Test Code: *1_1311_6010B_L* Units: mg/L

Sample ID: **TB-200101593** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **OPTIMA3300_010723C** SeqNo: **386448** Analysis Date **7/23/01 4:13:24 PM** Prep Batch ID: **200101671** Prep Date: **6/29/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Barium	ND	0.06000								
A	Selenium	ND	0.3000								

Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

TCLP Metals by ICP Method 6010B Test Code: *1_1311_6010B_L* Units: mg/L

Sample ID: **LCS-200101671** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **OPTIMA3300_010720F** SeqNo: **385953** Analysis Date **7/20/01 5:19:39 PM** Prep Batch ID: **200101671** Prep Date: **6/29/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Arsenic	5.382	0.3000	5.000	0	108	80	120			
A	Cadmium	1.049	0.01500	1.000	0	105	80	120			
A	Chromium	5.109	0.03000	5.000	0	102	80	120			
A	Lead	5.296	0.1500	5.000	0	106	80	120			
A	Silver	1.108	0.03000	1.000	0	111	80	120			

J-508

113

Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

TCLP Metals by ICP Method 6010B Test Code: *1_1311_6010B_L* Units: mg/L

Sample ID: **LCS-200101671** Client Sample ID: DF: 10 DL_No: 1

Run Batch ID: **OPTIMA3300_010723C** SeqNo: **386453** Analysis Date **7/23/01 4:35:19 PM** Prep Batch ID: **200101671** Prep Date: **6/29/01**

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Barium	57.26	0.6000	50.00	0	115	80	120			
A Selenium	5.427	3.000	5.000	0	109	80	120			

J-509

114

Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

SOIL

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: E and E Washington D.C. Office
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106169-07A **Sample Type:** SAMP **Matrix:** Soil

Client Sample ID: KWS-SS-AR-1
Alt. Client ID:
Collection Date: 6/18/01 11:50:00 AM **% Moist:** 6.62
est Code: 1_6010B_TAL_S

ICP METALS ANALYSIS BY METHOD 6010B **Method:** SW6010B **Prep Method:** SW3050B

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
Aluminum	7740		9.74	mg/Kg-dry	1	8/16/01 6:54:31 PM	OPTIMA_010816E	SHT
Antimony	4.90		0.974	mg/Kg-dry	1			
Arsenic	2.93		0.974	mg/Kg-dry	1			
Barium	38.7		1.95	mg/Kg-dry	1			
Beryllium	0.567		0.487	mg/Kg-dry	1			
Cadmium	ND		0.487	mg/Kg-dry	1			
Calcium	1200		48.7	mg/Kg-dry	1			
Chromium	11.9		0.974	mg/Kg-dry	1			
Cobalt	7.64		1.95	mg/Kg-dry	1			
Copper	17.3		1.95	mg/Kg-dry	1			
Iron	16500		4.87	mg/Kg-dry	1			
Lead	13.0		0.487	mg/Kg-dry	1			
Magnesium	1220		48.7	mg/Kg-dry	1			
Manganese	258		0.974	mg/Kg-dry	1			
Nickel	9.76		1.95	mg/Kg-dry	1			
Potassium	801		97.4	mg/Kg-dry	1	8/23/01 8:27:51 PM	OPTIMA_010823A	
Selenium	ND		0.974	mg/Kg-dry	1	8/16/01 6:54:31 PM	OPTIMA_010816E	
Silver	0.599	J	0.974	mg/Kg-dry	1	8/15/01 10:03:29 AM	OPTIMA_010815B	
Sodium	ND		97.4	mg/Kg-dry	1	8/23/01 8:27:51 PM	OPTIMA_010823A	
Thallium	1.34		0.974	mg/Kg-dry	1	8/16/01 6:54:31 PM	OPTIMA_010816E	
Vanadium	23.9		1.95	mg/Kg-dry	1			
Zinc	44.3		0.974	mg/Kg-dry	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: E and E Washington D.C. Office
Client Sample ID: KWS-SS-AR-2
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Alt. Client ID:
Project: Kenilworth RI/FS
Collection Date: 6/18/01 2:10:00 PM % Moist:24.20
Lab ID: 0106169-08A **Sample Type:** SAMP **Matrix:** Soil **est Code:** 1_6010B_TAL_S

ICP METALS ANALYSIS BY METHOD 6010B **Method:** SW6010B **Prep Method:** SW3050B

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
Aluminum	8860		11.6	mg/Kg-dry	1	8/16/01 6:58:15 PM	OPTIMA_010816E	SHT
Antimony	9.01		1.16	mg/Kg-dry	1			
Arsenic	3.78		1.16	mg/Kg-dry	1			
Barium	108		2.31	mg/Kg-dry	1			
Beryllium	0.515	J	0.579	mg/Kg-dry	1			
Cadmium	1.11		0.579	mg/Kg-dry	1			
Calcium	2730		57.9	mg/Kg-dry	1			
Chromium	25.1		1.16	mg/Kg-dry	1			
Cobalt	9.20		2.31	mg/Kg-dry	1			
Copper	68.5		2.31	mg/Kg-dry	1			
Iron	25200		5.79	mg/Kg-dry	1			
Lead	192		0.579	mg/Kg-dry	1			
Magnesium	1670		57.9	mg/Kg-dry	1			
Manganese	155		1.16	mg/Kg-dry	1			
Nickel	20.0		2.31	mg/Kg-dry	1			
Potassium	839		116	mg/Kg-dry	1	8/23/01 8:30:49 PM	OPTIMA_010823A	
Selenium	ND		1.16	mg/Kg-dry	1	8/16/01 6:58:15 PM	OPTIMA_010816E	
Silver	1.92		1.16	mg/Kg-dry	1	8/15/01 10:07:12 AM	OPTIMA_010815B	
Sodium	ND		116	mg/Kg-dry	1	8/23/01 8:30:49 PM	OPTIMA_010823A	
Thallium	3.10		1.16	mg/Kg-dry	1	8/16/01 6:58:15 PM	OPTIMA_010816E	
Vanadium	54.2		2.31	mg/Kg-dry	1			
Zinc	233		1.16	mg/Kg-dry	1			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: E and E Washington D.C. Office
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106169-09A **Sample Type:** SAMP **Matrix:** Soil

Client Sample ID: KWS-SS-AR-3
Alt. Client ID:
Collection Date: 6/18/01 12:40:00 PM **% Moist:** 15.30
est Code: 1_6010B_TAL_S

ICP METALS ANALYSIS BY METHOD 6010B **Method:** SW6010B **Prep Method:** SW3050B

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
Aluminum	8830		10.2	mg/Kg-dry	1	8/16/01 7:01:51 PM	OPTIMA_010816E	SHT
Antimony	5.30		1.02	mg/Kg-dry	1			
Arsenic	4.12		1.02	mg/Kg-dry	1			
Barium	71.0		2.04	mg/Kg-dry	1			
Beryllium	0.550		0.509	mg/Kg-dry	1			
Cadmium	ND		0.509	mg/Kg-dry	1			
Calcium	948		50.9	mg/Kg-dry	1			
Chromium	14.9		1.02	mg/Kg-dry	1			
Cobalt	9.11		2.04	mg/Kg-dry	1			
Copper	22.8		2.04	mg/Kg-dry	1			
Iron	17300		5.09	mg/Kg-dry	1			
Lead	24.6		0.509	mg/Kg-dry	1			
Magnesium	1450		50.9	mg/Kg-dry	1			
Manganese	770		1.02	mg/Kg-dry	1			
Nickel	10.7		2.04	mg/Kg-dry	1			
Potassium	1100		102	mg/Kg-dry	1	8/23/01 8:33:47 PM	OPTIMA_010823A	
Selenium	ND		1.02	mg/Kg-dry	1	8/16/01 7:01:51 PM	OPTIMA_010816E	
Silver	0.992	J	1.02	mg/Kg-dry	1	8/15/01 10:10:52 AM	OPTIMA_010815B	
Sodium	ND		102	mg/Kg-dry	1	8/23/01 8:33:47 PM	OPTIMA_010823A	
Thallium	ND		1.02	mg/Kg-dry	1	8/16/01 7:01:51 PM	OPTIMA_010816E	
Vanadium	27.2		2.04	mg/Kg-dry	1			
Zinc	65.3		1.02	mg/Kg-dry	1			

Definitions:
ND - Not Detected at the Reporting Limit
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B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: E and E Washington D.C. Office
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106169-10A **Sample Type:** SAMP **Matrix:** Soil

Client Sample ID: KWS-SS-AR-4
Alt. Client ID:
Collection Date: 6/18/01 2:40:00 PM **% Moist:**21.40
est Code: 1_6010B_TAL_S

ICP METALS ANALYSIS BY METHOD 6010B **Method:** SW6010B **Prep Method:** SW3050B

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
Aluminum	31800		55.8	mg/Kg-dry	5	8/16/01 7:05:27 PM	OPTIMA_010816E	SHT
Antimony	34.2		1.12	mg/Kg-dry	1	8/15/01 10:14:32 AM	OPTIMA_010815B	
Arsenic	4.89	J	5.58	mg/Kg-dry	5	8/16/01 7:05:27 PM	OPTIMA_010816E	
Barium	1020		11.2	mg/Kg-dry	5			
Beryllium	0.635		0.558	mg/Kg-dry	1	8/15/01 10:14:32 AM	OPTIMA_010815B	
Cadmium	6.64		2.79	mg/Kg-dry	5	8/16/01 7:05:27 PM	OPTIMA_010816E	
Calcium	30900		279	mg/Kg-dry	5			
Chromium	59.7		1.12	mg/Kg-dry	1	8/15/01 10:14:32 AM	OPTIMA_010815B	
Cobalt	15.1		2.23	mg/Kg-dry	1			
Copper	918		11.2	mg/Kg-dry	5	8/16/01 7:05:27 PM	OPTIMA_010816E	
Iron	81700		27.9	mg/Kg-dry	5			
Lead	2800		2.79	mg/Kg-dry	5			
Magnesium	6010		55.8	mg/Kg-dry	1	8/15/01 10:14:32 AM	OPTIMA_010815B	
Manganese	722		5.58	mg/Kg-dry	5	8/16/01 7:05:27 PM	OPTIMA_010816E	
Nickel	232		11.2	mg/Kg-dry	5			
Potassium	1870		112	mg/Kg-dry	1	8/23/01 8:36:45 PM	OPTIMA_010823A	
Selenium	ND		1.12	mg/Kg-dry	1	8/15/01 10:14:32 AM	OPTIMA_010815B	
Silver	13.2		1.12	mg/Kg-dry	1			
Sodium	8480		112	mg/Kg-dry	1	8/23/01 8:36:45 PM	OPTIMA_010823A	
Thallium	3.12		1.12	mg/Kg-dry	1	8/15/01 10:14:32 AM	OPTIMA_010815B	
Vanadium	662		11.2	mg/Kg-dry	5	8/16/01 7:05:27 PM	OPTIMA_010816E	
Zinc	2990		5.58	mg/Kg-dry	5			

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
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R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: E and E Washington D.C. Office
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106169-11A **Sample Type:** SAMP **Matrix:** Soil

Client Sample ID: KWS-SS-AR-5
Alt. Client ID: -
Collection Date: 6/18/01 3:40:00 PM **% Moist:** 18.30
est Code: 1_6010B_TAL_S

ICP METALS ANALYSIS BY METHOD 6010B **Method:** SW6010B **Prep Method:** SW3050B

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
Aluminum	20000		53.7	mg/Kg-dry	5	8/16/01 7:09:05 PM	OPTIMA_010816E	SHT
Antimony	32.1		1.07	mg/Kg-dry	1	8/15/01 10:18:23 AM	OPTIMA_010815B	
Arsenic	ND		5.37	mg/Kg-dry	5	8/16/01 7:09:05 PM	OPTIMA_010816E	
Barium	540		10.7	mg/Kg-dry	5			
Beryllium	0.200	J	0.537	mg/Kg-dry	1	8/15/01 10:18:23 AM	OPTIMA_010815B	
Cadmium	6.84		2.68	mg/Kg-dry	5	8/16/01 7:09:05 PM	OPTIMA_010816E	
Calcium	6850		268	mg/Kg-dry	5			
Chromium	51.7		1.07	mg/Kg-dry	1	8/15/01 10:18:23 AM	OPTIMA_010815B	
Cobalt	13.5		2.15	mg/Kg-dry	1			
Copper	416		10.7	mg/Kg-dry	5	8/16/01 7:09:05 PM	OPTIMA_010816E	
Iron	83700		26.8	mg/Kg-dry	5			
Lead	6960		2.68	mg/Kg-dry	5			
Magnesium	1170		53.7	mg/Kg-dry	1	8/15/01 10:18:23 AM	OPTIMA_010815B	
Manganese	813		5.37	mg/Kg-dry	5	8/16/01 7:09:05 PM	OPTIMA_010816E	
Nickel	67.8		10.7	mg/Kg-dry	5			
Potassium	818		107	mg/Kg-dry	1	8/23/01 8:39:45 PM	OPTIMA_010823A	
Selenium	ND		1.07	mg/Kg-dry	1	8/15/01 10:18:23 AM	OPTIMA_010815B	
Silver	95.0		1.07	mg/Kg-dry	1			
Sodium	1800		107	mg/Kg-dry	1	8/23/01 8:39:45 PM	OPTIMA_010823A	
Thallium	7.10		1.07	mg/Kg-dry	1	8/15/01 10:18:23 AM	OPTIMA_010815B	
Vanadium	125		10.7	mg/Kg-dry	5	8/16/01 7:09:05 PM	OPTIMA_010816E	
Zinc	1350		5.37	mg/Kg-dry	5			

Definitions:
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J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

Client: E and E Washington D.C. Office
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106169-12A **Sample Type:** SAMP **Matrix:** Soil

Client Sample ID: KWS-SS-AR-6
Alt. Client ID:
Collection Date: 6/18/01 3:00:00 PM **% Moist:**27.30
est Code: 1_6010B_TAL_S

ICP METALS ANALYSIS BY METHOD 6010B **Method:** SW6010B **Prep Method:** SW3050B

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
Aluminum	27000		13.8	mg/Kg-dry	1	8/16/01 7:19:46 PM	OPTIMA_010816E	SHT
Antimony	39.2		1.38	mg/Kg-dry	1			
Arsenic	ND		6.88	mg/Kg-dry	5	8/17/01 3:57:08 PM	OPTIMA_010817D	
Barium	738		2.75	mg/Kg-dry	1	8/16/01 7:19:46 PM	OPTIMA_010816E	
Beryllium	ND		0.688	mg/Kg-dry	1			
Cadmium	7.16		3.44	mg/Kg-dry	5	8/17/01 3:57:08 PM	OPTIMA_010817D	
Calcium	6390		68.8	mg/Kg-dry	1	8/16/01 7:19:46 PM	OPTIMA_010816E	
Chromium	54.5		1.38	mg/Kg-dry	1			
Cobalt	15.5		2.75	mg/Kg-dry	1			
Copper	715		2.75	mg/Kg-dry	1			
Iron	108000		34.4	mg/Kg-dry	5	8/17/01 3:57:08 PM	OPTIMA_010817D	
Lead	1230		3.44	mg/Kg-dry	5			
Magnesium	1390		68.8	mg/Kg-dry	1	8/16/01 7:19:46 PM	OPTIMA_010816E	
Manganese	967		1.38	mg/Kg-dry	1			
Nickel	80.4		2.75	mg/Kg-dry	1			
Potassium	714		138	mg/Kg-dry	1	8/23/01 8:48:23 PM	OPTIMA_010823A	
Selenium	ND		1.38	mg/Kg-dry	1	8/16/01 7:19:46 PM	OPTIMA_010816E	
Silver	110		1.38	mg/Kg-dry	1			
Sodium	997		138	mg/Kg-dry	1	8/23/01 8:48:23 PM	OPTIMA_010823A	
Thallium	9.07		1.38	mg/Kg-dry	1	8/16/01 7:19:46 PM	OPTIMA_010816E	
Vanadium	246		13.8	mg/Kg-dry	5	8/17/01 3:57:08 PM	OPTIMA_010817D	
Zinc	1380		6.88	mg/Kg-dry	5			

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* - Recovery outside limits
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Q - Qualifier A -Result by Method of Std. Addition
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Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

Metals, TAL by ICP Method 6010B Test Code: *1_6010B_TAL_S* Units: mg/Kg

Sample ID: **MB-200101705** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **OPTIMA_010816E** SeqNo: **398152** Analysis Date **8/16/01 5:55:34 PM** Prep Batch ID: **200101705** Prep Date: **7/3/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Aluminum	6.521	10.00								J
A	Antimony	ND	1.000								
A	Arsenic	0.3351	1.000								J
A	Barium	ND	2.000								
A	Beryllium	ND	0.5000								
A	Cadmium	ND	0.5000								
A	Calcium	ND	50.00								
A	Chromium	ND	1.000								
A	Cobalt	ND	2.000								
A	Copper	ND	2.000								
A	Iron	3.413	5.000								J
A	Lead	ND	0.5000								
A	Magnesium	ND	50.00								
A	Manganese	ND	1.000								
A	Nickel	ND	2.000								
A	Selenium	ND	1.000								
A	Thallium	ND	1.000								
A	Vanadium	ND	2.000								
A	Zinc	ND	1.000								

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Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

Ecology and Environment, Inc.
Analytical Services Center
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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

Metals, TAL by ICP Method 6010B Test Code: *1_6010B_TAL_S* Units: mg/Kg

Sample ID: **MB-200101705** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: OPTIMA_010823A SeqNo: 401771 Analysis Date 8/23/01 8:22:02 PM Prep Batch ID: 200101705 Prep Date: 7/3/01

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Potassium	ND	100.0								
A	Sodium	ND	100.0								

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J-520

Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

Metals, TAL by ICP Method 6010B Test Code: *1_6010B_TAL_S* Units: mg/Kg

Sample ID: **MB-200101705** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **OPTIMA_010815B** SeqNo: **397151** Analysis Date **8/15/01 9:03:34 AM** Prep Batch ID: **200101705** Prep Date: **7/3/01**

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Silver	ND	1.000								

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Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

Metals, TAL by ICP Method 6010B Test Code: *1_6010B_TAL_S* Units: mg/Kg

Sample ID: **LCS-200101705** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **OPTIMA_010816E** SeqNo: **398153** Analysis Date **8/16/01 5:59:05 PM** Prep Batch ID: **200101705** Prep Date: **7/3/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Aluminum	102.5	10.00	100.0	0	103	80	120			
A	Antimony	93.06	1.000	100.0	0	93	80	120			
A	Arsenic	101.5	1.000	100.0	0	102	80	120			
A	Barium	99.73	2.000	100.0	0	100	80	120			
A	Beryllium	95.64	0.5000	100.0	0	96	80	120			
A	Cadmium	96.20	0.5000	100.0	0	96	80	120			
A	Calcium	1089	50.00	1000	0	109	80	120			
A	Chromium	98.27	1.000	100.0	0	98	80	120			
A	Cobalt	98.27	2.000	100.0	0	98	80	120			
A	Copper	96.24	2.000	100.0	0	96	80	120			
A	Iron	100.4	5.000	100.0	0	100	80	120			
A	Lead	96.84	0.5000	100.0	0	97	80	120			
A	Magnesium	968.9	50.00	1000	0	97	80	120			
A	Manganese	99.70	1.000	100.0	0	100	80	120			
A	Nickel	97.77	2.000	100.0	0	98	80	120			
A	Selenium	91.27	1.000	100.0	0	91	80	120			
A	Thallium	96.46	1.000	100.0	0	96	80	120			
A	Vanadium	95.20	2.000	100.0	0	95	80	120			
A	Zinc	95.87	1.000	100.0	0	96	80	120			

Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

Metals, TAL by ICP Method 6010B Test Code: *1_6010B_TAL_S* Units: mg/Kg

Sample ID: **LCS-200101705** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **OPTIMA_010823A** SeqNo: **401772** Analysis Date **8/23/01 8:24:53 PM** Prep Batch ID: **200101705** Prep Date: **7/3/01**

	Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A	Potassium	842.5	100.0	1000	0	84	80	120			
A	Sodium	1001	100.0	1000	0	100	80	120			

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Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

Metals, TAL by ICP Method 6010B

Test Code: *1_6010B_TAL_S* Units: mg/Kg

Sample ID: **LCS-200101705** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **OPTIMA_010815B** SeqNo: **397152** Analysis Date **8/15/01 9:07:08 AM** Prep Batch ID: **200101705** Prep Date: **7/3/01**

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Silver	4.249	1.000	5.000	0	85	80	120			

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J-524

Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

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4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

YS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT

Sample Matrix Spike

Metals, TAL by ICP Method 6010B Test Code: *1_6010B_TAL_S* Units: **mg/Kg-dry**

Sample ID: **0106169-12AS**

Run Batch ID: **OPTIMA_010816E** SeqNo: **398176** Analysis Date **8/16/01 7:23:33 PM** Prep Batch ID: **200101705** Prep Date: **7/3/01**

	Analyte	Result	PQL	SPK Added	Orig Result	%REC	%RPD
A	Aluminum	25630	13.80	137.6	27000	-996	
A	Antimony	109.0	1.380	137.6	39.24	51	
A	Barium	735.6	2.750	137.6	737.8	-2	
A	Beryllium	130.7	0.6880	137.6	0	95	
A	Calcium	8750	68.80	1376	6386	172	
A	Chromium	189.8	1.380	137.6	54.54	98	
A	Cobalt	145.2	2.750	137.6	15.49	94	
A	Copper	668.8	2.750	137.6	714.8	-33	
A	Magnesium	2918	68.80	1376	1385	111	
A	Manganese	1059	1.380	137.6	967.5	66	
A	Nickel	208.0	2.750	137.6	80.41	93	
A	Selenium	101.4	1.380	137.6	0	74	
A	Silver	97.48	1.380	6.878	110.2	-185	
A	Thallium	129.6	1.380	137.6	9.071	88	

128

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated; E - Result exceeds Highest Calibration Standard

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Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

YS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Sample Matrix Spike

Metals, TAL by ICP Method 6010B

Test Code: *1_6010B_TAL_S* Units: mg/Kg-dry

Sample ID: **0106169-12AS**

Run Batch ID: OPTIMA_010823A SeqNo: 401781 Analysis Date 8/23/01 8:51:14 PM Prep Batch ID: 200101705 Prep Date: 7/3/01

	Analyte	Result	PQL	SPK Added	Orig Result	%REC	%RPD
A	Potassium	2615	138.0	1376	713.7	138	
A	Sodium	3172	138.0	1376	997.4	158	

Metals, TAL by ICP Method 6010B

Test Code: *1_6010B_TAL_S* Units: mg/Kg-dry

Sample ID: **0106169-12AS**

Run Batch ID: OPTIMA_010817D SeqNo: 398812 Analysis Date 8/17/01 4:00:47 PM Prep Batch ID: 200101705 Prep Date: 7/3/01

	Analyte	Result	PQL	SPK Added	Orig Result	%REC	%RPD
A	Arsenic	127.1	6.880	137.6	0	92	
A	Cadmium	144.7	3.440	137.6	7.158	100	
A	Iron	87050	34.40	137.6	108500	-15595	
A	Lead	1469	3.440	137.6	1228	175	
A	Vanadium	274.8	13.80	137.6	246.1	21	
A	Zinc	1548	6.880	137.6	1378	124	

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below reporting limits
1 - Represents RSD Limit for Quad Analysis
* - LCS Recovery outside limits
B - Analyte detected in the associated Method Blank
NC - Not Calculated
M - Matrix Spike Recovery outside limits
E - Result exceeds Highest Calibration Standard
RL -Reporting Limit
R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)

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Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Sample Matrix Spike Duplicate

Metals, TAL by ICP Method 6010B Test Code: *1_6010B_TAL_S* Units: mg/Kg-dry

Sample ID: **0106169-12AS1**

Run Batch ID: **OPTIMA_010816E** SeqNo: **398177** Analysis Date **8/16/01 7:27:17 PM** Prep Batch ID: **200101705** Prep Date: **7/3/01**

	Analyte	Result	PQL	SPK Added	Orig Result	%REC	%RPD
A	Aluminum	20460	13.80	137.6	27000	-4755	130.8
A	Antimony	111.6	1.380	137.6	39.24	53	3.7
A	Barium	717.6	2.750	137.6	737.8	-15	160.5
A	Beryllium	129.2	0.6880	137.6	0	94	1.1
A	Calcium	12780	68.80	1376	6386	464	92.0
A	Chromium	181.8	1.380	137.6	54.54	92	6.1
A	Cobalt	141.7	2.750	137.6	15.49	92	2.8
A	Copper	568.6	2.750	137.6	714.8	-106	104.4
A	Magnesium	2627	68.80	1376	1385	90	21.0
A	Manganese	897.5	1.380	137.6	967.5	-51	1522.6
A	Nickel	239.2	2.750	137.6	80.41	115	21.8
A	Selenium	106.0	1.380	137.6	0	77	4.5
A	Silver	62.82	1.380	6.878	110.2	-689	115.3
A	Thallium	130.2	1.380	137.6	9.071	88	0.5

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Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated; E - Result exceeds Highest Calibration Standard

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Laboratory Results

YS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Sample Matrix Spike Duplicate

Metals, TAL by ICP Method 6010B Test Code: *1_6010B_TAL_S* Units: mg/Kg-dry
Sample ID: **0106169-12AS1**
Run Batch ID: **OPTIMA_010823A** SeqNo: **401782** Analysis Date **8/23/01 8:54:07 PM** Prep Batch ID: **200101705** Prep Date: **7/3/01**

	Analyte	Result	PQL	SPK Added	Orig Result	%REC	%RPD
A	Potassium	2294	138.0	1376	713.7	115	18.4
A	Sodium	2686	138.0	1376	997.4	123	25.2

Metals, TAL by ICP Method 6010B Test Code: *1_6010B_TAL_S* Units: mg/Kg-dry
Sample ID: **0106169-12AS1**
Run Batch ID: **OPTIMA_010817D** SeqNo: **398813** Analysis Date **8/17/01 4:04:29 PM** Prep Batch ID: **200101705** Prep Date: **7/3/01**

	Analyte	Result	PQL	SPK Added	Orig Result	%REC	%RPD
A	Arsenic	135.1	6.880	137.6	0	98	6.1
A	Cadmium	143.3	3.440	137.6	7.158	99	1.0
A	Iron	88190	34.40	137.6	108500	-14763	5.5
A	Lead	1195	3.440	137.6	1228	-24	262.4
A	Vanadium	244.6	13.80	137.6	246.1	-1	221.6
A	Zinc	1278	6.880	137.6	1378	-73	765.3

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Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated; E - Result exceeds Highest Calibration Standard

MERCURY

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	KWS-SS-OL-1
Lab Order:	0106169 CPID: 001096.GT05.01..	Alt. Client ID:	
Project:	Kenilworth RI/FS	Collection Date:	6/19/01 10:15:00 AM
Lab ID:	0106169-01A Sample Type: SAMP	Matrix:	SOIL % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP MERCURY ANALYSIS IN WATER BY METHOD 7470A 1_1311_7470A_L								
Mercury	ND		0.0200	mg/L	1	7/6/01 3:19:10 PM	LEEMAN_010706A	JLW

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SS-OL-2
Lab Order:	0106169 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/19/01 10:30:00 AM
Lab ID:	**0106169-02A** **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP MERCURY ANALYSIS IN WATER BY METHOD 7470A 1_1311_7470A_L								
Mercury	ND		0.0200	mg/L	1	7/6/01 3:20:34 PM	LEEMAN_010706A	JLW

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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CLIENT:	E and E Washington D.C. Office	Client Sample ID:	KWS-SS-OL-3
Lab Order:	0106169 CPID: 001096.GT05.01..	Alt. Client ID:	
Project:	Kenilworth RI/FS	Collection Date:	6/19/01 11:00:00 AM
Lab ID:	0106169-03A Sample Type: SAMP	Matrix:	SOIL % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP MERCURY ANALYSIS IN WATER BY METHOD 7470A 1_1311_7470A_L								
Mercury	ND		0.0200	mg/L	1	7/6/01 3:21:53 PM	LEEMAN_010706A	JLW

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106169-04A **Sample Type:** SAMP

Client Sample ID: KWS-SS-OL-4
Alt. Client ID:
Collection Date: 6/19/01 11:30:00 AM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP MERCURY ANALYSIS IN WATER BY METHOD 7470A 1_1311_7470A_L								
Mercury	ND		0.0200	mg/L	1	7/6/01 3:23:06 PM	LEEMAN_010706A	JLW

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SS-OL-5
Lab Order:	0106169 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/19/01 12:25:00 PM
Lab ID:	0106169-05A **Sample Type:** SAMP	**Matrix:**	SOIL **%. Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP MERCURY ANALYSIS IN WATER BY METHOD 7470A								
1_1311_7470A_L								
Mercury	ND		0.0200	mg/L	1	7/6/01 3:24:43 PM	LEEMAN_010706A	JLW

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SS-OL-6
Lab Order:	0106169 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/19/01 12:25:00 PM
Lab ID:	0106169-06A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP MERCURY ANALYSIS IN WATER BY METHOD 7470A 1_1311_7470A_L								
Mercury	ND		0.0200	mg/L	1	7/6/01 3:26:16 PM	LEEMAN_010706A	JLW

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106169-13A **Sample Type:** SAMP

Client Sample ID: KWS-SS-NL-1
Alt. Client ID:
Collection Date: 6/18/01 4:20:00 PM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP MERCURY ANALYSIS IN WATER BY METHOD 7470A 1_1311_7470A_L								
Mercury	ND		0.0200	mg/L	1	7/6/01 3:27:29 PM	LEEMAN_010706A	JLW

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106169-14A **Sample Type:** SAMP

Client Sample ID: KWS-SS-NL-2
Alt. Client ID:
Collection Date: 6/18/01 4:50:00 PM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP MERCURY ANALYSIS IN WATER BY METHOD 7470A 1_1311_7470A_L								
Mercury	ND		0.0200	mg/L	1	7/6/01 3:28:44 PM	LEEMAN_010706A	JLW

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analyst

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LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Laboratory Results

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Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SS-NL-3
Lab Order:	0106169 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/18/01 5:00:00 PM
Lab ID:	0106169-15A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
TCLP MERCURY ANALYSIS IN WATER BY METHOD 7470A 1_1311_7470A_L								
Mercury	ND		0.0200	mg/L	1	7/6/01 3:33:17 PM	LEEMAN_010706A	JLW

Definitions:

ND - Not Detected at the Reporting Limit	* - Recovery outside limits	M -Matrix Spike recovery outside limits
J - Analyte detected below Reporting limits	R - RPD outside recovery limits	Q - Qualifier A -Result by Method of Std. Addition
B - Analyte detected in the associated Method Blank	E - Value above quantitation range	D - Diluted due to matrix or extended target compounds
H - Value exceeds Maximum Contaminant Level	Surr - Denotes Surrogate Compound	N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

TCLP Mercury by Method 7470A

Test Code: *1_1311_7470A_L* Units: mg/L

Sample ID: **MB-200101719** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **LEEMAN_010706A** SeqNo: **377999** Analysis Date: **7/6/01 3:16:30 PM** Prep Batch ID: **200101719** Prep Date: **7/5/01**

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Mercury	ND	0.02000								

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J-540

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
TCLP Leachate Blank

TCLP Mercury by Method 7470A Test Code: *1_1311_7470A_L* Units: mg/L

Sample ID: **TB0-200101593** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: LEEMAN_010706A SeqNo: **378019** Analysis Date: **7/6/01 3:43:49 PM** Prep Batch ID: **200101719** Prep Date: **7/6/01**

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Mercury	ND	0.02000								

J-541

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Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

TCLP Mercury by Method 7470A Test Code: *1_1311_7470A_L* Units: mg/L

Sample ID: **LCS-200101719** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **LEEMAN_010706A** SeqNo: **378000** Analysis Date: **7/6/01 3:17:46 PM** Prep Batch ID: **200101719** Prep Date: **7/5/01**

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Mercury	0.02086	0.02000	0.02500	0	83	80	120			

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J-542

Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

SOIL

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Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106169-07A **Sample Type:** SAMP

Client Sample ID: KWS-SS-AR-1
Alt. Client ID:
Collection Date: 6/18/01 11:50:00 AM
Matrix: SOIL **% Moist:** 6.62

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.0851		0.0487	mg/Kg-dry	1	7/11/01 11:16:44 AM	LEEMAN_010711C	JLW

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	KWS-SS-AR-2
Lab Order:	0106169 CPID: 001096.GT05.01..	Alt. Client ID:	
Project:	Kenilworth RI/FS	Collection Date:	6/18/01 2:10:00 PM
Lab ID:	0106169-08A Sample Type: SAMP	Matrix:	SOIL % Moist: 24.20

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.348		0.0660	mg/Kg-dry	1	7/11/01 11:18:17 AM	LEEMAN_010711C	JLW

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106169-09A **Sample Type:** SAMP

Client Sample ID: KWS-SS-AR-3
Alt. Client ID:
Collection Date: 6/18/01 12:40:00 PM
Matrix: SOIL **% Moist:** 15.30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.145		0.0492	mg/Kg-dry	1	7/11/01 11:20:20 AM	LEEMAN_010711C	JLW

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	Client Sample ID:	KWS-SS-AR-4
Lab Order:	0106169 CPID: 001096.GT05.01..	Alt. Client ID:	
Project:	Kenilworth RI/FS	Collection Date:	6/18/01 2:40:00 PM
Lab ID:	0106169-10A Sample Type: SAMP	Matrix:	SOIL % Moist: 21.40

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.0701		0.0530	mg/Kg-dry	1	7/11/01 11:21:49 AM	LEEMAN_010711C	JLW

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106169-11A **Sample Type:** SAMP

Client Sample ID: KWS-SS-AR-5
Alt. Client ID:
Collection Date: 6/18/01 3:40:00 PM
Matrix: SOIL **% Moist:** 18.30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A								
1_7471A_HG_S								
Mercury	0.664		0.0574	mg/Kg-dry	1	7/11/01 11:23:02 AM	LEEMAN_010711C	JLW

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Ecology and Environment, Inc.

Laboratory Results

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SS-AR-6
Lab Order:	0106169 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/18/01 3:00:00 PM
Lab ID:	0106169-12A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:** 27.30

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
MERCURY ANALYSIS IN SOIL BY METHOD 7471A 1_7471A_HG_S								
Mercury	0.586		0.0625	mg/Kg-dry	1	7/11/01 11:25:16 AM	LEEMAN_010711C	JLW

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 7/6/01 2:00:00 PM

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Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Method Blank

Mercury Analysis in Soil by Method 7471A Test Code: *1_7471A_HG_S* Units: mg/Kg

Sample ID: **MB-200101748** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **LEEMAN_010711C** SeqNo: **380590** Analysis Date **7/11/01 11:14:14 AM** Prep Batch ID: **200101748** Prep Date: **7/10/01**

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Mercury	ND	0.05000								

J-551

152

Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

Ecology and Environment, Inc.
Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT
Laboratory Control Spike

Mercury Analysis in Soil by Method 7471A Test Code: *1_7471A_HG_S* Units: mg/Kg

Sample ID: **LCS-200101748** Client Sample ID: DF: 1 DL_No: 1

Run Batch ID: **LEEMAN_010711C** SeqNo: **380591** Analysis Date **7/11/01 11:15:30 AM** Prep Batch ID: **200101748** Prep Date: **7/10/01**

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Mercury	0.3240	0.05000	0.3330	0	97	68	151			

J-552

153

Definitions: ND - Not Detected at the Reporting Limit * - LCS Recovery outside limits M - Matrix Spike Recovery outside limits P -Post Spike Recovery outside limits RL -Reporting Limit
J - Analyte detected below reporting limits B - Analyte detected in the associated Method Blank E - Result exceeds Highest Calibration Standard R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable)
1 - Represents RSD Limit for Quad Analysis NC - Not Calculated for values < RL D - Diluted due to matrix or extended target compounds

GENERAL ANALYTICAL CHEMISTRY

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Ecology and Environment, Inc.

Analytical Services Center
4493 Walden Avenue
Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106169-07A **Sample Type:** SAMP

Client Sample ID: KWS-SS-AR-1
Alt. Client ID:
Collection Date: 6/18/01 11:50:00 AM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	6.62		0.100	wt%	1	6/26/01	OHAUS_PMOIST_010626A	AC

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M -Matrix Spike recovery outside limits
Q - Qualifier
A -Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 6/28/01 6:00:00 PM

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Analytical Services Center
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Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SS-AR-2
Lab Order:	0106169 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/18/01 2:10:00 PM
Lab ID:	0106169-08A **Sample Type:** SAMP	**Matrix:**	SOIL % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	24.2		0.100	wt%	1	6/26/01	OHAUS_PMOIST_010626A	AO

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M - Matrix Spike recovery outside limits
Q - Qualifier A - Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 6/28/01 6:00:00 PM

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Laboratory Results

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Lancaster, New York 14086-

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT:	E and E Washington D.C. Office	**Client Sample ID:**	KWS-SS-AR-3
Lab Order:	0106169 **CPID:** 001096.GT05.01..	**Alt. Client ID:**	
Project:	Kenilworth RI/FS	**Collection Date:**	6/18/01 12:40:00 PM
Lab ID:	0106169-09A **Sample Type:** SAMP	**Matrix:**	SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	15.3		0.100	wt%	1	6/26/01	OHAUS_PMOIST_010626A	AO

Definitions:

ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M - Matrix Spike recovery outside limits.
Q - Qualifier
A - Result by Method of Std Addition
D - Diluted due to matrix or extended target compounds
N - Single Column Analysis

LIMS Version #: 3.1.1.9 - 6/28/01 6:00:00 PM

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Laboratory Results

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Lancaster, New York 14086-

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Client Sample ID: KWS-SS-AR-4
Lab Order: 0106169 CPID: 001096.GT05.01..
Alt. Client ID:
Project: Kenilworth RI/FS
Collection Date: 6/18/01 2:40:00 PM
Lab ID: 0106169-10A Sample Type: SAMP
Matrix: SOIL % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	21.4		0.100	wt%	1	6/26/01	OHAUS_PMOIST_010626A	AO

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
Ma - Matrix Spike recovery outside limits
Q - Qualifier
A - Result by Method of Std. Addition
D - Diluted due to matrix or extended target compounds
Sc - Single Column Analysis

Ecology and Environment, Inc.

Laboratory Results

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NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Client Sample ID: KWS-SS-AR-5
Lab Order: 0106169 CPID: 001096.GT05.01..
Alt. Client ID:
Project: Kenilworth RI/FS
Collection Date: 6/18/01 3:40:00 PM
Lab ID: 0106169-11A Sample Type: SAMP
Matrix: SOIL % Moist:

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	18.3		0.100	Wt%	1	6/26/01	OHAUS_PMOIST_010626A	AO

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M - Matrix Spike recovery outside limits
Q - Qualifier
D - Diluted due to matrix or excluded target compounds
A - Result by Method of Std. Addition
N - Single Column Analysis

Ecology and Environment, Inc.

Analytical Services Center
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Lancaster, New York 14086-

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Lab Order: 0106169 **CPID:** 001096.GT05.01..
Project: Kenilworth RI/FS
Lab ID: 0106169-12A **Sample Type:** SAMP

Client Sample ID: KWS-SS-AR-4
Alt. Client ID:
Collection Date: 6/18/01 3:00:00 PM
Matrix: SOIL **% Moist:**

Analyte	Result	Q	Limit	Units	DF	Date Analyzed	Run Batch ID	Analyst
PERCENT MOISTURE								
PMOIST								
Percent Moisture	27.3		0.100	wt%	1	6/26/01	OHAUS PMOIST 010626A	AO

Definitions:
ND - Not Detected at the Reporting Limit
J - Analyte detected below Reporting limits
B - Analyte detected in the associated Method Blank
H - Value exceeds Maximum Contaminant Level
* - Recovery outside limits
R - RPD outside recovery limits
E - Value above quantitation range
Surr - Denotes Surrogate Compound
M - Matrix Spike recovery outside limits
Q - Qualifier
A - Result by Method of Std. Addition
D - Diluted due to matrix or extended target
N - Single Column Analysis

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LIMS Version #: 3.1.1.9 - 6/28/01 6:00:00 PM

Ecology and Environment, Inc.

Analytical Services Center
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Lancaster, New York 14086

Laboratory Results

NYS ELAP ID#: 10486
Phone: (716) 685-8080

CLIENT: E and E Washington D.C. Office
Work Order: 0106169
Project: Kenilworth RI/FS

QC SUMMARY REPORT

Sample Duplicate

Percent Moisture Test Code: *PMOIST* Units: wt%

Sample ID: **0106169-12A** Client Sample ID: **KWS-SS-AR-6** DF: 1 DL_No: 1

Run Batch ID: OHAUS_PMOIST_010626A SeqNo: 372344 Analysis Date 6/26/01 Prep Batch ID: 010626170r Prep Date: 6/26/01

Analyte	Result	RL	Spike Value	Orig Result	%REC	LowLimit	HighLimit	%RPD	RPDLimit [1]	Qual
A Percent Moisture	22.22	0.1000		27.33				20.6	35	

Definitions: ND - Not Detected at the Reporting Limit; * - LCS Recovery outside limits; M - Matrix Spike Recovery outside limits; P -Post Spike Recovery outside limits; RL -Reporting Limit; J - Analyte detected below reporting limits; B - Analyte detected in the associated Method Blank; E - Result exceeds Highest Calibration Standard; R - RPD outside recovery limits (for Samp/Duplicates < 5X RL Difference <2X RL is Acceptable); 1 - Represents RSD Limit for Quad Analysis; NC - Not Calculated for values < RL; D - Diluted due to matrix or extended target compounds

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Supplemental Sampling Analytical Results

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SEVERN TRENT STL

STL Chicago
2417 Bond Street
University Park, IL 60466

Tel: 708 534 5200 Fax: 708 534 5211
www.stl-inc.com

SEVERN TRENT LABORATORIES ANALYTICAL REPORT

JOB NUMBER: 238871

Prepared For:

Ecology & Environment
1700 N. Moore St.
Suite 1610
Arlington, VA 22209

Project: NPS - Kenilworth

Attention: Leslie Fischbeck

Date: 08/24/2005

Signature

Name: Richard C. Wright

Title: Project Manager

E-Mail: rwright@stl-inc.com

9/24/05
Date

STL Chicago
2417 Bond Street
University Park, IL 60466

PHONE: (708) 534-5200
FAX..: (708) 534-5211

This Report Contains (98) Pages

Severn Trent Laboratories - Chicago
METALS CASE NARRATIVE

Client: Ecology & Environment
Project: NPS - Kenilworth
STL#: 238871

Date Rec'd: 08/03/05

1. This narrative covers Metals analysis of samples in the above Job 238871.

   Method Refs: USEPA, SW-846

2. All analyses were performed within the required holding times.

3. All Initial and Continuing Calibration Verification (ICV/CCV's) were within control limits.

4. All Initial and Continuing Calibration Blanks (ICB/CCB's) were within control limits.

5. All ICP Interference Check Samples were within control limits.

6. All Preparation/Method Blanks were less than the Reporting Limit.

7. Laboratory Control Sample (LCS) recoveries were within the 80-120% control limits.

8. Matrix QC was performed on Sample 1 (ICP and Hg) and Sample 5 (ICP).

   Several Serial dilution analysis were not within control limits.

   Total Matrix Spike recoveries (MS/MSD) were all within the 75-125% control limits (control limits are not applicable when the sample concentration exceeds the spike added concentration by a factor of 4 or more) except for Sample 1 Sb, K (MS/MSD) and Hg (MSD) and also Sample 5 Sb (MS/MSD).

   All Duplicate results were within the 20% control limits for sample concentrations greater than 5X the RL or +/- the RL for sample concentrations less than 5X the RL except for Sample 1 Co.

Jodi L. Gromala
Metals Section Manager

8-15-05
Date

Severn Trent Services - Chicago
GC/MS BNA Case Narrative

Ecology & Environment/NPS - Kenilworth
Job Number: 238871
BNA DATA:

1. All extractions and analyses were performed within recommended hold-times.

2. The MB (Method Blank) had all analytes undetected.

3. The LCS (Laboratory Control Sample) had the two control spike recoveries within the QC limits.

4. The MS/MSD (Matrix Spike/Matrix Spike Duplicate) had the two control spike recoveries below the QC limits and the two control RPD values within the QC limit.

5. The MSD had one surrogate recovery below the QC limits. No corrective action was required. All other samples had all surrogate recoveries within the QC limits.

6. All samples had all internal standard areas and retention times within the SOP acceptance limits as compared to the corresponding calibration verification standard.

7. All samples were analyzed following USEPA SW846 8270C protocol.

Gary Rynkar
GC/MS Section Manager

8/24/5
Date

STL Chicago
Pesticide Case Narrative

Ecology & Environment
NPS - Kenilworth
Job #: 238871-1 through 18
Pesticides

1. STL Chicago used the following Gas Chromatographic systems for the analysis of these pesticides:

ID#	INSTRUMENT	COLUMN TYPE	DETECTOR
16	HP 6890	Rtx-Clp2 (Primary)	Electron Capture
15	HP 6890	Rtx-Clp (Confirmation)	Electron Capture

2. These soil samples were extracted based on SW846 method 3541. The extracts were analyzed for pesticides based on SW846 method 8081A. The extracts received a GPC cleanup in order to reduce matrix interference.

3. All required holding times were met for the extraction and analysis.

4. The method blank was below the reporting limits for all target compounds.

5. The surrogate compounds used for this analysis were Decachlorobiphenyl (DCB) and Tetrachloro-m-xylene (TCX). All surrogate recoveries were within statistical control limits.

6. All blank spike recoveries were within statistical control limits. A solution containing all single response pesticides was used for spiking.

7. A matrix spike and matrix spike duplicate were performed on sample 238871-2 (KS-SS-02). The matrix spike had 6 out of 20 recoveries outside statistical control limits. The matrix spike duplicate had 5 out of 20 recoveries. The RPDs had 3 >30%. These out of control recoveries could be attributed to sample matrix.

8. All initial and continuing (grand mean <15% difference) standard calibrations associated with these samples were in control and all target compounds detected were <15% difference on the primary column. All SSV recoveries were within limits of 85%-115%.

9. All initial and continuing (grand mean <15% difference) standard calibrations associated with these samples were in control and all target compounds detected were <15% difference on the confirmation column and all SSV recoveries were within limits of 85%-115% with the following exceptions:

CCV that ran 08/11/05 at 22:45 had 4,4'-DDE biased high with 15.7% difference. All results were reported from the primary column.

CCV that ran 08/12/05 at 08:27 had 4,4'-DDE biased high with 16.3% difference. All results were reported from the primary column.

10. Target compounds were confirmed using a second column. All results were reported from the primary column.

11. Most samples were analyzed at dilutions due to level of target compounds detected. Reporting limits have been adjusted to reflect the necessary dilutions.

Patti Gibson
Organics Section Manager

8/24/05
Date

STL Chicago
PCB Case Narrative

Ecology & Environment
NPS - Kenilworth
Job #: 238871-1 through 18
PCBs

1. STL Chicago used the following Gas Chromatographic systems for the analysis of PCBs:

ID#	INSTRUMENT	COLUMN TYPE	DETECTOR
37	HP 6890	Rtx-5 (Primary)	Electron Capture
38	HP 6890	Rtx-35 (Confirmation)	Electron Capture

2. These soil samples were extracted based on SW846 method 3541. The extracts were analyzed for PCBs based on SW846 method 8082. All extracts received a sulfuric acid cleanup and a GPC cleanup in order to reduce matrix interference.

3. All required holding times were met for the extraction and analysis.

4. The method blank was below the reporting limits for all Aroclors.

5. The surrogate compounds used for this analysis were Decachlorobiphenyl (DCB) and Tetrachloro-m-xylene (TCX). All surrogate recoveries were within statistical control limits.

6. All blank spike recoveries were within statistical control limits.

7. A matrix spike and a matrix spike duplicate were performed on sample 238871-2 (KS-SS-02). The Aroclor 1016 had 106% recovery in matrix spike and Aroclor 1260 had 42% recovery in matrix spike duplicate and an RPD of 49%. All other matrix spike and matrix spike duplicate recoveries and RPD were within statistical control limits.

8. All initial and continuing (grand mean <15% difference) standard calibrations associated with these samples were within method control limits on both columns. All SSV recoveries were within limits of 85%-115%.

9. Target compounds were confirmed using a second column. All results were reported from the primary column.

10. Samples 238871-1 and –2 were analyzed at dilutions due to level of target compounds detected. Reporting limits have been adjusted to reflect the necessary dilutions.

Patti Gibson
Organics Section Manager

8-24-05
Date

STL Chicago is part of Severn Trent Laboratories, Inc.

