



Appendix A

Memorandum: Results of Additional Sampling at Trailer Disposal and Former Debris Areas,
Moss Beach Ranch Rancho Corral de Tierra, San Mateo County, California



19 October 2012

MEMORANDUM

To: Meghan Scanlon (Peninsula Open Space Trust)

From: Kat Wuelfing (Erlar & Kalinowski, Inc.)
Michelle King, Ph.D. (Erlar & Kalinowski, Inc.)

Subject: Results of Additional Sampling at Trailer Disposal and Former Debris Areas, Moss Beach Ranch
Rancho Corral de Tierra, San Mateo County, California
(EKI B10014.01)

cc: Viktoriya Sirova (National Park Service)

Introduction

This memorandum presents the results of the February 2012 soil sampling conducted by Erlar & Kalinowski, Inc. (“EKI”) at the Trailer Disposal and Former Debris Areas at Moss Beach Ranch of the Rancho Corral de Tierra property, located in San Mateo County, California (these areas are referred to as the “Site” and are shown on Figures 1 and 2). EKI collected subsurface soil samples from exploratory trenches at the Site in accordance with our Independent Consultant Agreement with Peninsula Open Space Trust (“POST”), dated 7 March 2011 and Work Authorization No. 2, dated 10 January 2012 (collectively, the “Agreement”). EKI understands that the ownership of the Rancho Corral de Tierra property was recently transferred to the National Park Service (“NPS”) and that POST has retained responsibility for the removal of contaminated soil at the Site per the First Amendment to Corporate Offer to Purchase Real Property, dated 19 October 2011.

The objectives of the sampling conducted in February 2012 were to:

- 1) Conduct exploratory trenching and collect additional soil samples to characterize the extent of impact identified during previous sampling at the Site;
- 2) Collect additional zinc data to be used to calculate a representative background concentration for zinc in soil at the Site; and
- 3) Characterize the particle size distribution of Site soil for purposes of selecting compatible fill material.

The forthcoming Removal Action Workplan for the Site will use the analytical data presented in this memorandum to determine the extents of the remedial excavation.

Background

EKI performed sampling investigations of the Rancho Corral de Tierra property in 2011 to identify potential environmental liabilities. The potential environmental liabilities identified during the 2011 sampling event are referred to as “recognized environmental conditions” (“RECs”) (EKI, 2011). During the 2011 sampling event, soil samples were collected from multiple areas across the Rancho Corral de Tierra property and analyzed for a variety of chemical constituents, including total petroleum hydrocarbons (“TPH”), metals, organochlorine pesticides, and volatile organic compounds. Surface water samples were collected during the 2011 sampling event from several creeks on the property and analyzed for fecal indicator bacteria, pesticides, and common water quality parameters. Groundwater samples were collected from several domestic supply wells on the property and analyzed for TPH, BTEX compounds¹, and pesticides. As a result of this investigation, the 2011 Sampling Investigation Report (EKI, 2011) identified RECs at the Trailer Disposal and Former Debris Areas requiring further investigation and/or remediation.

Three discrete and one multi-increment (“MI”) soil samples were collected from the Trailer Disposal Area in April 2011 (see Figure 3 and Table 1). TPH-diesel, TPH-motor oil, endrin and zinc were detected in the soil samples at concentrations above respective San Francisco Regional Water Quality Control Board (“RWQCB”) residential Environmental Screening Levels (“ESLs”). The maximum detected concentrations of TPH-diesel, TPH-motor oil, endrin, and zinc in soil were 42,500 milligrams per kilogram (“mg/kg”), 60,300 mg/kg, 0.00511 mg/kg, and 1,130 mg/kg, respectively. One MI surface soil sample was collected from the Former Debris Area and contained TPH-diesel and TPH-motor oil at concentrations of 1,880 mg/kg and 3,060 mg/kg, respectively (see Figure 4 and Table 1).

The soil sampling and exploratory trenching conducted in February 2012, reported herein, was conducted in order to further evaluate the lateral and vertical extent of the contamination identified in the 2011 Sampling Investigation Report.

February 2012 Sampling Approach

Exploratory trenching was conducted at the Trailer Disposal and Former Debris Areas over three days between 22 February 2012 and 24 February 2012. Cornerstone Environmental Contractors of Lafayette, California (“Cornerstone”) was retained by EKI to perform the exploratory backhoe trenching. Trench locations were selected with the goal of characterizing the extent of soil contamination and presence of debris in the areas identified in the 2011 Sampling Investigation Report. Trenches were dug near the areas of the MI samples collected in 2011 and in areas extending outward from the MI sample location, within the limits of accessibility. All trenches were approximately 1 foot wide

¹ Benzene, toluene, ethylbenzene and xylenes.

by 4 feet long and were up to 5 feet deep. In addition, discrete soil samples were collected from shallow boreholes in the mechanical shed and from or near the creek bank at the Trailer Disposal Area. The trench, discrete soil, and MI sample locations are shown on Figures 3 and 4.