SAMPLE INFORMATION
Date: 08/24/2005

Job Number.: 238871
Customer...: Ecology & Environment
Attn.....: Leslie Fischbeck

Project Number.....: 20005675
Customer Project ID....: NPS - KENILWORTH
Project Description....: NPS - Kenilworth

Laboratory Sample ID	Customer Sample ID	Sample Matrix	Date Sampled	Time Sampled	Date Received	Time Received
238871-1	KS-SS-01	Soil	08/02/2005	08:50	08/03/2005	10:00
238871-2	KS-SS-02	Soil	08/02/2005	08:55	08/03/2005	10:00
238871-3	KS-SS-03	Soil	08/02/2005	09:00	08/03/2005	10:00
238871-4	KS-SS-04	Soil	08/02/2005	09:10	08/03/2005	10:00
238871-5	KS-SS-05	Soil	08/02/2005	09:15	08/03/2005	10:00
238871-6	KS-SS-06	Soil	08/02/2005	09:25	08/03/2005	10:00
238871-7	KS-SS-07	Soil	08/02/2005	09:30	08/03/2005	10:00
238871-8	KS-SS-08	Soil	08/02/2005	09:40	08/03/2005	10:00
238871-9	KS-SS-09	Soil	08/02/2005	09:45	08/03/2005	10:00
238871-10	KS-SS-10	Soil	08/02/2005	09:55	08/03/2005	10:00
238871-11	KS-SS-11	Soil	08/02/2005	10:10	08/03/2005	10:00
238871-12	KS-SS-12	Soil	08/02/2005	10:20	08/03/2005	10:00
238871-13	KS-SS-13	Soil	08/02/2005	10:30	08/03/2005	10:00
238871-14	KS-SS-14	Soil	08/02/2005	10:40	08/03/2005	10:00
238871-15	KS-SS-15	Soil	08/02/2005	10:50	08/03/2005	10:00
238871-16	KS-SS-16	Soil	08/02/2005	11:00	08/03/2005	10:00
238871-17	KS-SS-17	Soil	08/02/2005	11:10	08/03/2005	10:00
238871-18	KS-SS-99	Soil	08/02/2005	00:00	08/03/2005	10:00

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment PROJECT: NPS - KENILWORTH ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-01
Date Sampled.....: 08/02/2005
Time Sampled.....: 08:50
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-1
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8270C	Semivolatile Organics											
	Naphthalene, 3541 Low Solid*	38	U		7.5	38	1.00000	ug/Kg	158304		08/12/05 1821	dpk
	Acenaphthylene, 3541 Low Solid*	38	U		7.4	38	1.00000	ug/Kg	158304		08/12/05 1821	dpk
	Acenaphthene, 3541 Low Solid*	38	U		7.3	38	1.00000	ug/Kg	158304		08/12/05 1821	dpk
	Fluorene, 3541 Low Solid*	38	U		7.2	38	1.00000	ug/Kg	158304		08/12/05 1821	dpk
	Phenanthrene, 3541 Low Solid*	97			6.1	38	1.00000	ug/Kg	158304		08/12/05 1821	dpk
	Anthracene, 3541 Low Solid*	38	U		8.1	38	1.00000	ug/Kg	158304		08/12/05 1821	dpk
	Fluoranthene, 3541 Low Solid*	190			7.1	38	1.00000	ug/Kg	158304		08/12/05 1821	dpk
	Pyrene, 3541 Low Solid*	160			8.6	38	1.00000	ug/Kg	158304		08/12/05 1821	dpk
	Benzo(a)anthracene, 3541 Low Solid*	74			7.4	38	1.00000	ug/Kg	158304		08/12/05 1821	dpk
	Chrysene, 3541 Low Solid*	180			7.7	38	1.00000	ug/Kg	158304		08/12/05 1821	dpk
	Benzo(b)fluoranthene, 3541 Low Solid*	170		M	9.4	38	1.00000	ug/Kg	158304		08/12/05 1821	dpk
	Benzo(k)fluoranthene, 3541 Low Solid*	86		M	11	38	1.00000	ug/Kg	158304		08/12/05 1821	dpk
	Benzo(a)pyrene, 3541 Low Solid*	94			4.3	38	1.00000	ug/Kg	158304		08/12/05 1821	dpk
	Indeno(1,2,3-cd)pyrene, 3541 Low Solid*	66			7.5	38	1.00000	ug/Kg	158304		08/12/05 1821	dpk
	Dibenzo(a,h)anthracene, 3541 Low Solid*	38	U		7.7	38	1.00000	ug/Kg	158304		08/12/05 1821	dpk
	Benzo(ghi)perylene, 3541 Low Solid*	75			10	38	1.00000	ug/Kg	158304		08/12/05 1821	dpk
8081A	Organochlorine Pesticide Analysis											
	alpha-BHC, 3541 Solid*	9.6	U		5.5	9.6	5.00000	ug/Kg	158203		08/11/05 1809	pjg
	beta-BHC, 3541 Solid*	9.6	U		7.9	9.6	5.00000	ug/Kg	158203		08/11/05 1809	pjg
	delta-BHC, 3541 Solid*	9.6	U		7.9	9.6	5.00000	ug/Kg	158203		08/11/05 1809	pjg
	gamma-BHC (Lindane), 3541 Solid*	9.6	U		5.5	9.6	5.00000	ug/Kg	158203		08/11/05 1809	pjg
	Heptachlor, 3541 Solid*	9.6	U		5.1	9.6	5.00000	ug/Kg	158203		08/11/05 1809	pjg
	Aldrin, 3541 Solid*	9.6	U		5.0	9.6	5.00000	ug/Kg	158203		08/11/05 1809	pjg
	Heptachlor epoxide, 3541 Solid*	9.6	U		5.3	9.6	5.00000	ug/Kg	158203		08/11/05 1809	pjg
	Endosulfan I, 3541 Solid*	9.6	U		5.6	9.6	5.00000	ug/Kg	158203		08/11/05 1809	pjg
	Dieldrin, 3541 Solid*	9.6	U		5.0	9.6	5.00000	ug/Kg	158203		08/11/05 1809	pjg
	4,4'-DDE, 3541 Solid*	33			5.3	9.6	5.00000	ug/Kg	158203		08/11/05 1809	pjg

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment PROJECT: NPS - KENILWORTH ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-01
Date Sampled.....: 08/02/2005
Time Sampled.....: 08:50
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-1
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Endrin, 3541 Solid*	9.6	U		5.3	9.6	5.00000	ug/Kg	158203		08/11/05 1809	pjg
	Endosulfan II, 3541 Solid*	9.6	U		5.6	9.6	5.00000	ug/Kg	158203		08/11/05 1809	pjg
	4,4'-DDD, 3541 Solid*	9.6	U		6.2	9.6	5.00000	ug/Kg	158203		08/11/05 1809	pjg
	Endosulfan sulfate, 3541 Solid*	9.6	U		6.2	9.6	5.00000	ug/Kg	158203		08/11/05 1809	pjg
	4,4'-DDT, 3541 Solid*	87			5.2	9.6	5.00000	ug/Kg	158203		08/11/05 1809	pjg
	Methoxychlor, 3541 Solid*	47	U		7.9	47	5.00000	ug/Kg	158203		08/11/05 1809	pjg
	alpha-Chlordane, 3541 Solid*	9.6	U		5.0	9.6	5.00000	ug/Kg	158203		08/11/05 1809	pjg
	gamma-Chlordane, 3541 Solid*	9.6	U		0.84	9.6	5.00000	ug/Kg	158203		08/11/05 1809	pjg
	Toxaphene, 3541 Solid*	94	U		62	94	5.00000	ug/Kg	158203		08/11/05 1809	pjg
	Endrin aldehyde, 3541 Solid*	9.6	U		6.7	9.6	5.00000	ug/Kg	158203		08/11/05 1809	pjg
	Endrin ketone, 3541 Solid*	9.6	U		7.3	9.6	5.00000	ug/Kg	158203		08/11/05 1809	pjg
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	38	U		13	38	2.00000	ug/Kg	158329		08/11/05 1257	bjt
	Aroclor 1221, 3541 Solid*	38	U		10	38	2.00000	ug/Kg	158329		08/11/05 1257	bjt
	Aroclor 1232, 3541 Solid*	38	U		10	38	2.00000	ug/Kg	158329		08/11/05 1257	bjt
	Aroclor 1242, 3541 Solid*	38	U		11	38	2.00000	ug/Kg	158329		08/11/05 1257	bjt
	Aroclor 1248, 3541 Solid*	38	U		8.1	38	2.00000	ug/Kg	158329		08/11/05 1257	bjt
	Aroclor 1254, 3541 Solid*	38	U		8.3	38	2.00000	ug/Kg	158329		08/11/05 1257	bjt
	Aroclor 1260, 3541 Solid*	470			7.4	38	2.00000	ug/Kg	158329		08/11/05 1257	bjt
Method	% Solids Determination											
	% Solids, Solid	86.3			0.10	0.10	1	%	156577		08/04/05 2203	clb
	% Moisture, Solid	13.7			0.10	0.10	1	%	156577		08/04/05 2203	clb
7471A	Mercury (CVAA) Solids											
	Mercury, Solid*	0.19			0.0071	0.019	1	mg/Kg	157319		08/11/05 1411	gok
6010B	Metals Analysis (ICAP Trace)											
	Aluminum, Solid*	9900			5.6	22	1	mg/Kg	157282		08/11/05 1928	tds

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-01
Date Sampled.....: 08/02/2005
Time Sampled.....: 08:50
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-1
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Antimony, Solid*	2.2	U		0.48	2.2	1	mg/Kg	157282		08/11/05 1928	tds
	Arsenic, Solid*	7.5			0.41	1.1	1	mg/Kg	157282		08/11/05 1928	tds
	Barium, Solid*	120			0.080	1.1	1	mg/Kg	157282		08/11/05 1928	tds
	Beryllium, Solid*	1.0			0.020	0.45	1	mg/Kg	157282		08/11/05 1928	tds
	Cadmium, Solid*	0.28			0.065	0.22	1	mg/Kg	157282		08/11/05 1928	tds
	Calcium, Solid*	1100			2.1	11	1	mg/Kg	157282		08/11/05 1928	tds
	Chromium, Solid*	24			0.11	1.1	1	mg/Kg	157282		08/11/05 1928	tds
	Cobalt, Solid*	12			0.13	0.56	1	mg/Kg	157282		08/11/05 1928	tds
	Copper, Solid*	25			0.25	1.1	1	mg/Kg	157282		08/11/05 1928	tds
	Iron, Solid*	16000			2.5	11	1	mg/Kg	157282		08/11/05 1928	tds
	Lead, Solid*	100			0.28	0.56	1	mg/Kg	157282		08/11/05 1928	tds
	Magnesium, Solid*	1700			1.1	11	1	mg/Kg	157282		08/11/05 1928	tds
	Manganese, Solid*	230			0.059	1.1	1	mg/Kg	157282		08/11/05 1928	tds
	Nickel, Solid*	24			0.54	1.1	1	mg/Kg	157282		08/11/05 1928	tds
	Potassium, Solid*	770			6.7	56	1	mg/Kg	157282		08/11/05 1928	tds
	Selenium, Solid*	1.0	B		0.50	1.1	1	mg/Kg	157282		08/11/05 1928	tds
	Silver, Solid*	0.63			0.11	0.56	1	mg/Kg	157282		08/11/05 1928	tds
	Sodium, Solid*	110	U		88	110	1	mg/Kg	157282		08/11/05 1928	tds
	Thallium, Solid*	1.1	U		0.64	1.1	1	mg/Kg	157282		08/11/05 1928	tds
	Vanadium, Solid*	59			0.17	0.56	1	mg/Kg	157282		08/11/05 1928	tds
	Zinc, Solid*	85			1.5	2.2	1	mg/Kg	157282		08/11/05 1928	tds

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-02
Date Sampled.....: 08/02/2005
Time Sampled.....: 08:55
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-2
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8270C	Semivolatile Organics											
	Naphthalene, 3541 Low Solid*	35	J	a	7.5	37	1.00000	ug/Kg	158304		08/12/05 1918	dpk
	Acenaphthylene, 3541 Low Solid*	210			7.4	37	1.00000	ug/Kg	158304		08/12/05 1918	dpk
	Acenaphthene, 3541 Low Solid*	37	U		7.3	37	1.00000	ug/Kg	158304		08/12/05 1918	dpk
	Fluorene, 3541 Low Solid*	37	U		7.2	37	1.00000	ug/Kg	158304		08/12/05 1918	dpk
	Phenanthrene, 3541 Low Solid*	200			6.0	37	1.00000	ug/Kg	158304		08/12/05 1918	dpk
	Anthracene, 3541 Low Solid*	120			8.1	37	1.00000	ug/Kg	158304		08/12/05 1918	dpk
	Fluoranthene, 3541 Low Solid*	490			7.0	37	1.00000	ug/Kg	158304		08/12/05 1918	dpk
	Pyrene, 3541 Low Solid*	820		H	8.5	37	1.00000	ug/Kg	158304		08/12/05 1918	dpk
	Benzo(a)anthracene, 3541 Low Solid*	500			7.4	37	1.00000	ug/Kg	158304		08/12/05 1918	dpk
	Chrysene, 3541 Low Solid*	540		H	7.6	37	1.00000	ug/Kg	158304		08/12/05 1918	dpk
	Benzo(b)fluoranthene, 3541 Low Solid*	750		M	9.3	37	1.00000	ug/Kg	158304		08/12/05 1918	dpk
	Benzo(k)fluoranthene, 3541 Low Solid*	440		M	10	37	1.00000	ug/Kg	158304		08/12/05 1918	dpk
	Benzo(a)pyrene, 3541 Low Solid*	650		H	4.3	37	1.00000	ug/Kg	158304		08/12/05 1918	dpk
	Indeno(1,2,3-cd)pyrene, 3541 Low Solid*	360		H	7.5	37	1.00000	ug/Kg	158304		08/12/05 1918	dpk
	Dibenzo(a,h)anthracene, 3541 Low Solid*	140		H	7.6	37	1.00000	ug/Kg	158304		08/12/05 1918	dpk
	Benzo(ghi)perylene, 3541 Low Solid*	460			10	37	1.00000	ug/Kg	158304		08/12/05 1918	dpk
8081A	Organochlorine Pesticide Analysis											
	alpha-BHC, 3541 Solid*	9.3	U		5.3	9.3	5.00000	ug/Kg	158203		08/11/05 1836	pjg
	beta-BHC, 3541 Solid*	9.3	U		7.7	9.3	5.00000	ug/Kg	158203		08/11/05 1836	pjg
	delta-BHC, 3541 Solid*	9.3	U		7.7	9.3	5.00000	ug/Kg	158203		08/11/05 1836	pjg
	gamma-BHC (Lindane), 3541 Solid*	9.3	U		5.4	9.3	5.00000	ug/Kg	158203		08/11/05 1836	pjg
	Heptachlor, 3541 Solid*	9.3	U		5.0	9.3	5.00000	ug/Kg	158203		08/11/05 1836	pjg
	Aldrin, 3541 Solid*	9.3	U		4.9	9.3	5.00000	ug/Kg	158203		08/11/05 1836	pjg
	Heptachlor epoxide, 3541 Solid*	9.3	U		5.1	9.3	5.00000	ug/Kg	158203		08/11/05 1836	pjg
	Endosulfan I, 3541 Solid*	9.3	U		5.5	9.3	5.00000	ug/Kg	158203		08/11/05 1836	pjg
	Dieldrin, 3541 Solid*	7.8	J	a	4.9	9.3	5.00000	ug/Kg	158203		08/11/05 1836	pjg
	4,4'-DDE, 3541 Solid*	31			5.1	9.3	5.00000	ug/Kg	158203		08/11/05 1836	pjg

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-02
Date Sampled.....: 08/02/2005
Time Sampled.....: 08:55
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-2
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Endrin, 3541 Solid*	9.3	U		5.2	9.3	5.00000	ug/Kg	158203		08/11/05 1836	pjg
	Endosulfan II, 3541 Solid*	9.3	U		5.5	9.3	5.00000	ug/Kg	158203		08/11/05 1836	pjg
	4,4'-DDD, 3541 Solid*	9.3	U		6.0	9.3	5.00000	ug/Kg	158203		08/11/05 1836	pjg
	Endosulfan sulfate, 3541 Solid*	9.3	U		6.0	9.3	5.00000	ug/Kg	158203		08/11/05 1836	pjg
	4,4'-DDT, 3541 Solid*	120			5.1	9.3	5.00000	ug/Kg	158203		08/11/05 1836	pjg
	Methoxychlor, 3541 Solid*	45	U		7.7	45	5.00000	ug/Kg	158203		08/11/05 1836	pjg
	alpha-Chlordane, 3541 Solid*	9.3	U		4.9	9.3	5.00000	ug/Kg	158203		08/11/05 1836	pjg
	gamma-Chlordane, 3541 Solid*	9.3	U		0.82	9.3	5.00000	ug/Kg	158203		08/11/05 1836	pjg
	Toxaphene, 3541 Solid*	91	U		60	91	5.00000	ug/Kg	158203		08/11/05 1836	pjg
	Endrin aldehyde, 3541 Solid*	9.3	U		6.6	9.3	5.00000	ug/Kg	158203		08/11/05 1836	pjg
	Endrin ketone, 3541 Solid*	9.3	U		7.1	9.3	5.00000	ug/Kg	158203		08/11/05 1836	pjg
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	91	U		31	91	5.00000	ug/Kg	158329		08/11/05 1404	bjt
	Aroclor 1221, 3541 Solid*	91	U		25	91	5.00000	ug/Kg	158329		08/11/05 1404	bjt
	Aroclor 1232, 3541 Solid*	91	U		25	91	5.00000	ug/Kg	158329		08/11/05 1404	bjt
	Aroclor 1242, 3541 Solid*	91	U		27	91	5.00000	ug/Kg	158329		08/11/05 1404	bjt
	Aroclor 1248, 3541 Solid*	91	U		20	91	5.00000	ug/Kg	158329		08/11/05 1404	bjt
	Aroclor 1254, 3541 Solid*	91	U		20	91	5.00000	ug/Kg	158329		08/11/05 1404	bjt
	Aroclor 1260, 3541 Solid*	610			18	91	5.00000	ug/Kg	158329		08/11/05 1404	bjt
Method	% Solids Determination											
	% Solids, Solid	87.5			0.10	0.10	1	%	156577		08/04/05 2209	clb
	% Moisture, Solid	12.5			0.10	0.10	1	%	156577		08/04/05 2209	clb
7471A	Mercury (CVAA) Solids											
	Mercury, Solid*	0.30			0.0070	0.019	1	mg/Kg	157319		08/11/05 1425	gok
6010B	Metals Analysis (ICAP Trace)											
	Aluminum, Solid*	6300			5.4	22	1	mg/Kg	157282		08/11/05 1951	tds

* In Description = Dry Wgt.

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment PROJECT: NPS - KENILWORTH ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-02
Date Sampled.....: 08/02/2005
Time Sampled.....: 08:55
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-2
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Antimony, Solid*	1.2	B		0.46	2.2	1	mg/Kg	157282		08/11/05 1951	tds
	Arsenic, Solid*	9.9			0.40	1.1	1	mg/Kg	157282		08/11/05 1951	tds
	Barium, Solid*	89			0.077	1.1	1	mg/Kg	157282		08/11/05 1951	tds
	Beryllium, Solid*	0.65			0.019	0.43	1	mg/Kg	157282		08/11/05 1951	tds
	Cadmium, Solid*	0.53			0.062	0.22	1	mg/Kg	157282		08/11/05 1951	tds
	Calcium, Solid*	1400			2.0	11	1	mg/Kg	157282		08/11/05 1951	tds
	Chromium, Solid*	34			0.11	1.1	1	mg/Kg	157282		08/11/05 1951	tds
	Cobalt, Solid*	7.5			0.13	0.54	1	mg/Kg	157282		08/11/05 1951	tds
	Copper, Solid*	33			0.24	1.1	1	mg/Kg	157282		08/11/05 1951	tds
	Iron, Solid*	15000			2.4	11	1	mg/Kg	157282		08/11/05 1951	tds
	Lead, Solid*	180			0.27	0.54	1	mg/Kg	157282		08/11/05 1951	tds
	Magnesium, Solid*	1700			1.1	11	1	mg/Kg	157282		08/11/05 1951	tds
	Manganese, Solid*	190			0.057	1.1	1	mg/Kg	157282		08/11/05 1951	tds
	Nickel, Solid*	26			0.52	1.1	1	mg/Kg	157282		08/11/05 1951	tds
	Potassium, Solid*	430			6.5	54	1	mg/Kg	157282		08/11/05 1951	tds
	Selenium, Solid*	0.72	B		0.48	1.1	1	mg/Kg	157282		08/11/05 1951	tds
	Silver, Solid*	2.7			0.11	0.54	1	mg/Kg	157282		08/11/05 1951	tds
	Sodium, Solid*	110	U		85	110	1	mg/Kg	157282		08/11/05 1951	tds
	Thallium, Solid*	1.1	U		0.61	1.1	1	mg/Kg	157282		08/11/05 1951	tds
	Vanadium, Solid*	51			0.16	0.54	1	mg/Kg	157282		08/11/05 1951	tds
	Zinc, Solid*	230			1.5	2.2	1	mg/Kg	157282		08/11/05 1951	tds

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment

PROJECT: NPS - KENILWORTH

ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-03
Date Sampled.....: 08/02/2005
Time Sampled.....: 09:00
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-3
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8270C	Semivolatile Organics											
	Naphthalene, 3541 Low Solid*	36	U		7.1	36	1.00000	ug/Kg	158304		08/12/05 1937	dpk
	Acenaphthylene, 3541 Low Solid*	36	U		7.0	36	1.00000	ug/Kg	158304		08/12/05 1937	dpk
	Acenaphthene, 3541 Low Solid*	36	U		6.9	36	1.00000	ug/Kg	158304		08/12/05 1937	dpk
	Fluorene, 3541 Low Solid*	36	U		6.8	36	1.00000	ug/Kg	158304		08/12/05 1937	dpk
	Phenanthrene, 3541 Low Solid*	40			5.7	36	1.00000	ug/Kg	158304		08/12/05 1937	dpk
	Anthracene, 3541 Low Solid*	36	U		7.7	36	1.00000	ug/Kg	158304		08/12/05 1937	dpk
	Fluoranthene, 3541 Low Solid*	92			6.7	36	1.00000	ug/Kg	158304		08/12/05 1937	dpk
	Pyrene, 3541 Low Solid*	100			8.1	36	1.00000	ug/Kg	158304		08/12/05 1937	dpk
	Benzo(a)anthracene, 3541 Low Solid*	41			7.0	36	1.00000	ug/Kg	158304		08/12/05 1937	dpk
	Chrysene, 3541 Low Solid*	67		H	7.2	36	1.00000	ug/Kg	158304		08/12/05 1937	dpk
	Benzo(b)fluoranthene, 3541 Low Solid*	85		M	8.9	36	1.00000	ug/Kg	158304		08/12/05 1937	dpk
	Benzo(k)fluoranthene, 3541 Low Solid*	53		M	9.9	36	1.00000	ug/Kg	158304		08/12/05 1937	dpk
	Benzo(a)pyrene, 3541 Low Solid*	56		H	4.1	36	1.00000	ug/Kg	158304		08/12/05 1937	dpk
	Indeno(1,2,3-cd)pyrene, 3541 Low Solid*	36		H	7.1	36	1.00000	ug/Kg	158304		08/12/05 1937	dpk
	Dibenzo(a,h)anthracene, 3541 Low Solid*	36	U		7.2	36	1.00000	ug/Kg	158304		08/12/05 1937	dpk
	Benzo(ghi)perylene, 3541 Low Solid*	43		H	9.6	36	1.00000	ug/Kg	158304		08/12/05 1937	dpk
8081A	Organochlorine Pesticide Analysis											
	alpha-BHC, 3541 Solid*	3.8	U		2.2	3.8	2.00000	ug/Kg	158203		08/11/05 2027	pjg
	beta-BHC, 3541 Solid*	3.8	U		3.2	3.8	2.00000	ug/Kg	158203		08/11/05 2027	pjg
	delta-BHC, 3541 Solid*	3.8	U		3.2	3.8	2.00000	ug/Kg	158203		08/11/05 2027	pjg
	gamma-BHC (Lindane), 3541 Solid*	3.8	U		2.2	3.8	2.00000	ug/Kg	158203		08/11/05 2027	pjg
	Heptachlor, 3541 Solid*	3.8	U		2.1	3.8	2.00000	ug/Kg	158203		08/11/05 2027	pjg
	Aldrin, 3541 Solid*	3.8	U		2.0	3.8	2.00000	ug/Kg	158203		08/11/05 2027	pjg
	Heptachlor epoxide, 3541 Solid*	3.8	U		2.1	3.8	2.00000	ug/Kg	158203		08/11/05 2027	pjg
	Endosulfan I, 3541 Solid*	3.8	U		2.3	3.8	2.00000	ug/Kg	158203		08/11/05 2027	pjg
	Dieldrin, 3541 Solid*	3.8	U		2.0	3.8	2.00000	ug/Kg	158203		08/11/05 2027	pjg
	4,4'-DDE, 3541 Solid*	3.6	J	a	2.1	3.8	2.00000	ug/Kg	158203		08/11/05 2027	pjg

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-03
Date Sampled.....: 08/02/2005
Time Sampled.....: 09:00
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-3
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Endrin, 3541 Solid*	3.8	U		2.1	3.8	2.00000	ug/Kg	158203		08/11/05 2027	pjg
	Endosulfan II, 3541 Solid*	3.8	U		2.3	3.8	2.00000	ug/Kg	158203		08/11/05 2027	pjg
	4,4'-DDD, 3541 Solid*	3.8	U		2.5	3.8	2.00000	ug/Kg	158203		08/11/05 2027	pjg
	Endosulfan sulfate, 3541 Solid*	3.8	U		2.5	3.8	2.00000	ug/Kg	158203		08/11/05 2027	pjg
	4,4'-DDT, 3541 Solid*	9.5			2.1	3.8	2.00000	ug/Kg	158203		08/11/05 2027	pjg
	Methoxychlor, 3541 Solid*	19	U		3.2	19	2.00000	ug/Kg	158203		08/11/05 2027	pjg
	alpha-Chlordane, 3541 Solid*	3.8	U		2.0	3.8	2.00000	ug/Kg	158203		08/11/05 2027	pjg
	gamma-Chlordane, 3541 Solid*	3.8	U		0.34	3.8	2.00000	ug/Kg	158203		08/11/05 2027	pjg
	Toxaphene, 3541 Solid*	38	U		25	38	2.00000	ug/Kg	158203		08/11/05 2027	pjg
	Endrin aldehyde, 3541 Solid*	3.8	U		2.7	3.8	2.00000	ug/Kg	158203		08/11/05 2027	pjg
	Endrin ketone, 3541 Solid*	3.8	U		2.9	3.8	2.00000	ug/Kg	158203		08/11/05 2027	pjg
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	19	U		6.3	19	1.00000	ug/Kg	158329		08/10/05 1700	bjt
	Aroclor 1221, 3541 Solid*	19	U		5.2	19	1.00000	ug/Kg	158329		08/10/05 1700	bjt
	Aroclor 1232, 3541 Solid*	19	U		5.1	19	1.00000	ug/Kg	158329		08/10/05 1700	bjt
	Aroclor 1242, 3541 Solid*	19	U		5.5	19	1.00000	ug/Kg	158329		08/10/05 1700	bjt
	Aroclor 1248, 3541 Solid*	19	U		4.1	19	1.00000	ug/Kg	158329		08/10/05 1700	bjt
	Aroclor 1254, 3541 Solid*	19	U		4.2	19	1.00000	ug/Kg	158329		08/10/05 1700	bjt
	Aroclor 1260, 3541 Solid*	55			3.7	19	1.00000	ug/Kg	158329		08/10/05 1700	bjt
Method	% Solids Determination											
	% Solids, Solid	87.5			0.10	0.10	1	%	156577		08/04/05 2212	clb
	% Moisture, Solid	12.5			0.10	0.10	1	%	156577		08/04/05 2212	clb
7471A	Mercury (CVAA) Solids											
	Mercury, Solid*	0.11			0.0070	0.019	1	mg/Kg	157319		08/11/05 1427	gok
6010B	Metals Analysis (ICAP Trace)											
	Aluminum, Solid*	11000			5.6	22	1	mg/Kg	157282		08/11/05 1955	tds

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-03
Date Sampled.....: 08/02/2005
Time Sampled.....: 09:00
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-3
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Antimony, Solid*	2.2	U		0.48	2.2	1	mg/Kg	157282		08/11/05 1955	tds
	Arsenic, Solid*	5.3			0.41	1.1	1	mg/Kg	157282		08/11/05 1955	tds
	Barium, Solid*	110			0.080	1.1	1	mg/Kg	157282		08/11/05 1955	tds
	Beryllium, Solid*	1.1			0.020	0.44	1	mg/Kg	157282		08/11/05 1955	tds
	Cadmium, Solid*	0.089	B		0.064	0.22	1	mg/Kg	157282		08/11/05 1955	tds
	Calcium, Solid*	680			2.0	11	1	mg/Kg	157282		08/11/05 1955	tds
	Chromium, Solid*	21			0.11	1.1	1	mg/Kg	157282		08/11/05 1955	tds
	Cobalt, Solid*	11			0.13	0.55	1	mg/Kg	157282		08/11/05 1955	tds
	Copper, Solid*	22			0.24	1.1	1	mg/Kg	157282		08/11/05 1955	tds
	Iron, Solid*	17000			2.4	11	1	mg/Kg	157282		08/11/05 1955	tds
	Lead, Solid*	64			0.28	0.55	1	mg/Kg	157282		08/11/05 1955	tds
	Magnesium, Solid*	1400			1.1	11	1	mg/Kg	157282		08/11/05 1955	tds
	Manganese, Solid*	210			0.059	1.1	1	mg/Kg	157282		08/11/05 1955	tds
	Nickel, Solid*	22			0.53	1.1	1	mg/Kg	157282		08/11/05 1955	tds
	Potassium, Solid*	690			6.7	55	1	mg/Kg	157282		08/11/05 1955	tds
	Selenium, Solid*	0.81	B		0.50	1.1	1	mg/Kg	157282		08/11/05 1955	tds
	Silver, Solid*	0.23	B		0.11	0.55	1	mg/Kg	157282		08/11/05 1955	tds
	Sodium, Solid*	110	U		87	110	1	mg/Kg	157282		08/11/05 1955	tds
	Thallium, Solid*	1.1	U		0.63	1.1	1	mg/Kg	157282		08/11/05 1955	tds
	Vanadium, Solid*	38			0.17	0.55	1	mg/Kg	157282		08/11/05 1955	tds
	Zinc, Solid*	92			1.5	2.2	1	mg/Kg	157282		08/11/05 1955	tds

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment PROJECT: NPS - KENILWORTH ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-04
Date Sampled.....: 08/02/2005
Time Sampled.....: 09:10
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-4
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8270C	Semivolatile Organics											
	Naphthalene, 3541 Low Solid*	34	U		6.8	34	1.00000	ug/Kg	158304		08/12/05 1956	dpk
	Acenaphthylene, 3541 Low Solid*	34	U		6.7	34	1.00000	ug/Kg	158304		08/12/05 1956	dpk
	Acenaphthene, 3541 Low Solid*	6.8	J	a	6.6	34	1.00000	ug/Kg	158304		08/12/05 1956	dpk
	Fluorene, 3541 Low Solid*	34	U		6.5	34	1.00000	ug/Kg	158304		08/12/05 1956	dpk
	Phenanthrene, 3541 Low Solid*	140		H	5.4	34	1.00000	ug/Kg	158304		08/12/05 1956	dpk
	Anthracene, 3541 Low Solid*	34	U		7.3	34	1.00000	ug/Kg	158304		08/12/05 1956	dpk
	Fluoranthene, 3541 Low Solid*	320		H	6.3	34	1.00000	ug/Kg	158304		08/12/05 1956	dpk
	Pyrene, 3541 Low Solid*	350			7.7	34	1.00000	ug/Kg	158304		08/12/05 1956	dpk
	Benzo(a)anthracene, 3541 Low Solid*	150			6.7	34	1.00000	ug/Kg	158304		08/12/05 1956	dpk
	Chrysene, 3541 Low Solid*	190		H	6.9	34	1.00000	ug/Kg	158304		08/12/05 1956	dpk
	Benzo(b)fluoranthene, 3541 Low Solid*	250		M	8.4	34	1.00000	ug/Kg	158304		08/12/05 1956	dpk
	Benzo(k)fluoranthene, 3541 Low Solid*	150		M	9.4	34	1.00000	ug/Kg	158304		08/12/05 1956	dpk
	Benzo(a)pyrene, 3541 Low Solid*	180		H	3.9	34	1.00000	ug/Kg	158304		08/12/05 1956	dpk
	Indeno(1,2,3-cd)pyrene, 3541 Low Solid*	100			6.8	34	1.00000	ug/Kg	158304		08/12/05 1956	dpk
	Dibenzo(a,h)anthracene, 3541 Low Solid*	34	U		6.9	34	1.00000	ug/Kg	158304		08/12/05 1956	dpk
	Benzo(ghi)perylene, 3541 Low Solid*	100			9.1	34	1.00000	ug/Kg	158304		08/12/05 1956	dpk
8081A	Organochlorine Pesticide Analysis											
	alpha-BHC, 3541 Solid*	8.8	U		5.0	8.8	5.00000	ug/Kg	158203		08/11/05 2055	pjg
	beta-BHC, 3541 Solid*	8.8	U		7.3	8.8	5.00000	ug/Kg	158203		08/11/05 2055	pjg
	delta-BHC, 3541 Solid*	8.8	U		7.3	8.8	5.00000	ug/Kg	158203		08/11/05 2055	pjg
	gamma-BHC (Lindane), 3541 Solid*	8.8	U		5.1	8.8	5.00000	ug/Kg	158203		08/11/05 2055	pjg
	Heptachlor, 3541 Solid*	8.8	U		4.7	8.8	5.00000	ug/Kg	158203		08/11/05 2055	pjg
	Aldrin, 3541 Solid*	8.8	U		4.6	8.8	5.00000	ug/Kg	158203		08/11/05 2055	pjg
	Heptachlor epoxide, 3541 Solid*	8.8	U		4.9	8.8	5.00000	ug/Kg	158203		08/11/05 2055	pjg
	Endosulfan I, 3541 Solid*	8.8	U		5.2	8.8	5.00000	ug/Kg	158203		08/11/05 2055	pjg
	Dieldrin, 3541 Solid*	8.8	U		4.6	8.8	5.00000	ug/Kg	158203		08/11/05 2055	pjg
	4,4'-DDE, 3541 Solid*	22			4.9	8.8	5.00000	ug/Kg	158203		08/11/05 2055	pjg

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-04
Date Sampled.....: 08/02/2005
Time Sampled.....: 09:10
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-4
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Endrin, 3541 Solid*	8.8	U		4.9	8.8	5.00000	ug/Kg	158203		08/11/05 2055	pjg
	Endosulfan II, 3541 Solid*	8.8	U		5.2	8.8	5.00000	ug/Kg	158203		08/11/05 2055	pjg
	4,4'-DDD, 3541 Solid*	8.8	U		5.7	8.8	5.00000	ug/Kg	158203		08/11/05 2055	pjg
	Endosulfan sulfate, 3541 Solid*	8.8	U		5.7	8.8	5.00000	ug/Kg	158203		08/11/05 2055	pjg
	4,4'-DDT, 3541 Solid*	27			4.8	8.8	5.00000	ug/Kg	158203		08/11/05 2055	pjg
	Methoxychlor, 3541 Solid*	43	U		7.3	43	5.00000	ug/Kg	158203		08/11/05 2055	pjg
	alpha-Chlordane, 3541 Solid*	8.8	U		4.6	8.8	5.00000	ug/Kg	158203		08/11/05 2055	pjg
	gamma-Chlordane, 3541 Solid*	8.8	U		0.78	8.8	5.00000	ug/Kg	158203		08/11/05 2055	pjg
	Toxaphene, 3541 Solid*	87	U		57	87	5.00000	ug/Kg	158203		08/11/05 2055	pjg
	Endrin aldehyde, 3541 Solid*	8.8	U		6.2	8.8	5.00000	ug/Kg	158203		08/11/05 2055	pjg
	Endrin ketone, 3541 Solid*	8.8	U		6.8	8.8	5.00000	ug/Kg	158203		08/11/05 2055	pjg
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	17	U		5.8	17	1.00000	ug/Kg	158329		08/10/05 1733	bjt
	Aroclor 1221, 3541 Solid*	17	U		4.8	17	1.00000	ug/Kg	158329		08/10/05 1733	bjt
	Aroclor 1232, 3541 Solid*	17	U		4.7	17	1.00000	ug/Kg	158329		08/10/05 1733	bjt
	Aroclor 1242, 3541 Solid*	17	U		5.1	17	1.00000	ug/Kg	158329		08/10/05 1733	bjt
	Aroclor 1248, 3541 Solid*	17	U		3.7	17	1.00000	ug/Kg	158329		08/10/05 1733	bjt
	Aroclor 1254, 3541 Solid*	17	U		3.8	17	1.00000	ug/Kg	158329		08/10/05 1733	bjt
	Aroclor 1260, 3541 Solid*	98			3.4	17	1.00000	ug/Kg	158329		08/10/05 1733	bjt
Method	% Solids Determination											
	% Solids, Solid	95.5			0.10	0.10	1	%	156577		08/04/05 2216	clb
	% Moisture, Solid	4.5			0.10	0.10	1	%	156577		08/04/05 2216	clb
7471A	Mercury (CVAA) Solids											
	Mercury, Solid*	0.17			0.0064	0.017	1	mg/Kg	157319		08/11/05 1430	gok
6010B	Metals Analysis (ICAP Trace)											
	Aluminum, Solid*	3600			4.8	19	1	mg/Kg	157282		08/11/05 2000	tds

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment PROJECT: NPS - KENILWORTH ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-04
Date Sampled.....: 08/02/2005
Time Sampled.....: 09:10
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-4
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Antimony, Solid*	1.9	U		0.41	1.9	1	mg/Kg	157282		08/11/05 2000	tds
	Arsenic, Solid*	3.5			0.35	0.95	1	mg/Kg	157282		08/11/05 2000	tds
	Barium, Solid*	41			0.069	0.95	1	mg/Kg	157282		08/11/05 2000	tds
	Beryllium, Solid*	0.30	B		0.017	0.38	1	mg/Kg	157282		08/11/05 2000	tds
	Cadmium, Solid*	0.19			0.055	0.19	1	mg/Kg	157282		08/11/05 2000	tds
	Calcium, Solid*	680			1.8	9.5	1	mg/Kg	157282		08/11/05 2000	tds
	Chromium, Solid*	12			0.095	0.95	1	mg/Kg	157282		08/11/05 2000	tds
	Cobalt, Solid*	4.0			0.11	0.48	1	mg/Kg	157282		08/11/05 2000	tds
	Copper, Solid*	14			0.21	0.95	1	mg/Kg	157282		08/11/05 2000	tds
	Iron, Solid*	8800			2.1	9.5	1	mg/Kg	157282		08/11/05 2000	tds
	Lead, Solid*	74			0.24	0.48	1	mg/Kg	157282		08/11/05 2000	tds
	Magnesium, Solid*	570			0.96	9.5	1	mg/Kg	157282		08/11/05 2000	tds
	Manganese, Solid*	210			0.050	0.95	1	mg/Kg	157282		08/11/05 2000	tds
	Nickel, Solid*	8.5			0.46	0.95	1	mg/Kg	157282		08/11/05 2000	tds
	Potassium, Solid*	360			5.7	48	1	mg/Kg	157282		08/11/05 2000	tds
	Selenium, Solid*	0.49	B		0.43	0.95	1	mg/Kg	157282		08/11/05 2000	tds
	Silver, Solid*	0.41	B		0.095	0.48	1	mg/Kg	157282		08/11/05 2000	tds
	Sodium, Solid*	95	U		75	95	1	mg/Kg	157282		08/11/05 2000	tds
	Thallium, Solid*	0.95	U		0.54	0.95	1	mg/Kg	157282		08/11/05 2000	tds
	Vanadium, Solid*	27			0.14	0.48	1	mg/Kg	157282		08/11/05 2000	tds
	Zinc, Solid*	56			1.3	1.9	1	mg/Kg	157282		08/11/05 2000	tds

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-05
Date Sampled.....: 08/02/2005
Time Sampled.....: 09:15
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-5
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8270C	Semivolatile Organics											
	Naphthalene, 3541 Low Solid*	35	U		7.0	35	1.00000	ug/Kg	158304		08/12/05 2014	dpk
	Acenaphthylene, 3541 Low Solid*	35	U		6.9	35	1.00000	ug/Kg	158304		08/12/05 2014	dpk
	Acenaphthene, 3541 Low Solid*	35	U		6.8	35	1.00000	ug/Kg	158304		08/12/05 2014	dpk
	Fluorene, 3541 Low Solid*	35	U		6.7	35	1.00000	ug/Kg	158304		08/12/05 2014	dpk
	Phenanthrene, 3541 Low Solid*	310		H	5.7	35	1.00000	ug/Kg	158304		08/12/05 2014	dpk
	Anthracene, 3541 Low Solid*	70		H	7.6	35	1.00000	ug/Kg	158304		08/12/05 2014	dpk
	Fluoranthene, 3541 Low Solid*	460			6.6	35	1.00000	ug/Kg	158304		08/12/05 2014	dpk
	Pyrene, 3541 Low Solid*	520			8.0	35	1.00000	ug/Kg	158304		08/12/05 2014	dpk
	Benzo(a)anthracene, 3541 Low Solid*	220			6.9	35	1.00000	ug/Kg	158304		08/12/05 2014	dpk
	Chrysene, 3541 Low Solid*	230		H	7.2	35	1.00000	ug/Kg	158304		08/12/05 2014	dpk
	Benzo(b)fluoranthene, 3541 Low Solid*	290		M	8.8	35	1.00000	ug/Kg	158304		08/12/05 2014	dpk
	Benzo(k)fluoranthene, 3541 Low Solid*	170		M	9.8	35	1.00000	ug/Kg	158304		08/12/05 2014	dpk
	Benzo(a)pyrene, 3541 Low Solid*	230		H	4.1	35	1.00000	ug/Kg	158304		08/12/05 2014	dpk
	Indeno(1,2,3-cd)pyrene, 3541 Low Solid*	110		H	7.0	35	1.00000	ug/Kg	158304		08/12/05 2014	dpk
	Dibenzo(a,h)anthracene, 3541 Low Solid*	35	U		7.2	35	1.00000	ug/Kg	158304		08/12/05 2014	dpk
	Benzo(ghi)perylene, 3541 Low Solid*	120		H	9.5	35	1.00000	ug/Kg	158304		08/12/05 2014	dpk
8081A	Organochlorine Pesticide Analysis											
	alpha-BHC, 3541 Solid*	3.5	U		2.0	3.5	2.00000	ug/Kg	158203		08/11/05 2122	pjg
	beta-BHC, 3541 Solid*	3.5	U		2.9	3.5	2.00000	ug/Kg	158203		08/11/05 2122	pjg
	delta-BHC, 3541 Solid*	3.5	U		2.9	3.5	2.00000	ug/Kg	158203		08/11/05 2122	pjg
	gamma-BHC (Lindane), 3541 Solid*	3.5	U		2.0	3.5	2.00000	ug/Kg	158203		08/11/05 2122	pjg
	Heptachlor, 3541 Solid*	3.5	U		1.9	3.5	2.00000	ug/Kg	158203		08/11/05 2122	pjg
	Aldrin, 3541 Solid*	3.5	U		1.9	3.5	2.00000	ug/Kg	158203		08/11/05 2122	pjg
	Heptachlor epoxide, 3541 Solid*	3.5	U		2.0	3.5	2.00000	ug/Kg	158203		08/11/05 2122	pjg
	Endosulfan I, 3541 Solid*	3.5	U		2.1	3.5	2.00000	ug/Kg	158203		08/11/05 2122	pjg
	Dieldrin, 3541 Solid*	3.5	U		1.9	3.5	2.00000	ug/Kg	158203		08/11/05 2122	pjg
	4,4'-DDE, 3541 Solid*	3.7			2.0	3.5	2.00000	ug/Kg	158203		08/11/05 2122	pjg

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-05
Date Sampled.....: 08/02/2005
Time Sampled.....: 09:15
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-5
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Endrin, 3541 Solid*	3.5	U		2.0	3.5	2.00000	ug/Kg	158203		08/11/05 2122	pjg
	Endosulfan II, 3541 Solid*	3.5	U		2.1	3.5	2.00000	ug/Kg	158203		08/11/05 2122	pjg
	4,4'-DDD, 3541 Solid*	3.5	U		2.3	3.5	2.00000	ug/Kg	158203		08/11/05 2122	pjg
	Endosulfan sulfate, 3541 Solid*	3.5	U		2.3	3.5	2.00000	ug/Kg	158203		08/11/05 2122	pjg
	4,4'-DDT, 3541 Solid*	9.0			1.9	3.5	2.00000	ug/Kg	158203		08/11/05 2122	pjg
	Methoxychlor, 3541 Solid*	17	U		2.9	17	2.00000	ug/Kg	158203		08/11/05 2122	pjg
	alpha-Chlordane, 3541 Solid*	3.5	U		1.9	3.5	2.00000	ug/Kg	158203		08/11/05 2122	pjg
	gamma-Chlordane, 3541 Solid*	3.5	U		0.31	3.5	2.00000	ug/Kg	158203		08/11/05 2122	pjg
	Toxaphene, 3541 Solid*	35	U		23	35	2.00000	ug/Kg	158203		08/11/05 2122	pjg
	Endrin aldehyde, 3541 Solid*	3.5	U		2.5	3.5	2.00000	ug/Kg	158203		08/11/05 2122	pjg
	Endrin ketone, 3541 Solid*	3.5	U		2.7	3.5	2.00000	ug/Kg	158203		08/11/05 2122	pjg
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	17	U		5.8	17	1.00000	ug/Kg	158329		08/10/05 1807	bjt
	Aroclor 1221, 3541 Solid*	17	U		4.8	17	1.00000	ug/Kg	158329		08/10/05 1807	bjt
	Aroclor 1232, 3541 Solid*	17	U		4.7	17	1.00000	ug/Kg	158329		08/10/05 1807	bjt
	Aroclor 1242, 3541 Solid*	17	U		5.1	17	1.00000	ug/Kg	158329		08/10/05 1807	bjt
	Aroclor 1248, 3541 Solid*	17	U		3.7	17	1.00000	ug/Kg	158329		08/10/05 1807	bjt
	Aroclor 1254, 3541 Solid*	17	U		3.9	17	1.00000	ug/Kg	158329		08/10/05 1807	bjt
	Aroclor 1260, 3541 Solid*	39			3.4	17	1.00000	ug/Kg	158329		08/10/05 1807	bjt
Method	% Solids Determination											
	% Solids, Solid	93.3			0.10	0.10	1	%	156577		08/04/05 2219	clb
	% Moisture, Solid	6.7			0.10	0.10	1	%	156577		08/04/05 2219	clb
7471A	Mercury (CVAA) Solids											
	Mercury, Solid*	0.11			0.0065	0.018	1	mg/Kg	157319		08/11/05 1432	gok
6010B	Metals Analysis (ICAP Trace)											
	Aluminum, Solid*	5500			5.2	20	1	mg/Kg	156962		08/09/05 1022	tds

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-05
Date Sampled.....: 08/02/2005
Time Sampled.....: 09:15
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-5
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Antimony, Solid*	0.76	B		0.44	2.0	1	mg/Kg	156962		08/09/05 1022	tds
	Arsenic, Solid*	5.3			0.38	1.0	1	mg/Kg	156962		08/09/05 1022	tds
	Barium, Solid*	51			0.073	1.0	1	mg/Kg	156962		08/09/05 1022	tds
	Beryllium, Solid*	0.72			0.018	0.41	1	mg/Kg	156962		08/09/05 1022	tds
	Cadmium, Solid*	0.30			0.059	0.20	1	mg/Kg	156962		08/09/05 1022	tds
	Calcium, Solid*	490			1.9	10	1	mg/Kg	156962		08/09/05 1022	tds
	Chromium, Solid*	13			0.10	1.0	1	mg/Kg	156962		08/09/05 1022	tds
	Cobalt, Solid*	6.0			0.12	0.51	1	mg/Kg	156962		08/09/05 1022	tds
	Copper, Solid*	15			0.22	1.0	1	mg/Kg	156962		08/09/05 1022	tds
	Iron, Solid*	13000			2.2	10	1	mg/Kg	156962		08/09/05 1022	tds
	Lead, Solid*	53			0.26	0.51	1	mg/Kg	156962		08/09/05 1022	tds
	Magnesium, Solid*	500			1.0	10	1	mg/Kg	156962		08/09/05 1022	tds
	Manganese, Solid*	170			0.054	1.0	1	mg/Kg	156962		08/09/05 1022	tds
	Nickel, Solid*	6.9			0.49	1.0	1	mg/Kg	156962		08/09/05 1022	tds
	Potassium, Solid*	310			6.1	51	1	mg/Kg	156962		08/09/05 1022	tds
	Selenium, Solid*	0.90	B		0.46	1.0	1	mg/Kg	156962		08/09/05 1022	tds
	Silver, Solid*	0.24	B		0.10	0.51	1	mg/Kg	156962		08/09/05 1022	tds
	Sodium, Solid*	89	B		80	100	1	mg/Kg	156962		08/09/05 1022	tds
	Thallium, Solid*	1.0	U		0.58	1.0	1	mg/Kg	156962		08/09/05 1022	tds
	Vanadium, Solid*	30			0.15	0.51	1	mg/Kg	156962		08/09/05 1022	tds
	Zinc, Solid*	67			1.4	2.0	1	mg/Kg	156962		08/09/05 1022	tds

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-06
Date Sampled.....: 08/02/2005
Time Sampled.....: 09:25
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-6
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8270C	Semivolatile Organics											
	Naphthalene, 3541 Low Solid*	37	U		7.3	37	1.00000	ug/Kg	158304		08/12/05 2034	dpk
	Acenaphthylene, 3541 Low Solid*	37	U		7.2	37	1.00000	ug/Kg	158304		08/12/05 2034	dpk
	Acenaphthene, 3541 Low Solid*	37	U		7.1	37	1.00000	ug/Kg	158304		08/12/05 2034	dpk
	Fluorene, 3541 Low Solid*	37	U		7.0	37	1.00000	ug/Kg	158304		08/12/05 2034	dpk
	Phenanthrene, 3541 Low Solid*	130			5.9	37	1.00000	ug/Kg	158304		08/12/05 2034	dpk
	Anthracene, 3541 Low Solid*	23	J	a	7.9	37	1.00000	ug/Kg	158304		08/12/05 2034	dpk
	Fluoranthene, 3541 Low Solid*	240			6.9	37	1.00000	ug/Kg	158304		08/12/05 2034	dpk
	Pyrene, 3541 Low Solid*	280			8.3	37	1.00000	ug/Kg	158304		08/12/05 2034	dpk
	Benzo(a)anthracene, 3541 Low Solid*	110			7.2	37	1.00000	ug/Kg	158304		08/12/05 2034	dpk
	Chrysene, 3541 Low Solid*	150		H	7.4	37	1.00000	ug/Kg	158304		08/12/05 2034	dpk
	Benzo(b)fluoranthene, 3541 Low Solid*	180		M	9.1	37	1.00000	ug/Kg	158304		08/12/05 2034	dpk
	Benzo(k)fluoranthene, 3541 Low Solid*	100		M	10	37	1.00000	ug/Kg	158304		08/12/05 2034	dpk
	Benzo(a)pyrene, 3541 Low Solid*	120		H	4.2	37	1.00000	ug/Kg	158304		08/12/05 2034	dpk
	Indeno(1,2,3-cd)pyrene, 3541 Low Solid*	65			7.3	37	1.00000	ug/Kg	158304		08/12/05 2034	dpk
	Dibenzo(a,h)anthracene, 3541 Low Solid*	37	U		7.4	37	1.00000	ug/Kg	158304		08/12/05 2034	dpk
	Benzo(ghi)perylene, 3541 Low Solid*	68			9.9	37	1.00000	ug/Kg	158304		08/12/05 2034	dpk
8081A	Organochlorine Pesticide Analysis											
	alpha-BHC, 3541 Solid*	3.8	U		2.2	3.8	2.00000	ug/Kg	158203		08/11/05 2150	pjg
	beta-BHC, 3541 Solid*	3.8	U		3.1	3.8	2.00000	ug/Kg	158203		08/11/05 2150	pjg
	delta-BHC, 3541 Solid*	3.8	U		3.1	3.8	2.00000	ug/Kg	158203		08/11/05 2150	pjg
	gamma-BHC (Lindane), 3541 Solid*	3.8	U		2.2	3.8	2.00000	ug/Kg	158203		08/11/05 2150	pjg
	Heptachlor, 3541 Solid*	3.8	U		2.0	3.8	2.00000	ug/Kg	158203		08/11/05 2150	pjg
	Aldrin, 3541 Solid*	3.8	U		2.0	3.8	2.00000	ug/Kg	158203		08/11/05 2150	pjg
	Heptachlor epoxide, 3541 Solid*	3.8	U		2.1	3.8	2.00000	ug/Kg	158203		08/11/05 2150	pjg
	Endosulfan I, 3541 Solid*	3.8	U		2.2	3.8	2.00000	ug/Kg	158203		08/11/05 2150	pjg
	Dieldrin, 3541 Solid*	3.8	U		2.0	3.8	2.00000	ug/Kg	158203		08/11/05 2150	pjg
	4,4'-DDE, 3541 Solid*	9.3			2.1	3.8	2.00000	ug/Kg	158203		08/11/05 2150	pjg

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-06
Date Sampled.....: 08/02/2005
Time Sampled.....: 09:25
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-6
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Endrin, 3541 Solid*	3.8	U		2.1	3.8	2.00000	ug/Kg	158203		08/11/05 2150	pjg
	Endosulfan II, 3541 Solid*	3.8	U		2.2	3.8	2.00000	ug/Kg	158203		08/11/05 2150	pjg
	4,4'-DDD, 3541 Solid*	3.8	U		2.5	3.8	2.00000	ug/Kg	158203		08/11/05 2150	pjg
	Endosulfan sulfate, 3541 Solid*	3.8	U		2.5	3.8	2.00000	ug/Kg	158203		08/11/05 2150	pjg
	4,4'-DDT, 3541 Solid*	17			2.1	3.8	2.00000	ug/Kg	158203		08/11/05 2150	pjg
	Methoxychlor, 3541 Solid*	19	U		3.1	19	2.00000	ug/Kg	158203		08/11/05 2150	pjg
	alpha-Chlordane, 3541 Solid*	3.8	U		2.0	3.8	2.00000	ug/Kg	158203		08/11/05 2150	pjg
	gamma-Chlordane, 3541 Solid*	3.8	U		0.34	3.8	2.00000	ug/Kg	158203		08/11/05 2150	pjg
	Toxaphene, 3541 Solid*	37	U		25	37	2.00000	ug/Kg	158203		08/11/05 2150	pjg
	Endrin aldehyde, 3541 Solid*	3.8	U		2.7	3.8	2.00000	ug/Kg	158203		08/11/05 2150	pjg
	Endrin ketone, 3541 Solid*	3.8	U		2.9	3.8	2.00000	ug/Kg	158203		08/11/05 2150	pjg
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	19	U		6.3	19	1.00000	ug/Kg	158329		08/10/05 1840	bjt
	Aroclor 1221, 3541 Solid*	19	U		5.1	19	1.00000	ug/Kg	158329		08/10/05 1840	bjt
	Aroclor 1232, 3541 Solid*	19	U		5.0	19	1.00000	ug/Kg	158329		08/10/05 1840	bjt
	Aroclor 1242, 3541 Solid*	19	U		5.5	19	1.00000	ug/Kg	158329		08/10/05 1840	bjt
	Aroclor 1248, 3541 Solid*	19	U		4.0	19	1.00000	ug/Kg	158329		08/10/05 1840	bjt
	Aroclor 1254, 3541 Solid*	19	U		4.1	19	1.00000	ug/Kg	158329		08/10/05 1840	bjt
	Aroclor 1260, 3541 Solid*	62			3.7	19	1.00000	ug/Kg	158329		08/10/05 1840	bjt
Method	% Solids Determination											
	% Solids, Solid	87.1			0.10	0.10	1	%	156577		08/04/05 2222	clb
	% Moisture, Solid	12.9			0.10	0.10	1	%	156577		08/04/05 2222	clb
7471A	Mercury (CVAA) Solids											
	Mercury, Solid*	0.16			0.0070	0.019	1	mg/Kg	157319		08/11/05 1434	gok
6010B	Metals Analysis (ICAP Trace)											
	Aluminum, Solid*	11000			5.4	21	1	mg/Kg	157282		08/11/05 2025	tds

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment

PROJECT: NPS - KENILWORTH

ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-06
Date Sampled.....: 08/02/2005
Time Sampled.....: 09:25
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-6
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Antimony, Solid*	2.1	U		0.46	2.1	1	mg/Kg	157282		08/11/05 2025	tds
	Arsenic, Solid*	6.5			0.39	1.1	1	mg/Kg	157282		08/11/05 2025	tds
	Barium, Solid*	200			0.077	1.1	1	mg/Kg	157282		08/11/05 2025	tds
	Beryllium, Solid*	1.0			0.019	0.43	1	mg/Kg	157282		08/11/05 2025	tds
	Cadmium, Solid*	0.22			0.062	0.21	1	mg/Kg	157282		08/11/05 2025	tds
	Calcium, Solid*	1700			2.0	11	1	mg/Kg	157282		08/11/05 2025	tds
	Chromium, Solid*	27			0.11	1.1	1	mg/Kg	157282		08/11/05 2025	tds
	Cobalt, Solid*	13			0.13	0.53	1	mg/Kg	157282		08/11/05 2025	tds
	Copper, Solid*	43			0.23	1.1	1	mg/Kg	157282		08/11/05 2025	tds
	Iron, Solid*	18000			2.3	11	1	mg/Kg	157282		08/11/05 2025	tds
	Lead, Solid*	130			0.27	0.53	1	mg/Kg	157282		08/11/05 2025	tds
	Magnesium, Solid*	1600			1.1	11	1	mg/Kg	157282		08/11/05 2025	tds
	Manganese, Solid*	300			0.056	1.1	1	mg/Kg	157282		08/11/05 2025	tds
	Nickel, Solid*	20			0.51	1.1	1	mg/Kg	157282		08/11/05 2025	tds
	Potassium, Solid*	910			6.4	53	1	mg/Kg	157282		08/11/05 2025	tds
	Selenium, Solid*	1.1	B		0.48	1.1	1	mg/Kg	157282		08/11/05 2025	tds
	Silver, Solid*	0.64			0.11	0.53	1	mg/Kg	157282		08/11/05 2025	tds
	Sodium, Solid*	110	U		84	110	1	mg/Kg	157282		08/11/05 2025	tds
	Thallium, Solid*	1.1	U		0.61	1.1	1	mg/Kg	157282		08/11/05 2025	tds
	Vanadium, Solid*	55			0.16	0.53	1	mg/Kg	157282		08/11/05 2025	tds
	Zinc, Solid*	120			1.5	2.1	1	mg/Kg	157282		08/11/05 2025	tds

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-07
Date Sampled.....: 08/02/2005
Time Sampled.....: 09:30
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-7
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8270C	Semivolatile Organics											
	Naphthalene, 3541 Low Solid*	36	U		7.3	36	1.00000	ug/Kg	158304		08/12/05 2053	dpk
	Acenaphthylene, 3541 Low Solid*	36	U		7.2	36	1.00000	ug/Kg	158304		08/12/05 2053	dpk
	Acenaphthene, 3541 Low Solid*	36	U		7.0	36	1.00000	ug/Kg	158304		08/12/05 2053	dpk
	Fluorene, 3541 Low Solid*	36	U		6.9	36	1.00000	ug/Kg	158304		08/12/05 2053	dpk
	Phenanthrene, 3541 Low Solid*	190			5.8	36	1.00000	ug/Kg	158304		08/12/05 2053	dpk
	Anthracene, 3541 Low Solid*	32	J	a	7.8	36	1.00000	ug/Kg	158304		08/12/05 2053	dpk
	Fluoranthene, 3541 Low Solid*	380			6.8	36	1.00000	ug/Kg	158304		08/12/05 2053	dpk
	Pyrene, 3541 Low Solid*	490			8.3	36	1.00000	ug/Kg	158304		08/12/05 2053	dpk
	Benzo(a)anthracene, 3541 Low Solid*	190			7.2	36	1.00000	ug/Kg	158304		08/12/05 2053	dpk
	Chrysene, 3541 Low Solid*	280		H	7.4	36	1.00000	ug/Kg	158304		08/12/05 2053	dpk
	Benzo(b)fluoranthene, 3541 Low Solid*	290		M	9.0	36	1.00000	ug/Kg	158304		08/12/05 2053	dpk
	Benzo(k)fluoranthene, 3541 Low Solid*	300		M	10	36	1.00000	ug/Kg	158304		08/12/05 2053	dpk
	Benzo(a)pyrene, 3541 Low Solid*	310		H	4.2	36	1.00000	ug/Kg	158304		08/12/05 2053	dpk
	Indeno(1,2,3-cd)pyrene, 3541 Low Solid*	110		H	7.3	36	1.00000	ug/Kg	158304		08/12/05 2053	dpk
	Dibenzo(a,h)anthracene, 3541 Low Solid*	36	U		7.4	36	1.00000	ug/Kg	158304		08/12/05 2053	dpk
	Benzo(ghi)perylene, 3541 Low Solid*	130			9.8	36	1.00000	ug/Kg	158304		08/12/05 2053	dpk
8081A	Organochlorine Pesticide Analysis											
	alpha-BHC, 3541 Solid*	3.7	U		2.1	3.7	2.00000	ug/Kg	158203		08/12/05 0009	pjg
	beta-BHC, 3541 Solid*	3.7	U		3.1	3.7	2.00000	ug/Kg	158203		08/12/05 0009	pjg
	delta-BHC, 3541 Solid*	3.7	U		3.1	3.7	2.00000	ug/Kg	158203		08/12/05 0009	pjg
	gamma-BHC (Lindane), 3541 Solid*	3.7	U		2.1	3.7	2.00000	ug/Kg	158203		08/12/05 0009	pjg
	Heptachlor, 3541 Solid*	3.7	U		2.0	3.7	2.00000	ug/Kg	158203		08/12/05 0009	pjg
	Aldrin, 3541 Solid*	3.7	U		2.0	3.7	2.00000	ug/Kg	158203		08/12/05 0009	pjg
	Heptachlor epoxide, 3541 Solid*	3.7	U		2.1	3.7	2.00000	ug/Kg	158203		08/12/05 0009	pjg
	Endosulfan I, 3541 Solid*	3.7	U		2.2	3.7	2.00000	ug/Kg	158203		08/12/05 0009	pjg
	Dieldrin, 3541 Solid*	3.7	U		2.0	3.7	2.00000	ug/Kg	158203		08/12/05 0009	pjg
	4,4'-DDE, 3541 Solid*	18			2.1	3.7	2.00000	ug/Kg	158203		08/12/05 0009	pjg

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-07
Date Sampled.....: 08/02/2005
Time Sampled.....: 09:30
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-7
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Endrin, 3541 Solid*	3.7	U		2.1	3.7	2.00000	ug/Kg	158203		08/12/05 0009	pjg
	Endosulfan II, 3541 Solid*	3.7	U		2.2	3.7	2.00000	ug/Kg	158203		08/12/05 0009	pjg
	4,4'-DDD, 3541 Solid*	3.7	U		2.4	3.7	2.00000	ug/Kg	158203		08/12/05 0009	pjg
	Endosulfan sulfate, 3541 Solid*	3.7	U		2.4	3.7	2.00000	ug/Kg	158203		08/12/05 0009	pjg
	4,4'-DDT, 3541 Solid*	27			2.0	3.7	2.00000	ug/Kg	158203		08/12/05 0009	pjg
	Methoxychlor, 3541 Solid*	18	U		3.1	18	2.00000	ug/Kg	158203		08/12/05 0009	pjg
	alpha-Chlordane, 3541 Solid*	3.7	U		2.0	3.7	2.00000	ug/Kg	158203		08/12/05 0009	pjg
	gamma-Chlordane, 3541 Solid*	3.7	U		0.33	3.7	2.00000	ug/Kg	158203		08/12/05 0009	pjg
	Toxaphene, 3541 Solid*	37	U		24	37	2.00000	ug/Kg	158203		08/12/05 0009	pjg
	Endrin aldehyde, 3541 Solid*	3.7	U		2.6	3.7	2.00000	ug/Kg	158203		08/12/05 0009	pjg
	Endrin ketone, 3541 Solid*	3.7	U		2.9	3.7	2.00000	ug/Kg	158203		08/12/05 0009	pjg
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	18	U		6.1	18	1.00000	ug/Kg	158329		08/10/05 2020	bjt
	Aroclor 1221, 3541 Solid*	18	U		5.0	18	1.00000	ug/Kg	158329		08/10/05 2020	bjt
	Aroclor 1232, 3541 Solid*	18	U		4.9	18	1.00000	ug/Kg	158329		08/10/05 2020	bjt
	Aroclor 1242, 3541 Solid*	18	U		5.4	18	1.00000	ug/Kg	158329		08/10/05 2020	bjt
	Aroclor 1248, 3541 Solid*	18	U		3.9	18	1.00000	ug/Kg	158329		08/10/05 2020	bjt
	Aroclor 1254, 3541 Solid*	18	U		4.1	18	1.00000	ug/Kg	158329		08/10/05 2020	bjt
	Aroclor 1260, 3541 Solid*	97			3.6	18	1.00000	ug/Kg	158329		08/10/05 2020	bjt
Method	% Solids Determination											
	% Solids, Solid	86.7			0.10	0.10	1	%	156577		08/04/05 2225	clb
	% Moisture, Solid	13.3			0.10	0.10	1	%	156577		08/04/05 2225	clb
7471A	Mercury (CVAA) Solids											
	Mercury, Solid*	0.18			0.0070	0.019	1	mg/Kg	157319		08/11/05 1437	gok
6010B	Metals Analysis (ICAP Trace)											
	Aluminum, Solid*	9500			5.6	22	1	mg/Kg	157282		08/11/05 2029	tds

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-07
Date Sampled.....: 08/02/2005
Time Sampled.....: 09:30
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-7
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Antimony, Solid*	2.2	U		0.48	2.2	1	mg/Kg	157282		08/11/05 2029	tds
	Arsenic, Solid*	6.6			0.41	1.1	1	mg/Kg	157282		08/11/05 2029	tds
	Barium, Solid*	100			0.080	1.1	1	mg/Kg	157282		08/11/05 2029	tds
	Beryllium, Solid*	0.97			0.020	0.44	1	mg/Kg	157282		08/11/05 2029	tds
	Cadmium, Solid*	0.32			0.064	0.22	1	mg/Kg	157282		08/11/05 2029	tds
	Calcium, Solid*	2300			2.0	11	1	mg/Kg	157282		08/11/05 2029	tds
	Chromium, Solid*	23			0.11	1.1	1	mg/Kg	157282		08/11/05 2029	tds
	Cobalt, Solid*	12			0.13	0.55	1	mg/Kg	157282		08/11/05 2029	tds
	Copper, Solid*	21			0.24	1.1	1	mg/Kg	157282		08/11/05 2029	tds
	Iron, Solid*	17000			2.4	11	1	mg/Kg	157282		08/11/05 2029	tds
	Lead, Solid*	79			0.28	0.55	1	mg/Kg	157282		08/11/05 2029	tds
	Magnesium, Solid*	1700			1.1	11	1	mg/Kg	157282		08/11/05 2029	tds
	Manganese, Solid*	280			0.059	1.1	1	mg/Kg	157282		08/11/05 2029	tds
	Nickel, Solid*	23			0.53	1.1	1	mg/Kg	157282		08/11/05 2029	tds
	Potassium, Solid*	760			6.6	55	1	mg/Kg	157282		08/11/05 2029	tds
	Selenium, Solid*	0.93	B		0.50	1.1	1	mg/Kg	157282		08/11/05 2029	tds
	Silver, Solid*	0.61			0.11	0.55	1	mg/Kg	157282		08/11/05 2029	tds
	Sodium, Solid*	110	U		87	110	1	mg/Kg	157282		08/11/05 2029	tds
	Thallium, Solid*	1.1	U		0.63	1.1	1	mg/Kg	157282		08/11/05 2029	tds
	Vanadium, Solid*	52			0.17	0.55	1	mg/Kg	157282		08/11/05 2029	tds
	Zinc, Solid*	99			1.5	2.2	1	mg/Kg	157282		08/11/05 2029	tds

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-08
Date Sampled.....: 08/02/2005
Time Sampled.....: 09:40
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-8
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8270C	Semivolatile Organics											
	Naphthalene, 3541 Low Solid*	22	J	a	6.8	34	1.00000	ug/Kg	158304		08/12/05 2112	dpk
	Acenaphthylene, 3541 Low Solid*	21	J	a	6.7	34	1.00000	ug/Kg	158304		08/12/05 2112	dpk
	Acenaphthene, 3541 Low Solid*	34	U		6.6	34	1.00000	ug/Kg	158304		08/12/05 2112	dpk
	Fluorene, 3541 Low Solid*	34	U		6.5	34	1.00000	ug/Kg	158304		08/12/05 2112	dpk
	Phenanthrene, 3541 Low Solid*	210			5.5	34	1.00000	ug/Kg	158304		08/12/05 2112	dpk
	Anthracene, 3541 Low Solid*	34	J	a	7.3	34	1.00000	ug/Kg	158304		08/12/05 2112	dpk
	Fluoranthene, 3541 Low Solid*	420			6.4	34	1.00000	ug/Kg	158304		08/12/05 2112	dpk
	Pyrene, 3541 Low Solid*	550		H	7.7	34	1.00000	ug/Kg	158304		08/12/05 2112	dpk
	Benzo(a)anthracene, 3541 Low Solid*	210			6.7	34	1.00000	ug/Kg	158304		08/12/05 2112	dpk
	Chrysene, 3541 Low Solid*	340		H	6.9	34	1.00000	ug/Kg	158304		08/12/05 2112	dpk
	Benzo(b)fluoranthene, 3541 Low Solid*	300		M	8.5	34	1.00000	ug/Kg	158304		08/12/05 2112	dpk
	Benzo(k)fluoranthene, 3541 Low Solid*	380		M	9.5	34	1.00000	ug/Kg	158304		08/12/05 2112	dpk
	Benzo(a)pyrene, 3541 Low Solid*	300			3.9	34	1.00000	ug/Kg	158304		08/12/05 2112	dpk
	Indeno(1,2,3-cd)pyrene, 3541 Low Solid*	160			6.8	34	1.00000	ug/Kg	158304		08/12/05 2112	dpk
	Dibenzo(a,h)anthracene, 3541 Low Solid*	34	U		6.9	34	1.00000	ug/Kg	158304		08/12/05 2112	dpk
	Benzo(ghi)perylene, 3541 Low Solid*	140			9.2	34	1.00000	ug/Kg	158304		08/12/05 2112	dpk
8081A	Organochlorine Pesticide Analysis											
	alpha-BHC, 3541 Solid*	3.6	U		2.1	3.6	2.00000	ug/Kg	158203		08/12/05 0036	pjg
	beta-BHC, 3541 Solid*	3.6	U		3.0	3.6	2.00000	ug/Kg	158203		08/12/05 0036	pjg
	delta-BHC, 3541 Solid*	3.6	U		3.0	3.6	2.00000	ug/Kg	158203		08/12/05 0036	pjg
	gamma-BHC (Lindane), 3541 Solid*	3.6	U		2.1	3.6	2.00000	ug/Kg	158203		08/12/05 0036	pjg
	Heptachlor, 3541 Solid*	3.6	U		2.0	3.6	2.00000	ug/Kg	158203		08/12/05 0036	pjg
	Aldrin, 3541 Solid*	3.6	U		1.9	3.6	2.00000	ug/Kg	158203		08/12/05 0036	pjg
	Heptachlor epoxide, 3541 Solid*	3.6	U		2.0	3.6	2.00000	ug/Kg	158203		08/12/05 0036	pjg
	Endosulfan I, 3541 Solid*	3.6	U		2.1	3.6	2.00000	ug/Kg	158203		08/12/05 0036	pjg
	Dieldrin, 3541 Solid*	2.2	J	a	1.9	3.6	2.00000	ug/Kg	158203		08/12/05 0036	pjg
	4,4'-DDE, 3541 Solid*	23			2.0	3.6	2.00000	ug/Kg	158203		08/12/05 0036	pjg

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-08
Date Sampled.....: 08/02/2005
Time Sampled.....: 09:40
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-8
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Endrin, 3541 Solid*	3.6	U		2.0	3.6	2.00000	ug/Kg	158203		08/12/05 0036	pjg
	Endosulfan II, 3541 Solid*	3.6	U		2.1	3.6	2.00000	ug/Kg	158203		08/12/05 0036	pjg
	4,4'-DDD, 3541 Solid*	3.6	U		2.4	3.6	2.00000	ug/Kg	158203		08/12/05 0036	pjg
	Endosulfan sulfate, 3541 Solid*	3.6	U		2.4	3.6	2.00000	ug/Kg	158203		08/12/05 0036	pjg
	4,4'-DDT, 3541 Solid*	31			2.0	3.6	2.00000	ug/Kg	158203		08/12/05 0036	pjg
	Methoxychlor, 3541 Solid*	18	U		3.0	18	2.00000	ug/Kg	158203		08/12/05 0036	pjg
	alpha-Chlordane, 3541 Solid*	3.6	U		1.9	3.6	2.00000	ug/Kg	158203		08/12/05 0036	pjg
	gamma-Chlordane, 3541 Solid*	3.6	U		0.32	3.6	2.00000	ug/Kg	158203		08/12/05 0036	pjg
	Toxaphene, 3541 Solid*	36	U		24	36	2.00000	ug/Kg	158203		08/12/05 0036	pjg
	Endrin aldehyde, 3541 Solid*	3.6	U		2.6	3.6	2.00000	ug/Kg	158203		08/12/05 0036	pjg
	Endrin ketone, 3541 Solid*	3.6	U		2.8	3.6	2.00000	ug/Kg	158203		08/12/05 0036	pjg
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	18	U		6.0	18	1.00000	ug/Kg	158329		08/10/05 2053	bjt
	Aroclor 1221, 3541 Solid*	18	U		4.9	18	1.00000	ug/Kg	158329		08/10/05 2053	bjt
	Aroclor 1232, 3541 Solid*	18	U		4.8	18	1.00000	ug/Kg	158329		08/10/05 2053	bjt
	Aroclor 1242, 3541 Solid*	18	U		5.3	18	1.00000	ug/Kg	158329		08/10/05 2053	bjt
	Aroclor 1248, 3541 Solid*	18	U		3.9	18	1.00000	ug/Kg	158329		08/10/05 2053	bjt
	Aroclor 1254, 3541 Solid*	18	U		4.0	18	1.00000	ug/Kg	158329		08/10/05 2053	bjt
	Aroclor 1260, 3541 Solid*	83			3.5	18	1.00000	ug/Kg	158329		08/10/05 2053	bjt
Method	% Solids Determination											
	% Solids, Solid	91.2			0.10	0.10	1	%	156577		08/04/05 2228	clb
	% Moisture, Solid	8.8			0.10	0.10	1	%	156577		08/04/05 2228	clb
7471A	Mercury (CVAA) Solids											
	Mercury, Solid*	0.19			0.0067	0.018	1	mg/Kg	157319		08/11/05 1439	gok
6010B	Metals Analysis (ICAP Trace)											
	Aluminum, Solid*	10000			5.3	21	1	mg/Kg	157282		08/11/05 2034	tds

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-08
Date Sampled.....: 08/02/2005
Time Sampled.....: 09:40
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-8
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Antimony, Solid*	0.63	B		0.45	2.1	1	mg/Kg	157282		08/11/05 2034	tds
	Arsenic, Solid*	7.5			0.39	1.0	1	mg/Kg	157282		08/11/05 2034	tds
	Barium, Solid*	120			0.075	1.0	1	mg/Kg	157282		08/11/05 2034	tds
	Beryllium, Solid*	1.1			0.019	0.42	1	mg/Kg	157282		08/11/05 2034	tds
	Cadmium, Solid*	0.36			0.061	0.21	1	mg/Kg	157282		08/11/05 2034	tds
	Calcium, Solid*	990			1.9	10	1	mg/Kg	157282		08/11/05 2034	tds
	Chromium, Solid*	31			0.10	1.0	1	mg/Kg	157282		08/11/05 2034	tds
	Cobalt, Solid*	21			0.13	0.52	1	mg/Kg	157282		08/11/05 2034	tds
	Copper, Solid*	30			0.23	1.0	1	mg/Kg	157282		08/11/05 2034	tds
	Iron, Solid*	18000			2.3	10	1	mg/Kg	157282		08/11/05 2034	tds
	Lead, Solid*	120			0.26	0.52	1	mg/Kg	157282		08/11/05 2034	tds
	Magnesium, Solid*	1400			1.1	10	1	mg/Kg	157282		08/11/05 2034	tds
	Manganese, Solid*	460			0.056	1.0	1	mg/Kg	157282		08/11/05 2034	tds
	Nickel, Solid*	23			0.50	1.0	1	mg/Kg	157282		08/11/05 2034	tds
	Potassium, Solid*	770			6.3	52	1	mg/Kg	157282		08/11/05 2034	tds
	Selenium, Solid*	1.0			0.47	1.0	1	mg/Kg	157282		08/11/05 2034	tds
	Silver, Solid*	1.0			0.10	0.52	1	mg/Kg	157282		08/11/05 2034	tds
	Sodium, Solid*	100	U		82	100	1	mg/Kg	157282		08/11/05 2034	tds
	Thallium, Solid*	1.0	U		0.60	1.0	1	mg/Kg	157282		08/11/05 2034	tds
	Vanadium, Solid*	60			0.16	0.52	1	mg/Kg	157282		08/11/05 2034	tds
	Zinc, Solid*	290			1.4	2.1	1	mg/Kg	157282		08/11/05 2034	tds

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-09
Date Sampled.....: 08/02/2005
Time Sampled.....: 09:45
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-9
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8270C	Semivolatile Organics											
	Naphthalene, 3541 Low Solid*	35	U		7.0	35	1.00000	ug/Kg	158304		08/12/05 2131	dpk
	Acenaphthylene, 3541 Low Solid*	35	U		6.9	35	1.00000	ug/Kg	158304		08/12/05 2131	dpk
	Acenaphthene, 3541 Low Solid*	22	J	a	6.8	35	1.00000	ug/Kg	158304		08/12/05 2131	dpk
	Fluorene, 3541 Low Solid*	23	J	a	6.7	35	1.00000	ug/Kg	158304		08/12/05 2131	dpk
	Phenanthrene, 3541 Low Solid*	520		H	5.7	35	1.00000	ug/Kg	158304		08/12/05 2131	dpk
	Anthracene, 3541 Low Solid*	77		H	7.6	35	1.00000	ug/Kg	158304		08/12/05 2131	dpk
	Fluoranthene, 3541 Low Solid*	1100		H	6.6	35	1.00000	ug/Kg	158304		08/12/05 2131	dpk
	Pyrene, 3541 Low Solid*	1300		H	8.0	35	1.00000	ug/Kg	158304		08/12/05 2131	dpk
	Benzo(a)anthracene, 3541 Low Solid*	580			6.9	35	1.00000	ug/Kg	158304		08/12/05 2131	dpk
	Chrysene, 3541 Low Solid*	830		H	7.1	35	1.00000	ug/Kg	158304		08/12/05 2131	dpk
	Benzo(b)fluoranthene, 3541 Low Solid*	820		M	8.8	35	1.00000	ug/Kg	158304		08/12/05 2131	dpk
	Benzo(k)fluoranthene, 3541 Low Solid*	870		M	9.8	35	1.00000	ug/Kg	158304		08/12/05 2131	dpk
	Benzo(a)pyrene, 3541 Low Solid*	860			4.1	35	1.00000	ug/Kg	158304		08/12/05 2131	dpk
	Indeno(1,2,3-cd)pyrene, 3541 Low Solid*	370		H	7.0	35	1.00000	ug/Kg	158304		08/12/05 2131	dpk
	Dibenzo(a,h)anthracene, 3541 Low Solid*	35	U		7.1	35	1.00000	ug/Kg	158304		08/12/05 2131	dpk
	Benzo(ghi)perylene, 3541 Low Solid*	350			9.5	35	1.00000	ug/Kg	158304		08/12/05 2131	dpk
8081A	Organochlorine Pesticide Analysis											
	alpha-BHC, 3541 Solid*	9.2	U		5.3	9.2	5.00000	ug/Kg	158203		08/12/05 0104	pjg
	beta-BHC, 3541 Solid*	9.2	U		7.6	9.2	5.00000	ug/Kg	158203		08/12/05 0104	pjg
	delta-BHC, 3541 Solid*	9.2	U		7.6	9.2	5.00000	ug/Kg	158203		08/12/05 0104	pjg
	gamma-BHC (Lindane), 3541 Solid*	9.2	U		5.3	9.2	5.00000	ug/Kg	158203		08/12/05 0104	pjg
	Heptachlor, 3541 Solid*	9.2	U		5.0	9.2	5.00000	ug/Kg	158203		08/12/05 0104	pjg
	Aldrin, 3541 Solid*	9.2	U		4.8	9.2	5.00000	ug/Kg	158203		08/12/05 0104	pjg
	Heptachlor epoxide, 3541 Solid*	9.2	U		5.1	9.2	5.00000	ug/Kg	158203		08/12/05 0104	pjg
	Endosulfan I, 3541 Solid*	9.2	U		5.4	9.2	5.00000	ug/Kg	158203		08/12/05 0104	pjg
	Dieldrin, 3541 Solid*	9.2	U		4.8	9.2	5.00000	ug/Kg	158203		08/12/05 0104	pjg
	4,4'-DDE, 3541 Solid*	17			5.1	9.2	5.00000	ug/Kg	158203		08/12/05 0104	pjg

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-09
Date Sampled.....: 08/02/2005
Time Sampled.....: 09:45
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-9
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Endrin, 3541 Solid*	9.2	U		5.2	9.2	5.00000	ug/Kg	158203		08/12/05 0104	pjg
	Endosulfan II, 3541 Solid*	9.2	U		5.4	9.2	5.00000	ug/Kg	158203		08/12/05 0104	pjg
	4,4'-DDD, 3541 Solid*	9.2	U		6.0	9.2	5.00000	ug/Kg	158203		08/12/05 0104	pjg
	Endosulfan sulfate, 3541 Solid*	9.2	U		6.0	9.2	5.00000	ug/Kg	158203		08/12/05 0104	pjg
	4,4'-DDT, 3541 Solid*	26			5.1	9.2	5.00000	ug/Kg	158203		08/12/05 0104	pjg
	Methoxychlor, 3541 Solid*	45	U		7.6	45	5.00000	ug/Kg	158203		08/12/05 0104	pjg
	alpha-Chlordane, 3541 Solid*	9.2	U		4.8	9.2	5.00000	ug/Kg	158203		08/12/05 0104	pjg
	gamma-Chlordane, 3541 Solid*	9.2	U		0.82	9.2	5.00000	ug/Kg	158203		08/12/05 0104	pjg
	Toxaphene, 3541 Solid*	91	U		60	91	5.00000	ug/Kg	158203		08/12/05 0104	pjg
	Endrin aldehyde, 3541 Solid*	9.2	U		6.5	9.2	5.00000	ug/Kg	158203		08/12/05 0104	pjg
	Endrin ketone, 3541 Solid*	9.2	U		7.1	9.2	5.00000	ug/Kg	158203		08/12/05 0104	pjg
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	18	U		6.1	18	1.00000	ug/Kg	158329		08/10/05 2126	bjt
	Aroclor 1221, 3541 Solid*	18	U		5.0	18	1.00000	ug/Kg	158329		08/10/05 2126	bjt
	Aroclor 1232, 3541 Solid*	18	U		4.9	18	1.00000	ug/Kg	158329		08/10/05 2126	bjt
	Aroclor 1242, 3541 Solid*	18	U		5.3	18	1.00000	ug/Kg	158329		08/10/05 2126	bjt
	Aroclor 1248, 3541 Solid*	18	U		3.9	18	1.00000	ug/Kg	158329		08/10/05 2126	bjt
	Aroclor 1254, 3541 Solid*	18	U		4.0	18	1.00000	ug/Kg	158329		08/10/05 2126	bjt
	Aroclor 1260, 3541 Solid*	87			3.6	18	1.00000	ug/Kg	158329		08/10/05 2126	bjt
Method	% Solids Determination											
	% Solids, Solid	90.9			0.10	0.10	1	%	156577		08/04/05 2231	clb
	% Moisture, Solid	9.1			0.10	0.10	1	%	156577		08/04/05 2231	clb
7471A	Mercury (CVAA) Solids											
	Mercury, Solid*	0.12			0.0067	0.018	1	mg/Kg	157319		08/11/05 1441	gok
6010B	Metals Analysis (ICAP Trace)											
	Aluminum, Solid*	7800			5.4	21	1	mg/Kg	157282		08/11/05 2038	tds

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-09
Date Sampled.....: 08/02/2005
Time Sampled.....: 09:45
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-9
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Antimony, Solid*	2.1	U		0.46	2.1	1	mg/Kg	157282		08/11/05 2038	tds
	Arsenic, Solid*	5.1			0.40	1.1	1	mg/Kg	157282		08/11/05 2038	tds
	Barium, Solid*	93			0.077	1.1	1	mg/Kg	157282		08/11/05 2038	tds
	Beryllium, Solid*	0.74			0.019	0.43	1	mg/Kg	157282		08/11/05 2038	tds
	Cadmium, Solid*	4.3			0.062	0.21	1	mg/Kg	157282		08/11/05 2038	tds
	Calcium, Solid*	1700			2.0	11	1	mg/Kg	157282		08/11/05 2038	tds
	Chromium, Solid*	20			0.11	1.1	1	mg/Kg	157282		08/11/05 2038	tds
	Cobalt, Solid*	11			0.13	0.53	1	mg/Kg	157282		08/11/05 2038	tds
	Copper, Solid*	18			0.23	1.1	1	mg/Kg	157282		08/11/05 2038	tds
	Iron, Solid*	16000			2.3	11	1	mg/Kg	157282		08/11/05 2038	tds
	Lead, Solid*	72			0.27	0.53	1	mg/Kg	157282		08/11/05 2038	tds
	Magnesium, Solid*	1800			1.1	11	1	mg/Kg	157282		08/11/05 2038	tds
	Manganese, Solid*	270			0.057	1.1	1	mg/Kg	157282		08/11/05 2038	tds
	Nickel, Solid*	22			0.51	1.1	1	mg/Kg	157282		08/11/05 2038	tds
	Potassium, Solid*	690			6.4	53	1	mg/Kg	157282		08/11/05 2038	tds
	Selenium, Solid*	0.55	B		0.48	1.1	1	mg/Kg	157282		08/11/05 2038	tds
	Silver, Solid*	0.91			0.11	0.53	1	mg/Kg	157282		08/11/05 2038	tds
	Sodium, Solid*	110	U		84	110	1	mg/Kg	157282		08/11/05 2038	tds
	Thallium, Solid*	1.1	U		0.61	1.1	1	mg/Kg	157282		08/11/05 2038	tds
	Vanadium, Solid*	52			0.16	0.53	1	mg/Kg	157282		08/11/05 2038	tds
	Zinc, Solid*	91			1.5	2.1	1	mg/Kg	157282		08/11/05 2038	tds

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-10
Date Sampled.....: 08/02/2005
Time Sampled.....: 09:55
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-10
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8270C	Semivolatile Organics											
	Naphthalene, 3541 Low Solid*	35	U		7.1	35	1.00000	ug/Kg	158304		08/12/05 2150	dpk
	Acenaphthylene, 3541 Low Solid*	35	U		7.0	35	1.00000	ug/Kg	158304		08/12/05 2150	dpk
	Acenaphthene, 3541 Low Solid*	35	U		6.9	35	1.00000	ug/Kg	158304		08/12/05 2150	dpk
	Fluorene, 3541 Low Solid*	35	U		6.8	35	1.00000	ug/Kg	158304		08/12/05 2150	dpk
	Phenanthrene, 3541 Low Solid*	130			5.7	35	1.00000	ug/Kg	158304		08/12/05 2150	dpk
	Anthracene, 3541 Low Solid*	26	J	a	7.6	35	1.00000	ug/Kg	158304		08/12/05 2150	dpk
	Fluoranthene, 3541 Low Solid*	240			6.7	35	1.00000	ug/Kg	158304		08/12/05 2150	dpk
	Pyrene, 3541 Low Solid*	310		H	8.1	35	1.00000	ug/Kg	158304		08/12/05 2150	dpk
	Benzo(a)anthracene, 3541 Low Solid*	110		M	7.0	35	1.00000	ug/Kg	158304		08/12/05 2150	dpk
	Chrysene, 3541 Low Solid*	210		M	7.2	35	1.00000	ug/Kg	158304		08/12/05 2150	dpk
	Benzo(b)fluoranthene, 3541 Low Solid*	190		M	8.8	35	1.00000	ug/Kg	158304		08/12/05 2150	dpk
	Benzo(k)fluoranthene, 3541 Low Solid*	190		M	9.9	35	1.00000	ug/Kg	158304		08/12/05 2150	dpk
	Benzo(a)pyrene, 3541 Low Solid*	180		M	4.1	35	1.00000	ug/Kg	158304		08/12/05 2150	dpk
	Indeno(1,2,3-cd)pyrene, 3541 Low Solid*	140			7.1	35	1.00000	ug/Kg	158304		08/12/05 2150	dpk
	Dibenzo(a,h)anthracene, 3541 Low Solid*	35	U		7.2	35	1.00000	ug/Kg	158304		08/12/05 2150	dpk
	Benzo(ghi)perylene, 3541 Low Solid*	150		H	9.6	35	1.00000	ug/Kg	158304		08/12/05 2150	dpk
8081A	Organochlorine Pesticide Analysis											
	alpha-BHC, 3541 Solid*	3.7	U		2.1	3.7	2.00000	ug/Kg	158203		08/12/05 0132	pjg
	beta-BHC, 3541 Solid*	3.7	U		3.1	3.7	2.00000	ug/Kg	158203		08/12/05 0132	pjg
	delta-BHC, 3541 Solid*	3.7	U		3.1	3.7	2.00000	ug/Kg	158203		08/12/05 0132	pjg
	gamma-BHC (Lindane), 3541 Solid*	3.7	U		2.1	3.7	2.00000	ug/Kg	158203		08/12/05 0132	pjg
	Heptachlor, 3541 Solid*	3.7	U		2.0	3.7	2.00000	ug/Kg	158203		08/12/05 0132	pjg
	Aldrin, 3541 Solid*	3.7	U		1.9	3.7	2.00000	ug/Kg	158203		08/12/05 0132	pjg
	Heptachlor epoxide, 3541 Solid*	3.7	U		2.1	3.7	2.00000	ug/Kg	158203		08/12/05 0132	pjg
	Endosulfan I, 3541 Solid*	3.7	U		2.2	3.7	2.00000	ug/Kg	158203		08/12/05 0132	pjg
	Dieldrin, 3541 Solid*	3.7	U		1.9	3.7	2.00000	ug/Kg	158203		08/12/05 0132	pjg
	4,4'-DDE, 3541 Solid*	9.1			2.1	3.7	2.00000	ug/Kg	158203		08/12/05 0132	pjg

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-10
Date Sampled.....: 08/02/2005
Time Sampled.....: 09:55
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-10
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Endrin, 3541 Solid*	3.7	U		2.1	3.7	2.00000	ug/Kg	158203		08/12/05 0132	pjg
	Endosulfan II, 3541 Solid*	3.7	U		2.2	3.7	2.00000	ug/Kg	158203		08/12/05 0132	pjg
	4,4'-DDD, 3541 Solid*	3.7	U		2.4	3.7	2.00000	ug/Kg	158203		08/12/05 0132	pjg
	Endosulfan sulfate, 3541 Solid*	3.7	U		2.4	3.7	2.00000	ug/Kg	158203		08/12/05 0132	pjg
	4,4'-DDT, 3541 Solid*	20			2.0	3.7	2.00000	ug/Kg	158203		08/12/05 0132	pjg
	Methoxychlor, 3541 Solid*	18	U		3.1	18	2.00000	ug/Kg	158203		08/12/05 0132	pjg
	alpha-Chlordane, 3541 Solid*	3.7	U		1.9	3.7	2.00000	ug/Kg	158203		08/12/05 0132	pjg
	gamma-Chlordane, 3541 Solid*	3.7	U		0.33	3.7	2.00000	ug/Kg	158203		08/12/05 0132	pjg
	Toxaphene, 3541 Solid*	36	U		24	36	2.00000	ug/Kg	158203		08/12/05 0132	pjg
	Endrin aldehyde, 3541 Solid*	3.7	U		2.6	3.7	2.00000	ug/Kg	158203		08/12/05 0132	pjg
	Endrin ketone, 3541 Solid*	3.7	U		2.8	3.7	2.00000	ug/Kg	158203		08/12/05 0132	pjg
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	18	U		6.1	18	1.00000	ug/Kg	158329		08/10/05 2200	bjt
	Aroclor 1221, 3541 Solid*	18	U		5.0	18	1.00000	ug/Kg	158329		08/10/05 2200	bjt
	Aroclor 1232, 3541 Solid*	18	U		4.9	18	1.00000	ug/Kg	158329		08/10/05 2200	bjt
	Aroclor 1242, 3541 Solid*	18	U		5.3	18	1.00000	ug/Kg	158329		08/10/05 2200	bjt
	Aroclor 1248, 3541 Solid*	18	U		3.9	18	1.00000	ug/Kg	158329		08/10/05 2200	bjt
	Aroclor 1254, 3541 Solid*	18	U		4.0	18	1.00000	ug/Kg	158329		08/10/05 2200	bjt
	Aroclor 1260, 3541 Solid*	18	U		3.6	18	1.00000	ug/Kg	158329		08/10/05 2200	bjt
Method	% Solids Determination											
	% Solids, Solid	90.0			0.10	0.10	1	%	156577		08/04/05 2234	clb
	% Moisture, Solid	10.0			0.10	0.10	1	%	156577		08/04/05 2234	clb
7471A	Mercury (CVAA) Solids											
	Mercury, Solid*	2.7			0.14	0.37	20	mg/Kg	157319		08/11/05 1444	gok
6010B	Metals Analysis (ICAP Trace)											
	Aluminum, Solid*	8900			5.4	21	1	mg/Kg	157282		08/11/05 2043	tds

* In Description = Dry Wgt.

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment PROJECT: NPS - KENILWORTH ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-10
Date Sampled.....: 08/02/2005
Time Sampled.....: 09:55
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-10
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Antimony, Solid*	0.56	B		0.46	2.1	1	mg/Kg	157282		08/11/05 2043	tds
	Arsenic, Solid*	4.6			0.39	1.1	1	mg/Kg	157282		08/11/05 2043	tds
	Barium, Solid*	90			0.076	1.1	1	mg/Kg	157282		08/11/05 2043	tds
	Beryllium, Solid*	0.75			0.019	0.42	1	mg/Kg	157282		08/11/05 2043	tds
	Cadmium, Solid*	0.11	B		0.062	0.21	1	mg/Kg	157282		08/11/05 2043	tds
	Calcium, Solid*	1200			2.0	11	1	mg/Kg	157282		08/11/05 2043	tds
	Chromium, Solid*	24			0.11	1.1	1	mg/Kg	157282		08/11/05 2043	tds
	Cobalt, Solid*	11			0.13	0.53	1	mg/Kg	157282		08/11/05 2043	tds
	Copper, Solid*	27			0.23	1.1	1	mg/Kg	157282		08/11/05 2043	tds
	Iron, Solid*	21000			2.3	11	1	mg/Kg	157282		08/11/05 2043	tds
	Lead, Solid*	76			0.27	0.53	1	mg/Kg	157282		08/11/05 2043	tds
	Magnesium, Solid*	1300			1.1	11	1	mg/Kg	157282		08/11/05 2043	tds
	Manganese, Solid*	280			0.056	1.1	1	mg/Kg	157282		08/11/05 2043	tds
	Nickel, Solid*	16			0.51	1.1	1	mg/Kg	157282		08/11/05 2043	tds
	Potassium, Solid*	650			6.4	53	1	mg/Kg	157282		08/11/05 2043	tds
	Selenium, Solid*	0.86	B		0.48	1.1	1	mg/Kg	157282		08/11/05 2043	tds
	Silver, Solid*	0.59			0.11	0.53	1	mg/Kg	157282		08/11/05 2043	tds
	Sodium, Solid*	110	U		83	110	1	mg/Kg	157282		08/11/05 2043	tds
	Thallium, Solid*	1.1	U		0.61	1.1	1	mg/Kg	157282		08/11/05 2043	tds
	Vanadium, Solid*	45			0.16	0.53	1	mg/Kg	157282		08/11/05 2043	tds
	Zinc, Solid*	250			1.5	2.1	1	mg/Kg	157282		08/11/05 2043	tds

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-11
Date Sampled.....: 08/02/2005
Time Sampled.....: 10:10
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-11
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8270C	Semivolatile Organics											
	Naphthalene, 3541 Low Solid*	35	U		7.0	35	1.00000	ug/Kg	158304		08/12/05 2209	dpk
	Acenaphthylene, 3541 Low Solid*	35	U		6.9	35	1.00000	ug/Kg	158304		08/12/05 2209	dpk
	Acenaphthene, 3541 Low Solid*	35	U		6.8	35	1.00000	ug/Kg	158304		08/12/05 2209	dpk
	Fluorene, 3541 Low Solid*	35	U		6.7	35	1.00000	ug/Kg	158304		08/12/05 2209	dpk
	Phenanthrene, 3541 Low Solid*	280		H	5.6	35	1.00000	ug/Kg	158304		08/12/05 2209	dpk
	Anthracene, 3541 Low Solid*	47		H	7.6	35	1.00000	ug/Kg	158304		08/12/05 2209	dpk
	Fluoranthene, 3541 Low Solid*	670		H	6.6	35	1.00000	ug/Kg	158304		08/12/05 2209	dpk
	Pyrene, 3541 Low Solid*	870		H	8.0	35	1.00000	ug/Kg	158304		08/12/05 2209	dpk
	Benzo(a)anthracene, 3541 Low Solid*	330		H	6.9	35	1.00000	ug/Kg	158304		08/12/05 2209	dpk
	Chrysene, 3541 Low Solid*	600		H	7.1	35	1.00000	ug/Kg	158304		08/12/05 2209	dpk
	Benzo(b)fluoranthene, 3541 Low Solid*	450		M	8.7	35	1.00000	ug/Kg	158304		08/12/05 2209	dpk
	Benzo(k)fluoranthene, 3541 Low Solid*	580		M	9.8	35	1.00000	ug/Kg	158304		08/12/05 2209	dpk
	Benzo(a)pyrene, 3541 Low Solid*	520		H	4.0	35	1.00000	ug/Kg	158304		08/12/05 2209	dpk
	Indeno(1,2,3-cd)pyrene, 3541 Low Solid*	170		H	7.0	35	1.00000	ug/Kg	158304		08/12/05 2209	dpk
	Dibenzo(a,h)anthracene, 3541 Low Solid*	35	U		7.1	35	1.00000	ug/Kg	158304		08/12/05 2209	dpk
	Benzo(ghi)perylene, 3541 Low Solid*	180		H	9.5	35	1.00000	ug/Kg	158304		08/12/05 2209	dpk
8081A	Organochlorine Pesticide Analysis											
	alpha-BHC, 3541 Solid*	9.2	U		5.3	9.2	5.00000	ug/Kg	158203		08/12/05 0227	pjg
	beta-BHC, 3541 Solid*	9.2	U		7.6	9.2	5.00000	ug/Kg	158203		08/12/05 0227	pjg
	delta-BHC, 3541 Solid*	9.2	U		7.6	9.2	5.00000	ug/Kg	158203		08/12/05 0227	pjg
	gamma-BHC (Lindane), 3541 Solid*	9.2	U		5.3	9.2	5.00000	ug/Kg	158203		08/12/05 0227	pjg
	Heptachlor, 3541 Solid*	9.2	U		4.9	9.2	5.00000	ug/Kg	158203		08/12/05 0227	pjg
	Aldrin, 3541 Solid*	9.2	U		4.8	9.2	5.00000	ug/Kg	158203		08/12/05 0227	pjg
	Heptachlor epoxide, 3541 Solid*	9.2	U		5.1	9.2	5.00000	ug/Kg	158203		08/12/05 0227	pjg
	Endosulfan I, 3541 Solid*	9.2	U		5.4	9.2	5.00000	ug/Kg	158203		08/12/05 0227	pjg
	Dieldrin, 3541 Solid*	9.2	U		4.8	9.2	5.00000	ug/Kg	158203		08/12/05 0227	pjg
	4,4'-DDE, 3541 Solid*	9.2	U		5.1	9.2	5.00000	ug/Kg	158203		08/12/05 0227	pjg

* In Description = Dry Wgt.