Soil samples from each location at the Site were analyzed by K-Prime, Inc. (“K-Prime”) in Santa Rosa, California for one or more of the following chemical constituents:

- TPH reported as diesel fuel and motor oil using U.S. EPA Method 8015m (with silica gel cleanup applied to the samples prior to analysis);
- Endrin using U.S. EPA Method 8081A;
- Lead using EPA Method 6020A; and
- Zinc using EPA Method 6020A.

Specific laboratory analysis performed for each sample is discussed in further detail below.

In addition, soil samples from the Site (and from stockpiled material at the Denniston Creek Valley) were sent to the geotechnical laboratory, Cooper Testing Laboratory (“Cooper”) in Palo Alto, California for grain size distribution analysis. Analytical laboratory reports from both K-Prime and Cooper, including grain size distribution figures are provided in Attachment A.

Site-Specific Zinc Background Concentration

Thirty-five soil samples collected in February 2012 and five soil samples collected in April 2011 from the site were used to calculate a site-specific zinc background concentration. The 95% upper tolerance limit (“UTL”) of the 95th percentile of this population (not including data determined to be outliers) is 138 mg/kg and is proposed to be used as the primary site-specific background concentration for zinc. The methodology used to calculate this background concentration is described in a technical memorandum provided as Attachment B. The methodology for applying this background concentration to confirmation sample results in order to determine whether remedial excavation is complete will be included in the forthcoming Removal Action Workplan.

Trailer Disposal Area

A total of 34 soil samples were collected from the Trailer Disposal Area (Figure 3). Twenty-five soil samples were collected from 11 trenches, generally centered around the MI sample and stained sample collected in April 2011 (samples MBRTRS and MBRTR1). Five additional surface soil samples were collected from along the western bank of San Vicente Creek and four samples were collected from two locations within the mechanical shed. Samples results are presented in Table 1.

All soil samples from the Trailer Disposal Area were analyzed for TPH-diesel and TPH-motor oil. In addition, all trench and creek bank samples were also analyzed for endrin and zinc. Following discussions with POST and NPS, one sample from trench TRE and two from nearby trench TRF were analyzed for lead to evaluate potential impact from lead paint associated with corrugated metal found in trench TRE (see below for discussion).

Sample Results and Observations

Trench Samples

Twenty-five soil samples were collected from 11 trenches from depths ranging from 0.5 feet below ground surface (“ft bgs”) to 4.5 ft bgs. All samples were analyzed for TPH-diesel, TPH-motor oil, endrin and zinc. One sample from trench TRE and two from trench TRF were also analyzed for lead. One sample from trench TRH was additionally submitted for particle size distribution.

Shallow soil samples up to 1 ft bgs from four trenches (TRA, TRB, TRE, and TRI) contained TPH-diesel at concentrations above the Preliminary Cleanup Goal (“PCG”) of 115 mg/kg² (Figure 3). The maximum detected concentration of TPH-diesel was 242 mg/kg, from 0.5 ft bgs in trench TRB.

TPH-motor oil was detected above the PCG of 144 mg/kg in two shallow soil trench samples at concentrations of 165 mg/kg and 223 mg/kg at trenches TRI and TRE, respectively.

Endrin was not detected in any of the samples. In all cases, the reporting limits were below the PCG of 0.004 mg/kg, ranging from 0.00216 mg/kg to 0.00298 mg/kg.

Buried corrugated metal was discovered in the northern end of trench TRE approximately 1 to 2 ft bgs. In addition, the edge of buried corrugated metal was exposed in the western end of trench TRG at the Trailer Disposal Area, also at a depth of approximately 1 to 2 ft bgs. Photographs of the debris from trench TRE are provided in Attachment C (Photos 1 through 3). The metal had been painted and the paint was observed to be flaking off into the soil at trench TRE. EKI collected a sample of the flaking paint and submitted it for lead analysis. The paint sample contained lead at a concentration of 4,430 mg/kg (Table 2). A soil sample collected from beneath the corrugated metal debris was also analyzed for lead and was found to contain lead at a concentration of 18.8 mg/kg (TRE-3). Two

² The PCG for petroleum hydrocarbons are based on cleanup levels being used at the Presidio of San Francisco (BBL, 2004; EKI, 2002). More specifically, EKI is applying the Freshwater Ecological Protection Zone goal of 115 mg/kg for TPH-diesel contamination in soil where depth to groundwater is less than 5 feet. The Presidio Goal where groundwater is greater than 5 feet is 144 mg/kg. Because of the close proximity to San Vicente Creek and the likely variable depth to groundwater in this area, the more conservative PCG of 115 mg/kg is used at the Trailer Disposal Area.

samples from the trench west of the area where corrugated metal debris was uncovered were also analyzed for lead (TRF-1 and TRF-3). Lead was detected at concentrations of 10.1 mg/kg and 3.71 mg/kg, respectively. These concentrations of lead detected in soil are within anticipated background concentrations for lead in soil and are not indicative of lead impact (Scott, C.M., 1996). Lead impact appears to be limited to the paint associated with the buried corrugated metal.