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L A B O R A T O R Y T E S T R E S U L T S

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment PROJECT: NPS - KENILWORTH ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-11
Date Sampled.....: 08/02/2005
Time Sampled.....: 10:10
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-11
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Endrin, 3541 Solid*	9.2	U		5.2	9.2	5.00000	ug/Kg	158203		08/12/05 0227	pjg
	Endosulfan II, 3541 Solid*	9.2	U		5.4	9.2	5.00000	ug/Kg	158203		08/12/05 0227	pjg
	4,4'-DDD, 3541 Solid*	9.2	U		6.0	9.2	5.00000	ug/Kg	158203		08/12/05 0227	pjg
	Endosulfan sulfate, 3541 Solid*	9.2	U		6.0	9.2	5.00000	ug/Kg	158203		08/12/05 0227	pjg
	4,4'-DDT, 3541 Solid*	9.2	U		5.1	9.2	5.00000	ug/Kg	158203		08/12/05 0227	pjg
	Methoxychlor, 3541 Solid*	45	U		7.6	45	5.00000	ug/Kg	158203		08/12/05 0227	pjg
	alpha-Chlordane, 3541 Solid*	9.2	U		4.8	9.2	5.00000	ug/Kg	158203		08/12/05 0227	pjg
	gamma-Chlordane, 3541 Solid*	9.2	U		0.82	9.2	5.00000	ug/Kg	158203		08/12/05 0227	pjg
	Toxaphene, 3541 Solid*	91	U		60	91	5.00000	ug/Kg	158203		08/12/05 0227	pjg
	Endrin aldehyde, 3541 Solid*	9.2	U		6.5	9.2	5.00000	ug/Kg	158203		08/12/05 0227	pjg
	Endrin ketone, 3541 Solid*	9.2	U		7.1	9.2	5.00000	ug/Kg	158203		08/12/05 0227	pjg
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	18	U		6.1	18	1.00000	ug/Kg	158329		08/10/05 2307	bjt
	Aroclor 1221, 3541 Solid*	18	U		5.0	18	1.00000	ug/Kg	158329		08/10/05 2307	bjt
	Aroclor 1232, 3541 Solid*	18	U		4.9	18	1.00000	ug/Kg	158329		08/10/05 2307	bjt
	Aroclor 1242, 3541 Solid*	18	U		5.3	18	1.00000	ug/Kg	158329		08/10/05 2307	bjt
	Aroclor 1248, 3541 Solid*	18	U		3.9	18	1.00000	ug/Kg	158329		08/10/05 2307	bjt
	Aroclor 1254, 3541 Solid*	18	U		4.0	18	1.00000	ug/Kg	158329		08/10/05 2307	bjt
	Aroclor 1260, 3541 Solid*	45			3.6	18	1.00000	ug/Kg	158329		08/10/05 2307	bjt
Method	% Solids Determination											
	% Solids, Solid	90.3			0.10	0.10	1	%	156577		08/04/05 2237	clb
	% Moisture, Solid	9.7			0.10	0.10	1	%	156577		08/04/05 2237	clb
7471A	Mercury (CVAA) Solids											
	Mercury, Solid*	0.062			0.0068	0.018	1	mg/Kg	157319		08/11/05 1451	gok
6010B	Metals Analysis (ICAP Trace)											
	Aluminum, Solid*	7700			5.3	21	1	mg/Kg	157282		08/11/05 2047	tds

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment PROJECT: NPS - KENILWORTH ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-11
Date Sampled.....: 08/02/2005
Time Sampled.....: 10:10
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-11
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Antimony, Solid*	0.50	B		0.45	2.1	1	mg/Kg	157282		08/11/05 2047	tds
	Arsenic, Solid*	3.9			0.39	1.1	1	mg/Kg	157282		08/11/05 2047	tds
	Barium, Solid*	81			0.076	1.1	1	mg/Kg	157282		08/11/05 2047	tds
	Beryllium, Solid*	0.60			0.019	0.42	1	mg/Kg	157282		08/11/05 2047	tds
	Cadmium, Solid*	0.21	U		0.061	0.21	1	mg/Kg	157282		08/11/05 2047	tds
	Calcium, Solid*	1500			1.9	11	1	mg/Kg	157282		08/11/05 2047	tds
	Chromium, Solid*	24			0.11	1.1	1	mg/Kg	157282		08/11/05 2047	tds
	Cobalt, Solid*	3.9			0.13	0.53	1	mg/Kg	157282		08/11/05 2047	tds
	Copper, Solid*	12			0.23	1.1	1	mg/Kg	157282		08/11/05 2047	tds
	Iron, Solid*	13000			2.3	11	1	mg/Kg	157282		08/11/05 2047	tds
	Lead, Solid*	50			0.26	0.53	1	mg/Kg	157282		08/11/05 2047	tds
	Magnesium, Solid*	1700			1.1	11	1	mg/Kg	157282		08/11/05 2047	tds
	Manganese, Solid*	170			0.056	1.1	1	mg/Kg	157282		08/11/05 2047	tds
	Nickel, Solid*	13			0.50	1.1	1	mg/Kg	157282		08/11/05 2047	tds
	Potassium, Solid*	1400			6.3	53	1	mg/Kg	157282		08/11/05 2047	tds
	Selenium, Solid*	0.51	B		0.47	1.1	1	mg/Kg	157282		08/11/05 2047	tds
	Silver, Solid*	0.53	U		0.11	0.53	1	mg/Kg	157282		08/11/05 2047	tds
	Sodium, Solid*	110	U		83	110	1	mg/Kg	157282		08/11/05 2047	tds
	Thallium, Solid*	1.1	U		0.60	1.1	1	mg/Kg	157282		08/11/05 2047	tds
	Vanadium, Solid*	33			0.16	0.53	1	mg/Kg	157282		08/11/05 2047	tds
	Zinc, Solid*	62			1.4	2.1	1	mg/Kg	157282		08/11/05 2047	tds

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-12
Date Sampled.....: 08/02/2005
Time Sampled.....: 10:20
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-12
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8270C	Semivolatile Organics											
	Naphthalene, 3541 Low Solid*	40	U		8.0	40	1.00000	ug/Kg	158304		08/12/05 2228	dpk
	Acenaphthylene, 3541 Low Solid*	40	U		7.9	40	1.00000	ug/Kg	158304		08/12/05 2228	dpk
	Acenaphthene, 3541 Low Solid*	40	U		7.7	40	1.00000	ug/Kg	158304		08/12/05 2228	dpk
	Fluorene, 3541 Low Solid*	40	U		7.6	40	1.00000	ug/Kg	158304		08/12/05 2228	dpk
	Phenanthrene, 3541 Low Solid*	77			6.4	40	1.00000	ug/Kg	158304		08/12/05 2228	dpk
	Anthracene, 3541 Low Solid*	40	U		8.6	40	1.00000	ug/Kg	158304		08/12/05 2228	dpk
	Fluoranthene, 3541 Low Solid*	150			7.5	40	1.00000	ug/Kg	158304		08/12/05 2228	dpk
	Pyrene, 3541 Low Solid*	210			9.1	40	1.00000	ug/Kg	158304		08/12/05 2228	dpk
	Benzo(a)anthracene, 3541 Low Solid*	91			7.9	40	1.00000	ug/Kg	158304		08/12/05 2228	dpk
	Chrysene, 3541 Low Solid*	140		H	8.1	40	1.00000	ug/Kg	158304		08/12/05 2228	dpk
	Benzo(b)fluoranthene, 3541 Low Solid*	100		M	9.9	40	1.00000	ug/Kg	158304		08/12/05 2228	dpk
	Benzo(k)fluoranthene, 3541 Low Solid*	150		M	11	40	1.00000	ug/Kg	158304		08/12/05 2228	dpk
	Benzo(a)pyrene, 3541 Low Solid*	40	U		4.6	40	1.00000	ug/Kg	158304		08/12/05 2228	dpk
	Indeno(1,2,3-cd)pyrene, 3541 Low Solid*	59		M	8.0	40	1.00000	ug/Kg	158304		08/12/05 2228	dpk
	Dibenzo(a,h)anthracene, 3541 Low Solid*	40	U		8.1	40	1.00000	ug/Kg	158304		08/12/05 2228	dpk
	Benzo(ghi)perylene, 3541 Low Solid*	100		M	11	40	1.00000	ug/Kg	158304		08/12/05 2228	dpk
8081A	Organochlorine Pesticide Analysis											
	alpha-BHC, 3541 Solid*	4.0	U		2.3	4.0	2.00000	ug/Kg	158203		08/12/05 0255	pjg
	beta-BHC, 3541 Solid*	4.0	U		3.3	4.0	2.00000	ug/Kg	158203		08/12/05 0255	pjg
	delta-BHC, 3541 Solid*	4.0	U		3.3	4.0	2.00000	ug/Kg	158203		08/12/05 0255	pjg
	gamma-BHC (Lindane), 3541 Solid*	4.0	U		2.3	4.0	2.00000	ug/Kg	158203		08/12/05 0255	pjg
	Heptachlor, 3541 Solid*	4.0	U		2.1	4.0	2.00000	ug/Kg	158203		08/12/05 0255	pjg
	Aldrin, 3541 Solid*	4.0	U		2.1	4.0	2.00000	ug/Kg	158203		08/12/05 0255	pjg
	Heptachlor epoxide, 3541 Solid*	4.0	U		2.2	4.0	2.00000	ug/Kg	158203		08/12/05 0255	pjg
	Endosulfan I, 3541 Solid*	4.0	U		2.3	4.0	2.00000	ug/Kg	158203		08/12/05 0255	pjg
	Dieldrin, 3541 Solid*	4.0	U		2.1	4.0	2.00000	ug/Kg	158203		08/12/05 0255	pjg
	4,4'-DDE, 3541 Solid*	6.7			2.2	4.0	2.00000	ug/Kg	158203		08/12/05 0255	pjg

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-12
Date Sampled.....: 08/02/2005
Time Sampled.....: 10:20
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-12
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Endrin, 3541 Solid*	4.0	U		2.2	4.0	2.00000	ug/Kg	158203		08/12/05 0255	pjg
	Endosulfan II, 3541 Solid*	4.0	U		2.3	4.0	2.00000	ug/Kg	158203		08/12/05 0255	pjg
	4,4'-DDD, 3541 Solid*	4.0	U		2.6	4.0	2.00000	ug/Kg	158203		08/12/05 0255	pjg
	Endosulfan sulfate, 3541 Solid*	4.0	U		2.6	4.0	2.00000	ug/Kg	158203		08/12/05 0255	pjg
	4,4'-DDT, 3541 Solid*	15			2.2	4.0	2.00000	ug/Kg	158203		08/12/05 0255	pjg
	Methoxychlor, 3541 Solid*	19	U		3.3	19	2.00000	ug/Kg	158203		08/12/05 0255	pjg
	alpha-Chlordane, 3541 Solid*	4.0	U		2.1	4.0	2.00000	ug/Kg	158203		08/12/05 0255	pjg
	gamma-Chlordane, 3541 Solid*	4.0	U		0.35	4.0	2.00000	ug/Kg	158203		08/12/05 0255	pjg
	Toxaphene, 3541 Solid*	39	U		26	39	2.00000	ug/Kg	158203		08/12/05 0255	pjg
	Endrin aldehyde, 3541 Solid*	4.0	U		2.8	4.0	2.00000	ug/Kg	158203		08/12/05 0255	pjg
	Endrin ketone, 3541 Solid*	4.0	U		3.0	4.0	2.00000	ug/Kg	158203		08/12/05 0255	pjg
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	19	U		6.5	19	1.00000	ug/Kg	158329		08/10/05 2340	bjt
	Aroclor 1221, 3541 Solid*	19	U		5.4	19	1.00000	ug/Kg	158329		08/10/05 2340	bjt
	Aroclor 1232, 3541 Solid*	19	U		5.2	19	1.00000	ug/Kg	158329		08/10/05 2340	bjt
	Aroclor 1242, 3541 Solid*	19	U		5.7	19	1.00000	ug/Kg	158329		08/10/05 2340	bjt
	Aroclor 1248, 3541 Solid*	19	U		4.2	19	1.00000	ug/Kg	158329		08/10/05 2340	bjt
	Aroclor 1254, 3541 Solid*	19	U		4.3	19	1.00000	ug/Kg	158329		08/10/05 2340	bjt
	Aroclor 1260, 3541 Solid*	50			3.8	19	1.00000	ug/Kg	158329		08/10/05 2340	bjt
Method	% Solids Determination											
	% Solids, Solid	82.5			0.10	0.10	1	%	156577		08/04/05 2240	clb
	% Moisture, Solid	17.5			0.10	0.10	1	%	156577		08/04/05 2240	clb
7471A	Mercury (CVAA) Solids											
	Mercury, Solid*	0.13			0.0074	0.020	1	mg/Kg	157319		08/11/05 1453	gok
6010B	Metals Analysis (ICAP Trace)											
	Aluminum, Solid*	10000			5.9	23	1	mg/Kg	157282		08/11/05 2052	tds

* In Description = Dry Wgt.

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-12
Date Sampled.....: 08/02/2005
Time Sampled.....: 10:20
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-12
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Antimony, Solid*	2.3	U		0.50	2.3	1	mg/Kg	157282		08/11/05 2052	tds
	Arsenic, Solid*	6.0			0.43	1.2	1	mg/Kg	157282		08/11/05 2052	tds
	Barium, Solid*	98			0.084	1.2	1	mg/Kg	157282		08/11/05 2052	tds
	Beryllium, Solid*	0.92			0.021	0.46	1	mg/Kg	157282		08/11/05 2052	tds
	Cadmium, Solid*	0.13	B		0.067	0.23	1	mg/Kg	157282		08/11/05 2052	tds
	Calcium, Solid*	790			2.1	12	1	mg/Kg	157282		08/11/05 2052	tds
	Chromium, Solid*	21			0.12	1.2	1	mg/Kg	157282		08/11/05 2052	tds
	Cobalt, Solid*	10			0.14	0.58	1	mg/Kg	157282		08/11/05 2052	tds
	Copper, Solid*	26			0.26	1.2	1	mg/Kg	157282		08/11/05 2052	tds
	Iron, Solid*	17000			2.6	12	1	mg/Kg	157282		08/11/05 2052	tds
	Lead, Solid*	65			0.29	0.58	1	mg/Kg	157282		08/11/05 2052	tds
	Magnesium, Solid*	1400			1.2	12	1	mg/Kg	157282		08/11/05 2052	tds
	Manganese, Solid*	230			0.061	1.2	1	mg/Kg	157282		08/11/05 2052	tds
	Nickel, Solid*	19			0.56	1.2	1	mg/Kg	157282		08/11/05 2052	tds
	Potassium, Solid*	920			7.0	58	1	mg/Kg	157282		08/11/05 2052	tds
	Selenium, Solid*	0.92	B		0.52	1.2	1	mg/Kg	157282		08/11/05 2052	tds
	Silver, Solid*	0.51	B		0.12	0.58	1	mg/Kg	157282		08/11/05 2052	tds
	Sodium, Solid*	120	U		91	120	1	mg/Kg	157282		08/11/05 2052	tds
	Thallium, Solid*	1.2	U		0.66	1.2	1	mg/Kg	157282		08/11/05 2052	tds
	Vanadium, Solid*	57			0.17	0.58	1	mg/Kg	157282		08/11/05 2052	tds
	Zinc, Solid*	75			1.6	2.3	1	mg/Kg	157282		08/11/05 2052	tds

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-13
Date Sampled.....: 08/02/2005
Time Sampled.....: 10:30
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-13
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8270C	Semivolatile Organics											
	Naphthalene, 3541 Low Solid*	36	U		7.3	36	1.00000	ug/Kg	158304		08/12/05 2247	dpk
	Acenaphthylene, 3541 Low Solid*	36	U		7.2	36	1.00000	ug/Kg	158304		08/12/05 2247	dpk
	Acenaphthene, 3541 Low Solid*	36	U		7.0	36	1.00000	ug/Kg	158304		08/12/05 2247	dpk
	Fluorene, 3541 Low Solid*	36	U		6.9	36	1.00000	ug/Kg	158304		08/12/05 2247	dpk
	Phenanthrene, 3541 Low Solid*	77		H	5.8	36	1.00000	ug/Kg	158304		08/12/05 2247	dpk
	Anthracene, 3541 Low Solid*	36	U		7.8	36	1.00000	ug/Kg	158304		08/12/05 2247	dpk
	Fluoranthene, 3541 Low Solid*	120		H	6.8	36	1.00000	ug/Kg	158304		08/12/05 2247	dpk
	Pyrene, 3541 Low Solid*	150			8.3	36	1.00000	ug/Kg	158304		08/12/05 2247	dpk
	Benzo(a)anthracene, 3541 Low Solid*	65		M	7.2	36	1.00000	ug/Kg	158304		08/12/05 2247	dpk
	Chrysene, 3541 Low Solid*	140		M	7.4	36	1.00000	ug/Kg	158304		08/12/05 2247	dpk
	Benzo(b)fluoranthene, 3541 Low Solid*	110		M	9.0	36	1.00000	ug/Kg	158304		08/12/05 2247	dpk
	Benzo(k)fluoranthene, 3541 Low Solid*	150		M	10	36	1.00000	ug/Kg	158304		08/12/05 2247	dpk
	Benzo(a)pyrene, 3541 Low Solid*	100		M	4.2	36	1.00000	ug/Kg	158304		08/12/05 2247	dpk
	Indeno(1,2,3-cd)pyrene, 3541 Low Solid*	42		M	7.3	36	1.00000	ug/Kg	158304		08/12/05 2247	dpk
	Dibenzo(a,h)anthracene, 3541 Low Solid*	36	U		7.4	36	1.00000	ug/Kg	158304		08/12/05 2247	dpk
	Benzo(ghi)perylene, 3541 Low Solid*	52		H	9.8	36	1.00000	ug/Kg	158304		08/12/05 2247	dpk
8081A	Organochlorine Pesticide Analysis											
	alpha-BHC, 3541 Solid*	3.8	U		2.2	3.8	2.00000	ug/Kg	158203		08/12/05 0322	pjg
	beta-BHC, 3541 Solid*	3.8	U		3.1	3.8	2.00000	ug/Kg	158203		08/12/05 0322	pjg
	delta-BHC, 3541 Solid*	3.8	U		3.1	3.8	2.00000	ug/Kg	158203		08/12/05 0322	pjg
	gamma-BHC (Lindane), 3541 Solid*	3.8	U		2.2	3.8	2.00000	ug/Kg	158203		08/12/05 0322	pjg
	Heptachlor, 3541 Solid*	3.8	U		2.0	3.8	2.00000	ug/Kg	158203		08/12/05 0322	pjg
	Aldrin, 3541 Solid*	3.8	U		2.0	3.8	2.00000	ug/Kg	158203		08/12/05 0322	pjg
	Heptachlor epoxide, 3541 Solid*	3.8	U		2.1	3.8	2.00000	ug/Kg	158203		08/12/05 0322	pjg
	Endosulfan I, 3541 Solid*	3.8	U		2.2	3.8	2.00000	ug/Kg	158203		08/12/05 0322	pjg
	Dieldrin, 3541 Solid*	3.8	U		2.0	3.8	2.00000	ug/Kg	158203		08/12/05 0322	pjg
	4,4'-DDE, 3541 Solid*	4.3			2.1	3.8	2.00000	ug/Kg	158203		08/12/05 0322	pjg

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-13
Date Sampled.....: 08/02/2005
Time Sampled.....: 10:30
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-13
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Endrin, 3541 Solid*	3.8	U		2.1	3.8	2.00000	ug/Kg	158203		08/12/05 0322	pjg
	Endosulfan II, 3541 Solid*	3.8	U		2.2	3.8	2.00000	ug/Kg	158203		08/12/05 0322	pjg
	4,4'-DDD, 3541 Solid*	3.8	U		2.5	3.8	2.00000	ug/Kg	158203		08/12/05 0322	pjg
	Endosulfan sulfate, 3541 Solid*	3.8	U		2.5	3.8	2.00000	ug/Kg	158203		08/12/05 0322	pjg
	4,4'-DDT, 3541 Solid*	13			2.1	3.8	2.00000	ug/Kg	158203		08/12/05 0322	pjg
	Methoxychlor, 3541 Solid*	19	U		3.1	19	2.00000	ug/Kg	158203		08/12/05 0322	pjg
	alpha-Chlordane, 3541 Solid*	3.8	U		2.0	3.8	2.00000	ug/Kg	158203		08/12/05 0322	pjg
	gamma-Chlordane, 3541 Solid*	3.8	U		0.34	3.8	2.00000	ug/Kg	158203		08/12/05 0322	pjg
	Toxaphene, 3541 Solid*	37	U		25	37	2.00000	ug/Kg	158203		08/12/05 0322	pjg
	Endrin aldehyde, 3541 Solid*	3.8	U		2.7	3.8	2.00000	ug/Kg	158203		08/12/05 0322	pjg
	Endrin ketone, 3541 Solid*	3.8	U		2.9	3.8	2.00000	ug/Kg	158203		08/12/05 0322	pjg
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	19	U		6.3	19	1.00000	ug/Kg	158329		08/11/05 0014	bjt
	Aroclor 1221, 3541 Solid*	19	U		5.1	19	1.00000	ug/Kg	158329		08/11/05 0014	bjt
	Aroclor 1232, 3541 Solid*	19	U		5.0	19	1.00000	ug/Kg	158329		08/11/05 0014	bjt
	Aroclor 1242, 3541 Solid*	19	U		5.5	19	1.00000	ug/Kg	158329		08/11/05 0014	bjt
	Aroclor 1248, 3541 Solid*	19	U		4.0	19	1.00000	ug/Kg	158329		08/11/05 0014	bjt
	Aroclor 1254, 3541 Solid*	19	U		4.1	19	1.00000	ug/Kg	158329		08/11/05 0014	bjt
	Aroclor 1260, 3541 Solid*	32			3.7	19	1.00000	ug/Kg	158329		08/11/05 0014	bjt
Method	% Solids Determination											
	% Solids, Solid	87.9			0.10	0.10	1	%	156577		08/04/05 2243	clb
	% Moisture, Solid	12.1			0.10	0.10	1	%	156577		08/04/05 2243	clb
7471A	Mercury (CVAA) Solids											
	Mercury, Solid*	0.34			0.0069	0.019	1	mg/Kg	157319		08/11/05 1455	gok
6010B	Metals Analysis (ICAP Trace)											
	Aluminum, Solid*	10000			5.5	22	1	mg/Kg	157282		08/11/05 2056	tds

* In Description = Dry Wgt.

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-13
Date Sampled.....: 08/02/2005
Time Sampled.....: 10:30
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-13
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Antimony, Solid*	2.2	U		0.47	2.2	1	mg/Kg	157282		08/11/05 2056	tds
	Arsenic, Solid*	4.7			0.40	1.1	1	mg/Kg	157282		08/11/05 2056	tds
	Barium, Solid*	130			0.079	1.1	1	mg/Kg	157282		08/11/05 2056	tds
	Beryllium, Solid*	1.6			0.020	0.44	1	mg/Kg	157282		08/11/05 2056	tds
	Cadmium, Solid*	0.22	U		0.063	0.22	1	mg/Kg	157282		08/11/05 2056	tds
	Calcium, Solid*	910			2.0	11	1	mg/Kg	157282		08/11/05 2056	tds
	Chromium, Solid*	24			0.11	1.1	1	mg/Kg	157282		08/11/05 2056	tds
	Cobalt, Solid*	13			0.13	0.55	1	mg/Kg	157282		08/11/05 2056	tds
	Copper, Solid*	23			0.24	1.1	1	mg/Kg	157282		08/11/05 2056	tds
	Iron, Solid*	20000			2.4	11	1	mg/Kg	157282		08/11/05 2056	tds
	Lead, Solid*	56			0.27	0.55	1	mg/Kg	157282		08/11/05 2056	tds
	Magnesium, Solid*	1500			1.1	11	1	mg/Kg	157282		08/11/05 2056	tds
	Manganese, Solid*	370			0.058	1.1	1	mg/Kg	157282		08/11/05 2056	tds
	Nickel, Solid*	18			0.53	1.1	1	mg/Kg	157282		08/11/05 2056	tds
	Potassium, Solid*	840			6.6	55	1	mg/Kg	157282		08/11/05 2056	tds
	Selenium, Solid*	0.76	B		0.49	1.1	1	mg/Kg	157282		08/11/05 2056	tds
	Silver, Solid*	0.27	B		0.11	0.55	1	mg/Kg	157282		08/11/05 2056	tds
	Sodium, Solid*	110	U		86	110	1	mg/Kg	157282		08/11/05 2056	tds
	Thallium, Solid*	1.1	U		0.62	1.1	1	mg/Kg	157282		08/11/05 2056	tds
	Vanadium, Solid*	34			0.16	0.55	1	mg/Kg	157282		08/11/05 2056	tds
	Zinc, Solid*	70			1.5	2.2	1	mg/Kg	157282		08/11/05 2056	tds

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-14
Date Sampled.....: 08/02/2005
Time Sampled.....: 10:40
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-14
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8270C	Semivolatile Organics											
	Naphthalene, 3541 Low Solid*	36	U		7.3	36	1.00000	ug/Kg	158304		08/12/05 2306	dpk
	Acenaphthylene, 3541 Low Solid*	36	U		7.2	36	1.00000	ug/Kg	158304		08/12/05 2306	dpk
	Acenaphthene, 3541 Low Solid*	36	U		7.1	36	1.00000	ug/Kg	158304		08/12/05 2306	dpk
	Fluorene, 3541 Low Solid*	36	U		7.0	36	1.00000	ug/Kg	158304		08/12/05 2306	dpk
	Phenanthrene, 3541 Low Solid*	36	J	a	5.9	36	1.00000	ug/Kg	158304		08/12/05 2306	dpk
	Anthracene, 3541 Low Solid*	36	U		7.8	36	1.00000	ug/Kg	158304		08/12/05 2306	dpk
	Fluoranthene, 3541 Low Solid*	53		H	6.8	36	1.00000	ug/Kg	158304		08/12/05 2306	dpk
	Pyrene, 3541 Low Solid*	73		H	8.3	36	1.00000	ug/Kg	158304		08/12/05 2306	dpk
	Benzo(a)anthracene, 3541 Low Solid*	37		M	7.2	36	1.00000	ug/Kg	158304		08/12/05 2306	dpk
	Chrysene, 3541 Low Solid*	57		M	7.4	36	1.00000	ug/Kg	158304		08/12/05 2306	dpk
	Benzo(b)fluoranthene, 3541 Low Solid*	44		M	9.1	36	1.00000	ug/Kg	158304		08/12/05 2306	dpk
	Benzo(k)fluoranthene, 3541 Low Solid*	68		M	10	36	1.00000	ug/Kg	158304		08/12/05 2306	dpk
	Benzo(a)pyrene, 3541 Low Solid*	36	U		4.2	36	1.00000	ug/Kg	158304		08/12/05 2306	dpk
	Indeno(1,2,3-cd)pyrene, 3541 Low Solid*	36	U		7.3	36	1.00000	ug/Kg	158304		08/12/05 2306	dpk
	Dibenzo(a,h)anthracene, 3541 Low Solid*	36	U		7.4	36	1.00000	ug/Kg	158304		08/12/05 2306	dpk
	Benzo(ghi)perylene, 3541 Low Solid*	36	U		9.8	36	1.00000	ug/Kg	158304		08/12/05 2306	dpk
8081A	Organochlorine Pesticide Analysis											
	alpha-BHC, 3541 Solid*	2.0	U		1.1	2.0	1.00000	ug/Kg	158203		08/12/05 0350	pjg
	beta-BHC, 3541 Solid*	3.2			1.6	2.0	1.00000	ug/Kg	158203		08/12/05 0350	pjg
	delta-BHC, 3541 Solid*	2.0	U		1.6	2.0	1.00000	ug/Kg	158203		08/12/05 0350	pjg
	gamma-BHC (Lindane), 3541 Solid*	2.0	U		1.1	2.0	1.00000	ug/Kg	158203		08/12/05 0350	pjg
	Heptachlor, 3541 Solid*	2.0	U		1.0	2.0	1.00000	ug/Kg	158203		08/12/05 0350	pjg
	Aldrin, 3541 Solid*	2.0	U		1.0	2.0	1.00000	ug/Kg	158203		08/12/05 0350	pjg
	Heptachlor epoxide, 3541 Solid*	2.0	U		1.1	2.0	1.00000	ug/Kg	158203		08/12/05 0350	pjg
	Endosulfan I, 3541 Solid*	2.0	U		1.1	2.0	1.00000	ug/Kg	158203		08/12/05 0350	pjg
	Dieldrin, 3541 Solid*	2.0	U		1.0	2.0	1.00000	ug/Kg	158203		08/12/05 0350	pjg
	4,4'-DDE, 3541 Solid*	3.4			1.1	2.0	1.00000	ug/Kg	158203		08/12/05 0350	pjg

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-14
Date Sampled.....: 08/02/2005
Time Sampled.....: 10:40
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-14
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Endrin, 3541 Solid*	2.0	U		1.1	2.0	1.00000	ug/Kg	158203		08/12/05 0350	pjg
	Endosulfan II, 3541 Solid*	2.0	U		1.1	2.0	1.00000	ug/Kg	158203		08/12/05 0350	pjg
	4,4'-DDD, 3541 Solid*	2.0	U		1.3	2.0	1.00000	ug/Kg	158203		08/12/05 0350	pjg
	Endosulfan sulfate, 3541 Solid*	2.0	U		1.3	2.0	1.00000	ug/Kg	158203		08/12/05 0350	pjg
	4,4'-DDT, 3541 Solid*	5.0			1.1	2.0	1.00000	ug/Kg	158203		08/12/05 0350	pjg
	Methoxychlor, 3541 Solid*	9.5	U		1.6	9.5	1.00000	ug/Kg	158203		08/12/05 0350	pjg
	alpha-Chlordane, 3541 Solid*	2.0	U		1.0	2.0	1.00000	ug/Kg	158203		08/12/05 0350	pjg
	gamma-Chlordane, 3541 Solid*	2.0	U		0.17	2.0	1.00000	ug/Kg	158203		08/12/05 0350	pjg
	Toxaphene, 3541 Solid*	19	U		13	19	1.00000	ug/Kg	158203		08/12/05 0350	pjg
	Endrin aldehyde, 3541 Solid*	2.0	U		1.4	2.0	1.00000	ug/Kg	158203		08/12/05 0350	pjg
	Endrin ketone, 3541 Solid*	2.0	U		1.5	2.0	1.00000	ug/Kg	158203		08/12/05 0350	pjg
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	19	U		6.4	19	1.00000	ug/Kg	158329		08/11/05 0937	bjt
	Aroclor 1221, 3541 Solid*	19	U		5.3	19	1.00000	ug/Kg	158329		08/11/05 0937	bjt
	Aroclor 1232, 3541 Solid*	19	U		5.2	19	1.00000	ug/Kg	158329		08/11/05 0937	bjt
	Aroclor 1242, 3541 Solid*	19	U		5.6	19	1.00000	ug/Kg	158329		08/11/05 0937	bjt
	Aroclor 1248, 3541 Solid*	19	U		4.1	19	1.00000	ug/Kg	158329		08/11/05 0937	bjt
	Aroclor 1254, 3541 Solid*	19	U		4.3	19	1.00000	ug/Kg	158329		08/11/05 0937	bjt
	Aroclor 1260, 3541 Solid*	19	U		3.8	19	1.00000	ug/Kg	158329		08/11/05 0937	bjt
Method	% Solids Determination											
	% Solids, Solid	86.5			0.10	0.10	1	%	156577		08/04/05 2247	clb
	% Moisture, Solid	13.5			0.10	0.10	1	%	156577		08/04/05 2247	clb
7471A	Mercury (CVAA) Solids											
	Mercury, Solid*	0.18			0.0071	0.019	1	mg/Kg	157319		08/11/05 1458	gok
6010B	Metals Analysis (ICAP Trace)											
	Aluminum, Solid*	11000			5.5	22	1	mg/Kg	157282		08/11/05 2101	tds

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-14
Date Sampled.....: 08/02/2005
Time Sampled.....: 10:40
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-14
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Antimony, Solid*	2.2	U		0.47	2.2	1	mg/Kg	157282		08/11/05 2101	tds
	Arsenic, Solid*	5.7			0.40	1.1	1	mg/Kg	157282		08/11/05 2101	tds
	Barium, Solid*	100			0.079	1.1	1	mg/Kg	157282		08/11/05 2101	tds
	Beryllium, Solid*	0.93			0.020	0.44	1	mg/Kg	157282		08/11/05 2101	tds
	Cadmium, Solid*	0.22	U		0.063	0.22	1	mg/Kg	157282		08/11/05 2101	tds
	Calcium, Solid*	850			2.0	11	1	mg/Kg	157282		08/11/05 2101	tds
	Chromium, Solid*	22			0.11	1.1	1	mg/Kg	157282		08/11/05 2101	tds
	Cobalt, Solid*	9.8			0.13	0.55	1	mg/Kg	157282		08/11/05 2101	tds
	Copper, Solid*	21			0.24	1.1	1	mg/Kg	157282		08/11/05 2101	tds
	Iron, Solid*	19000			2.4	11	1	mg/Kg	157282		08/11/05 2101	tds
	Lead, Solid*	34			0.27	0.55	1	mg/Kg	157282		08/11/05 2101	tds
	Magnesium, Solid*	1500			1.1	11	1	mg/Kg	157282		08/11/05 2101	tds
	Manganese, Solid*	220			0.058	1.1	1	mg/Kg	157282		08/11/05 2101	tds
	Nickel, Solid*	27			0.52	1.1	1	mg/Kg	157282		08/11/05 2101	tds
	Potassium, Solid*	880			6.6	55	1	mg/Kg	157282		08/11/05 2101	tds
	Selenium, Solid*	0.85	B		0.49	1.1	1	mg/Kg	157282		08/11/05 2101	tds
	Silver, Solid*	0.17	B		0.11	0.55	1	mg/Kg	157282		08/11/05 2101	tds
	Sodium, Solid*	110	U		86	110	1	mg/Kg	157282		08/11/05 2101	tds
	Thallium, Solid*	1.1	U		0.62	1.1	1	mg/Kg	157282		08/11/05 2101	tds
	Vanadium, Solid*	46			0.16	0.55	1	mg/Kg	157282		08/11/05 2101	tds
	Zinc, Solid*	63			1.5	2.2	1	mg/Kg	157282		08/11/05 2101	tds

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-15
Date Sampled.....: 08/02/2005
Time Sampled.....: 10:50
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-15
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8270C	Semivolatile Organics											
	Naphthalene, 3541 Low Solid*	36	U		7.2	36	1.00000	ug/Kg	158304		08/12/05 2324	dpk
	Acenaphthylene, 3541 Low Solid*	36	U		7.1	36	1.00000	ug/Kg	158304		08/12/05 2324	dpk
	Acenaphthene, 3541 Low Solid*	36	U		7.0	36	1.00000	ug/Kg	158304		08/12/05 2324	dpk
	Fluorene, 3541 Low Solid*	36	U		6.8	36	1.00000	ug/Kg	158304		08/12/05 2324	dpk
	Phenanthrene, 3541 Low Solid*	43		H	5.8	36	1.00000	ug/Kg	158304		08/12/05 2324	dpk
	Anthracene, 3541 Low Solid*	36	U		7.7	36	1.00000	ug/Kg	158304		08/12/05 2324	dpk
	Fluoranthene, 3541 Low Solid*	83		H	6.7	36	1.00000	ug/Kg	158304		08/12/05 2324	dpk
	Pyrene, 3541 Low Solid*	120			8.1	36	1.00000	ug/Kg	158304		08/12/05 2324	dpk
	Benzo(a)anthracene, 3541 Low Solid*	52			7.1	36	1.00000	ug/Kg	158304		08/12/05 2324	dpk
	Chrysene, 3541 Low Solid*	83		H	7.3	36	1.00000	ug/Kg	158304		08/12/05 2324	dpk
	Benzo(b)fluoranthene, 3541 Low Solid*	64		M	8.9	36	1.00000	ug/Kg	158304		08/12/05 2324	dpk
	Benzo(k)fluoranthene, 3541 Low Solid*	67		M	10	36	1.00000	ug/Kg	158304		08/12/05 2324	dpk
	Benzo(a)pyrene, 3541 Low Solid*	68		H	4.1	36	1.00000	ug/Kg	158304		08/12/05 2324	dpk
	Indeno(1,2,3-cd)pyrene, 3541 Low Solid*	36	U		7.2	36	1.00000	ug/Kg	158304		08/12/05 2324	dpk
	Dibenzo(a,h)anthracene, 3541 Low Solid*	36	U		7.3	36	1.00000	ug/Kg	158304		08/12/05 2324	dpk
	Benzo(ghi)perylene, 3541 Low Solid*	36	U		9.7	36	1.00000	ug/Kg	158304		08/12/05 2324	dpk
8081A	Organochlorine Pesticide Analysis											
	alpha-BHC, 3541 Solid*	1.9	U		1.1	1.9	1.00000	ug/Kg	158203		08/12/05 0418	pjg
	beta-BHC, 3541 Solid*	1.9	U		1.5	1.9	1.00000	ug/Kg	158203		08/12/05 0418	pjg
	delta-BHC, 3541 Solid*	1.9	U		1.5	1.9	1.00000	ug/Kg	158203		08/12/05 0418	pjg
	gamma-BHC (Lindane), 3541 Solid*	1.9	U		1.1	1.9	1.00000	ug/Kg	158203		08/12/05 0418	pjg
	Heptachlor, 3541 Solid*	1.9	U		1.0	1.9	1.00000	ug/Kg	158203		08/12/05 0418	pjg
	Aldrin, 3541 Solid*	1.9	U		0.97	1.9	1.00000	ug/Kg	158203		08/12/05 0418	pjg
	Heptachlor epoxide, 3541 Solid*	1.9	U		1.0	1.9	1.00000	ug/Kg	158203		08/12/05 0418	pjg
	Endosulfan I, 3541 Solid*	1.9	U		1.1	1.9	1.00000	ug/Kg	158203		08/12/05 0418	pjg
	Dieldrin, 3541 Solid*	1.9	U		0.97	1.9	1.00000	ug/Kg	158203		08/12/05 0418	pjg
	4,4'-DDE, 3541 Solid*	4.6			1.0	1.9	1.00000	ug/Kg	158203		08/12/05 0418	pjg

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-15
Date Sampled.....: 08/02/2005
Time Sampled.....: 10:50
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-15
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Endrin, 3541 Solid*	1.9	U		1.0	1.9	1.00000	ug/Kg	158203		08/12/05 0418	pjg
	Endosulfan II, 3541 Solid*	1.9	U		1.1	1.9	1.00000	ug/Kg	158203		08/12/05 0418	pjg
	4,4'-DDD, 3541 Solid*	1.9	U		1.2	1.9	1.00000	ug/Kg	158203		08/12/05 0418	pjg
	Endosulfan sulfate, 3541 Solid*	1.9	U		1.2	1.9	1.00000	ug/Kg	158203		08/12/05 0418	pjg
	4,4'-DDT, 3541 Solid*	12			1.0	1.9	1.00000	ug/Kg	158203		08/12/05 0418	pjg
	Methoxychlor, 3541 Solid*	9.1	U		1.5	9.1	1.00000	ug/Kg	158203		08/12/05 0418	pjg
	alpha-Chlordane, 3541 Solid*	1.9	U		0.97	1.9	1.00000	ug/Kg	158203		08/12/05 0418	pjg
	gamma-Chlordane, 3541 Solid*	1.9	U		0.16	1.9	1.00000	ug/Kg	158203		08/12/05 0418	pjg
	Toxaphene, 3541 Solid*	18	U		12	18	1.00000	ug/Kg	158203		08/12/05 0418	pjg
	Endrin aldehyde, 3541 Solid*	1.9	U		1.3	1.9	1.00000	ug/Kg	158203		08/12/05 0418	pjg
	Endrin ketone, 3541 Solid*	1.9	U		1.4	1.9	1.00000	ug/Kg	158203		08/12/05 0418	pjg
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	18	U		6.1	18	1.00000	ug/Kg	158329		08/11/05 1010	bjt
	Aroclor 1221, 3541 Solid*	18	U		5.0	18	1.00000	ug/Kg	158329		08/11/05 1010	bjt
	Aroclor 1232, 3541 Solid*	18	U		4.9	18	1.00000	ug/Kg	158329		08/11/05 1010	bjt
	Aroclor 1242, 3541 Solid*	18	U		5.4	18	1.00000	ug/Kg	158329		08/11/05 1010	bjt
	Aroclor 1248, 3541 Solid*	18	U		3.9	18	1.00000	ug/Kg	158329		08/11/05 1010	bjt
	Aroclor 1254, 3541 Solid*	18	U		4.0	18	1.00000	ug/Kg	158329		08/11/05 1010	bjt
	Aroclor 1260, 3541 Solid*	61			3.6	18	1.00000	ug/Kg	158329		08/11/05 1010	bjt
Method	% Solids Determination											
	% Solids, Solid	90.7			0.10	0.10	1	%	156577		08/04/05 2250	clb
	% Moisture, Solid	9.3			0.10	0.10	1	%	156577		08/04/05 2250	clb
7471A	Mercury (CVAA) Solids											
	Mercury, Solid*	0.10			0.0067	0.018	1	mg/Kg	157319		08/11/05 1500	gok
6010B	Metals Analysis (ICAP Trace)											
	Aluminum, Solid*	6100			5.4	21	1	mg/Kg	157282		08/11/05 2105	tds

* In Description = Dry Wgt.

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-15
Date Sampled.....: 08/02/2005
Time Sampled.....: 10:50
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-15
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Antimony, Solid*	0.52	B		0.46	2.1	1	mg/Kg	157282		08/11/05 2105	tds
	Arsenic, Solid*	5.0			0.40	1.1	1	mg/Kg	157282		08/11/05 2105	tds
	Barium, Solid*	66			0.077	1.1	1	mg/Kg	157282		08/11/05 2105	tds
	Beryllium, Solid*	0.48			0.019	0.43	1	mg/Kg	157282		08/11/05 2105	tds
	Cadmium, Solid*	0.13	B		0.062	0.21	1	mg/Kg	157282		08/11/05 2105	tds
	Calcium, Solid*	1300			2.0	11	1	mg/Kg	157282		08/11/05 2105	tds
	Chromium, Solid*	17			0.11	1.1	1	mg/Kg	157282		08/11/05 2105	tds
	Cobalt, Solid*	29			0.13	0.54	1	mg/Kg	157282		08/11/05 2105	tds
	Copper, Solid*	18			0.24	1.1	1	mg/Kg	157282		08/11/05 2105	tds
	Iron, Solid*	22000			2.4	11	1	mg/Kg	157282		08/11/05 2105	tds
	Lead, Solid*	73			0.27	0.54	1	mg/Kg	157282		08/11/05 2105	tds
	Magnesium, Solid*	560			1.1	11	1	mg/Kg	157282		08/11/05 2105	tds
	Manganese, Solid*	640			0.057	1.1	1	mg/Kg	157282		08/11/05 2105	tds
	Nickel, Solid*	10			0.51	1.1	1	mg/Kg	157282		08/11/05 2105	tds
	Potassium, Solid*	640			6.4	54	1	mg/Kg	157282		08/11/05 2105	tds
	Selenium, Solid*	1.2			0.48	1.1	1	mg/Kg	157282		08/11/05 2105	tds
	Silver, Solid*	0.38	B		0.11	0.54	1	mg/Kg	157282		08/11/05 2105	tds
	Sodium, Solid*	110	U		84	110	1	mg/Kg	157282		08/11/05 2105	tds
	Thallium, Solid*	1.1	U		0.61	1.1	1	mg/Kg	157282		08/11/05 2105	tds
	Vanadium, Solid*	54			0.16	0.54	1	mg/Kg	157282		08/11/05 2105	tds
	Zinc, Solid*	93			1.5	2.1	1	mg/Kg	157282		08/11/05 2105	tds

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-16
Date Sampled.....: 08/02/2005
Time Sampled.....: 11:00
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-16
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8270C	Semivolatile Organics											
	Naphthalene, 3541 Low Solid*	37	U		7.4	37	1.00000	ug/Kg	158304		08/12/05 2343	dpk
	Acenaphthylene, 3541 Low Solid*	38		H	7.3	37	1.00000	ug/Kg	158304		08/12/05 2343	dpk
	Acenaphthene, 3541 Low Solid*	37	U		7.2	37	1.00000	ug/Kg	158304		08/12/05 2343	dpk
	Fluorene, 3541 Low Solid*	37			7.1	37	1.00000	ug/Kg	158304		08/12/05 2343	dpk
	Phenanthrene, 3541 Low Solid*	660		H	6.0	37	1.00000	ug/Kg	158304		08/12/05 2343	dpk
	Anthracene, 3541 Low Solid*	200		H	8.0	37	1.00000	ug/Kg	158304		08/12/05 2343	dpk
	Fluoranthene, 3541 Low Solid*	1300		H	7.0	37	1.00000	ug/Kg	158304		08/12/05 2343	dpk
	Pyrene, 3541 Low Solid*	1700		H	8.5	37	1.00000	ug/Kg	158304		08/12/05 2343	dpk
	Benzo(a)anthracene, 3541 Low Solid*	860		H	7.3	37	1.00000	ug/Kg	158304		08/12/05 2343	dpk
	Chrysene, 3541 Low Solid*	930		H	7.5	37	1.00000	ug/Kg	158304		08/12/05 2343	dpk
	Benzo(b)fluoranthene, 3541 Low Solid*	730		M	9.2	37	1.00000	ug/Kg	158304		08/12/05 2343	dpk
	Benzo(k)fluoranthene, 3541 Low Solid*	900		M	10	37	1.00000	ug/Kg	158304		08/12/05 2343	dpk
	Benzo(a)pyrene, 3541 Low Solid*	900		H	4.3	37	1.00000	ug/Kg	158304		08/12/05 2343	dpk
	Indeno(1,2,3-cd)pyrene, 3541 Low Solid*	180		M	7.4	37	1.00000	ug/Kg	158304		08/12/05 2343	dpk
	Dibenzo(a,h)anthracene, 3541 Low Solid*	37	U		7.5	37	1.00000	ug/Kg	158304		08/12/05 2343	dpk
	Benzo(ghi)perylene, 3541 Low Solid*	170			10	37	1.00000	ug/Kg	158304		08/12/05 2343	dpk
8081A	Organochlorine Pesticide Analysis											
	alpha-BHC, 3541 Solid*	7.7	U		4.4	7.7	4.00000	ug/Kg	158203		08/12/05 0636	pjg
	beta-BHC, 3541 Solid*	7.7	U		6.3	7.7	4.00000	ug/Kg	158203		08/12/05 0636	pjg
	delta-BHC, 3541 Solid*	7.7	U		6.3	7.7	4.00000	ug/Kg	158203		08/12/05 0636	pjg
	gamma-BHC (Lindane), 3541 Solid*	7.7	U		4.4	7.7	4.00000	ug/Kg	158203		08/12/05 0636	pjg
	Heptachlor, 3541 Solid*	7.7	U		4.1	7.7	4.00000	ug/Kg	158203		08/12/05 0636	pjg
	Aldrin, 3541 Solid*	7.7	U		4.0	7.7	4.00000	ug/Kg	158203		08/12/05 0636	pjg
	Heptachlor epoxide, 3541 Solid*	7.7	U		4.2	7.7	4.00000	ug/Kg	158203		08/12/05 0636	pjg
	Endosulfan I, 3541 Solid*	7.7	U		4.5	7.7	4.00000	ug/Kg	158203		08/12/05 0636	pjg
	Dieldrin, 3541 Solid*	7.7	U		4.0	7.7	4.00000	ug/Kg	158203		08/12/05 0636	pjg
	4,4'-DDE, 3541 Solid*	15			4.2	7.7	4.00000	ug/Kg	158203		08/12/05 0636	pjg

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment PROJECT: NPS - KENILWORTH ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-16
Date Sampled.....: 08/02/2005
Time Sampled.....: 11:00
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-16
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Endrin, 3541 Solid*	7.7	U		4.3	7.7	4.00000	ug/Kg	158203		08/12/05 0636	pjg
	Endosulfan II, 3541 Solid*	7.7	U		4.5	7.7	4.00000	ug/Kg	158203		08/12/05 0636	pjg
	4,4'-DDD, 3541 Solid*	7.7	U		5.0	7.7	4.00000	ug/Kg	158203		08/12/05 0636	pjg
	Endosulfan sulfate, 3541 Solid*	7.7	U		5.0	7.7	4.00000	ug/Kg	158203		08/12/05 0636	pjg
	4,4'-DDT, 3541 Solid*	24			4.2	7.7	4.00000	ug/Kg	158203		08/12/05 0636	pjg
	Methoxychlor, 3541 Solid*	37	U		6.3	37	4.00000	ug/Kg	158203		08/12/05 0636	pjg
	alpha-Chlordane, 3541 Solid*	7.7	U		4.0	7.7	4.00000	ug/Kg	158203		08/12/05 0636	pjg
	gamma-Chlordane, 3541 Solid*	7.7	U		0.68	7.7	4.00000	ug/Kg	158203		08/12/05 0636	pjg
	Toxaphene, 3541 Solid*	75	U		50	75	4.00000	ug/Kg	158203		08/12/05 0636	pjg
	Endrin aldehyde, 3541 Solid*	7.7	U		5.4	7.7	4.00000	ug/Kg	158203		08/12/05 0636	pjg
	Endrin ketone, 3541 Solid*	7.7	U		5.9	7.7	4.00000	ug/Kg	158203		08/12/05 0636	pjg
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	19	U		6.3	19	1.00000	ug/Kg	158329		08/11/05 1044	bjt
	Aroclor 1221, 3541 Solid*	19	U		5.2	19	1.00000	ug/Kg	158329		08/11/05 1044	bjt
	Aroclor 1232, 3541 Solid*	19	U		5.1	19	1.00000	ug/Kg	158329		08/11/05 1044	bjt
	Aroclor 1242, 3541 Solid*	19	U		5.5	19	1.00000	ug/Kg	158329		08/11/05 1044	bjt
	Aroclor 1248, 3541 Solid*	19	U		4.1	19	1.00000	ug/Kg	158329		08/11/05 1044	bjt
	Aroclor 1254, 3541 Solid*	19	U		4.2	19	1.00000	ug/Kg	158329		08/11/05 1044	bjt
	Aroclor 1260, 3541 Solid*	150			3.7	19	1.00000	ug/Kg	158329		08/11/05 1044	bjt
Method	% Solids Determination											
	% Solids, Solid	87.5			0.10	0.10	1	%	156577		08/04/05 2253	clb
	% Moisture, Solid	12.5			0.10	0.10	1	%	156577		08/04/05 2253	clb
7471A	Mercury (CVAA) Solids											
	Mercury, Solid*	0.14			0.0070	0.019	1	mg/Kg	157319		08/11/05 1503	gok
6010B	Metals Analysis (ICAP Trace)											
	Aluminum, Solid*	7900			5.5	22	1	mg/Kg	157282		08/11/05 2130	tds

* In Description = Dry Wgt.

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-16
Date Sampled.....: 08/02/2005
Time Sampled.....: 11:00
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-16
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Antimony, Solid*	0.62	B		0.47	2.2	1	mg/Kg	157282		08/11/05 2130	tds
	Arsenic, Solid*	9.1			0.40	1.1	1	mg/Kg	157282		08/11/05 2130	tds
	Barium, Solid*	120			0.079	1.1	1	mg/Kg	157282		08/11/05 2130	tds
	Beryllium, Solid*	0.84			0.020	0.44	1	mg/Kg	157282		08/11/05 2130	tds
	Cadmium, Solid*	0.26			0.063	0.22	1	mg/Kg	157282		08/11/05 2130	tds
	Calcium, Solid*	2600			2.0	11	1	mg/Kg	157282		08/11/05 2130	tds
	Chromium, Solid*	21			0.11	1.1	1	mg/Kg	157282		08/11/05 2130	tds
	Cobalt, Solid*	9.1			0.13	0.55	1	mg/Kg	157282		08/11/05 2130	tds
	Copper, Solid*	36			0.24	1.1	1	mg/Kg	157282		08/11/05 2130	tds
	Iron, Solid*	23000			2.4	11	1	mg/Kg	157282		08/11/05 2130	tds
	Lead, Solid*	100			0.27	0.55	1	mg/Kg	157282		08/11/05 2130	tds
	Magnesium, Solid*	700			1.1	11	1	mg/Kg	157282		08/11/05 2130	tds
	Manganese, Solid*	190			0.058	1.1	1	mg/Kg	157282		08/11/05 2130	tds
	Nickel, Solid*	15			0.52	1.1	1	mg/Kg	157282		08/11/05 2130	tds
	Potassium, Solid*	610			6.5	55	1	mg/Kg	157282		08/11/05 2130	tds
	Selenium, Solid*	1.4			0.49	1.1	1	mg/Kg	157282		08/11/05 2130	tds
	Silver, Solid*	0.44	B		0.11	0.55	1	mg/Kg	157282		08/11/05 2130	tds
	Sodium, Solid*	88	B		86	110	1	mg/Kg	157282		08/11/05 2130	tds
	Thallium, Solid*	1.1	U		0.62	1.1	1	mg/Kg	157282		08/11/05 2130	tds
	Vanadium, Solid*	58			0.16	0.55	1	mg/Kg	157282		08/11/05 2130	tds
	Zinc, Solid*	110			1.5	2.2	1	mg/Kg	157282		08/11/05 2130	tds

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-17
Date Sampled.....: 08/02/2005
Time Sampled.....: 11:10
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-17
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8270C	Semivolatile Organics											
	Naphthalene, 3541 Low Solid*	39	U		7.7	39	1.00000	ug/Kg	158304		08/13/05 0002	dpk
	Acenaphthylene, 3541 Low Solid*	39	U		7.6	39	1.00000	ug/Kg	158304		08/13/05 0002	dpk
	Acenaphthene, 3541 Low Solid*	39	U		7.5	39	1.00000	ug/Kg	158304		08/13/05 0002	dpk
	Fluorene, 3541 Low Solid*	39	U		7.4	39	1.00000	ug/Kg	158304		08/13/05 0002	dpk
	Phenanthrene, 3541 Low Solid*	46		H	6.2	39	1.00000	ug/Kg	158304		08/13/05 0002	dpk
	Anthracene, 3541 Low Solid*	39	U		8.3	39	1.00000	ug/Kg	158304		08/13/05 0002	dpk
	Fluoranthene, 3541 Low Solid*	73		H	7.3	39	1.00000	ug/Kg	158304		08/13/05 0002	dpk
	Pyrene, 3541 Low Solid*	110			8.8	39	1.00000	ug/Kg	158304		08/13/05 0002	dpk
	Benzo(a)anthracene, 3541 Low Solid*	43			7.6	39	1.00000	ug/Kg	158304		08/13/05 0002	dpk
	Chrysene, 3541 Low Solid*	69		H	7.8	39	1.00000	ug/Kg	158304		08/13/05 0002	dpk
	Benzo(b)fluoranthene, 3541 Low Solid*	53		M	9.6	39	1.00000	ug/Kg	158304		08/13/05 0002	dpk
	Benzo(k)fluoranthene, 3541 Low Solid*	73		M	11	39	1.00000	ug/Kg	158304		08/13/05 0002	dpk
	Benzo(a)pyrene, 3541 Low Solid*	39	U		4.4	39	1.00000	ug/Kg	158304		08/13/05 0002	dpk
	Indeno(1,2,3-cd)pyrene, 3541 Low Solid*	120		H	7.7	39	1.00000	ug/Kg	158304		08/13/05 0002	dpk
	Dibenzo(a,h)anthracene, 3541 Low Solid*	39	U		7.8	39	1.00000	ug/Kg	158304		08/13/05 0002	dpk
	Benzo(ghi)perylene, 3541 Low Solid*	180		H	10	39	1.00000	ug/Kg	158304		08/13/05 0002	dpk
8081A	Organochlorine Pesticide Analysis											
	alpha-BHC, 3541 Solid*	4.0	U		2.3	4.0	2.00000	ug/Kg	158203		08/12/05 0704	pjg
	beta-BHC, 3541 Solid*	4.0	U		3.3	4.0	2.00000	ug/Kg	158203		08/12/05 0704	pjg
	delta-BHC, 3541 Solid*	4.0	U		3.3	4.0	2.00000	ug/Kg	158203		08/12/05 0704	pjg
	gamma-BHC (Lindane), 3541 Solid*	4.0	U		2.3	4.0	2.00000	ug/Kg	158203		08/12/05 0704	pjg
	Heptachlor, 3541 Solid*	4.0	U		2.1	4.0	2.00000	ug/Kg	158203		08/12/05 0704	pjg
	Aldrin, 3541 Solid*	4.0	U		2.1	4.0	2.00000	ug/Kg	158203		08/12/05 0704	pjg
	Heptachlor epoxide, 3541 Solid*	4.0	U		2.2	4.0	2.00000	ug/Kg	158203		08/12/05 0704	pjg
	Endosulfan I, 3541 Solid*	4.0	U		2.3	4.0	2.00000	ug/Kg	158203		08/12/05 0704	pjg
	Dieldrin, 3541 Solid*	4.0	U		2.1	4.0	2.00000	ug/Kg	158203		08/12/05 0704	pjg
	4,4'-DDE, 3541 Solid*	14			2.2	4.0	2.00000	ug/Kg	158203		08/12/05 0704	pjg

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-17
Date Sampled.....: 08/02/2005
Time Sampled.....: 11:10
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-17
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Endrin, 3541 Solid*	4.0	U		2.2	4.0	2.00000	ug/Kg	158203		08/12/05 0704	pjg
	Endosulfan II, 3541 Solid*	4.0	U		2.3	4.0	2.00000	ug/Kg	158203		08/12/05 0704	pjg
	4,4'-DDD, 3541 Solid*	4.0	U		2.6	4.0	2.00000	ug/Kg	158203		08/12/05 0704	pjg
	Endosulfan sulfate, 3541 Solid*	4.0	U		2.6	4.0	2.00000	ug/Kg	158203		08/12/05 0704	pjg
	4,4'-DDT, 3541 Solid*	25			2.2	4.0	2.00000	ug/Kg	158203		08/12/05 0704	pjg
	Methoxychlor, 3541 Solid*	19	U		3.3	19	2.00000	ug/Kg	158203		08/12/05 0704	pjg
	alpha-Chlordane, 3541 Solid*	4.0	U		2.1	4.0	2.00000	ug/Kg	158203		08/12/05 0704	pjg
	gamma-Chlordane, 3541 Solid*	4.0	U		0.35	4.0	2.00000	ug/Kg	158203		08/12/05 0704	pjg
	Toxaphene, 3541 Solid*	39	U		26	39	2.00000	ug/Kg	158203		08/12/05 0704	pjg
	Endrin aldehyde, 3541 Solid*	4.0	U		2.8	4.0	2.00000	ug/Kg	158203		08/12/05 0704	pjg
	Endrin ketone, 3541 Solid*	4.0	U		3.1	4.0	2.00000	ug/Kg	158203		08/12/05 0704	pjg
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	20	U		6.6	20	1.00000	ug/Kg	158329		08/11/05 1150	bjt
	Aroclor 1221, 3541 Solid*	20	U		5.4	20	1.00000	ug/Kg	158329		08/11/05 1150	bjt
	Aroclor 1232, 3541 Solid*	20	U		5.3	20	1.00000	ug/Kg	158329		08/11/05 1150	bjt
	Aroclor 1242, 3541 Solid*	20	U		5.8	20	1.00000	ug/Kg	158329		08/11/05 1150	bjt
	Aroclor 1248, 3541 Solid*	20	U		4.2	20	1.00000	ug/Kg	158329		08/11/05 1150	bjt
	Aroclor 1254, 3541 Solid*	20	U		4.3	20	1.00000	ug/Kg	158329		08/11/05 1150	bjt
	Aroclor 1260, 3541 Solid*	110			3.9	20	1.00000	ug/Kg	158329		08/11/05 1150	bjt
Method	% Solids Determination											
	% Solids, Solid	84.1			0.10	0.10	1	%	156577		08/04/05 2256	clb
	% Moisture, Solid	15.9			0.10	0.10	1	%	156577		08/04/05 2256	clb
7471A	Mercury (CVAA) Solids											
	Mercury, Solid*	0.17			0.0073	0.020	1	mg/Kg	157319		08/11/05 1505	gok
6010B	Metals Analysis (ICAP Trace)											
	Aluminum, Solid*	11000			5.7	23	1	mg/Kg	157282		08/11/05 2135	tds

* In Description = Dry Wgt.

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment

PROJECT: NPS - KENILWORTH

ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-17
Date Sampled.....: 08/02/2005
Time Sampled.....: 11:10
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-17
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Antimony, Solid*	2.3	U		0.49	2.3	1	mg/Kg	157282		08/11/05 2135	tds
	Arsenic, Solid*	6.8			0.42	1.1	1	mg/Kg	157282		08/11/05 2135	tds
	Barium, Solid*	96			0.081	1.1	1	mg/Kg	157282		08/11/05 2135	tds
	Beryllium, Solid*	0.97			0.020	0.45	1	mg/Kg	157282		08/11/05 2135	tds
	Cadmium, Solid*	0.11	B		0.066	0.23	1	mg/Kg	157282		08/11/05 2135	tds
	Calcium, Solid*	570			2.1	11	1	mg/Kg	157282		08/11/05 2135	tds
	Chromium, Solid*	23			0.11	1.1	1	mg/Kg	157282		08/11/05 2135	tds
	Cobalt, Solid*	8.4			0.14	0.57	1	mg/Kg	157282		08/11/05 2135	tds
	Copper, Solid*	26			0.25	1.1	1	mg/Kg	157282		08/11/05 2135	tds
	Iron, Solid*	17000			2.5	11	1	mg/Kg	157282		08/11/05 2135	tds
	Lead, Solid*	72			0.28	0.57	1	mg/Kg	157282		08/11/05 2135	tds
	Magnesium, Solid*	1500			1.1	11	1	mg/Kg	157282		08/11/05 2135	tds
	Manganese, Solid*	160			0.060	1.1	1	mg/Kg	157282		08/11/05 2135	tds
	Nickel, Solid*	17			0.54	1.1	1	mg/Kg	157282		08/11/05 2135	tds
	Potassium, Solid*	930			6.8	57	1	mg/Kg	157282		08/11/05 2135	tds
	Selenium, Solid*	0.87	B		0.51	1.1	1	mg/Kg	157282		08/11/05 2135	tds
	Silver, Solid*	0.74			0.11	0.57	1	mg/Kg	157282		08/11/05 2135	tds
	Sodium, Solid*	110	U		89	110	1	mg/Kg	157282		08/11/05 2135	tds
	Thallium, Solid*	1.1	U		0.64	1.1	1	mg/Kg	157282		08/11/05 2135	tds
	Vanadium, Solid*	57			0.17	0.57	1	mg/Kg	157282		08/11/05 2135	tds
	Zinc, Solid*	70			1.5	2.3	1	mg/Kg	157282		08/11/05 2135	tds

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment

PROJECT: NPS - KENILWORTH

ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-99
Date Sampled.....: 08/02/2005
Time Sampled.....: 00:00
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-18
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8270C	Semivolatile Organics											
	Naphthalene, 3541 Low Solid*	35	U		7.0	35	1.00000	ug/Kg	158304		08/13/05 0021	dpk
	Acenaphthylene, 3541 Low Solid*	35	U		6.9	35	1.00000	ug/Kg	158304		08/13/05 0021	dpk
	Acenaphthene, 3541 Low Solid*	35	U		6.8	35	1.00000	ug/Kg	158304		08/13/05 0021	dpk
	Fluorene, 3541 Low Solid*	35	U		6.7	35	1.00000	ug/Kg	158304		08/13/05 0021	dpk
	Phenanthrene, 3541 Low Solid*	140		H	5.7	35	1.00000	ug/Kg	158304		08/13/05 0021	dpk
	Anthracene, 3541 Low Solid*	26	J	a	7.6	35	1.00000	ug/Kg	158304		08/13/05 0021	dpk
	Fluoranthene, 3541 Low Solid*	240		H	6.6	35	1.00000	ug/Kg	158304		08/13/05 0021	dpk
	Pyrene, 3541 Low Solid*	320		H	8.0	35	1.00000	ug/Kg	158304		08/13/05 0021	dpk
	Benzo(a)anthracene, 3541 Low Solid*	130		H	6.9	35	1.00000	ug/Kg	158304		08/13/05 0021	dpk
	Chrysene, 3541 Low Solid*	190		H	7.1	35	1.00000	ug/Kg	158304		08/13/05 0021	dpk
	Benzo(b)fluoranthene, 3541 Low Solid*	160		M	8.7	35	1.00000	ug/Kg	158304		08/13/05 0021	dpk
	Benzo(k)fluoranthene, 3541 Low Solid*	200		M	9.8	35	1.00000	ug/Kg	158304		08/13/05 0021	dpk
	Benzo(a)pyrene, 3541 Low Solid*	150		H	4.1	35	1.00000	ug/Kg	158304		08/13/05 0021	dpk
	Indeno(1,2,3-cd)pyrene, 3541 Low Solid*	51			7.0	35	1.00000	ug/Kg	158304		08/13/05 0021	dpk
	Dibenzo(a,h)anthracene, 3541 Low Solid*	35	U		7.1	35	1.00000	ug/Kg	158304		08/13/05 0021	dpk
	Benzo(ghi)perylene, 3541 Low Solid*	69		H	9.5	35	1.00000	ug/Kg	158304		08/13/05 0021	dpk
8081A	Organochlorine Pesticide Analysis											
	alpha-BHC, 3541 Solid*	3.7	U		2.1	3.7	2.00000	ug/Kg	158203		08/12/05 0731	pjg
	beta-BHC, 3541 Solid*	3.7	U		3.0	3.7	2.00000	ug/Kg	158203		08/12/05 0731	pjg
	delta-BHC, 3541 Solid*	3.7	U		3.0	3.7	2.00000	ug/Kg	158203		08/12/05 0731	pjg
	gamma-BHC (Lindane), 3541 Solid*	3.7	U		2.1	3.7	2.00000	ug/Kg	158203		08/12/05 0731	pjg
	Heptachlor, 3541 Solid*	3.7	U		2.0	3.7	2.00000	ug/Kg	158203		08/12/05 0731	pjg
	Aldrin, 3541 Solid*	3.7	U		1.9	3.7	2.00000	ug/Kg	158203		08/12/05 0731	pjg
	Heptachlor epoxide, 3541 Solid*	3.7	U		2.0	3.7	2.00000	ug/Kg	158203		08/12/05 0731	pjg
	Endosulfan I, 3541 Solid*	3.7	U		2.2	3.7	2.00000	ug/Kg	158203		08/12/05 0731	pjg
	Dieldrin, 3541 Solid*	3.7	U		1.9	3.7	2.00000	ug/Kg	158203		08/12/05 0731	pjg
	4,4'-DDE, 3541 Solid*	11			2.0	3.7	2.00000	ug/Kg	158203		08/12/05 0731	pjg

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment PROJECT: NPS - KENILWORTH ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-99
Date Sampled.....: 08/02/2005
Time Sampled.....: 00:00
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-18
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Endrin, 3541 Solid*	3.7	U		2.1	3.7	2.00000	ug/Kg	158203		08/12/05 0731	pjg
	Endosulfan II, 3541 Solid*	3.7	U		2.2	3.7	2.00000	ug/Kg	158203		08/12/05 0731	pjg
	4,4'-DDD, 3541 Solid*	3.7	U		2.4	3.7	2.00000	ug/Kg	158203		08/12/05 0731	pjg
	Endosulfan sulfate, 3541 Solid*	3.7	U		2.4	3.7	2.00000	ug/Kg	158203		08/12/05 0731	pjg
	4,4'-DDT, 3541 Solid*	22			2.0	3.7	2.00000	ug/Kg	158203		08/12/05 0731	pjg
	Methoxychlor, 3541 Solid*	18	U		3.0	18	2.00000	ug/Kg	158203		08/12/05 0731	pjg
	alpha-Chlordane, 3541 Solid*	3.7	U		1.9	3.7	2.00000	ug/Kg	158203		08/12/05 0731	pjg
	gamma-Chlordane, 3541 Solid*	3.7	U		0.33	3.7	2.00000	ug/Kg	158203		08/12/05 0731	pjg
	Toxaphene, 3541 Solid*	36	U		24	36	2.00000	ug/Kg	158203		08/12/05 0731	pjg
	Endrin aldehyde, 3541 Solid*	3.7	U		2.6	3.7	2.00000	ug/Kg	158203		08/12/05 0731	pjg
	Endrin ketone, 3541 Solid*	3.7	U		2.8	3.7	2.00000	ug/Kg	158203		08/12/05 0731	pjg
8082	PCB Analysis											
	Aroclor 1016, 3541 Solid*	18	U		6.1	18	1.00000	ug/Kg	158329		08/11/05 1224	bjt
	Aroclor 1221, 3541 Solid*	18	U		5.0	18	1.00000	ug/Kg	158329		08/11/05 1224	bjt
	Aroclor 1232, 3541 Solid*	18	U		4.9	18	1.00000	ug/Kg	158329		08/11/05 1224	bjt
	Aroclor 1242, 3541 Solid*	18	U		5.3	18	1.00000	ug/Kg	158329		08/11/05 1224	bjt
	Aroclor 1248, 3541 Solid*	18	U		3.9	18	1.00000	ug/Kg	158329		08/11/05 1224	bjt
	Aroclor 1254, 3541 Solid*	18	U		4.0	18	1.00000	ug/Kg	158329		08/11/05 1224	bjt
	Aroclor 1260, 3541 Solid*	86			3.6	18	1.00000	ug/Kg	158329		08/11/05 1224	bjt
Method	% Solids Determination											
	% Solids, Solid	91.4			0.10	0.10	1	%	156577		08/04/05 2259	clb
	% Moisture, Solid	8.6			0.10	0.10	1	%	156577		08/04/05 2259	clb
7471A	Mercury (CVAA) Solids											
	Mercury, Solid*	0.90			0.067	0.18	10	mg/Kg	157319		08/11/05 1511	gok
6010B	Metals Analysis (ICAP Trace)											
	Aluminum, Solid*	9500			5.1	20	1	mg/Kg	157282		08/11/05 2139	tds

* In Description = Dry Wgt.

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LABORATORY TEST RESULTS

Job Number: 238871

Date:08/24/2005

CUSTOMER: Ecology & Environment

PROJECT: NPS - KENILWORTH

ATTN: Leslie Fischbeck

Customer Sample ID: KS-SS-99
Date Sampled.....: 08/02/2005
Time Sampled.....: 00:00
Sample Matrix.....: Soil

Laboratory Sample ID: 238871-18
Date Received.....: 08/03/2005
Time Received.....: 10:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
	Antimony, Solid*	1.1	B		0.44	2.0	1	mg/Kg	157282		08/11/05 2139	tds
	Arsenic, Solid*	6.7			0.38	1.0	1	mg/Kg	157282		08/11/05 2139	tds
	Barium, Solid*	89			0.073	1.0	1	mg/Kg	157282		08/11/05 2139	tds
	Beryllium, Solid*	0.70			0.018	0.41	1	mg/Kg	157282		08/11/05 2139	tds
	Cadmium, Solid*	0.20	U		0.059	0.20	1	mg/Kg	157282		08/11/05 2139	tds
	Calcium, Solid*	1200			1.9	10	1	mg/Kg	157282		08/11/05 2139	tds
	Chromium, Solid*	34			0.10	1.0	1	mg/Kg	157282		08/11/05 2139	tds
	Cobalt, Solid*	12			0.12	0.51	1	mg/Kg	157282		08/11/05 2139	tds
	Copper, Solid*	33			0.22	1.0	1	mg/Kg	157282		08/11/05 2139	tds
	Iron, Solid*	54000			2.2	10	1	mg/Kg	157282		08/11/05 2139	tds
	Lead, Solid*	70			0.25	0.51	1	mg/Kg	157282		08/11/05 2139	tds
	Magnesium, Solid*	1100			1.0	10	1	mg/Kg	157282		08/11/05 2139	tds
	Manganese, Solid*	530			0.054	1.0	1	mg/Kg	157282		08/11/05 2139	tds
	Nickel, Solid*	18			0.49	1.0	1	mg/Kg	157282		08/11/05 2139	tds
	Potassium, Solid*	770			6.1	51	1	mg/Kg	157282		08/11/05 2139	tds
	Selenium, Solid*	1.7			0.46	1.0	1	mg/Kg	157282		08/11/05 2139	tds
	Silver, Solid*	0.42	B		0.10	0.51	1	mg/Kg	157282		08/11/05 2139	tds
	Sodium, Solid*	100	U		80	100	1	mg/Kg	157282		08/11/05 2139	tds
	Thallium, Solid*	1.0	U		0.58	1.0	1	mg/Kg	157282		08/11/05 2139	tds
	Vanadium, Solid*	45			0.15	0.51	1	mg/Kg	157282		08/11/05 2139	tds
	Zinc, Solid*	230			1.4	2.0	1	mg/Kg	157282		08/11/05 2139	tds

* In Description = Dry Wgt.

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LABORATORY CHRONICLE

Job Number: 238871 Date: 08/24/2005

CUSTOMER: Ecology & Environment PROJECT: NPS - KENILWORTH ATTN: Leslie Fischbeck

Lab ID: 238871-1 Client ID: KS-SS-01 Date Recvd: 08/03/2005 Sample Date: 08/02/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	156577	156577	08/04/2005	2203	
3050B	Acid Digestion: Solids (ICAP)	1	156622		08/05/2005	0945	
EDD	Electronic Data Deliverable	1					
3541	Extraction Soxhlet (Chlor.Pest)	1	156741		08/08/2005	0700	
3541	Extraction Soxhlet (PCBs)	1	156742		08/08/2005	0700	
3541	Extraction Soxhlet (SVOC)	1	156596		08/05/2005	0700	
7471A	Mercury (CVAA) Solids	1	157319	157245	08/11/2005	1411	
6010B	Metals Analysis (ICAP Trace)	1	157282	156622	08/11/2005	1928	
8081A	Organochlorine Pesticide Analysis	1	158203	156741	08/11/2005	1809	5.00000
8082	PCB Analysis	1	158329	156742	08/11/2005	1257	2.00000
7470/7471	SW846 Digestion (Hg)	1	157245		08/10/2005	1230	
8270C	Semivolatile Organics	1	158304	156596	08/12/2005	1821	1.00000

Lab ID: 238871-2 Client ID: KS-SS-02 Date Recvd: 08/03/2005 Sample Date: 08/02/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	156577	156577	08/04/2005	2209	
3050B	Acid Digestion: Solids (ICAP)	1	156622		08/05/2005	0945	
3541	Extraction Soxhlet (Chlor.Pest)	1	156741		08/08/2005	0700	
3541	Extraction Soxhlet (PCBs)	1	156742		08/08/2005	0700	
3541	Extraction Soxhlet (SVOC)	1	156596		08/05/2005	0700	
7471A	Mercury (CVAA) Solids	1	157319	157245	08/11/2005	1425	
6010B	Metals Analysis (ICAP Trace)	1	157282	156622	08/11/2005	1951	
8081A	Organochlorine Pesticide Analysis	1	158203	156741	08/11/2005	1836	5.00000
8082	PCB Analysis	1	158329	156742	08/11/2005	1404	5.00000
7470/7471	SW846 Digestion (Hg)	1	157245		08/10/2005	1230	
8270C	Semivolatile Organics	1	158304	156596	08/12/2005	1918	1.00000

Lab ID: 238871-3 Client ID: KS-SS-03 Date Recvd: 08/03/2005 Sample Date: 08/02/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	156577	156577	08/04/2005	2212	
3050B	Acid Digestion: Solids (ICAP)	1	156622		08/05/2005	0945	
3541	Extraction Soxhlet (Chlor.Pest)	1	156741		08/08/2005	0700	
3541	Extraction Soxhlet (PCBs)	1	156742		08/08/2005	0700	
3541	Extraction Soxhlet (SVOC)	1	156596		08/05/2005	0700	
7471A	Mercury (CVAA) Solids	1	157319	157245	08/11/2005	1427	
6010B	Metals Analysis (ICAP Trace)	1	157282	156622	08/11/2005	1955	
8081A	Organochlorine Pesticide Analysis	1	158203	156741	08/11/2005	2027	2.00000
8082	PCB Analysis	1	158329	156742	08/10/2005	1700	1.00000
7470/7471	SW846 Digestion (Hg)	1	157245		08/10/2005	1230	
8270C	Semivolatile Organics	1	158304	156596	08/12/2005	1937	1.00000

Lab ID: 238871-4 Client ID: KS-SS-04 Date Recvd: 08/03/2005 Sample Date: 08/02/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	156577	156577	08/04/2005	2216	
3050B	Acid Digestion: Solids (ICAP)	1	156622		08/05/2005	0945	
3541	Extraction Soxhlet (Chlor.Pest)	1	156741		08/08/2005	0700	
3541	Extraction Soxhlet (PCBs)	1	156742		08/08/2005	0700	
3541	Extraction Soxhlet (SVOC)	1	156596		08/05/2005	0700	
7471A	Mercury (CVAA) Solids	1	157319	157245	08/11/2005	1430	
6010B	Metals Analysis (ICAP Trace)	1	157282	156622	08/11/2005	2000	
8081A	Organochlorine Pesticide Analysis	1	158203	156741	08/11/2005	2055	5.00000
8082	PCB Analysis	1	158329	156742	08/10/2005	1733	1.00000
7470/7471	SW846 Digestion (Hg)	1	157245		08/10/2005	1230	
8270C	Semivolatile Organics	1	158304	156596	08/12/2005	1956	1.00000

Lab ID: 238871-5 Client ID: KS-SS-05 Date Recvd: 08/03/2005 Sample Date: 08/02/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	156577	156577	08/04/2005	2219	

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Lab ID: 238871-5 Client ID: KS-SS-05 Date Recvd: 08/03/2005 Sample Date: 08/02/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
3050B	Acid Digestion: Solids (ICAP)	1	156866		08/08/2005	2100	
3541	Extraction Soxhlet (Chlor.Pest)	1	156741		08/08/2005	0700	
3541	Extraction Soxhlet (PCBs)	1	156742		08/08/2005	0700	
3541	Extraction Soxhlet (SVOC)	1	156596		08/05/2005	0700	
7471A	Mercury (CVAA) Solids	1	157319	157245	08/11/2005	1432	
6010B	Metals Analysis (ICAP Trace)	1	156962	156866	08/09/2005	1022	
8081A	Organochlorine Pesticide Analysis	1	158203	156741	08/11/2005	2122	2.00000
8082	PCB Analysis	1	158329	156742	08/10/2005	1807	1.00000
7470/7471	SW846 Digestion (Hg)	1	157245		08/10/2005	1230	
8270C	Semivolatile Organics	1	158304	156596	08/12/2005	2014	1.00000

Lab ID: 238871-6 Client ID: KS-SS-06 Date Recvd: 08/03/2005 Sample Date: 08/02/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	156577	156577	08/04/2005	2222	
3050B	Acid Digestion: Solids (ICAP)	1	156622		08/05/2005	0945	
3541	Extraction Soxhlet (Chlor.Pest)	1	156741		08/08/2005	0700	
3541	Extraction Soxhlet (PCBs)	1	156742		08/08/2005	0700	
3541	Extraction Soxhlet (SVOC)	1	156596		08/05/2005	0700	
7471A	Mercury (CVAA) Solids	1	157319	157245	08/11/2005	1434	
6010B	Metals Analysis (ICAP Trace)	1	157282	156622	08/11/2005	2025	
8081A	Organochlorine Pesticide Analysis	1	158203	156741	08/11/2005	2150	2.00000
8082	PCB Analysis	1	158329	156742	08/10/2005	1840	1.00000
7470/7471	SW846 Digestion (Hg)	1	157245		08/10/2005	1230	
8270C	Semivolatile Organics	1	158304	156596	08/12/2005	2034	1.00000

Lab ID: 238871-7 Client ID: KS-SS-07 Date Recvd: 08/03/2005 Sample Date: 08/02/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	156577	156577	08/04/2005	2225	
3050B	Acid Digestion: Solids (ICAP)	1	156622		08/05/2005	0945	
3541	Extraction Soxhlet (Chlor.Pest)	1	156741		08/08/2005	0700	
3541	Extraction Soxhlet (PCBs)	1	156742		08/08/2005	0700	
3541	Extraction Soxhlet (SVOC)	1	156596		08/05/2005	0700	
7471A	Mercury (CVAA) Solids	1	157319	157245	08/11/2005	1437	
6010B	Metals Analysis (ICAP Trace)	1	157282	156622	08/11/2005	2029	
8081A	Organochlorine Pesticide Analysis	1	158203	156741	08/12/2005	0009	2.00000
8082	PCB Analysis	1	158329	156742	08/10/2005	2020	1.00000
7470/7471	SW846 Digestion (Hg)	1	157245		08/10/2005	1230	
8270C	Semivolatile Organics	1	158304	156596	08/12/2005	2053	1.00000

Lab ID: 238871-8 Client ID: KS-SS-08 Date Recvd: 08/03/2005 Sample Date: 08/02/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	156577	156577	08/04/2005	2228	
3050B	Acid Digestion: Solids (ICAP)	1	156622		08/05/2005	0945	
3541	Extraction Soxhlet (Chlor.Pest)	1	156741		08/08/2005	0700	
3541	Extraction Soxhlet (PCBs)	1	156742		08/08/2005	0700	
3541	Extraction Soxhlet (SVOC)	1	156596		08/05/2005	0700	
7471A	Mercury (CVAA) Solids	1	157319	157245	08/11/2005	1439	
6010B	Metals Analysis (ICAP Trace)	1	157282	156622	08/11/2005	2034	
8081A	Organochlorine Pesticide Analysis	1	158203	156741	08/12/2005	0036	2.00000
8082	PCB Analysis	1	158329	156742	08/10/2005	2053	1.00000
7470/7471	SW846 Digestion (Hg)	1	157245		08/10/2005	1230	
8270C	Semivolatile Organics	1	158304	156596	08/12/2005	2112	1.00000

Lab ID: 238871-9 Client ID: KS-SS-09 Date Recvd: 08/03/2005 Sample Date: 08/02/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	156577	156577	08/04/2005	2231	

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Lab ID: 238871-9 Client ID: KS-SS-09 Date Recvd: 08/03/2005 Sample Date: 08/02/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
3050B	Acid Digestion: Solids (ICAP)	1	156622		08/05/2005	0945	
3541	Extraction Soxhlet (Chlor.Pest)	1	156741		08/08/2005	0700	
3541	Extraction Soxhlet (PCBs)	1	156742		08/08/2005	0700	
3541	Extraction Soxhlet (SVOC)	1	156596		08/05/2005	0700	
7471A	Mercury (CVAA) Solids	1	157319	157245	08/11/2005	1441	
6010B	Metals Analysis (ICAP Trace)	1	157282	156622	08/11/2005	2038	
8081A	Organochlorine Pesticide Analysis	1	158203	156741	08/12/2005	0104	5.00000
8082	PCB Analysis	1	158329	156742	08/10/2005	2126	1.00000
7470/7471	SW846 Digestion (Hg)	1	157245		08/10/2005	1230	
8270C	Semivolatile Organics	1	158304	156596	08/12/2005	2131	1.00000

Lab ID: 238871-10 Client ID: KS-SS-10 Date Recvd: 08/03/2005 Sample Date: 08/02/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	156577	156577	08/04/2005	2234	
3050B	Acid Digestion: Solids (ICAP)	1	156622		08/05/2005	0945	
3541	Extraction Soxhlet (Chlor.Pest)	1	156741		08/08/2005	0700	
3541	Extraction Soxhlet (PCBs)	1	156742		08/08/2005	0700	
3541	Extraction Soxhlet (SVOC)	1	156596		08/05/2005	0700	
7471A	Mercury (CVAA) Solids	1	157319	157245	08/11/2005	1444	20
6010B	Metals Analysis (ICAP Trace)	1	157282	156622	08/11/2005	2043	
8081A	Organochlorine Pesticide Analysis	1	158203	156741	08/12/2005	0132	2.00000
8082	PCB Analysis	1	158329	156742	08/10/2005	2200	1.00000
7470/7471	SW846 Digestion (Hg)	1	157245		08/10/2005	1230	
8270C	Semivolatile Organics	1	158304	156596	08/12/2005	2150	1.00000

Lab ID: 238871-11 Client ID: KS-SS-11 Date Recvd: 08/03/2005 Sample Date: 08/02/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	156577	156577	08/04/2005	2237	
3050B	Acid Digestion: Solids (ICAP)	1	156622		08/05/2005	0945	
3541	Extraction Soxhlet (Chlor.Pest)	1	156741		08/08/2005	0700	
3541	Extraction Soxhlet (PCBs)	1	156742		08/08/2005	0700	
3541	Extraction Soxhlet (SVOC)	1	156596		08/05/2005	0700	
7471A	Mercury (CVAA) Solids	1	157319	157245	08/11/2005	1451	
6010B	Metals Analysis (ICAP Trace)	1	157282	156622	08/11/2005	2047	
8081A	Organochlorine Pesticide Analysis	1	158203	156741	08/12/2005	0227	5.00000
8082	PCB Analysis	1	158329	156742	08/10/2005	2307	1.00000
7470/7471	SW846 Digestion (Hg)	1	157245		08/10/2005	1230	
8270C	Semivolatile Organics	1	158304	156596	08/12/2005	2209	1.00000

Lab ID: 238871-12 Client ID: KS-SS-12 Date Recvd: 08/03/2005 Sample Date: 08/02/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	156577	156577	08/04/2005	2240	
3050B	Acid Digestion: Solids (ICAP)	1	156622		08/05/2005	0945	
3541	Extraction Soxhlet (Chlor.Pest)	1	156741		08/08/2005	0700	
3541	Extraction Soxhlet (PCBs)	1	156742		08/08/2005	0700	
3541	Extraction Soxhlet (SVOC)	1	156596		08/05/2005	0700	
7471A	Mercury (CVAA) Solids	1	157319	157245	08/11/2005	1453	
6010B	Metals Analysis (ICAP Trace)	1	157282	156622	08/11/2005	2052	
8081A	Organochlorine Pesticide Analysis	1	158203	156741	08/12/2005	0255	2.00000
8082	PCB Analysis	1	158329	156742	08/10/2005	2340	1.00000
7470/7471	SW846 Digestion (Hg)	1	157245		08/10/2005	1230	
8270C	Semivolatile Organics	1	158304	156596	08/12/2005	2228	1.00000

Lab ID: 238871-13 Client ID: KS-SS-13 Date Recvd: 08/03/2005 Sample Date: 08/02/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	156577	156577	08/04/2005	2243	

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Lab ID: 238871-13 Client ID: KS-SS-13 Date Recvd: 08/03/2005 Sample Date: 08/02/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
3050B	Acid Digestion: Solids (ICAP)	1	156622		08/05/2005	0945	
3541	Extraction Soxhlet (Chlor.Pest)	1	156741		08/08/2005	0700	
3541	Extraction Soxhlet (PCBs)	1	156742		08/08/2005	0700	
3541	Extraction Soxhlet (SVOC)	1	156596		08/05/2005	0700	
7471A	Mercury (CVAA) Solids	1	157319	157245	08/11/2005	1455	
6010B	Metals Analysis (ICAP Trace)	1	157282	156622	08/11/2005	2056	
8081A	Organochlorine Pesticide Analysis	1	158203	156741	08/12/2005	0322	2.00000
8082	PCB Analysis	1	158329	156742	08/11/2005	0014	1.00000
7470/7471	SW846 Digestion (Hg)	1	157245		08/10/2005	1230	
8270C	Semivolatile Organics	1	158304	156596	08/12/2005	2247	1.00000

Lab ID: 238871-14 Client ID: KS-SS-14 Date Recvd: 08/03/2005 Sample Date: 08/02/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	156577	156577	08/04/2005	2247	
3050B	Acid Digestion: Solids (ICAP)	1	156622		08/05/2005	0945	
3541	Extraction Soxhlet (Chlor.Pest)	1	156741		08/08/2005	0700	
3541	Extraction Soxhlet (PCBs)	1	156742		08/08/2005	0700	
3541	Extraction Soxhlet (SVOC)	1	156596		08/05/2005	0700	
7471A	Mercury (CVAA) Solids	1	157319	157245	08/11/2005	1458	
6010B	Metals Analysis (ICAP Trace)	1	157282	156622	08/11/2005	2101	
8081A	Organochlorine Pesticide Analysis	1	158203	156741	08/12/2005	0350	1.00000
8082	PCB Analysis	1	158329	156742	08/11/2005	0937	1.00000
7470/7471	SW846 Digestion (Hg)	1	157245		08/10/2005	1230	
8270C	Semivolatile Organics	1	158304	156596	08/12/2005	2306	1.00000

Lab ID: 238871-15 Client ID: KS-SS-15 Date Recvd: 08/03/2005 Sample Date: 08/02/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	156577	156577	08/04/2005	2250	
3050B	Acid Digestion: Solids (ICAP)	1	156622		08/05/2005	0945	
3541	Extraction Soxhlet (Chlor.Pest)	1	156741		08/08/2005	0700	
3541	Extraction Soxhlet (PCBs)	1	156742		08/08/2005	0700	
3541	Extraction Soxhlet (SVOC)	1	156596		08/05/2005	0700	
7471A	Mercury (CVAA) Solids	1	157319	157245	08/11/2005	1500	
6010B	Metals Analysis (ICAP Trace)	1	157282	156622	08/11/2005	2105	
8081A	Organochlorine Pesticide Analysis	1	158203	156741	08/12/2005	0418	1.00000
8082	PCB Analysis	1	158329	156742	08/11/2005	1010	1.00000
7470/7471	SW846 Digestion (Hg)	1	157245		08/10/2005	1230	
8270C	Semivolatile Organics	1	158304	156596	08/12/2005	2324	1.00000

Lab ID: 238871-16 Client ID: KS-SS-16 Date Recvd: 08/03/2005 Sample Date: 08/02/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	156577	156577	08/04/2005	2253	
3050B	Acid Digestion: Solids (ICAP)	1	156622		08/05/2005	0945	
3541	Extraction Soxhlet (Chlor.Pest)	1	156741		08/08/2005	0700	
3541	Extraction Soxhlet (PCBs)	1	156742		08/08/2005	0700	
3541	Extraction Soxhlet (SVOC)	1	156596		08/05/2005	0700	
7471A	Mercury (CVAA) Solids	1	157319	157245	08/11/2005	1503	
6010B	Metals Analysis (ICAP Trace)	1	157282	156622	08/11/2005	2130	
8081A	Organochlorine Pesticide Analysis	1	158203	156741	08/12/2005	0636	4.00000
8082	PCB Analysis	1	158329	156742	08/11/2005	1044	1.00000
7470/7471	SW846 Digestion (Hg)	1	157245		08/10/2005	1230	
8270C	Semivolatile Organics	1	158304	156596	08/12/2005	2343	1.00000

Lab ID: 238871-17 Client ID: KS-SS-17 Date Recvd: 08/03/2005 Sample Date: 08/02/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	156577	156577	08/04/2005	2256	

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Lab ID: 238871-17 Client ID: KS-SS-17 Date Recvd: 08/03/2005 Sample Date: 08/02/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
3050B	Acid Digestion: Solids (ICAP)	1	156622		08/05/2005	0945	
3541	Extraction Soxhlet (Chlor.Pest)	1	156741		08/08/2005	0700	
3541	Extraction Soxhlet (PCBs)	1	156742		08/08/2005	0700	
3541	Extraction Soxhlet (SVOC)	1	156596		08/05/2005	0700	
7471A	Mercury (CVAA) Solids	1	157319	157245	08/11/2005	1505	
6010B	Metals Analysis (ICAP Trace)	1	157282	156622	08/11/2005	2135	
8081A	Organochlorine Pesticide Analysis	1	158203	156741	08/12/2005	0704	2.00000
8082	PCB Analysis	1	158329	156742	08/11/2005	1150	1.00000
7470/7471	SW846 Digestion (Hg)	1	157245		08/10/2005	1230	
8270C	Semivolatile Organics	1	158304	156596	08/13/2005	0002	1.00000

Lab ID: 238871-18 Client ID: KS-SS-99 Date Recvd: 08/03/2005 Sample Date: 08/02/2005

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
Method	% Solids Determination	1	156577	156577	08/04/2005	2259	
3050B	Acid Digestion: Solids (ICAP)	1	156622		08/05/2005	0945	
3541	Extraction Soxhlet (Chlor.Pest)	1	156741		08/08/2005	0700	
3541	Extraction Soxhlet (PCBs)	1	156742		08/08/2005	0700	
3541	Extraction Soxhlet (SVOC)	1	156596		08/05/2005	0700	
7471A	Mercury (CVAA) Solids	1	157319	157245	08/11/2005	1511	10
6010B	Metals Analysis (ICAP Trace)	1	157282	156622	08/11/2005	2139	
8081A	Organochlorine Pesticide Analysis	1	158203	156741	08/12/2005	0731	2.00000
8082	PCB Analysis	1	158329	156742	08/11/2005	1224	1.00000
7470/7471	SW846 Digestion (Hg)	1	157245		08/10/2005	1230	
8270C	Semivolatile Organics	1	158304	156596	08/13/2005	0021	1.00000

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SURROGATE RECOVERIES REPORT

Job Number.: 238871

Report Date.: 08/24/2005

CUSTOMER: Ecology & Environment PROJECT: NPS - KENILWORTH ATTN: Leslie Fischbeck

Method.....: Organochlorine Pesticide Analysis
Method Code...: 8081

Test Matrix...: 3541 Solid
Batch(s).....: 158203

Prep Batch..: 156741

Lab ID	DT	Sample ID	Date	DCB	TCX
LCS			08/11/2005	102	72
MB			08/11/2005	113	71
238871- 1		KS-SS-01	08/11/2005	125	88
238871- 2		KS-SS-02	08/11/2005	115	92
238871- 2	MS	KS-SS-02	08/11/2005	117	90
238871- 2	MSD	KS-SS-02	08/11/2005	109	86
238871- 3		KS-SS-03	08/11/2005	112	83
238871- 4		KS-SS-04	08/11/2005	99	78
238871- 5		KS-SS-05	08/11/2005	96	78
238871- 6		KS-SS-06	08/11/2005	92	74
238871- 7		KS-SS-07	08/12/2005	103	86
238871- 8		KS-SS-08	08/12/2005	93	75
238871- 9		KS-SS-09	08/12/2005	110	80
238871- 10		KS-SS-10	08/12/2005	86	73
238871- 11		KS-SS-11	08/12/2005	92	78
238871- 12		KS-SS-12	08/12/2005	89	77
238871- 13		KS-SS-13	08/12/2005	97	74
238871- 14		KS-SS-14	08/12/2005	152	79
238871- 15		KS-SS-15	08/12/2005	98	81
238871- 16		KS-SS-16	08/12/2005	126	97
238871- 17		KS-SS-17	08/12/2005	113	96
238871- 18		KS-SS-99	08/12/2005	105	88