Zinc was detected in soil trench samples from the Trailer Disposal Area at concentrations ranging from 21.9 mg/kg to 239 mg/kg. Two samples contained zinc at concentrations above the site-specific background concentration of 138 mg/kg in shallow soil samples collected at a depth of 1 ft bgs from trenches TRE (145 mg/kg) and TRJ (239 mg/kg).

The particle size distribution analysis of sample TRH-4.5 indicated that the sample was composed of 3.9% gravel, 56.3% sand, and 39.8% silt and clay.

Debris was found in all trenches in the Trailer Disposal Area except for trenches TRJ and TRK. Photographs of the debris found in the trenches are provided in Attachment C. Generally debris included materials such as household trash, asphalt, wood, and wire. A rusted barrel was observed in trench TRH and corrugated metal was observed in trenches TRE and TRG. Because no significant debris was observed in trenches TRF or TRK, trenching was not extended westward, beyond the trailer. Debris was not observed in any trench at depths greater than 2.5 ft bgs.

Creek Bank Samples

Five surface soil samples were collected from accessible areas along the San Vicente Creek bank (Figure 3). All samples were analyzed for TPH-diesel, TPH-motor oil, endrin, and zinc.

TPH-diesel was detected in the two southernmost creek bank samples (Creek D and Creek E) at concentrations of 139 mg/kg and 95.3 mg/kg, respectively. The analytical laboratory noted that the chromatogram for TPH-diesel analysis from location Creek D indicated an unknown hydrocarbon with a single peak, rather than a pattern consistent with the diesel standard. EKI requested that K-Prime review the results for this sample to evaluate whether the detected hydrocarbon was likely of natural origins. After reviewing the chromatogram for sample Creek D, K-Prime determined that the hydrocarbons detected within the diesel range did not resemble typical synthetic hydrocarbons and were most likely of natural origins.³

Endrin was not detected in any of the creek soil samples. Analytical reporting limits for endrin were below the PCG of 0.004 mg/kg. Zinc was detected at concentrations ranging

³ Voicemail from Richard Kagel (K-Prime) to Kat Wuefing (EKI), 29 March 2012.

from 60.8 mg/kg to 92.3 mg/kg in the creek bank samples, below the site-specific background concentration of 138 mg/kg.

Mechanical Shed Floor Samples

Four samples were collected from two locations on the floor of the mechanical shed and were analyzed for TPH-diesel and TPH-motor oil. TPH-diesel was detected in three out of four samples with a maximum concentration of 93.9 mg/kg, which is below the PCG of 115 mg/kg. TPH-motor oil was detected in the same three samples with a maximum concentration of 81.6 mg/kg, which is below the PCG of 144 mg/kg.

Former Debris Area

A total of 31 soil samples were collected from the Trailer Disposal Area from 16 trenches, generally centered on the MI sample collected in April 2011 (sample MBR9S; Figure 4). Samples results are presented in Table 1.

Twenty-six soil samples from the Former Debris Area were analyzed for TPH-diesel and TPH-motor oil. Five additional soil samples, all located at a depth of 2.5 ft bgs, were analyzed for zinc to augment the background data set. One sample, also from a depth of 2.5 ft bgs was submitted for particle size distribution.

Sample Results and Observations

TPH-diesel was detected in one soil sample (FDF-1) at a concentration of 70.9 mg/kg, which is below the PCG of 144 mg/kg.⁴ TPH-motor oil was detected in one soil sample (FDF-1) at a concentration of 81.6 mg/kg, below the PCG of 144 mg/kg.

Zinc was detected in samples from the Former Debris Area at concentrations from 29.4 mg/kg to 55.8 mg/kg; these results were included in calculations to determine a representative background concentration limit for zinc at the Site.

The surface debris and flatbed trailers that had been on the site in April 2011 were not present during the February 2012 exploratory trenching and sampling. Debris was not observed in any of the trenches in the Former Debris Area.

The particle size distribution analysis of sample FDL-2.5 indicated that the sample was composed of 1.2% gravel, 65.7% sand, and 33.1% silt and clay.

Waste Characterization

⁴ Groundwater in the Former Debris Area is assumed to be greater than 5 ft bgs based on the level of the creek relative to the ground surface. Therefore, the PCG of 144 mg/kg is used.