Test	Test Description	Limits
DCB	Decachlorobiphenyl (surr)	20 - 152
TCX	Tetrachloro-m-xylene (surr)	30 - 124

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SURROGATE RECOVERIES REPORT

Job Number.: 238871

Report Date.: 08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Method.....: PCB Analysis
Method Code...: 8082

Test Matrix...: 3541 Solid
Batch(s).....: 158329

Prep Batch..: 156742

Lab ID	DT	Sample ID	Date	DCB	TCX
LCS			08/10/2005	72	62
MB			08/10/2005	85	73
238871- 1		KS-SS-01	08/11/2005	102	81
238871- 2		KS-SS-02	08/11/2005	118	88
238871- 2	MS	KS-SS-02	08/11/2005	118	94
238871- 2	MSD	KS-SS-02	08/11/2005	108	84
238871- 3		KS-SS-03	08/10/2005	76	85
238871- 4		KS-SS-04	08/10/2005	76	80
238871- 5		KS-SS-05	08/10/2005	72	77
238871- 6		KS-SS-06	08/10/2005	94	83
238871- 7		KS-SS-07	08/10/2005	103	85
238871- 8		KS-SS-08	08/10/2005	94	75
238871- 9		KS-SS-09	08/10/2005	97	79
238871- 10		KS-SS-10	08/10/2005	95	75
238871- 11		KS-SS-11	08/10/2005	87	72
238871- 12		KS-SS-12	08/10/2005	93	79
238871- 13		KS-SS-13	08/11/2005	104	74
238871- 14		KS-SS-14	08/11/2005	98	84
238871- 15		KS-SS-15	08/11/2005	107	87
238871- 16		KS-SS-16	08/11/2005	114	90
238871- 17		KS-SS-17	08/11/2005	110	97
238871- 18		KS-SS-99	08/11/2005	113	93

Test	Test Description	Limits
DCB	Decachlorobiphenyl (surr)	70 - 125
TCX	Tetrachloro-m-xylene (surr)	44 - 135

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SURROGATE RECOVERIES REPORT

Job Number.: 238871

Report Date.: 08/24/2005

CUSTOMER: Ecology & Environment PROJECT: NPS - KENILWORTH ATTN: Leslie Fischbeck

Method.....: Semivolatile Organics
Method Code...: 8270

Test Matrix...: 3541 Low Solid
Batch(s).....: 158304

Prep Batch..: 156596

Lab ID	DT	Sample ID	Date	2FLUBP	NITRD5	TERD14
LCS			08/12/2005	73	71	79
MB			08/12/2005	74	64	80
238871- 1		KS-SS-01	08/12/2005	45	39	49
238871- 1 MS		KS-SS-01	08/12/2005	50	48	56
238871- 1 MSD		KS-SS-01	08/12/2005	43*	39	52
238871- 2		KS-SS-02	08/12/2005	62	57	82
238871- 3		KS-SS-03	08/12/2005	62	55	78
238871- 4		KS-SS-04	08/12/2005	61	54	75
238871- 5		KS-SS-05	08/12/2005	72	63	97
238871- 6		KS-SS-06	08/12/2005	50	43	69
238871- 7		KS-SS-07	08/12/2005	67	57	91
238871- 8		KS-SS-08	08/12/2005	66	61	94
238871- 9		KS-SS-09	08/12/2005	62	57	81
238871- 10		KS-SS-10	08/12/2005	56	50	79
238871- 11		KS-SS-11	08/12/2005	61	56	83
238871- 12		KS-SS-12	08/12/2005	64	57	91
238871- 13		KS-SS-13	08/12/2005	62	57	83
238871- 14		KS-SS-14	08/12/2005	52	48	71
238871- 15		KS-SS-15	08/12/2005	55	50	76
238871- 16		KS-SS-16	08/12/2005	50	40	72
238871- 17		KS-SS-17	08/13/2005	53	45	71
238871- 18		KS-SS-99	08/13/2005	55	47	82

Test	Test Description	Limits
2FLUBP	2-Fluorobiphenyl (surr)	44 - 103
NITRD5	Nitrobenzene-d5 (surr)	34 - 100
TERD14	Terphenyl-d14 (surr)	41 - 116

QUALITY CONTROL RESULTS

Job Number.: 238871

Report Date.: 08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	O5GWLCPFA	156741-002		08/11/2005	1741

Test Method.....: 8081A
Method Description.: Organochlorine Pesticide Analysis

Equipment Code....: INST1516
Batch.....: 158203

Analyst...: pjg

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
alpha-BHC, 3541 Solid	ug/Kg	10.287		13.330	1.700 U	77	%	29-120	
beta-BHC, 3541 Solid	ug/Kg	11.963		13.330	1.700 U	90	%	51-123	
delta-BHC, 3541 Solid	ug/Kg	12.193		13.330	1.700 U	91	%	51-125	
gamma-BHC (Lindane), 3541 Solid	ug/Kg	10.670		13.330	1.700 U	80	%	37-121	
Heptachlor, 3541 Solid	ug/Kg	10.440		13.330	1.700 U	78	%	33-124	
Aldrin, 3541 Solid	ug/Kg	10.357		13.330	1.700 U	78	%	35-120	
Heptachlor epoxide, 3541 Solid	ug/Kg	11.537		13.330	1.700 U	87	%	51-116	
Endosulfan I, 3541 Solid	ug/Kg	8.280		13.330	1.700 U	62	%	27-100	
Dieldrin, 3541 Solid	ug/Kg	12.410		13.330	1.700 U	93	%	55-124	
4,4'-DDE, 3541 Solid	ug/Kg	12.490		13.330	1.700 U	94	%	59-120	
Endrin, 3541 Solid	ug/Kg	12.493		13.330	1.700 U	94	%	49-136	
Endosulfan II, 3541 Solid	ug/Kg	10.127		13.330	1.700 U	76	%	37-105	
4,4'-DDD, 3541 Solid	ug/Kg	13.287		13.330	1.700 U	100	%	59-130	
Endosulfan sulfate, 3541 Solid	ug/Kg	13.200		13.330	1.700 U	99	%	54-129	
4,4'-DDT, 3541 Solid	ug/Kg	13.697		13.330	1.700 U	103	%	58-130	
Methoxychlor, 3541 Solid	ug/Kg	12.150		13.330	8.300 U	91	%	57-132	
alpha-Chlordane, 3541 Solid	ug/Kg	12.150		13.330	1.700 U	91	%	64-123	
gamma-Chlordane, 3541 Solid	ug/Kg	12.103		13.330	1.700 U	91	%	59-121	
Endrin aldehyde, 3541 Solid	ug/Kg	12.067		13.330	1.700 U	90	%	31-110	
Endrin ketone, 3541 Solid	ug/Kg	13.350		13.330	1.700 U	100	%	52-131	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 238871

Report Date.: 08/24/2005

CUSTOMER: Ecology & Environment PROJECT: NPS - KENILWORTH ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8081A
Method Description.: Organochlorine Pesticide Analysis

Equipment Code....: INST1516
Batch.....: 158203

Analyst...: pjg

MB	Method Blank		156741-001		08/11/2005	1713

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
alpha-BHC, 3541 Solid	ug/Kg	1.700	U							
beta-BHC, 3541 Solid	ug/Kg	1.700	U							
delta-BHC, 3541 Solid	ug/Kg	1.700	U							
gamma-BHC (Lindane), 3541 Solid	ug/Kg	1.700	U							
Heptachlor, 3541 Solid	ug/Kg	1.700	U							
Aldrin, 3541 Solid	ug/Kg	1.700	U							
Heptachlor epoxide, 3541 Solid	ug/Kg	1.700	U							
Endosulfan I, 3541 Solid	ug/Kg	1.700	U							
Dieldrin, 3541 Solid	ug/Kg	1.700	U							
4,4'-DDE, 3541 Solid	ug/Kg	1.700	U							
Endrin, 3541 Solid	ug/Kg	1.700	U							
Endosulfan II, 3541 Solid	ug/Kg	1.700	U							
4,4'-DDD, 3541 Solid	ug/Kg	1.700	U							
Endosulfan sulfate, 3541 Solid	ug/Kg	1.700	U							
4,4'-DDT, 3541 Solid	ug/Kg	1.700	U							
Methoxychlor, 3541 Solid	ug/Kg	8.300	U							
alpha-Chlordane, 3541 Solid	ug/Kg	1.700	U							
gamma-Chlordane, 3541 Solid	ug/Kg	1.700	U							
Toxaphene, 3541 Solid	ug/Kg	16.700	U							
Endrin aldehyde, 3541 Solid	ug/Kg	1.700	U							
Endrin ketone, 3541 Solid	ug/Kg	1.700	U							

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 238871

Report Date.: 08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8081A
Method Description.: Organochlorine Pesticide Analysis

Equipment Code....: INST1516
Batch.....: 158203

Analyst...: pjg

MS	Matrix Spike	O5GWLCPFA	238871-2	5.00000	08/11/2005	1904

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value		QC Calc.	*	Limits	F
alpha-BHC, 3541 Solid	ug/Kg	11.418		74.750	9.530	U	76	%	29-120	
beta-BHC, 3541 Solid	ug/Kg	13.773		74.750	9.530	U	92	%	51-123	
delta-BHC, 3541 Solid	ug/Kg	13.829		74.750	9.530	U	92	%	51-125	
gamma-BHC (Lindane), 3541 Solid	ug/Kg	13.418		74.750	9.530	U	90	%	37-121	
Heptachlor, 3541 Solid	ug/Kg	15.604		74.750	9.530	U	104	%	33-124	
Aldrin, 3541 Solid	ug/Kg	13.193		74.750	9.530	U	88	%	35-120	
Heptachlor epoxide, 3541 Solid	ug/Kg	16.669		74.750	9.530	U	112	%	51-116	
Endosulfan I, 3541 Solid	ug/Kg	7.980	J	74.750	9.530	U	53	%	27-100	
Dieldrin, 3541 Solid	ug/Kg	40.533		74.750	7.845	J	219	%	55-124	*
4,4'-DDE, 3541 Solid	ug/Kg	44.850		74.750	30.524		96	%	59-120	
Endrin, 3541 Solid	ug/Kg	16.688		74.750	9.530	U	112	%	49-136	
Endosulfan II, 3541 Solid	ug/Kg	14.352		74.750	9.530	U	96	%	37-105	
4,4'-DDD, 3541 Solid	ug/Kg	11.773		74.750	9.530	U	79	%	59-130	
Endosulfan sulfate, 3541 Solid	ug/Kg	25.135		74.750	9.530	U	168	%	54-129	*
4,4'-DDT, 3541 Solid	ug/Kg	142.044		74.750	120.799		142	%	58-130	*
Methoxychlor, 3541 Solid	ug/Kg	77.236		74.750	46.527	U	517	%	57-132	*
alpha-Chlordane, 3541 Solid	ug/Kg	13.754		74.750	9.530	U	92	%	64-123	
gamma-Chlordane, 3541 Solid	ug/Kg	21.117		74.750	9.530	U	141	%	59-121	*
Endrin aldehyde, 3541 Solid	ug/Kg	25.994		74.750	9.530	U	174	%	31-110	*
Endrin ketone, 3541 Solid	ug/Kg	14.203		74.750	9.530	U	95	%	52-131	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 238871

Report Date.: 08/24/2005

CUSTOMER: Ecology & Environment PROJECT: NPS - KENILWORTH ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MSD	Matrix Spike Duplicate	05GWLCPFA	238871-2	5.00000	08/11/2005	1932

Test Method.....: 8081A
Method Description.: Organochlorine Pesticide Analysis

Equipment Code....: INST1516
Batch.....: 158203

Analyst...: pjg

Parameter/Test Description	Units	QC Result		QC Result		True Value	Orig. Value		QC Calc.	*	Limits	F
alpha-BHC, 3541 Solid	ug/Kg	10.687		11.418		75.390	9.617	U	71	%	29-120	
									7	R	30	
beta-BHC, 3541 Solid	ug/Kg	13.570		13.773		75.390	9.617	U	90	%	51-123	
									2	R	30	
delta-BHC, 3541 Solid	ug/Kg	13.439		13.829		75.390	9.617	U	89	%	51-125	
									3	R	30	
gamma-BHC (Lindane), 3541 Solid	ug/Kg	12.496		13.418		75.390	9.617	U	83	%	37-121	
									8	R	30	
Heptachlor, 3541 Solid	ug/Kg	14.796		15.604		75.390	9.617	U	98	%	33-124	
									6	R	30	
Aldrin, 3541 Solid	ug/Kg	12.308		13.193		75.390	9.617	U	82	%	35-120	
									7	R	30	
Heptachlor epoxide, 3541 Solid	ug/Kg	14.852		16.669		75.390	9.617	U	98	%	51-116	
									13	R	30	
Endosulfan I, 3541 Solid	ug/Kg	7.633	J	7.980	J	75.390	9.617	U	51	%	27-100	
									4	R	30	
Dieldrin, 3541 Solid	ug/Kg	31.608		40.533		75.390	7.845	J	158	%	55-124	*
									32	R	30	*
4,4'-DDE, 3541 Solid	ug/Kg	41.032		44.850		75.390	30.524		70	%	59-120	
									31	R	30	*
Endrin, 3541 Solid	ug/Kg	16.322		16.688		75.390	9.617	U	108	%	49-136	
									4	R	30	
Endosulfan II, 3541 Solid	ug/Kg	12.835		14.352		75.390	9.617	U	85	%	37-105	
									12	R	30	
4,4'-DDD, 3541 Solid	ug/Kg	10.819		11.773		75.390	9.617	U	72	%	59-130	
									9	R	30	
Endosulfan sulfate, 3541 Solid	ug/Kg	33.021		25.135		75.390	9.617	U	219	%	54-129	*
									26	R	30	
4,4'-DDT, 3541 Solid	ug/Kg	127.713		142.044		75.390	120.799		46	%	58-130	*
									102	R	30	*
Methoxychlor, 3541 Solid	ug/Kg	75.599		77.236		75.390	46.954	U	501	%	57-132	*
									3	R	30	
alpha-Chlordane, 3541 Solid	ug/Kg	13.307		13.754		75.390	9.617	U	88	%	64-123	
									4	R	30	
gamma-Chlordane, 3541 Solid	ug/Kg	18.282		21.117		75.390	9.617	U	121	%	59-121	
									15	R	30	
Endrin aldehyde, 3541 Solid	ug/Kg	25.218		25.994		75.390	9.617	U	167	%	31-110	*
									4	R	30	
Endrin ketone, 3541 Solid	ug/Kg	14.456		14.203		75.390	9.617	U	96	%	52-131	
									1	R	30	

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 238871

Report Date.: 08/24/2005

CUSTOMER: Ecology & Environment PROJECT: NPS - KENILWORTH ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST3738
Batch.....: 158329

Analyst...: bjt

LCS	Laboratory Control Sample	D5HWLPCBA	156742-002		08/10/2005	1337

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016, 3541 Solid	ug/Kg	115.890		166.700	16.700 U	70	%	52-105	
Aroclor 1260, 3541 Solid	ug/Kg	141.407		167.000	16.700 U	85	%	63-122	

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 238871

Report Date.: 08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST3738
Batch.....: 158329

Analyst...: bjt

MB	Method Blank		156742-001		08/10/2005	1303

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aroclor 1016, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1221, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1232, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1242, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1248, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1254, 3541 Solid	ug/Kg	16.700	U							
Aroclor 1260, 3541 Solid	ug/Kg	16.700	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 238871

Report Date.: 08/24/2005

CUSTOMER: Ecology & Environment PROJECT: NPS - KENILWORTH ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST3738
Batch.....: 158329

Analyst...: bjt

MS	Matrix Spike	05HWLPCBA	238871-2	5.00000	08/11/2005	1437

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value		QC Calc.	*	Limits	F
Aroclor 1016, 3541 Solid	ug/Kg	198.020		936.100	93.806	U	106	%	52-105	*
Aroclor 1260, 3541 Solid	ug/Kg	743.617		937.800	614.031		69	%	63-122	

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 238871

Report Date.: 08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8082
Method Description.: PCB Analysis

Equipment Code....: INST3738
Batch.....: 158329

Analyst...: bjt

MSD	Matrix Spike Duplicate	O5HWLPCBA	238871-2	5.00000	08/11/2005	1510

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value		QC Calc.	*	Limits	F
Aroclor 1016, 3541 Solid	ug/Kg	168.589	198.020	920.800	92.279	U	92	%	52-105	
							14	R	30	
Aroclor 1260, 3541 Solid	ug/Kg	690.965	743.617	922.500	614.031		42	%	63-122	*
							49	R	30	*

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 238871

Report Date.: 08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8270C
Method Description.: Semivolatile Organics

Equipment Code....: GCL11
Batch.....: 158304

Analyst...: dpk

LCS	Laboratory Control Sample	O5HWLBLKA	156596-002		08/12/2005	1723

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Naphthalene, 3541 Low Solid	ug/Kg	1186.961		1667.000	33.000 U	71	%	55-100	
Acenaphthylene, 3541 Low Solid	ug/Kg	1054.873		1667.000	33.000 U	63	%	59-104	
Acenaphthene, 3541 Low Solid	ug/Kg	1197.488		1667.000	33.000 U	72	%	64-100	
Fluorene, 3541 Low Solid	ug/Kg	1236.058		1667.000	33.000 U	74	%	61-105	
Phenanthrene, 3541 Low Solid	ug/Kg	1333.370		1667.000	33.000 U	80	%	63-113	
Anthracene, 3541 Low Solid	ug/Kg	1137.689		1667.000	33.000 U	68	%	53-108	
Fluoranthene, 3541 Low Solid	ug/Kg	1203.241		1667.000	33.000 U	72	%	56-112	
Pyrene, 3541 Low Solid	ug/Kg	1232.374		1667.000	33.000 U	74	%	62-114	
Benzo(a)anthracene, 3541 Low Solid	ug/Kg	1256.194		1667.000	33.000 U	75	%	56-130	
Chrysene, 3541 Low Solid	ug/Kg	1213.208		1667.000	33.000 U	73	%	52-113	
Benzo(b)fluoranthene, 3541 Low Solid	ug/Kg	1594.254		1667.000	33.000 U	96	%	37-150	
Benzo(k)fluoranthene, 3541 Low Solid	ug/Kg	1077.806		1667.000	33.000 U	65	%	37-120	
Benzo(a)pyrene, 3541 Low Solid	ug/Kg	1312.067		1667.000	33.000 U	79	%	55-117	
Indeno(1,2,3-cd)pyrene, 3541 Low Solid	ug/Kg	1229.621		1667.000	33.000 U	74	%	57-118	
Dibenzo(a,h)anthracene, 3541 Low Solid	ug/Kg	1293.457		1667.000	33.000 U	78	%	54-121	
Benzo(ghi)perylene, 3541 Low Solid	ug/Kg	1142.742		1667.000	33.000 U	69	%	56-128	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 238871

Report Date.: 08/24/2005

CUSTOMER: Ecology & Environment PROJECT: NPS - KENILWORTH ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date Time

Test Method.....: 8270C
Method Description.: Semivolatile Organics

Equipment Code....: GCL11
Batch.....: 158304

Analyst...: dpk

MB	Method Blank		156596-001		08/12/2005 1354

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Naphthalene, 3541 Low Solid	ug/Kg	33.000	U							
Acenaphthylene, 3541 Low Solid	ug/Kg	33.000	U							
Acenaphthene, 3541 Low Solid	ug/Kg	33.000	U							
Fluorene, 3541 Low Solid	ug/Kg	33.000	U							
Phenanthrene, 3541 Low Solid	ug/Kg	33.000	U							
Anthracene, 3541 Low Solid	ug/Kg	33.000	U							
Fluoranthene, 3541 Low Solid	ug/Kg	33.000	U							
Pyrene, 3541 Low Solid	ug/Kg	33.000	U							
Benzo(a)anthracene, 3541 Low Solid	ug/Kg	33.000	U							
Chrysene, 3541 Low Solid	ug/Kg	33.000	U							
Benzo(b)fluoranthene, 3541 Low Solid	ug/Kg	33.000	U							
Benzo(k)fluoranthene, 3541 Low Solid	ug/Kg	33.000	U							
Benzo(a)pyrene, 3541 Low Solid	ug/Kg	33.000	U							
Indeno(1,2,3-cd)pyrene, 3541 Low Solid	ug/Kg	33.000	U							
Dibenzo(a,h)anthracene, 3541 Low Solid	ug/Kg	33.000	U							
Benzo(ghi)perylene, 3541 Low Solid	ug/Kg	33.000	U							

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 238871

Report Date.: 08/24/2005

CUSTOMER: Ecology & Environment PROJECT: NPS - KENILWORTH ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 8270C
Method Description.: Semivolatile Organics

Equipment Code....: GCL11
Batch.....: 158304

Analyst...: dpk

MS	Matrix Spike	O5HWLBLKA	238871-1		08/12/2005	1840

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value		QC Calc.	*	Limits	F
Naphthalene, 3541 Low Solid	ug/Kg	914.497		1913.000	37.856	U	48	%	55-100	*
Acenaphthylene, 3541 Low Solid	ug/Kg	920.538		1913.000	37.856	U	48	%	59-104	*
Acenaphthene, 3541 Low Solid	ug/Kg	924.628		1913.000	37.856	U	48	%	64-100	*
Fluorene, 3541 Low Solid	ug/Kg	939.219		1913.000	37.856	U	49	%	61-105	*
Phenanthrene, 3541 Low Solid	ug/Kg	1048.642		1913.000	97.065		50	%	63-113	*
Anthracene, 3541 Low Solid	ug/Kg	883.474		1913.000	37.856	U	46	%	53-108	*
Fluoranthene, 3541 Low Solid	ug/Kg	1106.660		1913.000	186.838		48	%	56-112	*
Pyrene, 3541 Low Solid	ug/Kg	1277.654		1913.000	158.150		59	%	62-114	*
Benzo(a)anthracene, 3541 Low Solid	ug/Kg	1075.641		1913.000	73.900		52	%	56-130	*
Chrysene, 3541 Low Solid	ug/Kg	1108.703		1913.000	175.413		49	%	52-113	*
Benzo(b)fluoranthene, 3541 Low Solid	ug/Kg	1405.227		1913.000	172.537		64	%	37-150	
Benzo(k)fluoranthene, 3541 Low Solid	ug/Kg	932.968		1913.000	86.486		44	%	37-120	
Benzo(a)pyrene, 3541 Low Solid	ug/Kg	1054.174		1913.000	93.516		50	%	55-117	*
Indeno(1,2,3-cd)pyrene, 3541 Low Solid	ug/Kg	960.310		1913.000	66.282		47	%	57-118	*
Dibenzo(a,h)anthracene, 3541 Low Solid	ug/Kg	944.724		1913.000	37.856	U	49	%	54-121	*
Benzo(ghi)perylene, 3541 Low Solid	ug/Kg	899.826		1913.000	74.625		43	%	56-128	*

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 238871

Report Date.: 08/24/2005

CUSTOMER: Ecology & Environment PROJECT: NPS - KENILWORTH ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MSD	Matrix Spike Duplicate	05HWLBLKA	238871-1		08/12/2005	1858

Test Method.....: 8270C
Method Description.: Semivolatile Organics

Equipment Code....: GCL11
Batch.....: 158304

Analyst...: dpk

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value		QC Calc.	*	Limits	F
Naphthalene, 3541 Low Solid	ug/Kg	728.343	914.497	1877.000	37.168	U	39 21	% R	55-100 30	*
Acenaphthylene, 3541 Low Solid	ug/Kg	783.928	920.538	1877.000	37.168	U	42 13	% R	59-104 30	*
Acenaphthene, 3541 Low Solid	ug/Kg	774.537	924.628	1877.000	37.168	U	41 16	% R	64-100 30	*
Fluorene, 3541 Low Solid	ug/Kg	814.488	939.219	1877.000	37.168	U	43 13	% R	61-105 30	*
Phenanthrene, 3541 Low Solid	ug/Kg	832.459	1048.642	1877.000	97.065		39 25	% R	63-113 30	*
Anthracene, 3541 Low Solid	ug/Kg	789.543	883.474	1877.000	37.168	U	42 9	% R	53-108 30	*
Fluoranthene, 3541 Low Solid	ug/Kg	938.490	1106.660	1877.000	186.838		40 18	% R	56-112 30	*
Pyrene, 3541 Low Solid	ug/Kg	1065.002	1277.654	1877.000	158.150		48 21	% R	62-114 30	*
Benzo(a)anthracene, 3541 Low Solid	ug/Kg	914.119	1075.641	1877.000	73.900		45 14	% R	56-130 30	*
Chrysene, 3541 Low Solid	ug/Kg	924.606	1108.703	1877.000	175.413		40 20	% R	52-113 30	*
Benzo(b)fluoranthene, 3541 Low Solid	ug/Kg	1156.740	1405.227	1877.000	172.537		52 21	% R	37-150 30	
Benzo(k)fluoranthene, 3541 Low Solid	ug/Kg	845.735	932.968	1877.000	86.486		40 10	% R	37-120 30	
Benzo(a)pyrene, 3541 Low Solid	ug/Kg	883.495	1054.174	1877.000	93.516		42 17	% R	55-117 30	*
Indeno(1,2,3-cd)pyrene, 3541 Low Solid	ug/Kg	777.588	960.310	1877.000	66.282		38 21	% R	57-118 30	*
Dibenzo(a,h)anthracene, 3541 Low Solid	ug/Kg	816.155	944.724	1877.000	37.168	U	43 13	% R	54-121 30	*
Benzo(ghi)perylene, 3541 Low Solid	ug/Kg	746.652	899.826	1877.000	74.625		36 18	% R	56-128 30	*

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 238871

Report Date.: 08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	M05FSPK001	156866-002		08/09/2005	1016

Test Method.....: 6010B
Method Description.: Metals Analysis (ICAP Trace)

Equipment Code....: ICP4
Batch.....: 156962

Analyst...: tds

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aluminum, Solid	mg/Kg	194.64		200.00	5.05	U 97	%	80-120	
Antimony, Solid	mg/Kg	46.87		50.00	0.43	U 94	%	80-120	
Arsenic, Solid	mg/Kg	9.50		10.00	0.37	U 95	%	80-120	
Barium, Solid	mg/Kg	198.18		200.00	0.07	U 99	%	80-120	
Beryllium, Solid	mg/Kg	4.83		5.00	0.02	U 97	%	80-120	
Cadmium, Solid	mg/Kg	4.85		5.00	0.06	U 97	%	80-120	
Calcium, Solid	mg/Kg	978.43		1000.00	5.74	B 98	%	80-120	
Chromium, Solid	mg/Kg	19.86		20.00	0.10	U 99	%	80-120	
Cobalt, Solid	mg/Kg	48.47		50.00	0.12	U 97	%	80-120	
Copper, Solid	mg/Kg	25.31		25.00	0.22	U 101	%	80-120	
Iron, Solid	mg/Kg	96.88		100.00	2.20	U 97	%	80-120	
Lead, Solid	mg/Kg	10.34		10.00	0.34	B 103	%	80-120	
Magnesium, Solid	mg/Kg	951.89		1000.00	1.01	U 95	%	80-120	
Manganese, Solid	mg/Kg	51.41		50.00	0.05	U 103	%	80-120	
Nickel, Solid	mg/Kg	48.74		50.00	0.48	U 97	%	80-120	
Potassium, Solid	mg/Kg	869.01		1000.00	6.00	U 87	%	80-120	
Selenium, Solid	mg/Kg	9.61		10.00	0.45	U 96	%	80-120	
Silver, Solid	mg/Kg	4.93		5.00	0.10	U 99	%	80-120	
Sodium, Solid	mg/Kg	923.82		1000.00	78.60	U 92	%	80-120	
Thallium, Solid	mg/Kg	9.49		10.00	0.57	U 95	%	80-120	
Vanadium, Solid	mg/Kg	50.04		50.00	0.15	U 100	%	80-120	
Zinc, Solid	mg/Kg	48.49		50.00	1.37	U 97	%	80-120	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 238871

Report Date.: 08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank	156866	156866-001		08/09/2005	1010

Test Method.....: 6010B
Method Description.: Metals Analysis (ICAP Trace)

Equipment Code....: ICP4
Batch.....: 156962

Analyst...: tds

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aluminum, Solid	mg/Kg	5.05	U							
Antimony, Solid	mg/Kg	0.43	U							
Arsenic, Solid	mg/Kg	0.37	U							
Barium, Solid	mg/Kg	0.07	U							
Beryllium, Solid	mg/Kg	0.02	U							
Cadmium, Solid	mg/Kg	0.06	U							
Calcium, Solid	mg/Kg	5.74	B							
Chromium, Solid	mg/Kg	0.10	U							
Cobalt, Solid	mg/Kg	0.12	U							
Copper, Solid	mg/Kg	0.22	U							
Iron, Solid	mg/Kg	2.20	U							
Lead, Solid	mg/Kg	0.34	B							
Magnesium, Solid	mg/Kg	1.01	U							
Manganese, Solid	mg/Kg	0.05	U							
Nickel, Solid	mg/Kg	0.48	U							
Potassium, Solid	mg/Kg	6.00	U							
Selenium, Solid	mg/Kg	0.45	U							
Silver, Solid	mg/Kg	0.10	U							
Sodium, Solid	mg/Kg	78.60	U							
Thallium, Solid	mg/Kg	0.57	U							
Vanadium, Solid	mg/Kg	0.15	U							
Zinc, Solid	mg/Kg	1.37	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 238871

Report Date.: 08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 6010B
Method Description.: Metals Analysis (ICAP Trace)

Equipment Code....: ICP4
Batch.....: 156962

Analyst...: tds

MD	Method Duplicate		238871-5		08/09/2005	1034

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value		QC Calc.	*	Limits	F
Aluminum, Solid	mg/Kg	5634.09				5529.35		1.9	R	20.0	
Antimony, Solid	mg/Kg	0.45	U			0.76	B	0.54	A	2.08	
Arsenic, Solid	mg/Kg	5.13				5.31		3.4	R	20.0	
Barium, Solid	mg/Kg	51.84				50.99		1.6	R	20.0	
Beryllium, Solid	mg/Kg	0.73				0.72		0.01	A	0.42	
Cadmium, Solid	mg/Kg	0.30				0.30		0.00	A	0.21	
Calcium, Solid	mg/Kg	505.77				489.82		3.2	R	20.0	
Chromium, Solid	mg/Kg	12.97				12.53		3.4	R	20.0	
Cobalt, Solid	mg/Kg	5.92				6.00		1.4	R	20.0	
Copper, Solid	mg/Kg	15.48				15.32		1.1	R	20.0	
Iron, Solid	mg/Kg	12489.53				12880.27		3.1	R	20.0	
Lead, Solid	mg/Kg	56.13				53.42		4.9	R	20.0	
Magnesium, Solid	mg/Kg	511.53				497.32		2.8	R	20.0	
Manganese, Solid	mg/Kg	167.11				170.76		2.2	R	20.0	
Nickel, Solid	mg/Kg	6.83				6.88		0.8	R	20.0	
Potassium, Solid	mg/Kg	304.65				305.02		0.1	R	20.0	
Selenium, Solid	mg/Kg	0.95	B			0.90	B	0.05	A	1.04	
Silver, Solid	mg/Kg	0.25	B			0.24	B	0.00	A	0.52	
Sodium, Solid	mg/Kg	81.71	U			89.16	B	10.38	A	103.96	
Thallium, Solid	mg/Kg	0.59	U			0.59	U	52.38	A	1.04	
Vanadium, Solid	mg/Kg	30.62				30.29		1.1	R	20.0	
Zinc, Solid	mg/Kg	68.99				66.92		3.1	R	20.0	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 238871

Report Date.: 08/24/2005

CUSTOMER: Ecology & Environment PROJECT: NPS - KENILWORTH ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 6010B
Method Description.: Metals Analysis (ICAP Trace)

Equipment Code....: ICP4
Batch.....: 156962

Analyst...: tds

MS	Matrix Spike	M05FSPK001	238871-5		08/09/2005	1041

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value		QC Calc.	*	Limits	F
Aluminum, Solid	mg/Kg	9862.46		204.70	5529.35		2116	%	75-125	4
Antimony, Solid	mg/Kg	22.92		51.18	0.76	B	45	%	75-125	N
Arsenic, Solid	mg/Kg	14.01		10.24	5.31		85	%	75-125	
Barium, Solid	mg/Kg	244.52		204.70	50.99		95	%	75-125	
Beryllium, Solid	mg/Kg	5.27		5.12	0.72		89	%	75-125	
Cadmium, Solid	mg/Kg	4.76		5.12	0.30		87	%	75-125	
Calcium, Solid	mg/Kg	1430.00		1024.00	489.82		92	%	75-125	
Chromium, Solid	mg/Kg	34.35		20.47	12.53		107	%	75-125	
Cobalt, Solid	mg/Kg	51.46		51.18	6.00		89	%	75-125	
Copper, Solid	mg/Kg	40.45		25.59	15.32		98	%	75-125	
Iron, Solid	mg/Kg	13349.41		102.40	12880.27		458	%	75-125	4
Lead, Solid	mg/Kg	67.12		10.24	53.42		134	%	75-125	4
Magnesium, Solid	mg/Kg	1618.71		1024.00	497.32		110	%	75-125	
Manganese, Solid	mg/Kg	220.49		51.18	170.76		97	%	75-125	
Nickel, Solid	mg/Kg	54.67		51.18	6.88		93	%	75-125	
Potassium, Solid	mg/Kg	1441.60		1024.00	305.02		111	%	75-125	
Selenium, Solid	mg/Kg	9.35		10.24	0.90	B	91	%	75-125	
Silver, Solid	mg/Kg	4.85		5.12	0.24	B	95	%	75-125	
Sodium, Solid	mg/Kg	993.32		1024.00	89.16	B	97	%	75-125	
Thallium, Solid	mg/Kg	9.26		10.24	0.58	U	90	%	75-125	
Vanadium, Solid	mg/Kg	81.56		51.18	30.29		100	%	75-125	
Zinc, Solid	mg/Kg	124.88		51.18	66.92		113	%	75-125	

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 238871

Report Date.: 08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 6010B
Method Description.: Metals Analysis (ICAP Trace)

Equipment Code....: ICP4
Batch.....: 156962

Analyst...: tds

MSD	Matrix Spike Duplicate	M05FSPK001	238871-5		08/09/2005	1047

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value		QC Calc.	*	Limits	F
Aluminum, Solid	mg/Kg	9367.43	9862.46	194.20	5529.35		1977	%	75-125	4
							6.8	R	20	
Antimony, Solid	mg/Kg	21.93	22.92	48.54	0.76	B	45	%	75-125	N
							0.0	R	20	
Arsenic, Solid	mg/Kg	13.67	14.01	9.71	5.31		86	%	75-125	
							1.2	R	20	
Barium, Solid	mg/Kg	230.27	244.52	194.20	50.99		92	%	75-125	
							3.2	R	20	
Beryllium, Solid	mg/Kg	4.95	5.27	4.85	0.72		87	%	75-125	
							2.3	R	20	
Cadmium, Solid	mg/Kg	4.45	4.76	4.85	0.30		86	%	75-125	
							1.2	R	20	
Calcium, Solid	mg/Kg	1355.21	1430.00	970.80	489.82		89	%	75-125	
							3.3	R	20	
Chromium, Solid	mg/Kg	32.61	34.35	19.42	12.53		103	%	75-125	
							3.8	R	20	
Cobalt, Solid	mg/Kg	48.39	51.46	48.54	6.00		87	%	75-125	
							2.3	R	20	
Copper, Solid	mg/Kg	38.61	40.45	24.27	15.32		96	%	75-125	
							2.1	R	20	
Iron, Solid	mg/Kg	13220.08	13349.41	97.08	12880.27		350	%	75-125	4
							26.7	R	20	*
Lead, Solid	mg/Kg	66.40	67.12	9.71	53.42		134	%	75-125	4
							0.0	R	20	
Magnesium, Solid	mg/Kg	1522.95	1618.71	970.80	497.32		106	%	75-125	
							3.7	R	20	
Manganese, Solid	mg/Kg	217.44	220.49	48.54	170.76		96	%	75-125	
							1.0	R	20	
Nickel, Solid	mg/Kg	50.64	54.67	48.54	6.88		90	%	75-125	
							3.3	R	20	
Potassium, Solid	mg/Kg	1333.17	1441.60	970.80	305.02		106	%	75-125	
							4.6	R	20	
Selenium, Solid	mg/Kg	8.68	9.35	9.71	0.90	B	89	%	75-125	
							2.2	R	20	
Silver, Solid	mg/Kg	4.50	4.85	4.85	0.24	B	93	%	75-125	
							2.1	R	20	
Sodium, Solid	mg/Kg	926.15	993.32	970.80	89.16	B	95	%	75-125	
							2.1	R	20	
Thallium, Solid	mg/Kg	8.87	9.26	9.71	0.55	U	91	%	75-125	
							1.1	R	20	
Vanadium, Solid	mg/Kg	76.96	81.56	48.54	30.29		96	%	75-125	
							4.1	R	20	
Zinc, Solid	mg/Kg	118.56	124.88	48.54	66.92		106	%	75-125	
							6.4	R	20	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 238871

Report Date.: 08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
SD	Serial Dilution		238871-5		08/09/2005	1028

Test Method.....: 6010B
Method Description.: Metals Analysis (ICAP Trace)

Equipment Code....: ICP4
Batch.....: 156962

Analyst...: tds

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value		QC Calc.	*	Limits	F
Aluminum, Solid	mg/Kg	1229.10				5529.35		11.1	D	10.0	E
Antimony, Solid	mg/Kg	0.44	U			0.76	B				
Arsenic, Solid	mg/Kg	0.95	B			5.31					
Barium, Solid	mg/Kg	11.14				50.99		9.2	D	10.0	
Beryllium, Solid	mg/Kg	0.17	B			0.72					
Cadmium, Solid	mg/Kg	0.08	B			0.30					
Calcium, Solid	mg/Kg	117.32				489.82		19.8	D	10.0	E
Chromium, Solid	mg/Kg	2.80				12.53		11.8	D	10.0	E
Cobalt, Solid	mg/Kg	1.32				6.00					
Copper, Solid	mg/Kg	3.34				15.32		8.9	D	10.0	
Iron, Solid	mg/Kg	2900.81				12880.27		12.6	D	10.0	E
Lead, Solid	mg/Kg	12.02				53.42		12.5	D	10.0	E
Magnesium, Solid	mg/Kg	115.92				497.32		16.5	D	10.0	E
Manganese, Solid	mg/Kg	38.21				170.76		11.9	D	10.0	E
Nickel, Solid	mg/Kg	1.57				6.88					
Potassium, Solid	mg/Kg	68.16				305.02					
Selenium, Solid	mg/Kg	0.57	B			0.90	B				
Silver, Solid	mg/Kg	0.10	U			0.24	B				
Sodium, Solid	mg/Kg	80.23	U			89.16	B				
Thallium, Solid	mg/Kg	0.58	U			0.58	U				
Vanadium, Solid	mg/Kg	6.67				30.29		10.1	D	10.0	E
Zinc, Solid	mg/Kg	15.44				66.92					

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 238871

Report Date.: 08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 6010B
Method Description.: Metals Analysis (ICAP Trace)

Equipment Code....: ICP5
Batch.....: 157282

Analyst...: tds

LCS	Laboratory Control Sample	M05FSPK001	156989-002		08/11/2005	1818

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Arsenic, Solid	mg/Kg	9.60		10.00	0.37	U 96	%	80-120	
Barium, Solid	mg/Kg	197.29		200.00	0.07	U 99	%	80-120	
Cadmium, Solid	mg/Kg	4.95		5.00	0.06	U 99	%	80-120	
Chromium, Solid	mg/Kg	20.34		20.00	0.10	U 102	%	80-120	
Lead, Solid	mg/Kg	10.14		10.00	0.25	U 101	%	80-120	
Potassium, Solid	mg/Kg	852.16		1000.00	18.61	B 85	%	80-120	
Selenium, Solid	mg/Kg	9.65		10.00	0.45	U 97	%	80-120	
Silver, Solid	mg/Kg	4.88		5.00	0.10	U 98	%	80-120	

LCS	Laboratory Control Sample	M05FSPK001	156622-002		08/11/2005	1923

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aluminum, Solid	mg/Kg	194.51		200.00	5.05	U 97	%	80-120	
Antimony, Solid	mg/Kg	47.09		50.00	0.43	U 94	%	80-120	
Arsenic, Solid	mg/Kg	9.13		10.00	0.37	U 91	%	80-120	
Barium, Solid	mg/Kg	191.11		200.00	0.07	U 96	%	80-120	
Beryllium, Solid	mg/Kg	4.79		5.00	0.02	U 96	%	80-120	
Cadmium, Solid	mg/Kg	4.76		5.00	0.06	U 95	%	80-120	
Calcium, Solid	mg/Kg	989.18		1000.00	4.06	B 99	%	80-120	
Chromium, Solid	mg/Kg	19.63		20.00	0.13	B 98	%	80-120	
Cobalt, Solid	mg/Kg	47.60		50.00	0.12	U 95	%	80-120	
Copper, Solid	mg/Kg	24.57		25.00	0.22	U 98	%	80-120	
Iron, Solid	mg/Kg	103.09		100.00	3.59	B 103	%	80-120	
Lead, Solid	mg/Kg	9.80		10.00	0.25	U 98	%	80-120	
Magnesium, Solid	mg/Kg	940.15		1000.00	1.01	U 94	%	80-120	
Manganese, Solid	mg/Kg	50.53		50.00	0.05	U 101	%	80-120	
Nickel, Solid	mg/Kg	47.75		50.00	0.48	U 95	%	80-120	
Potassium, Solid	mg/Kg	828.22		1000.00	19.89	B 83	%	80-120	
Selenium, Solid	mg/Kg	9.26		10.00	0.45	U 93	%	80-120	
Silver, Solid	mg/Kg	4.87		5.00	0.10	U 97	%	80-120	
Sodium, Solid	mg/Kg	914.77		1000.00	78.60	U 91	%	80-120	
Thallium, Solid	mg/Kg	8.85		10.00	0.57	U 88	%	80-120	
Vanadium, Solid	mg/Kg	48.95		50.00	0.15	U 98	%	80-120	
Zinc, Solid	mg/Kg	46.65		50.00	1.37	U 93	%	80-120	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 238871

Report Date.: 08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 6010B
Method Description.: Metals Analysis (ICAP Trace)

Equipment Code....: ICP5
Batch.....: 157282

Analyst...: tds

MB	Method Blank	156989	156989-001		08/11/2005	1813

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Arsenic, Solid	mg/Kg	0.37	U							
Barium, Solid	mg/Kg	0.07	U							
Cadmium, Solid	mg/Kg	0.06	U							
Chromium, Solid	mg/Kg	0.10	U							
Lead, Solid	mg/Kg	0.25	U							
Potassium, Solid	mg/Kg	18.61	B							
Selenium, Solid	mg/Kg	0.45	U							
Silver, Solid	mg/Kg	0.10	U							

MB	Method Blank	156622	156622-001		08/11/2005	1919

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aluminum, Solid	mg/Kg	5.05	U							
Antimony, Solid	mg/Kg	0.43	U							
Arsenic, Solid	mg/Kg	0.37	U							
Barium, Solid	mg/Kg	0.07	U							
Beryllium, Solid	mg/Kg	0.02	U							
Cadmium, Solid	mg/Kg	0.06	U							
Calcium, Solid	mg/Kg	4.06	B							
Chromium, Solid	mg/Kg	0.13	B							
Cobalt, Solid	mg/Kg	0.12	U							
Copper, Solid	mg/Kg	0.22	U							
Iron, Solid	mg/Kg	3.59	B							
Lead, Solid	mg/Kg	0.25	U							
Magnesium, Solid	mg/Kg	1.01	U							
Manganese, Solid	mg/Kg	0.05	U							
Nickel, Solid	mg/Kg	0.48	U							
Potassium, Solid	mg/Kg	19.89	B							
Selenium, Solid	mg/Kg	0.45	U							
Silver, Solid	mg/Kg	0.10	U							
Sodium, Solid	mg/Kg	78.60	U							
Thallium, Solid	mg/Kg	0.57	U							
Vanadium, Solid	mg/Kg	0.15	U							
Zinc, Solid	mg/Kg	1.37	U							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 238871

Report Date.: 08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MD	Method Duplicate		238871-1		08/11/2005	1937

Test Method.....: 6010B
Method Description.: Metals Analysis (ICAP Trace)

Equipment Code....: ICP5
Batch.....: 157282

Analyst...: tds

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value		QC Calc.	*	Limits	F
Aluminum, Solid	mg/Kg	10492.26				9925.26		5.6	R	20.0	
Antimony, Solid	mg/Kg	0.51	B			0.48	U	0.18	A	2.22	
Arsenic, Solid	mg/Kg	7.76				7.48		3.7	R	20.0	
Barium, Solid	mg/Kg	117.64				117.73		0.1	R	20.0	
Beryllium, Solid	mg/Kg	1.01				1.00		0.00	A	0.44	
Cadmium, Solid	mg/Kg	0.26				0.28		0.01	A	0.22	
Calcium, Solid	mg/Kg	1093.74				1108.43		1.3	R	20.0	
Chromium, Solid	mg/Kg	24.13				24.12		0.1	R	20.0	
Cobalt, Solid	mg/Kg	9.57				11.95		22.2	R	20.0	*
Copper, Solid	mg/Kg	24.83				25.19		1.4	R	20.0	
Iron, Solid	mg/Kg	17086.42				16355.32		4.4	R	20.0	
Lead, Solid	mg/Kg	95.39				99.82		4.5	R	20.0	
Magnesium, Solid	mg/Kg	1719.90				1676.06		2.6	R	20.0	
Manganese, Solid	mg/Kg	199.03				234.10		16.2	R	20.0	
Nickel, Solid	mg/Kg	21.59				24.02		10.7	R	20.0	
Potassium, Solid	mg/Kg	809.85				770.15		5.0	R	20.0	
Selenium, Solid	mg/Kg	0.98	B			1.04	B	0.07	A	1.11	
Silver, Solid	mg/Kg	0.63				0.63		0.00	A	0.56	
Sodium, Solid	mg/Kg	87.33	U			87.33	U	0.68	A	111.10	
Thallium, Solid	mg/Kg	0.63	U			0.63	U	0	A	1.11	
Vanadium, Solid	mg/Kg	54.76				59.24		7.9	R	20.0	
Zinc, Solid	mg/Kg	86.15				84.53		1.9	R	20.0	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 238871

Report Date.: 08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MS	Matrix Spike	M05FSPK001	238871-1		08/11/2005	1941

Test Method.....: 6010B
Method Description.: Metals Analysis (ICAP Trace)

Equipment Code....: ICP5
Batch.....: 157282

Analyst...: tds

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value		QC Calc.	*	Limits	F
Aluminum, Solid	mg/Kg	16901.25		223.10	9925.26		3128	%	75-125	4
Antimony, Solid	mg/Kg	17.57		55.76	0.48	U	32	%	75-125	N
Arsenic, Solid	mg/Kg	16.35		11.15	7.48		80	%	75-125	
Barium, Solid	mg/Kg	307.89		223.10	117.73		85	%	75-125	
Beryllium, Solid	mg/Kg	5.56		5.58	1.00		82	%	75-125	
Cadmium, Solid	mg/Kg	4.61		5.58	0.28		78	%	75-125	
Calcium, Solid	mg/Kg	2069.61		1115.00	1108.43		86	%	75-125	
Chromium, Solid	mg/Kg	47.26		22.31	24.12		104	%	75-125	
Cobalt, Solid	mg/Kg	54.01		55.76	11.95		75	%	75-125	
Copper, Solid	mg/Kg	49.10		27.88	25.19		86	%	75-125	
Iron, Solid	mg/Kg	17285.79		111.50	16355.32		834	%	75-125	4
Lead, Solid	mg/Kg	104.79		11.15	99.82		45	%	75-125	4
Magnesium, Solid	mg/Kg	2944.62		1115.00	1676.06		114	%	75-125	
Manganese, Solid	mg/Kg	247.53		55.76	234.10		24	%	75-125	4
Nickel, Solid	mg/Kg	74.53		55.76	24.02		91	%	75-125	
Potassium, Solid	mg/Kg	2284.79		1115.00	770.15		136	%	75-125	N
Selenium, Solid	mg/Kg	9.57		11.15	1.04	B	86	%	75-125	
Silver, Solid	mg/Kg	5.27		5.58	0.63		83	%	75-125	
Sodium, Solid	mg/Kg	1058.20		1115.00	87.66	U	95	%	75-125	
Thallium, Solid	mg/Kg	8.42		11.15	0.64	U	75	%	75-125	
Vanadium, Solid	mg/Kg	114.28		55.76	59.24		99	%	75-125	
Zinc, Solid	mg/Kg	135.94		55.76	84.53		92	%	75-125	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 238871

Report Date.: 08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MSD	Matrix Spike Duplicate	M05FSPKOD1	238871-1		08/11/2005	1946

Test Method.....: 6010B
Method Description.: Metals Analysis (ICAP Trace)

Equipment Code....: ICP5
Batch.....: 157282

Analyst...: tds

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	*	Limits	F
Aluminum, Solid	mg/Kg	16593.30	16901.25	221.30	9925.26	3012	%	75-125	4
						3.8	R	20	
Antimony, Solid	mg/Kg	16.56	17.57	55.34	0.48 U	30	%	75-125	N
						6.5	R	20	
Arsenic, Solid	mg/Kg	16.43	16.35	11.07	7.48	81	%	75-125	
						1.2	R	20	
Barium, Solid	mg/Kg	309.40	307.89	221.30	117.73	87	%	75-125	
						2.3	R	20	
Beryllium, Solid	mg/Kg	5.69	5.56	5.53	1.00	85	%	75-125	
						3.6	R	20	
Cadmium, Solid	mg/Kg	4.62	4.61	5.53	0.28	78	%	75-125	
						0.0	R	20	
Calcium, Solid	mg/Kg	2042.66	2069.61	1107.00	1108.43	84	%	75-125	
						2.4	R	20	
Chromium, Solid	mg/Kg	45.95	47.26	22.13	24.12	99	%	75-125	
						4.9	R	20	
Cobalt, Solid	mg/Kg	53.35	54.01	55.34	11.95	75	%	75-125	
						0.0	R	20	
Copper, Solid	mg/Kg	51.52	49.10	27.67	25.19	95	%	75-125	
						9.9	R	20	
Iron, Solid	mg/Kg	17772.59	17285.79	110.70	16355.32	1281	%	75-125	4
						42.3	R	20	*
Lead, Solid	mg/Kg	105.54	104.79	11.07	99.82	52	%	75-125	4
						14.4	R	20	
Magnesium, Solid	mg/Kg	2872.71	2944.62	1107.00	1676.06	108	%	75-125	
						5.4	R	20	
Manganese, Solid	mg/Kg	256.28	247.53	55.34	234.10	40	%	75-125	4
						50.0	R	20	*
Nickel, Solid	mg/Kg	67.75	74.53	55.34	24.02	79	%	75-125	
						14.1	R	20	
Potassium, Solid	mg/Kg	2227.83	2284.79	1107.00	770.15	132	%	75-125	N
						3.0	R	20	
Selenium, Solid	mg/Kg	9.35	9.57	11.07	1.04 B	85	%	75-125	
						1.2	R	20	
Silver, Solid	mg/Kg	5.11	5.27	5.53	0.63	81	%	75-125	
						2.4	R	20	
Sodium, Solid	mg/Kg	1047.54	1058.20	1107.00	86.99 U	95	%	75-125	
						0.0	R	20	
Thallium, Solid	mg/Kg	8.31	8.42	11.07	0.63 U	75	%	75-125	
						0.0	R	20	
Vanadium, Solid	mg/Kg	104.74	114.28	55.34	59.24	82	%	75-125	
						18.8	R	20	
Zinc, Solid	mg/Kg	134.04	135.94	55.34	84.53	89	%	75-125	
						3.3	R	20	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 238871

Report Date.: 08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: 6010B
Method Description.: Metals Analysis (ICAP Trace)

Equipment Code....: ICP5
Batch.....: 157282

Analyst...: tds

SD	Serial Dilution		238871-1		08/11/2005	1932

Parameter/Test Description	Units	QC Result		QC Result	True Value	Orig. Value		QC Calc.	*	Limits	F
Aluminum, Solid	mg/Kg	2253.05				9925.26		13.5	D	10.0	E
Antimony, Solid	mg/Kg	0.48	U			0.48	U				
Arsenic, Solid	mg/Kg	1.83				7.48					
Barium, Solid	mg/Kg	26.61				117.73		13.0	D	10.0	E
Beryllium, Solid	mg/Kg	0.23	B			1.00		13.8	D	10.0	E
Cadmium, Solid	mg/Kg	0.07	B			0.28					
Calcium, Solid	mg/Kg	255.80				1108.43		15.4	D	10.0	E
Chromium, Solid	mg/Kg	5.43				24.12		12.6	D	10.0	E
Cobalt, Solid	mg/Kg	2.73				11.95		14.0	D	10.0	E
Copper, Solid	mg/Kg	5.55				25.19		10.2	D	10.0	E
Iron, Solid	mg/Kg	3752.13				16355.32		14.7	D	10.0	E
Lead, Solid	mg/Kg	23.33				99.82		16.8	D	10.0	E
Magnesium, Solid	mg/Kg	390.74				1676.06		16.6	D	10.0	E
Manganese, Solid	mg/Kg	53.98				234.10		15.3	D	10.0	E
Nickel, Solid	mg/Kg	5.48				24.02					
Potassium, Solid	mg/Kg	169.58				770.15		10.1	D	10.0	E
Selenium, Solid	mg/Kg	0.50	U			1.04	B				
Silver, Solid	mg/Kg	0.14	B			0.63					
Sodium, Solid	mg/Kg	87.66	U			87.66	U				
Thallium, Solid	mg/Kg	0.64	U			0.64	U				
Vanadium, Solid	mg/Kg	13.38				59.24		13.0	D	10.0	E
Zinc, Solid	mg/Kg	19.99				84.53		18.2	D	10.0	E

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 238871

Report Date.: 08/24/2005

CUSTOMER: Ecology & Environment | PROJECT: NPS - KENILWORTH | ATTN: Leslie Fischbeck

Test Method.....: Method
Method Description.: % Solids Determination
Parameter.....: % Solids

Batch.....: 156577
Equipment Code....:

Analyst...: clb
Test Code.: %SOLID

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	156577-001		%	0.1000 U								08/04/2005	2200
MD	238871-1		%	86.60000			86.30000	0.3		R	5.0	08/04/2005	2206

Test Method.....: 7471A
Method Description.: Mercury (CVAA) Solids
Parameter.....: Mercury

Batch.....: 157319
Equipment Code....: HG3

Analyst...: gok
Test Code.: HG

QC	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	*	Limits	Date	Time
MB	157245-007		mg/Kg	0.01 U								08/11/2005	1402
LCS	157245-008	M04LSTK010	mg/Kg	0.17		0.17	0.01 U	101		%	80-120	08/11/2005	1404
MD	238871-1		mg/Kg	0.21			0.19	9.0		R	20.0	08/11/2005	1413
MS	238871-1	M04KSTK001	mg/Kg	0.28		0.10	0.19	97		%	75-125	08/11/2005	1416
MSD	238871-1	M04KSTK001	mg/Kg	0.25	0.28	0.10	0.19	67	N	%	75-125	08/11/2005	1422
								36.6	*	R	20		
MB	157318-007		mg/Kg	0.01 U								08/11/2005	1517
LCS	157318-008	M04LSTK010	mg/Kg	0.17		0.17	0.01 U	102		%	80-120	08/11/2005	1519

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

REPORT COMMENTS

1) All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.
2) Soil, sediment and sludge sample results are reported on a "dry weight" basis except when analyzed for landfill disposal or incineration parameters. All other solid matrix samples are reported on an "as received" basis unless noted differently.
3) Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.
4) The test results for the noted analytical method(s) meet the requirements of NELAC. Lab Cert. ID# 100201
5) According to 40CFR Part 136.3, pH, Chlorine Residual and Dissolved Oxygen analyses are to be performed immediately after aqueous sample collection. When these parameters are not indicated as field (e.g. pH Field) they were not analyzed immediately, but as soon as possible on laboratory receipt.

Glossary of flags, qualifiers and abbreviations (any number of which may appear in the report)

Inorganic Qualifiers (Q-Column)

U Analyte was not detected at or above the stated limit.
< Not detected at or above the reporting limit.
J Result is less than the RL, but greater than or equal to the method detection limit.
B Result is less than the CRDL/RL, but greater than or equal to the IDL/MDL.
S Result was determined by the Method of Standard Additions.
F AFCEE: Result is less than the RL, but greater than or equal to the method detection limit.

Inorganic Flags (Flag Column)

^ ICV,CCV,ICB,CCB,ISA,ISB,CRI,CRA,MRL: Instrument related QC exceed the upper or lower control limits.
* LCS, LCD, MD: Batch QC exceeds the upper or lower control limits.
+ MSA correlation coefficient is less than 0.995.
4 MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
E SD: Serial dilution exceeds the control limits.
H MB, EB1, EB2, EB3: Batch QC is greater than reporting limit or had a negative instrument reading lower than the absolute value of the reporting limit.
N MS, MSD: Spike recovery exceeds the upper or lower control limits.
W AS(GFAA) Post-digestion spike was outside 85-115% control limits.

Organic Qualifiers (Q - Column)

U Analyte was not detected at or above the stated limit.
ND Compound not detected.
J Result is an estimated value below the reporting limit or a tentatively identified compound (TIC).
Q Result was qualitatively confirmed, but not quantified.
C Pesticide identification was confirmed by GC/MS.
Y The chromatographic response resembles a typical fuel pattern.
Z The chromatographic response does not resemble a typical fuel pattern.
E Result exceeded calibration range, secondary dilution required.
F AFCEE:Result is an estimated value below the reporting limit or a tentatively identified compound (TIC)

Organic Flags (Flags Column)

B MB: Batch QC is greater than reporting limit.
* LCS, LCD, ELC, ELD, CV, MS, MSD, Surrogate: Batch QC exceeds the upper or lower control limits.
^ EB1, EB2, EB3, MLE: Batch QC is greater than reporting Limit
A Concentration exceeds the instrument calibration range
a Concentration is below the method Reporting Limit (RL)
B Compound was found in the blank and sample.
D Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution will be flagged with a D.
H Alternate peak selection upon analytical review
I Indicates the presence of an interfence, recovery is not calculated.
M Manually integrated compound.
P The lower of the two values is reported when the % difference between the results of two GC columns is

greater than 25%.

Abbreviations

AS	Post Digestion Spike (GFAA Samples - See Note 1 below)
Batch	Designation given to identify a specific extraction, digestion, preparation set, or analysis set
CAP	Capillary Column CCB Continuing Calibration Blank
CCV	Continuing Calibration Verification
CF	Confirmation analysis of original
C1	Confirmation analysis of A1 or D1
C2	Confirmation analysis of A2 or D2
C3	Confirmation analysis of A3 or D3
CRA	Low Level Standard Check - GFAA; Mercury
CRI	Low Level Standard Check - ICP
CV	Calilbration Verification Standard
Dil Fac	Dilution Factor - Secondary dilution analysis
D1	Dilution 1
D2	Dilution 2
D3	Dilution 3
DLFac	Detection Limit Factor
DSH	Distilled Standard - High Level
DSL	Distilled Standard - Low Level
DSM	Distilled Standard - Medium Level
EB1	Extraction Blank 1
EB2	Extraction Blank 2
EB3	DI Blank
ELC	Method Extracted LCS
ELD	Method Extracted LCD
ICAL	Initial calibration
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
IDL	Instrument Detection Limit
ISA	Interference Check Sample A - ICAP
ISB	Interference Check Sample B - ICAP
Job No.	The first six digits of the sample ID which refers to a specific client, project and sample group
	Lab ID An 8 number unique laboratory identification
LCD	Laboratory Control Standard Duplicate
LCS	Laboratory Control Standard with reagent grade water or a matrix free from the analyte of interest
MB	Method Blank or (PB) Preparation Blank
MD	Method Duplicate
MDL	Method Detection Limit
MLE	Medium Level Extraction Blank
MRL	Method Reporting Limit Standard
MSA	Method of Standard Additions
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ND	Not Detected
PREPF	Preparation factor used by the Laboratory's Information Management System (LIMS)
PDS	Post Digestion Spike (ICAP)
RA	Re-analysis of original
A1	Re-analysis of D1
A2	Re-analysis of D2
A3	Re-analysis of D3
RD	Re-extraction of dilution
RE	Re-extraction of original
RC	Re-extraction Confirmation
RL	Reporting Limit
RPD	Relative Percent Difference of duplicate (unrounded) analyses
RRF	Relative Response Factor
RT	Retention Time

RTW	Retention Time Window Sample ID A 9 digit number unique for each sample, the first six digits are referred as the job number
SCB	Seeded Control Blank
SD	Serial Dilution (Calculated when sample concentration exceeds 50 times the MDL)
UCB	Unseeded Control Blank
SSV	Second Source Verification Standard
SLCS	Solid Laboratory Control Standard(LCS)
PHC	pH Calibration Check LCSP pH Laboratory Control Sample
LCDP	pH Laboratory Control Sample Duplicate
MDPH	pH Sample Duplicate
MDFP	Flashpoint Sample Duplicate
LCFP	Flashpoint LCS
G1	Gelex Check Standard Range 0-1
G2	Gelex Check Standard Range 1-10
G3	Gelex Check Standard Range 10-100
G4	Gelex Check Standard Range 100-1000

Note 1: The Post Spike Designation on Batch QC for GFAA is designated with an "S" added to the current abbreviation used. EX. LCS S=LCS Post Spike (GFAA); MSS=MS Post Spike (GFAA)

Note 2: The MD calculates an absolute difference (A) when the sample concentration is less than 5 times the reporting limit. The control limit is represented as +/- the RL.

NOTE: Samples in 2 coolers

SEVERN TRENT **STL**

STL Chicago
2417 Bond Street
University Park, IL 60466
Phone: 708-534-5200
Fax: 708-534-5211

Report To:
Contact: Leslie Fischbeck
Company: Ecology and Environment
Address: 1700 N. Moore St #1610
Arlington VA 22209
Phone: 703-522-6065
Fax: 703-558-7950
E-Mail: lfischbeck@ene.com

Bill To:
Contact: Same
Company:
Address:
Phone:
Fax:
PO#: 00109b.GX27.03 Quote:

Shaded Areas For Internal Use Only 1 of 2

Lab Lot# 238871

Package Sealed: Yes / No	Samples Sealed: Yes / No
Received on Ice: Yes / No	Samples Intact: Yes / No
Temperature °C of Cooler: 4.0 / 3.7	
Within Hold Time: Yes / No	Preserv. Indicated: Yes / No / NA
pH Check OK: Yes / No / NA	Res Cl2 Check OK: Yes / No / NA
Sample Labels and COC Agree: Yes / No / COC not present	

Sampler Name: Leslie Fischbeck, Mike Alexander
Signature:
Project Name: Kenilworth South
Project Number: 20005675
Project Location: NPS Kenilworth South, DC
Date Required Hard Copy: 8/26/05 email/Fax: 8/25/05
Lab PM: Richard Wright

Refrig #
/ Cont
Volume
Preserv

Laboratory ID	MS-MSD	Client Sample ID	Sampling Date	Sampling Time	Matrix	Comp/Grab	PCB	PEST	Tal Met	PAH							Additional Analyses / Remarks
1		KS-SS-01	8/2/05	8:50	S	G	X	X	X	X							
2		KS-SS-02		8:55	S	G	X	X	X	X							
3		KS-SS-03		9:00	S	G	X	X	X	X							
4		KS-SS-04		9:10	S	G	X	X	X	X							
5		KS-SS-05		9:15	S	G	X	X	X	X							
6		KS-SS-06		9:25	S	G	X	X	X	X							
7		KS-SS-07		9:30	S	G	X	X	X	X							
8		KS-SS-08		9:40	S	G	X	X	X	X							
9		KS-SS-09		9:45	S	G	X	X	X	X							
10		KS-SS-10		9:55	S	G	X	X	X	X							
11		KS-SS-11		10:10	S	G	X	X	X	X							
12		KS-SS-12		10:20	S	G	X	X	X	X							

Relinquished by	Company	Date	Time	Received by	Company	Date	Time
	E+E	8-2-05	6:00pm			8/3/05	1000
Relinquished by	Company	Date	Time	Received by	Company	Date	Time

Matrix Key
WW = Wastewater
W = Water
S = Soil
SL = Sludge
MS = Miscellaneous
OL = Oil
A = Air
SE = Sediment
SO = Solid
DS = Drum Solid
DL = Drum Liquid
L = Leachate
WI = Wipe
O = _____

Container Key.
1. Plastic
2. VOA Vial
3. Sterile Plastic
4. Amber Glass
5. Widemouth Glass
6. Other _____

Preservative Key
1. HCl, Cool to 4°
2. H2SO4, Cool to 4°
3. HNO3, Cool to 4°
4. NaOH, Cool to 4°
5. NaOH/Zn, Cool to 4°
6. Cool to 4°
7. None

COMMENTS

Date Received 8/3/05
Courier: FX **Hand Delivered** ☐
Bill of Lading see attach

J-660

NOTE: Samples in 2 coolers

SEVERN TRENT **STL**

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University Park, IL 60466
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Bill To:
Contact: Same
Company:
Address:
Phone:
Fax:
PO#: 001096.GX2703 Quote:

Shaded Areas For Internal Use Only 2 of 2

Lab Lot# 238071

Package Sealed Yes No	Samples Sealed Yes No
Received on Ice Yes No	Samples Intact Yes No
Temperature °C of Cooler	
Within Hold Time Yes No	Preserv. Indicated Yes No NA
pH Check OK Yes No NA	Res Cl2 Check OK Yes No NA
Sample Labels and COC Agree Yes No COC not present	

Sampler Name: Leslie Fischbeck, Mike Alexander
Signature:
Project Name: Kenilworth South
Project Number: 20005675
Project Location: NPS Kenilworth South, DC
Date Required Hard Copy: 8/26/05
email/Fax: 8/25/05
Lab PM: Richard Wright

Laboratory ID	MS-MSD	Client Sample ID	Sampling Date	Sampling Time	Matrix	Comp/Grab	PCB	PEST	TAL Met	PAH	Additional Analyses / Remarks
13		KS-SS-13	8/2/05	10:30	S	G	X	X	X	X	
14		KS-SS-14		10:40	S	G	X	X	X	X	
15		KS-SS-15		10:50	S	G	X	X	X	X	
16		KS-SS-16		11:00	S	G	X	X	X	X	
17		KS-SS-17		11:10	S	G	X	X	X	X	
18		KS-SS-99		—	S	G	X	X	X	X	duplicate.

RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY	DATE	TIME
	E&E	8-2-05	6:00pm		SL	8/3/05	1000
RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY	DATE	TIME

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3. Sterile Plastic
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5. Widemouth Glass
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3. HNO3, Cool to 4°
4. NaOH, Cool to 4°
5. NaOH/Zn, Cool to 4°
6. Cool to 4°
7. None

COMMENTS

Date Received 8/3/05
Courier: FX
Hand Delivered ☐
Bill of Lading see attach

J-661

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K ATSDR Health Consultation

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Health Consultation

KENILWORTH PARK LANDFILL – SOUTH SIDE
NE WASHINGTON, DC

EPA FACILITY ID: DCSFN0305462

JANUARY 23, 2006

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

Health Consultation: A Note of Explanation

An ATSDR health consultation is a verbal or written response from ATSDR to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

You May Contact ATSDR TOLL FREE at
1-888-42ATSDR
or
Visit our Home Page at: http://www.atsdr.cdc.gov

HEALTH CONSULTATION

KENILWORTH PARK LANDFILL – SOUTH SIDE
NE WASHINGTON, DC

EPA FACILITY ID: DCSFN0305462

Prepared by:

Federal Facilities Assessment Branch
Division of Health Assessment and Consultation
Agency for Toxic Substances and Disease Registry
Atlanta, Georgia

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Introduction

Statement of Issues and Purpose

In October 2002, the District of Columbia Department of Health (DC DOH) asked that the Agency for Toxic Substances and Disease Registry (ATSDR) conduct a public health consultation of the Kenilworth Park Landfill (KPL) site (1). The landfill site is owned by the U. S. Government and administered by the National Park Service (NPS). DC DOH concerns include the fact that NPS intends to reopen the site for recreational use (1) and that chemical concentrations in several environmental media are above U.S. Environmental Protection Agency (EPA) risk-based concentrations for a residential area (2, 3). A January 21, 2003, letter from the Centers for Disease Control and Prevention (CDC) to the DC DOH indicates that ATSDR will consider the request to evaluate Kenilworth Park Landfill (4).

Site Visit

As part of our evaluation of the Kenilworth Park Site, ATSDR met with the DC DOH (5) and the NPS (6) on June 17 and 18, 2003, respectively, to discuss the site. In our meeting NPS requested that because of their pending proposed plans for a junior golf course, we consider the south side of Kenilworth Landfill Park first. Accordingly, this health consultation, which evaluates the landfill, documents our findings and recommendations for the south side of Kenilworth Landfill Park. This health consultation also evaluates current and possible future conditions but not past conditions that were present during waste disposal and open burning. Our evaluation is based on the KPL site being used for recreation—not for residential purposes.

Site Description and History

We compiled the information provided in this health consultation from the Remedial Investigation (RI) report of the Kenilworth Park Landfill. In January 2002, Ecology and Environment, Inc. prepared the RI for the National Park Service.

Kenilworth Park consists of a southern (hereafter referred to as Kenilworth Park South) and a northern area (hereafter referred to as Kenilworth Park North), separated by Watts Branch, a tributary of the Anacostia River (Figure 1). South of the landfill site is a power plant, a waste transfer station, and the River Terrace community. Southeast of the landfill is the Neval H. Thomas Elementary School, east of the landfill is a residential neighborhood, and west is the Anacostia River. Residential property is primarily to the south and east. Kenilworth Aquatic Gardens is north of the landfill. Approximately 22,488 people reside within 1 mile of Kenilworth Landfill South (Figure 1).

Kenilworth Park North is currently being used for soccer and baseball. The District of Columbia Department of Parks and Recreation manages the tennis courts in the northeast section of Kenilworth North, and this section is in the process of transfer to the District. A youth golf facility is under consideration for Kenilworth Park South (7).

During our June 18 site visit, no hazardous debris was noted on the surface of the landfill, and a temporary storm water management system and sediment controls were in place (the most recent changes were to the sedimentation pond near the confluence of the Anacostia River and Watts Branch). A brief historical summary follows.

1937–1940s

In 1937, the United States Army Corps of Engineers dredged the Anacostia River to make the channel both wider and deeper. During this activity the adjoining wetlands were nearly all filled in; the NPS administers the newly created land.

1942–1968

The District used Section G of the land for disposal and burning of municipal waste. The landfill extended directly into the river without any barrier, and landfill wastes mixed with soil entered the water. By the time the Resource Conservation and Recovery Act (RCRA) became law the District Landfill was closed, so the landfill never had a permit.

1968–1970

Sanitary landfill operations were used at Kenilworth to dispose of the District's waste. When the filling was almost complete, the landfill was closed and largely capped (no impermeable cap was used; it is believed that sediment was dredged from the Anacostia River). At completion, the Kenilworth landfill contained around 4 million tons of raw refuse, incinerator ash, and other burned residue, had an average depth of 25 feet, and covered an area of about 145 acres (8). The NPS began to convert the land for use as a park with baseball and softball fields.

1977–1978

A major trunk of sewer (108 inches in diameter) was laid through the southern edge of the park. This sewer empties below sea level.

1980

By May, the park was complete. The site was a grassy area served by a road, with public toilets, a parking lot, and a set of exercise stations around the periphery. The center of the site had a maximum elevation of 28 feet above mean sea level.

1997–1998

New fill was deposited to cover part of the old landfill south of Watts Branch, raising the park surface by as much as 27 feet. The recent fill is in two sections: east (from the Driggs Corporation) and west (from the Barrett Tucker Corporation) of Deane Avenue. The fill was mostly excavation materials and construction debris.

1998

In October, the Environmental Health Division of the District's Department of Health issued a Notice of Violation to NPS regarding the placement of fill with objectionable materials (construction debris) on the site without a permit. The NPS began an investigation of Kenilworth Park South.

1999

NPS modified drainage and graded the west side of the fill—as temporary erosion and runoff control measures—and removed some surface rubble to reduce physical hazards. Later in the year, Driggs Corporation began crushing and sorting concrete, extracting reinforcing wire and rebar and other metal waste, excavating accessible asphalt, and stockpiling material for removal. The NPS contracted for the removal of the stockpiled construction debris.

2002

The area not covered by recent (1997–1998) fill is heavily overgrown. A hedgerow screens the Neval H. Thomas Elementary School from the site. The site is not fully fenced, and pedestrian access is unrestricted. The RI reports approximately 2,000 people live within ½-mile radius of the site.

The NPS prepared a Feasibility Study Report.

2003

ATSDR met with DC DOH and NPS to discuss the site.

Environmental Data and Pathways for the Kenilworth Park South Landfill

In this section, ATSDR evaluates whether community members are currently or will in the future be exposed to harmful levels of chemicals. ATSDR screens the concentrations of contaminants in environmental media (e.g., groundwater or soil) against health-based comparison values (CVs) (refer to text box). Because CVs are not thresholds of toxicity, environmental levels that exceed CVs would not necessarily produce adverse health effects. If a chemical is found in the environment at levels exceeding its corresponding CV, ATSDR further evaluates site-specific exposures and the likelihood of adverse health effects.

About ATSDR's Comparison Values (CVs)

CVs are not thresholds for adverse health effects. ATSDR CVs represent contaminant concentrations many times lower than levels at which no effects were observed in experimental animals or human epidemiologic studies. If contaminant concentrations are above CVs, ATSDR further analyzes exposure variables (for example, duration and frequency of exposure), the toxicology of the contaminant, other epidemiology studies, and the weight of evidence for health effects. Some of the CVs used by ATSDR scientists include:

EMEGs — environmental media evaluation guides

RMEGs — reference dose media evaluation guides,

CREGs — cancer risk evaluation guides, and

MCLs — EPA's maximum contaminant levels

MCLs, EMEGs, RMEGs, and CREGs are nonenforceable, health-based CVs developed by ATSDR for screening environmental contamination for further evaluation. MCLs are enforceable drinking water regulations developed to protect public health.

You can find out more about the ATSDR evaluation process by reading ATSDR's Public Health Assessment Guidance Manual at: http://www.atsdr.cdc.gov/HAC/HAGM/, or contacting ATSDR at 1-888-42ATSDR.

What is meant by exposure?

ATSDR's PHCs are driven by evaluation of the potential for human exposure or contact with environmental contaminants. Chemical contaminants released into the environment have the potential to cause adverse health effects. That said, however, *a release does not always result in human exposure*. People can only be exposed to a contaminant if they come in contact with it—if they breathe, eat, drink, or come into skin contact with a substance containing the contaminant.

How does ATSDR determine which exposure situations to evaluate?

ATSDR scientists evaluate site conditions to determine if people are, or could be exposed (i.e., exposed in a current or future scenario) to site-related contaminants. When evaluating exposure pathways, ATSDR identifies

whether exposure to contaminated media (soil, sediment, water, air, or biota) has occurred, is occurring, or will occur through ingestion, dermal (skin) contact, or inhalation.

How does ATSDR decide which contaminants may be present at levels of concern?

If exposure was, is, or could be possible, ATSDR scientists consider whether contamination is present at levels that might affect public health.

ATSDR scientists select contaminants for further evaluation by comparing them against health-based CVs. These are developed by ATSDR from available scientific literature related to exposure and health effects. CVs are derived for each of the different media and reflect an estimated contaminant concentration that is *not likely* to cause adverse health effects for a given chemical, assuming a standard daily contact rate (e.g., an amount of water or soil consumed or an amount of air breathed) and body weight.

Environmental Data

The RI report provided data for surface soil, subsurface soil, groundwater, surface water, and sediment. In most cases, data were collected during a 1998 sampling event, for the 2000 Preliminary Assessment/Site Investigation (PA/SI) (9), and for the 2002 RI. The Landfill Gas Testing Programs at Kenilworth and Oxon Cove Landfills (8) provided data for methane levels in the old landfill in 1979/1980. Moreover, the RI showed that explosive gas levels were detected in wells and drilled boreholes extending to the former District landfill just West of Deane Avenue and in the Northeast section. (3)

Surface Soil

During the 1998 sampling event, 24 surface soil samples at depths less than 3” were analyzed for BNAs (base/neutral acid extractible organics) and metals. In a few locations the new fill area exceeded EPA’s residential soil risk-based concentrations (RBCs) for polycyclic aromatic hydrocarbons (PAHs). Compounds exceeding RBCs are provided in Table 1.

For the 2000 PA/SI, a total of 35 surface soil samples at depths less than 3” were analyzed for PAHs and metals; five samples were also analyzed for polychlorinated biphenyls (PCBs). Compounds exceeding RBCs are provided in Table 1.

For the 2002 RI, surface soil samples were collected from 4 on-site locations and analyzed for PAHs, PCBs, and metals. Nine background samples were also collected from nearby NPS properties and analyzed for PCBs. Sampling depth was not provided. Compounds exceeding ATSDR Substance Comparison values are provided in Table 1.

Table 1: Surface Soil Exceeding Comparison Values

Compound	*Range On-site 1998 Report µg/kg*	*Range On-site 2000 PA/SI µg/kg*	*Range On-site 2002 RI µg/kg*	*Range Background from RI*	*ATSDR Substance Comparison Values µg/kg*
Benzo(a)pyrene	ND – 7700	11.0 – 2950	ND – 509	NA	100[1]
Dibenz(a,h)anthracene	ND – 110	ND – 1470	86.8 – 942	NA	90*
Aroclor 1254	NA	ND – 79.5	ND – 3160	278	1000[2]
Aroclor 1260	NA	30.6 – 83.4	119 – 2510	124 – 194	1000[2]

ND = Not detected
NA = Not analyzed
RBC = Risk based concentration
* = EPA Soil Screening Level
[1] = Chronic Oral CREG Value
[2] = Chronic Oral EMEG Value

In addition, three surface soil samples were collected in the schoolyard at Neval H. Thomas Elementary School. Total PAHs averaged 1770 µg/kg, and benzo(a)pyrene averaged 183.5 µg/kg.

Subsurface Soil

During the 1998 sampling event, eight subsurface soil samples were collected at depths ranging from 8 to 15 feet below ground surface (bgs) and analyzed for BNAs, total petroleum hydrocarbons (TPHs), and metals. Analysis of these former District landfill materials revealed elevated levels of arsenic, lead, cadmium, and PAHs. Information is provided in Table 2.

For the 2000 PA/SI, a total of 49 subsurface soil samples were collected from 22 boreholes. Analysis of the samples indicated PAHs, PCBs, and metals exceeded ATSDR health screening levels (see Table 2).

For the 2002 RI, 14 subsurface soil samples were collected at depths ranging from 1 foot to 12 feet bgs. All samples were analyzed for PAHs, PCBs, and metals. Compounds exceeding ATSDR Substance Comparison values are provided in Table 2.

Table 2: Subsurface Soils Exceeding Comparison Values

Compound	*Range On-site 1998 Report µg/kg*	*Range On-site 2000 PA/SI µg/kg*	*Range On-site 2002 RI µg/kg*	*ATSDR Substance Comparison Values (µg/kg)*
Benzo(a)pyrene	ND – 920	ND – 18000	8.82 – 6250	100 [1]
Benzo(a) anthracene		98.7 – 5860		900 *
Benzo(b)fluoranthene	ND – 980	ND – 16000	9.25 – 6370	90 *
Dibenz(a,h)anthracene	ND	ND – 3400	ND – 791	90 *
Indeno(1,2,3-cd)pyrene	ND – 190	ND – 17000	4.90 – 4110	900 *
Lead	21 – 4300 mg/kg	2.8 – 2500 mg/kg	13.0– 10500 mg/kg	400 mg/kg*

ND = Not detected
* = EPA Soil Screening Level
[1] = Chronic Oral CREG Value

Groundwater

During the 1998 sampling event, eight groundwater samples were analyzed for BNAs, volatile organic compounds (VOCs), TPHs, and metals. The RI reported that the groundwater had high levels of heavy metals, but due to water turbulence the levels were more likely the result of suspended solids rather than dissolved metal ions. VOCs, BNAs other than PAHs, and TPHs were found at low or non-detect levels.

For the 2000 PA/SI, 11 groundwater samples were analyzed for organics, pesticides, PCBs, TPHs, and metals. In May 1999, metals exceeded drinking water standards; but again, the samples had high turbidity and were probably the result of suspended solids.

As reported in the RI, “all of the wells are screened at least partially against the former District wastes, which were repeatedly burned. The resultant ash material is fine grained and has a high metal content… The low flow rates in these wells made it difficult to develop some of these wells enough to yield clear, nonturbid water.” Therefore, during sampling in March 2000, each well was sampled twice: once for unfiltered samples and once for filtered samples. None of the wells showed significant levels of metals. Only one unfiltered sample marginally exceeded the MCL for cadmium. Levels of organics were low, and only bis(2-ethylhexyl)phthalate exceeded its MCL in two wells.

For the 2002 RI, 11 samples were collected from previously sampled monitoring wells and analyzed for metals only. Also, two samples and one duplicate sample were collected from two newly constructed monitoring wells and analyzed for organic and inorganic compounds. Compounds exceeding ATSDR Substance Comparison values are provided in Table 3. (Of note, it appears Table 4-7 in the RI was not labeled with the correct units).

Table 3: Metals Exceeding Comparison Values in Groundwater

Compound	*Range On-site 1998 Report µg/L*	*Range On-site 2000 PA/SI µg/L*	*Range On-site 2002 RI µg/L*	*ATSDR Substance Comparison Values µg/L*	*DC Standard µg/L*
Antimony	NP	ND – 53	ND – 14.0	10[1]	N/A
Barium	930 – 27000	ND – 4000	191 – 6880	700[1]	1000
Iron	NP	7300 – 220000	1390 – 92800	300[2]	N/A
Lead	380 – 17000	ND – 2800	ND – 53.4	15[3]	50
Manganese	NP	89 – 4500	38.7 – 3180	500[1]	N/A

DC = District of Columbia
N/A = Not applicable
ND = Not detected
NP = Not provided
1 = Chronic RMEG Value
2 = EPA's National Secondary Drinking Water Regulation
3 = EPA Action Level

Surface Water

During the 1998 PA/SI sampling, four surface water samples were analyzed for organics and metals (two of the samples were considered background). One of the samples collected in the Anacostia River showed a lead concentration of 12µg/L, although that concentration is, possibly, a reflection of suspended solids. Overall analytical results did not indicate the Kenilworth Park site has affected surface water quality.

No new surface water samples were collected during 2001 RI activities.

Sediment

Also, during the first round of 1998 PA/SI sampling, 14 samples were analyzed for BNAs and TPHs. Sediments collected during the second round of sampling were analyzed for PAHs, PCBs, and metals (Table 4).

During the 2000 sampling event, five sediment samples were analyzed for BNAs, TPHs, pesticides, PCBs, and metals. Sediments around the site contained elevated PAHs and metal levels. Compounds exceeding ATSDR Substance Comparison values are shown in Table 4.

Methane

Between October 22, 1979 and January 17, 1980, probes and test wells were installed at Kenilworth Landfill to evaluate methane gas for heating greenhouses (8). Fifteen test probes and 16 wells were installed in the old landfill at Kenilworth Park. Gas samples were collected at the probe and analyzed by gas chromatography. Levels were found from zero to 98.42 percent by volume. Although no specific gas monitoring was performed during PA/SI or RI/FS activities, for safety purposes explosive gas was monitored during drilling activities. When penetrating the former landfill materials, levels of explosive gases were encountered above 20% of the Lower

Explosive Limit. Still, no explosive gas was detected in breathing zones, or above landfill materials, at levels that would indicate an explosive hazard.

Table 4: Sediment

Compound	***Range 1998 Report µg/kg***	***Range 2000 PA/SI µg/kg***	***ATSDR Substance Comparison Values µg/kg***
Benzo(a)pyrene	310 – 680	ND – 1290	100 [1]
Dibenz(a,h)anthracene	ND – 100	ND – 240	90 *

ND = Not detected
* = EPA
[1] = Chronic Oral CREG Value

Pathways

Exposure pathways are the different ways that contaminants move in the environment and the different ways that people can come into contact with these contaminants—by touching, eating or drinking. When information shows that people have come into contact with a contaminant in soil, air, or water, a completed exposure pathway exists. Completed exposure pathways can occur in the past or in the present.

Surface soil:

As reported previously, the site is not fully fenced and pedestrian access is unrestricted. The NPS plans to reopen the landfill site as a park. Adults and children playing at the park will have completed an exposure pathway to surface soil. Dermal and incidental ingestion are the routes of exposure. Surface soil concentrations of PAHs, PCBs, and arsenic exceeded ATSDR Substance Comparison Values. (See Table 1.)

Subsurface soil:

Workers involved with building structures on the property may be exposed to subsurface soil during digging/excavating activities. Dermal and incidental ingestion are the routes of exposure. Subsurface soil concentrations of PAHs, PCBs, and metals exceeded ATSDR Substance Comparison Values. (See Table 2.)

Groundwater:

According to the PA/SI, at the present time no water supply wells—municipal, commercial, or domestic—can be affected by the landfill site. Accordingly, groundwater can be eliminated as a potential human exposure pathway.

Surface water:

The Anacostia River is not a source of water for home or commercial use. Also, the RI states that sewer overflow problems prevent swimming in the river; floating trash was listed as a major problem. Limited sampling conducted in 1998 showed that KPL does not affect the water quality of Anacostia River (see Environmental Data and Pathways for the Kenilworth Park South Landfill: *Surface water*). ATSDR determined that the Anacostia River can be eliminated as a potential human exposure pathway. Our conclusion is based on the KPL site

being used as a junior golf course—not as a recreational facility where swimming or fishing occur. Fish advisories from DC DOH are in effect for Anacostia River (http://doh.dc.gov/doh/cwp/view,a,1374,q,584650,dohNav_GID,1837.asp), and signs are posted at KPL cautioning people from fishing or swimming. ATSDR believes this course of action is prudent and will ensure that public health is protected.

Sediment:

See *Surface water*. Swimming and other water activities are not known to occur in the section of the Anacostia River near the site. Therefore, river sediment can be eliminated as a potential human exposure pathway. It is unclear from available documentation, however, whether wading or other such activities could occur in Watts Branch, thereby exposing residents to this sediment. Dermal and incidental ingestion are the routes of exposure. Sediment concentrations of PAHs exceeded ATSDR Substance Comparison Values. (See Table 4.)

Biota:

No data are available. In 1998, through a survey on recreational fishing in the District of Columbia, the Fish & Wildlife Office of DC DOH documented that people consume fish caught in the Anacostia River. In April 2002, people were observed fishing from the banks of the Anacostia River, about 1½ miles downstream from the landfill site. Because of the levels of PCBs, a fish consumption advisory is in effect for fish caught in freshwater rivers and lakes in DC, including the Anacostia River. Specifically, the fish advisory warns the general population against consumption of American eel, catfish, and carp. The fish advisory for DC also warns that all other fish consumed by the general population should be restricted by the size of the fish, by the frequency of fish meals, or by both (information on fish obtained at www.epa.gov/waterscience/fish/).

Off-site data:

No records show that off-site soil samples were collected from residential areas to the east of the landfill property. The RI reports problems in the past with erosion and run-off. It also reports that the recent fill is poorly vegetated, and that the steep slopes around the edges of the fill favor erosion. Although the current drainage directs runoff and storm water to ditches and silt ponds, whether in the past off-site areas could have been affected by the site is unclear.

Physical Hazards:

In several places the RI report mentions physical hazards, but these hazards are not clearly spelled out. The potential exists for harm to human health from physical hazards. Some of these physical hazards include construction debris that may be exposed during soil excavation.

Methane:

During digging/excavating activities, workers on the property may be exposed to explosive levels of methane. If a new cap prevents upward migration of gases, residents in the area may be potentially exposed to methane and other gases due to lateral migration. Methane presents two threats to people: explosion and asphyxiation.

Child Health Considerations

ATSDR recognizes that in communities with contamination in water, soil, air, or food, infants and children may be more sensitive to exposures than are adults. This sensitivity is the result of a number of factors. Children are more likely to be exposed because they play outdoors and they often bring food into contaminated areas. Most children are shorter than adults, which means children breathe dust, soil, and heavy vapors close to the ground. Children are also smaller, potentially resulting in higher doses of chemical exposure per unit body weight. The developing body systems of children can sustain permanent damage if toxic exposures occur during critical growth stages. Most importantly, children depend completely on adults for risk identification and for management decisions, housing decisions, and access to medical care. Therefore, as part of the ATSDR Child Health Initiative, ATSDR is committed to evaluating childrens' special interests at sites such as the Kenilworth Landfill.

Like other people who play, live, and work at or near Kenilworth Landfill, children may contact contaminated soils or sediments as well as other media (e.g., air and water). As discussed in the Environmental Data and Pathways section of this PHC, current and future exposures for children could include contact with contaminated soils or sediments in recreational areas or other areas where children may play, resulting in ingestion of contaminated foods or non-food items (e.g., dirt), or resulting in breathing contaminated air.

To evaluate whether children may experience adverse health affects through current or future exposures to site contaminants, ATSDR estimated the potential doses for children. To estimate these doses, ATSDR used health-protective assumptions that likely overestimate the levels of actual exposure. The assumptions used and the estimated doses are found in Appendices C and D.

NPS plans to eliminate contact with soil at Kenilworth Park Landfill South by regrading and capping the landfill. This should eliminate any pathways of concern and prevent children from coming in contact with contaminated soils. ATSDR believes that NPS actions are prudent and will ensure that the public health and childrens' welfare are both protected.

Discussion of Potential Public Health Issues

ATSDR has reviewed the data from the 1998 report, the 2000 PA/SI, and the 2002 RI. We found that PCBs, PAHs, and metals at levels above ATSDR Substance Comparison values for soil, subsurface soil and sediments present a potential exposure. Nevertheless, while building the junior golf course NPS plans to eliminate contact with soil by regrading and capping the area. Because this should prevent contact with soil contamination in the future, such a course of action is prudent and protective of public health.

Because data are not available, ATSDR does not address past exposure pathways or past health related issues. Still, the 25+ yrs of burning/ash disposal has in all likelihood led to exposures of those who resided near the landfill and of employees working at Kenilworth Park Landfill.

One of our concerns from the June 13, 2003, site visit was the proximity of Neval H. Thomas Elementary School and the school's use of 200+ feet of NPS property as a recreational area. Moreover, the frequent accessibility that students currently have to the landfill may become a problem during construction of the golf course. That will be an issue that NPS will have to address to prevent the students from contacting soil contaminants.

NPS stated that Eastland Paradise Garden Apartments—the closest community to Kenilworth Park Landfill—has not raised any public health questions to ATSDR or to other government health agencies. Therefore, any community health concerns from potential environmental exposures to this community are presently unknown (6).

Another concern is that the new fill could contribute to an increase in methane levels; in other words, disturbance of old fill could release methane (10).

Compounds of Concern

Polychlorinated Biphenyls

The daily estimated exposure for all exposed persons (i.e., workers, adults, and children) does not exceed the chronic minimum risk level (MRL) of .00002 mg/kg/day (11). Hence, exposure of these groups to PCB-contaminated soil at the landfill area is not of public health concern and is not likely to result in adverse non-cancerous health effects. ATSDR looked further at site-specific exposures for Kenilworth Park by adjusting the exposure dose parameters (Appendix D). We found that even if exposure occurs, exposure to soil contaminants would not be at levels of public health concern for cancerous or non-cancerous health effects.

Polycyclic Aromatic Hydrocarbons

As previously stated, although no potential exposure to soil contaminants threatens adults and children using the golf course, ATSDR compared screening levels and site-specific contaminant levels for subsurface soils. Although workers may be exposed to subsurface soil during digging/excavating activities, a site-specific exposure model (Appendix D) shows that the levels of exposure are not of public health concern.

Safe limits for exposure to PAHs by ingestion have not been established. Still, people exposed to PAHs in non-occupational settings have not experienced noncancerous health effects (12). Some of the health effects that have been seen in workers exposed to substances that contain PAHs are chronic dermatitis and hyperkeratosis. But those exposures were at much greater concentrations than those expected from landfill area. Hence, exposure to the concentrations of PAHs in soil at the landfill area is not expected to result in adverse noncancerous health effects in adults or children.

Methane

Methane is a colorless and odorless, naturally occurring gas. Landfills are the largest source of methane emissions generated in the United States. Methane is produced in landfills by the process of anaerobic digestion of organic solid waste. Uncontrolled landfill gas can migrate through soil as far as 1500 feet from the landfill boundary (13). Migration and accumulation of methane in the landfill can cause both an explosion and asphyxiation hazard to construction and utility workers and to occupants of neighboring buildings. Methane gas was tested in July of 1980 and in its Feasibility Study NPS plans to place a 1-foot thick soil cap over much of the landfill area. Soil gas tends to migrate from areas of high pressure/concentration to areas of low pressure/concentration through paths of lesser resistance (14). Upward migration of gas could be hindered by an impermeable or possibly semi-permeable cap; therefore, the composition of the cap must be taken into account to prevent any lateral migration that could affect the school and the surrounding community.

ATSDR is concerned about potential public health hazards resulting from explosion and exposure issues associated with methane and other landfill gases at Kenilworth Park Landfill because

1. New fill may contribute to formation of methane—some of the typical construction and demolition debris constituents/components are organic;
2. Gas migration pathways may be altered by construction activities and the new fill, all of which could potentially result in explosive concentrations of methane in nearby structures; and
3. Construction and remediation workers could be injured by unknowingly digging into soil containing high levels of methane.

Conclusions

ATSDR determined that Kenilworth Park Landfill South does not pose a public health hazard when, as proposed by NPS, it is used as a youth golf facility. Our evaluation is based on the Kenilworth Park landfill South site being safe for recreational, not residential, use. Moreover, we assume that land use restrictions will prevent groundwater from becoming a source of residential or commercial water.

Because, however, little information on methane sampling is available, the potential exists for lateral migration. Thus for methane gases Kenilworth Park Landfill South is an indeterminate public health hazard. Capping the landfill will eliminate exposure to persons using the golf course. Migration and accumulation of methane in the landfill during renovation and capping of landfill can, however, cause both an explosive and asphyxiation hazard to construction and utility workers, and potentially to occupants of neighboring buildings.

NPS plans to eliminate contact with soil and waste by capping the landfill. ATSDR believes this course of action is prudent and will ensure that public health is protected.

Chemical contamination from Kenilworth Park Landfill South does not pose a present or future public health hazard to adjacent communities such as Eastland Paradise Gardens.

The boundaries of the landfill—Kenilworth landfill North and landfill South—are not clearly delineated. ATSDR determined that this presents an indeterminate public health hazard because of the proximity of the elementary school to the NPS property and the limited sampling conducted in the 200+ yards of NPS property that the elementary school is using. For example, only three samples were taken from this area for the PA/SI.

Recommendations

ATSDR recommends that

- to prevent potential exposure of students to surface soils that may contain harmful contaminants, NPS restrict access of Neval H. Thomas Elementary students to NPS property.
- to ensure no contamination from the landfill affects the surrounding communities, more testing be done along the property boundaries during and after landfill renovations.

- additional testing on the 200+ yards of NPS property that the elementary school is using to determine if there are high levels of PCBs, PAHs, and metals.
- NPS provide preventive methods for accidental exposure during capping of soil, (e.g., dust suppression methods).
- during and after landfill renovation and placement of a new cap, monitor for methane gas on the landfill, along the perimeters of the landfill near Thomas Elementary, and in the residential area to the East (Eastland Paradise Garden).