Although not a primary goal of this sampling event, soil was sampled and evaluated for waste characterization purposes, in anticipation of the planned excavation activities. Soil samples were collected from all trench locations from the Trailer Disposal Area and homogenized in the field to form one composite soil sample (TR-DISP). At the Former Debris Area, soil samples were collected from the trenches generally within the footprint of MI sample MBR9 and homogenized in the field to form one composite soil sample (FD-DISP). These composite soil samples were submitted for laboratory analysis to characterize soil for offsite disposal purposes (Table 2).

A solid waste is a California hazardous waste if the total concentration of a constituent exceeds its Total Threshold Limit Concentration (“TTLC”) criterion or if the concentration of a constituent in the extract from a Waste Extraction Test (“WET,” 22 CCR §66261, Appendix II) exceeds its Soluble Threshold Limit Concentration (“STLC”) criterion. A solid waste is a Resource Conservation and Recovery Act (“RCRA”) hazardous waste due to the toxicity characteristic (40 CFR §261.24) if the concentration of a chemical in the extract from the Toxicity Characteristic Leaching Procedure (“TCLP”) exceeds the regulatory criterion for that chemical. Soil samples that exceed 10 times the STLC or 20 times the RCRA regulatory level potentially meet the definition of a hazardous waste. If the 10 times the STLC, and/or 20 times the TCLP criterion were exceeded for soil samples, WET and TCLP extractions are performed to verify the hazardous waste classification. As shown in Table 2, none of the applicable waste classification criteria were exceeded for soil samples. Therefore, soil from the Site is anticipated to be classified as non-hazardous waste if it is excavated and disposed of offsite.

Lead was detected in a sample of flaking paint chips at a concentration in exceedance of the TTLC. It is anticipated that the corrugated metal and associated lead-based paint chips will be segregated from soil spoils and disposed of at an appropriate permitted off-site disposal facility.

Sample Location Surveying

All trench locations and selected building corners and landmarks were surveyed by MacLeod and Associates of San Carlos, California on 16 March 2012. The surveyor’s report is included as Attachment D. Northing and Easting data (i.e., horizontal coordinates) are reported in feet relative to the California State Plane Grid, Zone III, North American Datum of 1983 (“NAD 83”). Elevation data are reported in a local vertical datum, approximately relative to the North American Vertical Datum of 1988 (“NAVD 88”).

References

BBL, 2004. *Draft Development of Freshwater TPH-diesel and TPH-fuel oil Point of Compliance Concentrations, Presidio of San Francisco, San Francisco, California*, Blasland, Bouck & Lee, Inc., 15 July 2004.

EKI, 2002. *Development of Presidio-Wide Cleanup Levels for Soil, Sediment, Groundwater, and Surface Water, Presidio of San Francisco, California*, October 2002.

EKI, 2011. *Result of Sampling Investigations, Rancho Corral de Tierra, Montara, San Mateo County, California*, Erler & Kalinowski, Inc., 21 September 2011.

Scott, C.M., 1995. Background Metals Concentrations in Soils in Northern Santa Clara County, California, in: *Recent Geological Studies in the San Francisco Area*, Pacific Section of the Society of Economic Paleontologists and Mineralogists, Volume 76.

Attachments

Table 1 – Summary of Soil Sample Analytical Results

Table 2 – Summary of Waste Characterization Sample Analytical Results

Figure 1 – Site Location

Figure 2 – Moss Beach Ranch Site Setting

Figure 3 – Moss Beach Ranch Trailer Disposal Area Soil Sampling Results

Figure 4 – Moss Beach Ranch Former Debris Area Soil Sampling Results

Attachment A – Analytical Laboratory Reports

Attachment B – Memorandum: Moss Beach Ranch Background Zinc in Soil

Attachment C – Selected Photographs from Exploratory Trenching Activities

Attachment D – Surveyor's Report

TABLE 1
SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS
Moss Beach Ranch
Rancho Corral de Tierra, Moss Beach, California

Sample ID	Sample Date	Sample Type	Sample Depth (fet bgs)	Analytical Results (mg/kg dry weight)				
				TPH Diesel	TPH Motor Oil	Endrin	Lead	Zinc
Trailer Disposal Area								
TRA-0.5	2/22/2012	Discrete	0.5	133	124	<0.00218	--	60.0
TRA-2	2/22/2012	Discrete	2	<12	<12	<0.00241	--	68.4
TRA-4.5	2/22/2012	Discrete	4.5	<11.2	<11.2	<0.00223	--	33.4
TRB-0.5	2/22/2012	Discrete	0.5	242	121	<0.0024	--	76.4
TRB-2	2/22/2012	Discrete	2	<11.8	<11.8	<0.00236	--	47.8
TRB-4	2/22/2012	Discrete	4	<11.2	<11.2	<0.00223	--	29.9
TRC-0.5	2/22/2012	Discrete	0.5	<11.7	<11.7	<0.00235	--	90.9
TRD-0.5	2/22/2012	Discrete	0.5	96 (a)	106	<0.00237	--	54.1
TRD-2	2/22/2012	Discrete	2	<13	<13	<0.00259	--	59.4
TRE-1	2/22/2012	Discrete	1	145 (a)	223	<0.00255	--	145
TRE-3	2/22/2012	Discrete	3	<13.7	<13.7	<0.00274	18.8	86.7
TRE-4	2/22/2012	Discrete	4	<11.6	<11.6	<0.00233	--	24.3
TRF-1	2/22/2012	Discrete	1	<13.2	<13.2	<0.00264	10.1	94.6
TRF-3	2/22/2012	Discrete	3	<12.3	<12.3	<0.00247	3.71	42.5
TRG-0.75	2/22/2012	Discrete	0.75	102 (a)	119	<0.00235	--	87.7
TRG-2	2/22/2012	Discrete	2	<12.1	<12.1	<0.00243	--	25.2
TRH-2	2/22/2012	Discrete	2	<13	<13	<0.0026	--	94.4
TRH-4.5	2/22/2012	Discrete	4.5	<10.9	<10.9	<0.00218	--	37.1
TRI-0.75	2/22/2012	Discrete	0.75	140 (a)	165	<0.00231	--	85.1
TRI-2	2/22/2012	Discrete	2	<12	<12	<0.0024	--	69.9
TRI-4	2/22/2012	Discrete	4	<12.4	<12.4	<0.00249	--	43.4
TRJ-1	2/22/2012	Discrete	1	<11.6	<11.6	<0.00232	--	239
TRJ-3.5	2/22/2012	Discrete	3.5	<10.8	<10.8	<0.00216	--	22.3
TRK-1	2/22/2012	Discrete	1	<11.7	<11.7	<0.00233	--	56.9
TRK-3	2/22/2012	Discrete	3	<10.8	<10.8	<0.00216	--	21.9
CREEK A	2/24/2012	Discrete	surface	<13.8	<13.8	<0.00277	--	60.8
CREEK B	2/24/2012	Discrete	surface	<13.2	<13.2	<0.00263	--	61.9
CREEK C	2/24/2012	Discrete	surface	<12.7	<12.7	<0.00254	--	88.8
CREEK D	2/24/2012	Discrete	surface	139 (b)	90.4 (b)	<0.00263	--	92.3
CREEK E	2/24/2012	Discrete	surface	95.3 (c)	<14.9	<0.00298	--	61.7
MS1-1	2/24/2012	Discrete	1	93.9 (c)	81.6 (b)	--	--	--
MS1-2	2/24/2012	Discrete	2	68.3 (c)	78.4 (b)	--	--	--
MS2-1	2/24/2012	Discrete	1	64.2 (c)	66.8 (b)	--	--	--
MS2-2.5	2/24/2012	Discrete	2.5	<13	<13	--	--	--
MBSTR1-1.5	4/19/2011	Discrete	1.5	42,500	60,300	<0.81	--	1,130
MBRTR1-5	4/19/2011	Discrete	5	<13	<26	<0.0038	--	44.7
MBRTRS	4/18/2011	MIS	surface	248	1,260	0.00511 (d)	--	79.5
MBRSHS	4/19/2011	Discrete	surface	144	296	<0.031	--	185
Preliminary Cleanup Goals (e)				115/ 144	144	0.004	160	na
Site-Specific Background Zinc Concentration (f)				na	na	na	na	138

TABLE 1
SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS
Moss Beach Ranch
Rancho Corral de Tierra, Moss Beach, California