Authors, Technical Advisors

Angel Sanchez

LT, U.S. Public Health Service Commissioned Corps
Environmental Health Scientist
Federal Facilities Assessment Branch
Division of Health Assessment and Consultation

Laura Frazier

Environmental Health Scientist
Federal Facilities Assessment Branch
Division of Health Assessment and Consultation

Gary Campbell, PhD

Environmental Health Scientist
Federal Facilities Assessment Branch
Division of Health Assessment and Consultation

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Figure 1: Demographic Intro Map

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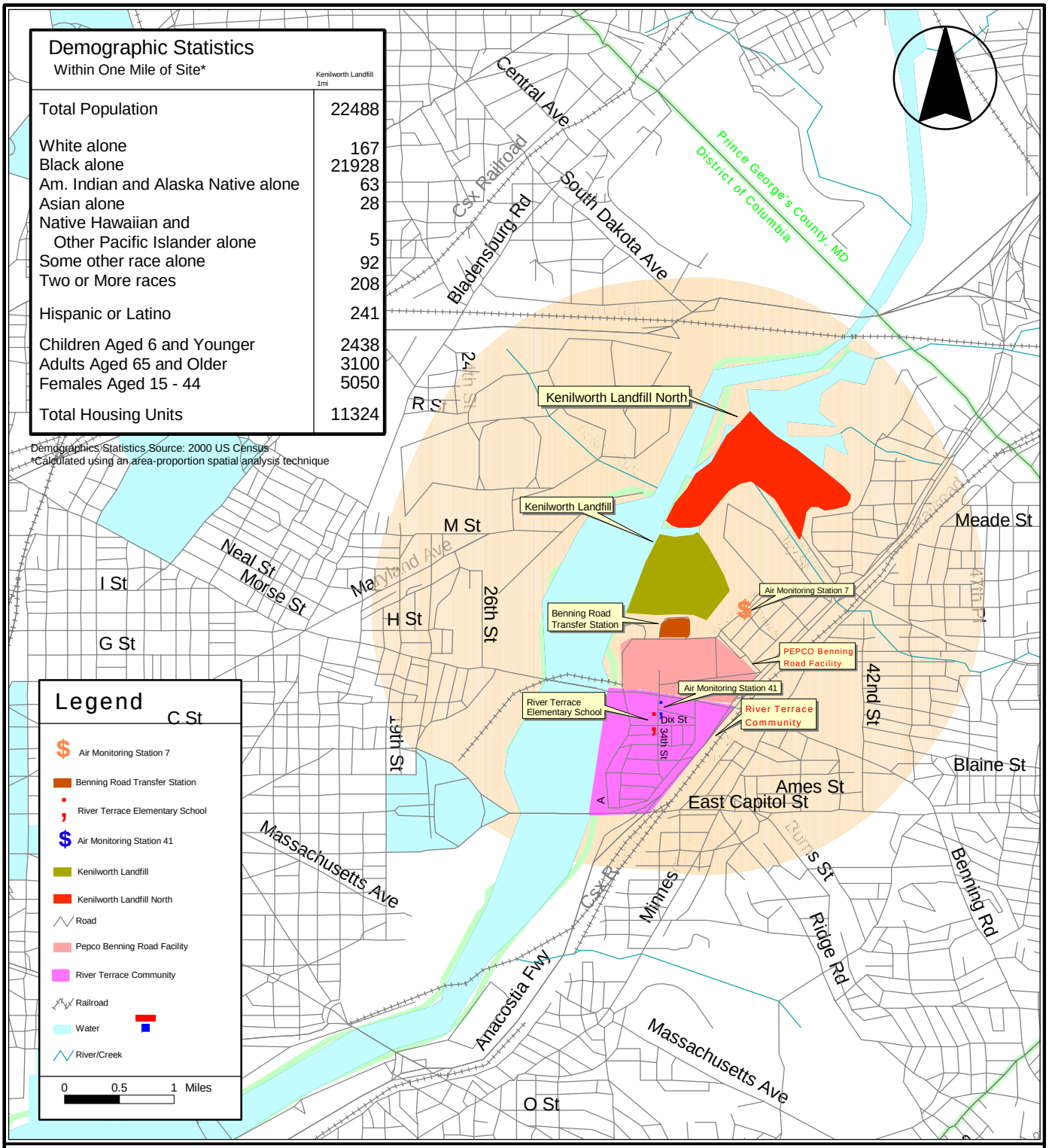

Kenilworth Landfill

Washington, DC

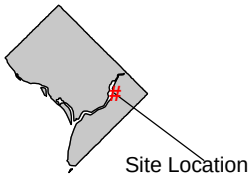

FIGURE 1: VICINITY MAP

District of Columbia

Base Map Source: 1995 TIGER/Line Files

JVA091003

Appendix A. Screening Analysis

Adult Screening Levels						
SURFACE SOIL						
Compound	**C**	**IR (kg,day)**	**EF**	**AF**	**BW**	**ED mg/kg/day**
Benzo(a)pyrene	0.509	0.0001	1	1	70	**7.27143E-07**
Dibenzo(a,h)anthracene	0.942	0.0001	1	1	70	**1.34571E-06**
Σ PAHs	1.451	0.0001	1	1	70	**2.07286E-06**
Aroclor 1254	3.16	0.0001	1	1	70	**4.51429E-06**
Aroclor 1260	2.51	0.0001	1	1	70	**3.58571E-06**
Σ PCBs	5.67	0.0001	1	1	70	**0.0000081**
	Cancer Risk					
Compound	**TEF**	**TEQ**	**CSF**	**CR**		
Benzo(a)pyrene	1	7.27143E-07	7.3	**5.31E-06**		
Dibenzo(a,h)anthracene	1	1.34571E-06	7.3	**9.82E-06**		
Σ PAHs	1	2.07286E-06	7.3	**1.51E-05**		
Aroclor 1254		4.51429E-06	2	**9.03E-06**		
Aroclor 1260		3.58571E-06	2	**7.17E-06**		
Σ PCBs		0.0000081	2	**1.62E-05**		
SUBSURFACE SOIL						
Compound	**C**	**IR (kg,day)**	**EF**	**AF**	**BW**	**ED mg/kg/day**
Benzo(a)pyrene	6.25	0.0001	1	1	70	**8.92857E-06**
Benzo(b)fluoranthene	6.37	0.0001	1	1	70	**0.0000091**
Dibenzo(a,h)anthracene	0.791	0.0001	1	1	70	**0.00000113**

Indeno(1,2,3-cd)pyrene	4.11	0.0001	1	1	70	**5.87143E-06**
Σ PAHs	17.521	0.0001	1	1	70	**0.00002503**
	Cancer Risk					
Compound	**TEF**	**TEQ**	**CSF**	**CR**		
Benzo(a)pyrene	1	8.92857E-06	7.3	**6.52E-05**		
Benzo(b)fluoranthene	0.1	0.00000091	7.3	**6.64E-06**		
Dibenzo(a,h)anthracene	1	0.00000113	7.3	**8.25E-06**		
Indeno(1,2,3-cd)pyrene	0.1	5.87143E-07	7.3	**4.29E-06**		
Σ PAHs		1.15557E-05	7.3	**8.44E-05**		
SEDIMENT						
Compound	**C**	**IR (kg,day)**	**EF**	**AF**	**BW**	**ED mg/kg/day**
Benzo(a)pyrene	1.29	0.0001	1	1	70	**1.84286E-06**
Dibenzo(a,h)anthracene	0.24	0.0001	1	1	70	**3.42857E-07**
Σ PAHs	1.53	0.0001	1	1	70	**2.18571E-06**
	Cancer Risk					
Compound	**TEF**	**TEQ**	**CSF**	**CR**		
Benzo(a)pyrene	1	1.84286E-06	7.3	**1.35E-05**		
Dibenzo(a,h)anthracene	1	3.42857E-07	7.3	**2.5E-06**		
Σ PAHs		2.18571E-06	7.3	**1.6E-05**		

Child Screening Levels						
SURFACE SOIL						
Compound	**C**	**IR (kg,day)**	**EF**	**AF**	**BW**	**ED mg/kg/day**
Benzo(a)pyrene	0.509	0.0002	1	1	30	**3.39333E-06**
Dibenzo(a,h)anthracene	0.942	0.0002	1	1	30	**0.00000628**
Σ PAHs	1.451	0.0002	1	1	30	**9.67333E-06**
Aroclor 1254	3.16	0.0002	1	1	30	**2.10667E-05**
Aroclor 1260	2.51	0.0002	1	1	30	**1.67333E-05**
Σ PCBs	5.67	0.0002	1	1	30	**0.0000378**
	Cancer Risk					
Compound	**TEF**	**TEQ**	**CSF**	**CR**		
Benzo(a)pyrene	1	3.39333E-06	7.3	**2.48E-05**		
Dibenzo(a,h)anthracene	1	0.00000628	7.3	**4.58E-05**		
Σ PAHs	1	9.67333E-06	7.3	**7.06E-05**		
Aroclor 1254		2.10667E-05	2	**4.21E-05**		
Aroclor 1260		1.67333E-05	2	**3.35E-05**		
Σ PCBs		0.0000378	2	**7.56E-05**		
SUBSURFACE SOIL						
Compound	**C**	**IR (kg,day)**	**EF**	**AF**	**BW**	**ED mg/kg/day**
Benzo(a)pyrene	6.25	0.0002	1	1	30	**4.16667E-05**
Benzo(b)fluoranthene	6.37	0.0002	1	1	30	**4.24667E-05**
Dibenzo(a,h)anthracene	0.791	0.0002	1	1	30	**5.27333E-06**

Indeno(1,2,3-cd)pyrene	4.11	0.0002	1	1	30	**0.0000274**
Σ PAHs	17.521	0.0002	1	1	30	**0.000116807**
	Cancer Risk					
Compound	**TEF**	**TEQ**	**CSF**	**CR**		
Benzo(a)pyrene	1	4.16667E-05	7.3	**0.000304**		
Benzo(b)fluoranthene	0.1	4.24667E-06	7.3	**3.1E-05**		
Dibenzo(a,h)anthracene	1	5.27333E-06	7.3	**3.85E-05**		
Indeno(1,2,3-cd)pyrene	0.1	0.00000274	7.3	**2E-05**		
Σ PAHs		5.39267E-05	7.3	**0.000394**		
SEDIMENT						
Compound	**C**	**IR (kg,day)**	**EF**	**AF**	**BW**	**ED mg/kg/day**
Benzo(a)pyrene	1.29	0.0002	1	1	30	0.0000086
Dibenzo(a,h)anthracene	0.24	0.0002	1	1	30	0.0000016
Σ PAHs	1.53	0.0002	1	1	30	0.0000102
	Cancer Risk					
Compound	**TEF**	**TEQ**	**CSF**	**CR**		
Benzo(a)pyrene	1	0.0000086	7.3	**6.28E-05**		
Dibenzo(a,h)anthracene	1	0.0000016	7.3	**1.17E-05**		
Σ PAHs		0.0000102	7.3	**7.45E-05**		

Appendix B. Site-Specific Analysis

Worker Site-Specific Data						
SURFACE SOIL						
Compound	**C**	**IR (kg,day)**	**EF**	**AF**	**BW**	**ED mg/kg/day**
Benzo(a)pyrene	0.509	0.0001	0.038	1	70	**2.76314E-08**
Dibenzo(a,h)anthracene	0.942	0.0001	0.038	1	70	**5.11371E-08**
Σ PAHs	1.451	0.0001	0.038	1	70	**7.87686E-08**
Aroclor 1254	3.16	0.0001	0.038	1	70	**1.71543E-07**
Aroclor 1260	2.51	0.0001	0.038	1	70	**1.36257E-07**
Σ PCBs	5.67	0.0001	0.038	1	70	**3.078E-07**
	Cancer Risk				**RME =**	**ED*MRL**
Compound	**TEF**	**TEQ**	**CSF**	**CR**	**MRL**	**REM**
Benzo(a)pyrene	1	2.76314E-08	7.3	**2.02E-07**	0.04	6.90786E-07
Dibenzo(a,h)anthracene	1	5.11371E-08	7.3	**3.73E-07**	0.04	1.27843E-06
Σ PAHs	**1**	7.87686E-08	7.3	**5.75E-07**	0.04	1.96921E-06
Aroclor 1254		1.71543E-07	2	**3.43E-07**	0.00002	0.008577143
Aroclor 1260		1.36257E-07	2	**2.73E-07**	0.00002	0.006812857
Σ PCBs		3.078E-07	2	**6.16E-07**	0.00002	0.01539
SUBSURFACE SOIL						
Compound	**C**	**IR (kg,day)**	**EF**	**AF**	**BW**	**ED mg/kg/day**
Benzo(a)pyrene	6.25	0.0001	0.038	1	70	**3.39286E-07**
Benzo(b)fluoranthene	6.37	0.0001	0.038	1	70	**3.458E-07**
Dibenzo(a,h)anthracene	0.791	0.0001	0.038	1	70	**4.294E-08**

Indeno(1,2,3-cd)pyrene	4.11	0.0001	0.038	1	70	**2.23114E-07**
Σ PAHs	17.521	0.0001	0.038	1	70	**9.5114E-07**
	Cancer Risk				**RME =**	**ED*MRL**
Compound	**TEF**	**TEQ**	**CSF**	**CR**	**MRL**	**REM**
Benzo(a)pyrene	1	3.39286E-07	7.3	**2.48E-06**	0.04	8.48214E-06
Benzo(b)fluoranthene	0.1	3.458E-08	7.3	**2.52E-07**	0.04	0.000008645
Dibenzo(a,h)anthracene	1	4.294E-08	7.3	**3.13E-07**	0.04	1.0735E-06
Indeno(1,2,3-cd)pyrene	0.1	2.23114E-08	7.3	**1.63E-07**	0.04	5.57786E-06
Σ PAHs		4.39117E-07	7.3	**3.21E-06**	0.04	2.37785E-05
SEDIMENT						
Compound	**C**	**IR (kg,day)**	**EF**	**AF**	**BW**	**ED mg/kg/day**
Benzo(a)pyrene	1.29	0.0001	0.038	1	70	**7.00286E-08**
Dibenzo(a,h)anthracene	0.24	0.0001	0.038	1	70	**1.30286E-08**
Σ PAHs	1.53	0.0001	0.038	1	70	**8.30571E-08**
	Cancer Risk				**RME =**	**ED*MRL**
Compound	**TEF**	**TEQ**	**CSF**	**CR**	**MRL**	**REM**
Benzo(a)pyrene	1	7.00286E-08	7.3	**5.11E-07**	0.04	**1.75071E-06**
Dibenzo(a,h)anthracene	1	1.30286E-08	7.3	**9.51E-08**	0.04	**3.25714E-07**
Σ PAHs		**8.30571E-08**	**7.3**	6.06E-07	**0.04**	**2.07643E-06**

Adult Site-Specific Data						
SURFACE SOIL						
Compound	**C**	**IR (kg,day)**	**EF**	**AF**	**BW**	**ED mg/kg/day**
Benzo(a)pyrene	0.509	0.0001	0.344	1	70	**2.50137E-07**
Dibenzo(a,h)anthracene	0.942	0.0001	0.344	1	70	**4.62926E-07**
Σ PAHs	1.451	0.0001	0.344	1	70	**7.13063E-07**
Aroclor 1254	3.16	0.0001	0.344	1	70	**1.55291E-06**
Aroclor 1260	2.51	0.0001	0.344	1	70	**1.23349E-06**
Σ PCBs	5.67	0.0001	0.344	1	70	**2.7864E-06**
	Cancer Risk				**RME =**	**ED*MRL**
Compound	**TEF**	**TEQ**	**CSF**	**CR**	**MRL**	**REM**
Benzo(a)pyrene	1	2.50137E-07	7.3	**1.826E-06**	0.04	6.25343E-06
Dibenzo(a,h)anthracene	1	4.62926E-07	7.3	**3.37936E-06**	0.04	1.15731E-05
Σ PAHs	1	7.13063E-07	7.3	**5.20536E-06**	0.04	1.78266E-05
Aroclor 1254		1.55291E-06	2	**3.10583E-06**	0.00002	0.077645714
Aroclor 1260		1.23349E-06	2	**2.46697E-06**	0.00002	0.061674286
Σ PCBs		2.7864E-06	2	**5.5728E-06**	0.00002	0.13932
SUBSURFACE SOIL						
Compound	**C**	**IR (kg,day)**	**EF**	**AF**	**BW**	**ED mg/kg/day**
Benzo(a)pyrene	6.25	0.0001	0.344	1	70	**3.07143E-06**
Benzo(b)fluoranthene	6.37	0.0001	0.344	1	70	**3.1304E-06**
Dibenzo(a,h)anthracene	0.791	0.0001	0.344	1	70	**3.8872E-07**

Indeno(1,2,3-cd)pyrene	4.11	0.0001	0.344	1	70	**2.01977E-06**
Σ PAHs	17.521	0.0001	0.344	1	70	**8.61032E-06**
	Cancer Risk				**RME =**	**ED*MRL**
Compound	**TEF**	**TEQ**	**CSF**	**CR**	**MRL**	**REM**
Benzo(a)pyrene	1	3.07143E-06	7.3	**2.24214E-05**	0.04	7.67857E-05
Benzo(b)fluoranthene	0.1	3.1304E-07	7.3	**2.28519E-06**	0.04	0.00007826
Dibenzo(a,h)anthracene	1	3.8872E-07	7.3	**2.83766E-06**	0.04	0.000009718
Indeno(1,2,3-cd)pyrene	0.1	2.01977E-07	7.3	**1.47443E-06**	0.04	5.04943E-05
Σ PAHs		3.97517E-06	7.3	**2.90187E-05**	0.04	0.000215258
SEDIMENT						
Compound	**C**	**IR (kg,day)**	**EF**	**AF**	**BW**	**ED mg/kg/day**
Benzo(a)pyrene	1.29	0.0001	0.344	1	70	**6.33943E-07**
Dibenzo(a,h)anthracene	0.24	0.0001	0.344	1	70	**1.17943E-07**
Σ PAHs	1.53	0.0001	0.344	1	70	**7.51886E-07**
	Cancer Risk				**RME =**	**ED*MRL**
Compound	**TEF**	**TEQ**	**CSF**	**CR**	**MRL**	**REM**
Benzo(a)pyrene	1	6.33943E-07	7.3	**4.62778E-06**	0.04	1.58486E-05
Dibenzo(a,h)anthracene	1	1.17943E-07	7.3	**8.60983E-07**	0.04	2.94857E-06
Σ PAHs		7.51886E-07	7.3	**5.48877E-06**	0.04	1.87971E-05

Child Site-Specific Data						
SURFACE SOIL						
Compound	**C**	**IR (kg,day)**	**EF**	**AF**	**BW**	**ED mg/kg/day**
Benzo(a)pyrene	0.509	0.0002	0.089	1	30	**3.02007E-07**
Dibenzo(a,h)anthracene	0.942	0.0002	0.089	1	30	**5.5892E-07**
Σ PAHs	1.451	0.0002	0.089	1	30	**8.60927E-07**
Aroclor 1254	3.16	0.0002	0.089	1	30	**1.87493E-06**
Aroclor 1260	2.51	0.0002	0.089	1	30	**1.48927E-06**
Σ PCBs	5.67	0.0002	0.089	1	30	**3.3642E-06**
	Cancer Risk				**RME =**	**ED*MRL**
Compound	**TEF**	**TEQ**	**CSF**	**CR**	**MRL**	**REM**
Benzo(a)pyrene	1	3.02007E-07	7.3	**2.2E-06**	0.04	7.55017E-06
Dibenzo(a,h)anthracene	1	5.5892E-07	7.3	**4.08E-06**	0.04	0.000013973
Σ PAHs	1	8.60927E-07	7.3	**6.28E-06**	0.04	2.15232E-05
Aroclor 1254		1.87493E-06	2	**3.75E-06**	0.00002	0.093746667
Aroclor 1260		1.48927E-06	2	**2.98E-06**	0.00002	0.074463333
Σ PCBs		3.3642E-06	2	**6.73E-06**	0.00002	0.16821
SUBSURFACE SOIL						
Compound	**C**	**IR (kg,day)**	**EF**	**AF**	**BW**	**ED mg/kg/day**
Benzo(a)pyrene	6.25	0.0002	0.089	1	30	**3.70833E-06**
Benzo(b)fluoranthene	6.37	0.0002	0.089	1	30	**3.77953E-06**
Dibenzo(a,h)anthracene	0.791	0.0002	0.089	1	30	**4.69327E-07**

Indeno(1,2,3-cd)pyrene	4.11	0.0002	0.089	1	30	**2.4386E-06**
Σ PAHs	17.521	0.0002	0.089	1	30	**1.03958E-05**
	Cancer Risk				**RME =**	**ED*MRL**
Compound	**TEF**	**TEQ**	**CSF**	**CR**	**MRL**	**REM**
Benzo(a)pyrene	1	3.70833E-06	7.3	**2.71E-05**	0.04	9.27083E-05
Benzo(b)fluoranthene	0.1	3.77953E-07	7.3	**2.76E-06**	0.04	9.44883E-05
Dibenzo(a,h)anthracene	1	4.69327E-07	7.3	**3.43E-06**	0.04	1.17332E-05
Indeno(1,2,3-cd)pyrene	0.1	2.4386E-07	7.3	**1.78E-06**	0.04	0.000060965
Σ PAHs		4.79947E-06	7.3	**3.5E-05**	0.04	0.000259895
SEDIMENT						
Compound	**C**	**IR (kg,day)**	**EF**	**AF**	**BW**	**ED mg/kg/day**
Benzo(a)pyrene	1.29	0.0002	0.089	1	30	**7.654E-07**
Dibenzo(a,h)anthracene	0.24	0.0002	0.089	1	30	**1.424E-07**
Σ PAHs	1.53	0.0002	0.089	1	30	**9.078E-07**
	Cancer Risk				**RME =**	**ED*MRL**
Compound	**TEF**	**TEQ**	**CSF**	**CR**	**MRL**	**REM**
Benzo(a)pyrene	1	7.654E-07	7.3	**5.59E-06**	0.04	0.000019135
Dibenzo(a,h)anthracene	1	1.424E-07	7.3	**1.04E-06**	0.04	0.00000356
Σ PAHs		9.078E-07	7.3	**6.63E-06**	0.04	0.000022695

Appendix C. Comparison of Exposure Doses to Health Guidelines

SURFACE SOILS					
	ED (mg/kg/day)		**MRL**	**NOAEL**	**LOAEL**
	Adult	Child	mg/kg/day	mg/kg/day	mg/kg/day
Aroclor 1254	4.5x10-6	6.32x10-5	.00002		.005
Aroclor 1260	3.58x10-6	5.02x10-5	.00002		.005
Σ PCBs	1.62x10-5	1.134x10-4	.00002		.005
Benzo(a)pyrene	7.3x10-7	1.02x10-5	.04	90	125
Dibenz(a,h)anthracene	1.34x10-6	1.88x10-5	.04	100	125
Σ PAHs	2.07x10-6	2.9x10-5	.04	90	125

SUBSURFACE SOILS					
	ED (mg/kg/day)		**MRL**	**NOAEL**	**LOAEL**
	Adult	Child	mg/kg/day	mg/kg/day	mg/kg/day
Benzo(a)pyrene	2.57x10-5	3.6x10-4	.04	90	125
Benzo(a) anthracene	8.92x10-6	1.17x10-4	.04	100	125
Benzo(b)fluoranthene	9.1x10-6	1.27x10-5	.04	90	125
Dibenzo(a,h)anthracene	1.13x10-6	1.58x10-5	.04	100	125
Indeno(1,2,3-cd)pyrene	5.87x10-6	8.22x10-5	.04	90	125
Σ PAHs	2.5x10-5	3.5x10-4	.04	90	125
Lead	.015	.21		.001 A	.1

SEDIMENT					
	ED (mg/kg/day)		**MRL**	**NOAEL**	**LOAEL**
	Adult	Child		mg/kg/day	mg/kg/day
Benzo(a)pyrene	1.84x10-6	2.58x10-5	.04	90	125
Benzo(a) anthracene	3.42x10-7	4.8x10-6	.04	88	125
Σ PAHs	2.18x10-6	3.06x10-5	.04	90	

Appendix D. Exposure Dose Methods

Site-Specific

On our first initial screen we assumed that the parameters of the exposure dose formula represented the worst case scenario, given

$$ED = C \times IR \times EF \times \frac{AF}{BW}$$

Where

ED = Exposure Dose; at its maximum,

C = Contaminant Concentration; 95% Upper CI,

EF = Exposure Factor, the frequency and duration of exposure;

AF = Absorption Factor: the percentage of the chemical ingested that actually makes it into the bloodstream; and

BW= Body Weight in kilograms (kg), using ATSDR defaults of 70kg for adult and 10kg for children.

We compared the exposure doses obtained from health guidelines (MRL, LOAEL, NOAEL) (Appendix C); we screened out contaminants, non-carcinogenic effects, or age groups. Once we found contaminants that may be of concern, we repeated the same procedures using site-specific exposure doses (Appendix B). In this case we changed the EF parameters as follows:

Adult: 0.603*0.571 = .344

220 days of exposure – frequency of exposure for 11 months times 5 days a week assuming that winter weather may impede persons for playing and/or working at the golf course. 220/365= 0.603

40 year exposure – maximum amount of exposure that an adult may spend at the golf course throughout his/her lifetime. 40/70 = 0.571

Worker: 0.54* 0.71

200 days of exposure - frequency of exposure for 10 months times 5 days a week assuming that winter weather may impede work at the golf course. 200/365= 0.54

5 year exposure – time that it would take to build the golf course; this is still a conservative number. 5/70 = .038

Child: 0.394*0.089

144 days of exposure - frequency of exposure for 12 months times 3 days a week assuming that winter weather may impede play at the golf course. 144/365= 0.089

16 year exposure – based on assumption that a child/teenager will play at the course for an average of 16 yrs until the child comes close to the age 21 and move on to a senior course. 16/70 = 0.228

Furthermore, when analyzing exposure dose of the PAHs and PCBs, we used the sum of them from each category – surface soil, sub-surface soil, and sediment – to further increase their effect. Although it is not representative of real life, most of these chemicals are found together in

soil but do not act together to cause an additive effect—we used this method to demonstrate that there is no apparent exposure at the site.

L Background Tables

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Table 1 Analytical Results for Background Soils
Polychlorinated Biphenyls (µg/kg unless otherwise noted)
Kenilworth Park South Landfill, N.E. Washington, D.C. PA/SI (2000)

Parameter	Sample Identification					RBC
	SS-29	SS-30	SS-32	SS-33	SS-34	
	Kenilworth Aquatic Gardens		Thomas School			
PCB-1016	ND	ND	ND	ND	16.5J	5,500
PCB-1254	79.5	ND	ND	ND	ND	320
PCB-1260	58.5	83.4	30.6	44.1	107	320

KEY

Note: Figures in bold are exceedences of RBCs.
J =Estimated.
ug/kg = Micrograms per kilogram
ND = Not detected
RBC = Risk-Based Concentration for Residential Soils (EPA Region III 2000)
PCBs = Polychlorinated biphenyls.

Table 2 Analytical Results for Background Soils
Polynuclear Aromatic Hydrocarbons (µg/kg unless otherwise noted)
Kenilworth Park South Landfill, N.E. Washington, D.C. PA/SI (2000)

Parameter	Sample Identification					RBC
	SS-29	SS-30	SS-32	SS-33	SS-34	
	Kenilworth Aquatic Gardens		Thomas School			
Acenaphthene	ND	ND	ND	ND	308J	4,700,000
Acenaphthylene	ND	ND	ND	ND	ND	-----
Anthracene	16.9J	99.8J	13.7J	14.1J	42.3J	23,000,000
Benz(a)anthracene	57.9	240J	103	65.4	225	870
Benzo(a)pyrene	**124**	**237J**	**113**	**99.8**	**254**	87
Benzo(b)fluoranthene	137	297	164	97.6	359	870
Benzo(g,h,i)perylene	92.2	94.9J	128	30.0J	73.7J	-----
Benzo(k)fluoranthene	147	269	145	109	291	8,700
Chrysene	89.9	331	117	88.0	325	87,000
Dibenz(a,h)anthracene	ND	ND	ND	ND	ND	87
Fluoranthene	153	666	152	135	470	3,100,000
Fluorene	ND	ND	ND	ND	ND	3,100,000
Indeno(1,2,3-cd)pyrene	46.8	117J	34.2	26.7	103J	870
2-Methylnaphthalene	ND	ND	248	ND	ND	1,600,000
Naphthalene	ND	ND	ND	ND	ND	1,600,000
Phenanthrene	58.6	341	40.3	46.8	162	-----
Pyrene	151	621J	171	140	395	2,300,000
Total PAHs (mg/kg)	1.1	3.3	1.4	0.9	3.0	-----

KEY

Note: Figures in bold are exceedences of RBCs.
PAHs = Polynuclear Aromatic Hydrocarbons.
J =Estimated.
K = X 1000.
mg/kg = Milligrams per kilogram.
ug/kg = Micrograms per kilogram.
ND = Not detected.
RBC = Risk-Based Concentration for Residential Soils (EPA Region III 2000).
----- = No Risk Based Concentration.

Table 3 Analytical Results for Background Soils
Target Analyte List (mg/kg)
Kenilworth Park South Landfill, N.E. Washington, D.C. PA/SI (2000)

Parameter	Sample Identification					RBC
	SS-29	SS-30	SS-32	SS-33	SS-34	
	Kenilworth Aquatic Gardens		Thomas School			
Aluminum	--	--	--	--	--	78K
Antimony	--	--	--	--	--	31
Arsenic	**7.31**	**12.4**	**2.97**	**4.20**	**3.34**	0.43
Barium	110	285	141	127	208	5,500
Beryllium	--	--	--	--	--	160
Cadmium	1.18	1.34	2.66	2.95	2.83	39
Calcium	--	--	--	--	--	----
Chromium	43.0	34.1	27.3	29.3	29.6	120,000[a]
Cobalt	--	--	--	--	--	4,700
Copper	--	--	--	--	--	3,100
Iron	--	--	--	--	--	23K
Lead	113	189	40.0	52.3	29.3	400[b]
Magnesium	--	--	--	--	--	----
Manganese	--	--	--	--	--	1,600
Mercury	0.415	0.901	0.291	0.381	0.311	23
Nickel	--	--	--	--	--	1,600
Potassium	--	--	--	--	--	----
Selenium	ND	ND	ND	ND	ND	390
Silver	ND	1.32	ND	ND	ND	390
Sodium	--	--	--	--	--	----
Vanadium	--	--	--	--	--	550
Zinc	--	--	--	--	--	23,000
Cyanide	--	--	--	--	--	1,600

KEY

[a] Chromium III.
[b] EPA Action Level.
Note: Figures in bold are exceedences of RBCs.

K = X 1000
mg/kg = Milligrams per kilogram
ND = Not detected
RBC = Risk-Based Concentration for Residential Soils (EPA Region III 2000)
-- = Not Tested
----- = No Risk Based Concentration

Table 4 **Analytical Results for Background Sediments**
Polynuclear Aromatic Hydrocarbons (µg/kg unless otherwise noted
Kenilworth Park South Landfill, N.E. Washington, D.C.

Parameter	Sample Identification		BTAG[a]
	SMP-A	SMP-B	
Acenaphthene	ND	ND	16
Acenaphthylene	ND	ND	44
Anthracene	59.1J	**181J**	85.3
Benz(a)anthracene	**302**	**603**	261
Benzo(a)pyrene	370	**1030**	430
Benzo(b)fluoranthene	980	1470	3,200
Benzo(g,h,i)perylene	352J	445J	670
Benzo(k)fluoranthene	1170	1320	N/A
Chrysene	**450**	**1060**	384
Dibenz(a,h)anthracene	ND	ND	63.4
Fluoranthene	**701**	**2150**	600
Fluorene	ND	ND	19
Indeno(1,2,3-cd)pyrene	147J	671	600
2-Methylnaphthalene	ND	ND	70
Naphthalene	ND	ND	160
Phenanthrene	215	**643**	240
Pyrene	**746**	**1920**	665
Total PAHs (mg/kg)	5.5	11.5	-----

KEY
[a] Biological Technical Assistance Group (BTAG) Screening Level (EPA Region III 1995)

Note: Figures in bold are exceedences of BTAG values.

PAHs = Polynuclear Aromatic Hydrocarbons.
J =Estimated.
mg/kg = Milligrams per kilogram.
ug/kg = Micrograms per kilogram.
ND = Not detected.
N/A = Not available.

Table 5 Analytical Results for Background Sediments
Polychlorinated Biphenyls (µg/kg unless otherwise noted)
Kenilworth Park South Landfill, N.E. Washington, D.C.

	Sample Identification		
Parameter	SMP-A	SMP-B	BTAG[a]
PCB-1016	ND	ND	22.7
PCB-1221	ND	ND	22.7
PCB-1232	ND	ND	22.7
PCB-1242	ND	ND	22.7
PCB-1248	ND	ND	22.7
PCB-1254	**57.1**	**53.2**	22.7
PCB-1260	**64.1**	**54.2**	22.7

KEY

[a] Biological Technical Assistance Group (BTAG) Screening Level (EPA Region III 1995).

Note: Figures in bold are exceedences of BTAG values.

J =Estimated.

ug/kg = Micrograms per kilogram.

ND = Not detected.

N/A =Not available.

PCBs = Polychlorinated biphenyls.

Table 6 **Analytical Results for Background Sediments**
Metals (mg/kg unless otherwise noted)
Kenilworth Park South Landfill, N.E. Washington, D.C.

Parameter	Sample Identification[a]		BTAG[a]
	SMP-A	SMP-B	
Aluminum	--	--	N/A
Antimony	--	--	150
Arsenic	5.38	6.58	8.2[b]
Barium	78.3	108	N/A
Beryllium	--	--	N/A
Cadmium	0.942	0.994	1.2
Calcium	--	--	N/A
Chromium	62.5	45.2	260
Cobalt	--	--	N/A
Copper	--	--	34
Iron	--	--	N/A
Lead	**80.1**	**81.3**	46.7
Magnesium	--	--	N/A
Manganese	--	--	N/A
Mercury	**0.200**	**0.245**	0.15
Nickel	--	--	20.9
Potassium	--	--	N/A
Selenium	--	--	N/A
Silver	ND	ND	1
Sodium	--	--	N/A
Vanadium	--	--	N/A
Zinc	--	--	150

KEY
[a] Biological Technical Assistance Group (BTAG) Screening Level (EPA Region III 1995).
[b] Toxic arsenic.

Note: Figures in bold are exceedences of BTAG values.

mg/kg = Milligrams per kilogram.
ND = Not detected.
-- = Not Tested.
N/A = Not available.

Table 7

Analytical Results for Background Samples, Polychlorinated Biphenyls (µg/kg), Kenilworth Park South Landfill Remedial Investigation (2001)

	KWS-SU-BK-1 Fort Mahon	KWS-SU-BK-2 Fort Chaplin	KWS-SU-BK-3 Fort Dupont - E St.	KWS-SU-BK-4 Fort Dupont - Maintenance Yard	KWS-SU-BK-5 Anacostia Park - Blaine St.	RBCs[a]
Aroclor 1242	ND	ND	ND	ND	ND	320
Aroclor 1254	ND	ND	ND	ND	ND	320
Aroclor 1260	38.4	ND	30.5	ND	185	320

	KWS-SU-BK-6 Anacostia Park - Oklahoma St.	KWS-SU-BK-7 Langston Golf Course	KWS-SU-BK-8 Arboretum - Capitol Columns	KWS-SU-BK-9 Arboretum - NE Fence	KWS-SU-BK-10 Sediment - Storm Sewer Outlet	RBCs[a]
Aroclor 1242	ND	ND	ND	ND	ND	320
Aroclor 1254	ND	ND	ND	ND	278	320
Aroclor 1260	ND	ND	124	124	194	320

Note: Figures in bold indicate values that exceed RBCs.

Key:

[a] EPA Region III RBCs for residential soils.

µg/kg = Micrograms per kilogram.

ND = Not detected.

RBC = Risk-based concentration.

Table 8 Analytical Results for Background Surface Soil Pesticides (mg/kg), Kenilworth Park South Landfill Supplemental Sampling (2006)

Analyte	RBCs [1]	Min.	Max.	KS-SS-01	KS-SS-02	KS-SS-03	KS-SS-04	KS-SS-05	KS-SS-06	KS-SS-07	KS-SS-08	KS-SS-09
4,4'-DDD	2.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aldrin	0.038	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDE	1.9	0.0034	0.033	0.033	0.031	0.0036 J	0.022	0.0037	0.0093	0.018	0.023	0.017
4,4'-DDT	1.9	ND	0.12	0.087	0.12	0.0095	0.027	0.009	0.017	0.027	0.031	0.026
alpha-BHC	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
alpha-Chlordane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
beta-BHC	0.36	ND	0.0032	ND	ND	ND	ND	ND	ND	ND	ND	ND
delta-BHC	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dieldrin	0.04	ND	0.0078 J	ND	0.0078 J	ND	ND	ND	ND	ND	0.0022 J	ND
Endosulfan I	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan II	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan sulfate	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	24	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin aldehyde	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	24	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin aldehyde	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin ketone	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
gamma-BHC (Lindane)	0.49	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
gamma-Chlordane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Heptachlor	0.14	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Heptachlor epoxide	0.07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methoxychlor	390	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toxaphene	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Note: Figures in bold indicate values that exc

Key:

J = Estimated value.

ND = Not detected at the reported value.

mg/Kg = Milligrams per kilogram.

(1) EPA Region III RBCs for residential soils.

a KS-SS-99 is a duplicated of KS-SS-10

Table 8 Analytical Results for Background Surface Soil Pesticides (mg/kg), Kenilworth Park South Landfill Supplemental Sampling (2006)

Analyte	RBCs (1)	Min.	Max.	KS-SS-10 a	KS-SS-99	KS-SS-11	KS-SS-12	KS-SS-13	KS-SS-14	KS-SS-15	KS-SS-16	KS-SS-17
4,4'-DDD	2.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aldrin	0.038	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDE	1.9	0.0034	0.033	0.0091	0.011	ND	0.0067	0.0043	0.0034	0.0046	0.015	0.014
4,4'-DDT	1.9	ND	0.12	0.022	0.022	ND	0.015	0.013	0.005	0.012	0.024	0.025
alpha-BHC	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
alpha-Chlordane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
beta-BHC	0.36	ND	0.0032	ND	ND	ND	ND	ND	0.0032	ND	ND	ND
delta-BHC	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dieldrin	0.04	ND	0.0078 J	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan I	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan II	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan sulfate	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	24	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin aldehyde	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	24	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin aldehyde	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin ketone	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
gamma-BHC (Lindane)	0.49	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
gamma-Chlordane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Heptachlor	0.14	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Heptachlor epoxide	0.07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methoxychlor	390	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toxaphene	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Note: Figures in bold indicate values that exc

Key:

J = Estimated value.

ND = Not detected at the reported value.

mg/Kg = Milligrams per kilogram.

(1) EPA Region III RBCs for residential soils.

a KS-SS-99 is a duplicated of KS-SS-10

Table 9 Analytical Results for Background Surface Metals (mg/kg), Kenilworth Park South Landfill Supplemental Sampling (2006)

Analyte	RBCs [(1)]	Min.	Max.	KS-SS-01	KS-SS-02	KS-SS-03	KS-SS-04	KS-SS-05	KS-SS-06	KS-SS-07	KS-SS-08	KS-SS-09
Aluminum	78,000	3,600	11,000	9,900	6,300	11,000	3,600	5,500	11,000	9,500	10,000	7,800
Antimony	31	ND	1.1J	ND	1.2 J	ND	ND	0.76 J	ND	ND	0.63 J	ND
Arsenic	0.43	3.5	9.9	7.5	9.9	5.3	3.5	5.3	6.5	6.6	7.5	5.1
Barium	5,500	41	200	120	89	110	41	51	200	100	120	93
Beryllium	160	0.48	1.6	1	0.65	1.1	0.30 J	0.72	1	0.97	1.1	0.74
Cadmium	78	ND	4.3	0.28	0.53	0.089 J	0.19	0.3	0.22	0.32	0.36	4.3
Calcium	NA	490	2,600	1,100	1,400	680	680	490	1,700	2,300	990	1,700
Chromium	NA	12	34	24	34	21	12	13	27	23	31	20
Cobalt	1,600	3.9	29	12	7.5	11	4	6	13	12	21	11
Copper	3,100	12	43	25	33	22	14	15	43	21	30	18
Iron	23,000	8,800	54,000	16,000	15,000	17,000	8,800	13,000	18,000	17,000	18,000	16,000
Lead	NA	34	180	100	180	64	74	53	130	79	120	72
Magnesium	NA	500	1,800	1,700	1,700	1,400	570	500	1,600	1,700	1,400	1,800
Manganese	1,600	160	640	230	190	210	210	170	300	280	460	270
Nickel	1,600	6.9	27	24	26	22	8.5	6.9	20	23	23	22
Potassium	NA	310	1,400	770	430	690	360	310	910	760	770	690
Selenium	390	1	1.7	1.0 J	0.72 J	0.81 J	0.49 J	0.90 J	1.1 J	0.93 J	1	0.55 J
Silver	390	0.61	2.7	0.63	2.7	0.23 J	0.41 J	0.24 J	0.64	0.61	1	0.91
Sodium	NA	ND	89 J	ND	ND	ND	ND	89 J	ND	ND	ND	ND
Thallium	5.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	78	27	60	59	51	38	27	30	55	52	60	52
Zinc	23,000	56	290	85	230	92	56	67	120	99	290	91
Mercury	NA	0.062	2.7	0.19	0.3	0.11	0.17	0.11	0.16	0.18	0.19	0.12

Note: Figures in bold indicate value

Key:

J = Estimated value.

ND = Not detected at the reported value.

mg/Kg = Milligrams per kilogram.

(1) EPA Region III RBCs for residential soils.

a KS-SS-99 is a duplicated of KS-SS-10

Table 9 Analytical Results for Background Surface Metals (mg/kg), Kenilworth Park South Landfill Supplemental Sampling (2006)

Analyte	RBCs [(1)]	Min.	Max.	KS-SS-10 [a]	KS-SS-99	KS-SS-11	KS-SS-12	KS-SS-13	KS-SS-14	KS-SS-15	KS-SS-16	KS-SS-17
Aluminum	78,000	3,600	11,000	8,900	9,500	7,700	10,000	10,000	11,000	6,100	7,900	11,000
Antimony	31	ND	1.1J	1.1 J	1.1 J	0.50 J	ND	ND	ND	0.52 J	0.62 J	ND
Arsenic	0.43	3.5	9.9	4.6	6.7	3.9	6	4.7	5.7	5	9.1	6.8
Barium	5,500	41	200	89	89	81	98	130	100	66	120	96
Beryllium	160	0.48	1.6	0.75	0.7	0.6	0.92	1.6	0.93	0.48	0.84	0.97
Cadmium	78	ND	4.3	0.11 J	ND	ND	0.13 J	ND	ND	0.13 J	0.26	0.11 J
Calcium	NA	490	2,600	1,200	1,200	1,500	790	910	850	1,300	2,600	570
Chromium	NA	12	34	34	34	24	21	24	22	17	21	23
Cobalt	1,600	3.9	29	11	12	3.9	10	13	9.8	29	9.1	8.4
Copper	3,100	12	43	27	33	12	26	23	21	18	36	26
Iron	23,000	8,800	54,000	21,000	54,000	13,000	17,000	20,000	19,000	22,000	23,000	17,000
Lead	NA	34	180	70	70	50	65	56	34	73	100	72
Magnesium	NA	500	1,800	1,100	1,100	1,700	1,400	1,500	1,500	560	700	1,500
Manganese	1,600	160	640	280	530	170	230	370	220	640	190	160
Nickel	1,600	6.9	27	16	18	13	19	18	27	10	15	17
Potassium	NA	310	1,400	770	770	1400	920	840	880	640	610	930
Selenium	390	1	1.7	0.86 J	1.7	0.51 J	0.92 J	0.76 J	0.85 J	1.2	1.4	0.87 J
Silver	390	0.61	2.7	0.42 J	0.42 J	ND	0.51 J	0.27 J	0.17 J	0.38 J	0.44 J	0.74
Sodium	NA	ND	89 J	ND	ND	ND	ND	ND	ND	ND	88 J	ND
Thallium	5.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	78	27	60	45	45	33	57	34	46	54	58	57
Zinc	23,000	56	290	230	230	62	75	70	63	93	110	70
Mercury	NA	0.062	2.7	2.7	0.9	0.062	0.13	0.34	0.18	0.1	0.14	0.17

Note: Figures in bold indicate value

Key:

J = Estimated value.

ND = Not detected at the reported value.

mg/Kg = Milligrams per kilogram.

(1) EPA Region III RBCs for residential soils.

a KS-SS-99 is a duplicated of KS-SS-10

Table 10 Analytical Results for Background Surface Soil Polychlorinated Biphenyls and Polynuclear Aromatic Hydrocarbons (mg/kg), Kenilworth Park South Landfill Supplemental Sampling (2006)

Analyte	RBCs (1)	Min.	Max.	KS-SS-01	KS-SS-02	KS-SS-03	KS-SS-04	KS-SS-05	KS-SS-06	KS-SS-07	KS-SS-08	KS-SS-09
Acenaphthene	4700	ND	0.0068 J	ND	ND	ND	0.0068 J	ND	ND	ND	ND	0.022 J
Acenaphthylene	NA	ND	0.038	ND	0.21	ND	ND	ND	ND	ND	0.021 J	ND
Anthracene	23000	0.023 J	0.2	ND	0.12	ND	ND	0.07	0.023 J	0.032 J	0.034 J	0.077
Benzo(a)anthracene	0.88	0.037	0.86	0.074	0.5	0.041	0.15	0.22	0.11	0.19	0.21	0.58
Benzo(a)pyrene	0.088	0.056	0.9	0.094	0.65	0.056	0.18	0.23	0.12	0.31	0.3	0.86
Benzo(b)fluoranthene	0.88	0.044	0.82	0.17	0.75	0.085	0.25	0.29	0.18	0.29	0.3	0.82
Benzo(ghi)perylene	NA	ND	0.46	0.075	0.46	0.043	0.1	0.12	0.068	0.13	0.14	0.35
Benzo(k)fluoranthene	8.8	0.053	0.9	0.086	0.44	0.053	0.15	0.17	0.1	0.3	0.38	0.87
Chrysene	88	0.057	0.93	0.18	0.54	0.067	0.19	0.23	0.15	0.28	0.34	0.83
Dibenzo(a,h)anthracene	0.088	ND	0.14	ND	0.14	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	3100	0.053	1.3	0.19	0.49	0.092	0.32	0.46	0.24	0.38	0.42	1.1
Fluorene	3100	ND	0.037	ND	ND	ND	ND	ND	ND	ND	ND	0.023 J
Indeno(1,2,3-cd)pyrene	0.88	ND	0.37	0.066	0.36	0.036	0.1	0.11	0.065	0.11	0.16	0.37
Naphthalene	1600	ND	0.035 J	ND	0.035 J	ND	ND	ND	ND	ND	0.022 J	ND
Phenanthrene	NA	0.04	0.66	0.097	0.2	0.04	0.14	0.31	0.13	0.19	0.21	0.52
Pyrene	2300	0.073	1.7	0.16	0.82	0.1	0.35	0.52	0.28	0.49	0.55	1.3
Total PAH	NA	0.368	8.605	1.192	5.715	0.613	1.9368	2.73	1.466	2.702	3.087	7.722
Aroclor 1016	5.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1221	0.32	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1232	0.32	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1242	0.32	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1248	0.32	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1254	0.32	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1260	0.32	ND	0.61	0.47	0.61	0.055	0.098	0.039	0.062	0.097	0.083	0.087

Note: Figures in bold indicate values that exceed RBCs.

Key:

J = Estimated value.

ND = Not detected at the reported value.

mg/Kg = Milligrams per kilogram.

(1) EPA Region III RBCs for residential soils.

a KS-SS-99 is a duplicated of KS-SS-10

Table 10 Analytical Results for Background Surface Soil Polychlorinated Biphenyls and Polynuclear Aromatic Hydrocarbons (mg/kg), Kenilworth Park South Landfill Supplemental Sampling (2006)

Analyte	RBCs (1)	Min.	Max.	KS-SS-10 a	KS-SS-99	KS-SS-11	KS-SS-12	KS-SS-13	KS-SS-14	KS-SS-15	KS-SS-16	KS-SS-17
Acenaphthene	4700	ND	0.0068 J	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	NA	ND	0.038	ND	ND	ND	ND	ND	ND	ND	0.038	ND
Anthracene	23000	0.023 J	0.2	0.026 J	0.026 J	0.047	ND	ND	ND	ND	0.2	ND
Benzo(a)anthracene	0.88	0.037	0.86	0.11	0.13	0.33	0.091	0.065	0.037	0.052	0.86	0.043
Benzo(a)pyrene	0.088	0.056	0.9	0.15	0.15	0.52	ND	0.1	ND	0.068	0.9	ND
Benzo(b)fluoranthene	0.88	0.044	0.82	0.19	0.16	0.45	0.1	0.11	0.044	0.064	0.73	0.053
Benzo(ghi)perylene	NA	ND	0.46	0.15	0.069	0.18	0.1	0.052	ND	ND	0.17	0.18
Benzo(k)fluoranthene	8.8	0.053	0.9	0.2	0.2	0.58	0.15	0.15	0.068	0.067	0.9	0.073
Chrysene	88	0.057	0.93	0.19	0.19	0.6	0.14	0.14	0.057	0.083	0.93	0.069
Dibenzo(a,h)anthracene	0.088	ND	0.14	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	3100	0.053	1.3	0.24	0.24	0.67	0.15	0.12	0.053	0.083	1.3	0.073
Fluorene	3100	ND	0.037	ND	ND	ND	ND	ND	ND	ND	0.037	ND
Indeno(1,2,3-cd)pyrene	0.88	ND	0.37	0.14	0.051	0.17	0.059	0.042	ND	ND	0.18	0.12
Naphthalene	1600	ND	0.035 J	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	NA	0.04	0.66	0.14	0.14	0.28	0.077	0.077	0.036 J	0.043	0.66	0.046
Pyrene	2300	0.073	1.7	0.32	0.32	0.87	0.21	0.15	0.073	0.12	1.7	0.11
Total PAH	NA	0.368	8.605	1.876	1.676	4.697	1.077	1.006	0.368	0.58	8.605	0.767
Aroclor 1016	5.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1221	0.32	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1232	0.32	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1242	0.32	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1248	0.32	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1254	0.32	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1260	0.32	ND	0.61	ND	0.086	0.045	0.05	0.032	ND	0.061	0.15	0.11

Note: Figures in bold indicate values that exceed RBCs.

Key:

J = Estimated value.

ND = Not detected at the reported value.

mg/Kg = Milligrams per kilogram.

(1) EPA Region III RBCs for residential soils.

a KS-SS-99 is a duplicated of KS-SS-10

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