Sample ID	Sample Date	Sample Type	Sample Depth (fet bgs)	Analytical Results (mg/kg dry weight)				
				TPH Diesel	TPH Motor Oil	Endrin	Lead	Zinc
Former Debris Area								
FDA-1	2/23/2012	Discrete	1	<12.3	<12.3	--	--	--
FDA-2.5	2/23/2012	Discrete	2.5	--	--	--	--	37.8
FDB-1	2/23/2012	Discrete	1	<12.3	<12.3	--	--	--
FDB-2.5	2/23/2012	Discrete	2.5	<11.8	<11.8	--	--	--
FDC-1	2/23/2012	Discrete	1	<12	<12	--	--	--
FDC-2.5	2/23/2012	Discrete	2.5	<12.2	<12.2	--	--	--
FDD-1	2/23/2012	Discrete	1	<11.4	<11.4	--	--	--
FDD-2.5	2/23/2012	Discrete	2.5	<11.5	<11.5	--	--	--
FDE-1	2/23/2012	Discrete	1	<11.3	<11.3	--	--	--
FDE-2.5	2/23/2012	Discrete	2.5	<11.6	<11.6	--	--	--
fdf-1	2/23/2012	Discrete	1	70.9 (c)	81.6 (b)	--	--	--
fdf-2.5	2/23/2012	Discrete	2.5	<12.9	<12.9	--	--	--
FDG-1	2/23/2012	Discrete	1	<11.6	<11.6	--	--	--
FDG-2.5	2/23/2012	Discrete	2.5	--	--	--	--	36.7
FDH-1	2/23/2012	Discrete	1	<12	<12	--	--	--
FDH-2.5	2/23/2012	Discrete	2.5	--	--	--	--	29.4
FDI-1	2/23/2012	Discrete	1	<12	<12	--	--	--
FDI-2.5	2/23/2012	Discrete	2.5	--	--	--	--	55.8
FDJ-1	2/23/2012	Discrete	1	<12.3	<12.3	--	--	--
FDK-1	2/23/2012	Discrete	1	<11.7	<11.7	--	--	--
FDK-2.5	2/23/2012	Discrete	2.5	<11.7	<11.7	--	--	--
FDL-1	2/23/2012	Discrete	1	<12.4	<12.4	--	--	--
FDL-2.5	2/23/2012	Discrete	2.5	<11.6	<11.6	--	--	--
FDM-1	2/23/2012	Discrete	1	<12.6	<12.6	--	--	--
FDM-2.5	2/23/2012	Discrete	2.5	--	--	--	--	44.3
FDN-1	2/23/2012	Discrete	1	<12.2	<12.2	--	--	--
FDN-2.5	2/23/2012	Discrete	2.5	<12	<12	--	--	--
FDO-1	2/23/2012	Discrete	1	<12.4	<12.4	--	--	--
FDO-2.5	2/23/2012	Discrete	2.5	<11.6	<11.6	--	--	--
FDP-1	2/23/2012	Discrete	1	<11.2	<11.2	--	--	--
FDP-2.5	2/23/2012	Discrete	2.5	<12.3	<12.3	--	--	--
MBR9S	4/18/2011	MIS	surface	1,880	3,060	<0.00399	--	213
Preliminary Cleanup Goals (e)				115/ 144	144	0.004	160	na
Site-Specific Background Concentration (f)				na	na	na	na	138

Abbreviations:

"--" - not analyzed for this compound
<0.50 - Compound not detected at or above indicated laboratory detection limit
ft bgs - Feet below ground surface
mg/kg - Milligrams per kilogram

TABLE 1
SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS

Moss Beach Ranch

Rancho Corral de Tierra, Moss Beach, California

MIS - Multi-Increment Sample

TPH - Total Petroleum Hydrocarbons

Notes:

- (a) The analytical laboratory noted that heavier hydrocarbons were contributing to the diesel range quantitation.
- (b) The analytical laboratory noted that the chromatogram indicated an unknown hydrocarbon with a single peak, rather than a pattern indicative of diesel. EKI requested that K-Prime review the results for this sample to evaluate whether the detected hydrocarbon was likely of natural origins. After reviewing the chromatogram for sample Creek D, K-Prime determined that the hydrocarbons detected within the diesel range did not resemble typical synthetic hydrocarbons and were most likely of natural origins
- (c) The analytical laboratory noted that the chromatogram indicated an unknown hydrocarbon with a several peaks, rather than a pattern indicative of heavy-range organics or motor oil.
- (d) Laboratory reported that the relative percent difference between the primary and confirmatory analysis exceeded 40% and the lower value was reported by the laboratory.
- (e) Preliminary Cleanup Goals ("PCGs") are based on the Presidio Cleanup Levels for special status species habitat areas for non-petroleum constituents (EKI, 2002) and freshwater protection zone values for petroleum constituents (RWQCB Order R2-2003-0080). The PCG for the Freshwater Ecological Protection Zone for TPH-diesel contamination in soil is 115 mg/kg where depth to groundwater is less than 5 feet and 144 mg/kg where groundwater is greater than 5 feet (BBL, 2004; EKI, 2002). Because of the close proximity to San Vicente Creek and the likely variable depth to groundwater in the Trailer Disposal Area, the more conservative PCG of 115 mg/kg is used. Groundwater in the Former Debris Area is assumed to be greater than 5 ft bgs; therefore, the PCG of 144 mg/kg is used.
- (f) The Presidio Cleanup Level for zinc is based on background levels at the Presidio, which are below background concentrations of zinc at the Site. Therefore, a site-specific background concentration for zinc in soil was calculated and will be used as the PCG.

References:

- BBL, 2004. *Draft Development of Freshwater TPH-diesel and TPH-fuel oil Point of Compliance Concentrations*, Presidio of San Francisco, San Francisco, California, Blasland, Bouck & Lee, Inc., 15 July 2004.
- EKI, 2002. *Development of Presidio-Wide Cleanup Levels for Soil, Sediment, Groundwater, and Surface Water*, Presidio of San Francisco, California, October 2002.

TABLE 2
SUMMARY OF WASTE CHARACTERIZATION SAMPLE ANALYTICAL RESULTS

Moss Beach Ranch

Rancho Corral de Tierra, Moss Beach, California

Area	Sample ID	Sample Type	Sample Date	Analytical Results (mg/kg, as received) (a)												
				TPH Diesel	TPH Motor Oil	Benzene	Toluene	Ethylbenzene	Xylenes (total)	Chlordane	Other Pesticides	Cadmium	Chromium	Lead	Nickel	Zinc
Trailer Disposal Area	TR-DISP	soil	2/28/2012	1,680	2,760	<0.00126	<0.00126	<0.00126	<0.00126	0.0526	ND	<2.5	25	7.94	15.8	70.3
Trailer Disposal Area	TR PAINT	paint chip	2/22/2012	--	--	--	--	--	--	--	--	--	--	4,430	--	--
Former Debris Area	FD-DISP	soil	2/28/2012	<10	<10	<0.00118	<0.00118	<0.00118	<0.00118	<0.050	ND	<2.5	33.5	7.55	38.5	54
Hazardous Waste Criteria (b)																
Total Threshold Limit Concentration (mg/kg)				na	na	na	na	na	na	2.5	na	100	2,500	1,000	2,000	5,000
Soluble Threshold Limit Concentration (mg/L)				na	na	na	na	na	na	0.25	na	1	5	5	20	250
10 x Soluble Threshold Limit Concentration (CA) (mg/kg)				na	na	na	na	na	na	2.5	na	10	50	50	200	2,500
20 x Toxicity Characteristic Leaching Procedure (RCRA) (mg/kg)				na	na	10	na	na	na	0.6	na	20	100	100	na	na

Abbreviations:

- "--" - not analyzed for this compound
- <0.50 - Compound not detected at or above indicated laboratory detection limit
- CA - California
- mg/kg - milligrams per kilogram
- mg/L - milligrams per liter
- na - not available
- STLC - Soluble Threshold Limit Concentration
- TCLP - Toxicity Characteristic Leaching Procedure
- TPH - Total Petroleum Hydrocarbons
- TTLC - Total Threshold Limit Concentration
- WET - Waste Extraction Test
- RCRA - Resource Conservation and Recovery Act

Notes:

- (a) The TTLC was not exceeded for soil samples and, therefore, soil from the Site is anticipated to be classified as non-hazardous waste if it is excavated and disposed of offsite. Lead was detected in a sample of paint chips flaking off of buried corrugated metal at a concentration in exceedance of the TTLC. It is anticipated that the corrugated metal and associated lead-based paint chips will be segregated from soil spoils and disposed of offsite as lead-containing construction debris
- (b) A solid waste is a California hazardous waste if the total concentration of a constituent exceeds its TTLC criterion or if the concentration of a constituent in the extract from a WET (22 CCR §66261, Appendix II) exceeds its STLC criterion. A solid waste is a RCRA hazardous waste due to the toxicity characteristic (40 CFR §261.24) if the concentration of a chemical in the extract from the TCLP exceeds the regulatory criterion for that chemical. Soil samples that exceed 10 times the STLC or 20 times the RCRA regulatory level potentially meet the definition of a hazardous waste. If the 10 times the STLC, and/or 20 times the TCLP criterion were exceeded for soil samples, WET and TCLP extractions are performed to verify the hazardous waste classification.



Notes:

1. All locations are approximate.
2. Basemap source: The Thomas Guide Digital Edition, State of California, 2003/2004.

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Site Location
Moss Beach Ranch

Rancho Corral de Tierra
Moss Beach, CA

October 2012
EKI B10014.01

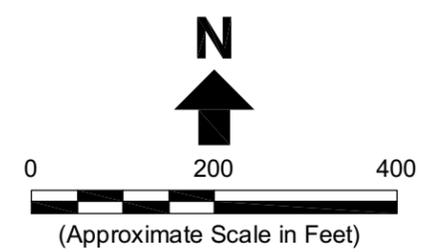
Figure 1



0 1500 3000



(Approximate Scale in Feet)



Legend:

 Creek (approximate)

Notes:

1. All locations are approximate.
2. Basemap source: Google Earth Pro, date of imagery 1 October 2009.

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Moss Beach Ranch
Site Setting

Rancho Corral de Tierra
Moss Beach, CA
October 2012
EKI B10014.01

Figure 2

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TRK	1 ft bgs	3 ft bgs
TPH-D	<11.7	<10.8
TPH-Mo	<11.7	<10.8
Endrin	<0.00233	<0.00216
Zinc	56.9	21.9

TRI	0.75 ft bgs	2 ft bgs	4 ft bgs
TPH-D	140	<12	<12.4
TPH-Mo	165	<12	<12.4
Endrin	<0.00231	<0.0024	<0.00249
Zinc	85.1	69.9	43.4

TRH	2 ft bgs	4.5 ft bgs
TPH-D	<13	<10.9
TPH-Mo	<13	<10.9
Endrin	<0.0026	<0.00218
Zinc	94.4	37.1

TRF	1 ft bgs	3 ft bgs
TPH-D	<13.2	<12.3
TPH-Mo	<13.2	<12.3
Endrin	<0.00264	<0.00247
Lead	10.1	3.71
Zinc	94.6	42.5

TRE	1 ft bgs	3 ft bgs	4 ft bgs
TPH-D	145	<13.7	<11.6
TPH-Mo	223	<13.7	<11.6
Endrin	<0.00255	<0.00274	<0.00233
Lead	--	18.8	--
Zinc	145	86.7	24.3

MBRSHS	surface
TPH-D	144
TPH-Mo	296
Endrin	<0.031
Zinc	185

MS2	1 ft bgs	2.5 ft bgs
TPH-D	64.2	<13
TPH-Mo	66.8	<13

MS1	1 ft bgs	2 ft bgs
TPH-D	93.9	68.3
TPH-Mo	81.6	78.4

TRB	0.5 ft bgs	2 ft bgs	4 ft bgs
TPH-D	242	<11.8	<11.2
TPH-Mo	121	<11.8	<11.2
Endrin	<0.0024	<0.00236	<0.00223
Zinc	76.4	47.8	29.9

TRA	0.5 ft bgs	2 ft bgs	4.5 ft bgs
TPH-D	133	<12	<11.2
TPH-Mo	124	<12	<11.2
Endrin	<0.00218	<0.00241	<0.00223
Zinc	60	68.4	33.4

TRJ	1 ft bgs	3.5 ft bgs
TPH-D	<11.6	<10.8
TPH-Mo	<11.6	<10.8
Endrin	<0.00232	<0.00216
Zinc	239	22.3

MBSTR1	1.5 ft bgs	5 ft bgs
TPH-D	42,500	<13
TPH-Mo	60,300	<26
Endrin	<0.81	<0.0038
Zinc	1,130	44.7

TRG	0.75 ft bgs	2 ft bgs
TPH-D	102	<12.1
TPH-Mo	119	<12.1
Endrin	<0.00235	<0.00243
Zinc	87.7	25.2

CREEK C	surface
TPH-D	<12.7
TPH-Mo	<12.7
Endrin	<0.00263
Zinc	88.8

CREEK B	surface
TPH-D	<13.2
TPH-Mo	<13.2
Endrin	<0.00254
Zinc	61.9

MBRTRS	surface
TPH-D	248
TPH-Mo	1,260
Endrin	0.00511
Zinc	79.5

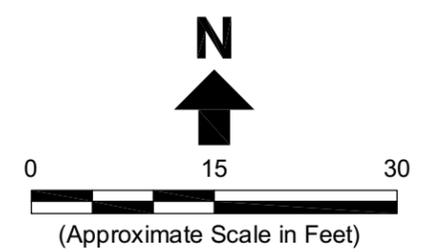
TRD	0.5 ft bgs	2 ft bgs
TPH-D	96	<13
TPH-Mo	106	<13
Endrin	<0.00237	<0.00259
Zinc	54.1	59.4

CREEK A	surface
TPH-D	<13.8
TPH-Mo	<13.8
Endrin	<0.00277
Zinc	60.8

CREEK E	surface
TPH-D	95.3
TPH-Mo	<14.9
Endrin	<0.00298
Zinc	61.7

CREEK D	surface
TPH-D	139
TPH-Mo	90.4
Endrin	<0.0132
Zinc	92.3

TRC	0.5 ft bgs
TPH-D	<11.7
TPH-Mo	<11.7
Endrin	<0.00235
Zinc	90.9



- Legend:**
- Soil Sample Location
 - ▬ Test Pit Location
 - ⋯ Multi-Increment Soil Sample Location

- Abbreviations:**
- ft bgs = Feet below ground surface
 - TPH-d = Total petroleum hydrocarbons as diesel
 - TPH-mo = Total petroleum hydrocarbons as motor oil

- Notes:**
1. All locations are approximate.
 2. Samples with the prefix "TR" and "Creek" were collected in February 2012. All other samples were collected in April 2011.
 3. Basemap source: Google Earth Pro, date of imagery June 19, 2011.
 4. Concentrations in milligrams per kilogram "mg/kg".

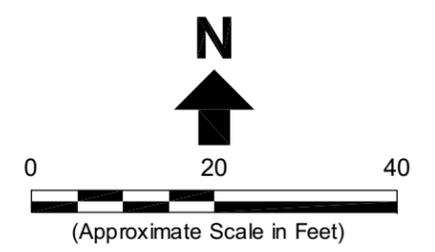
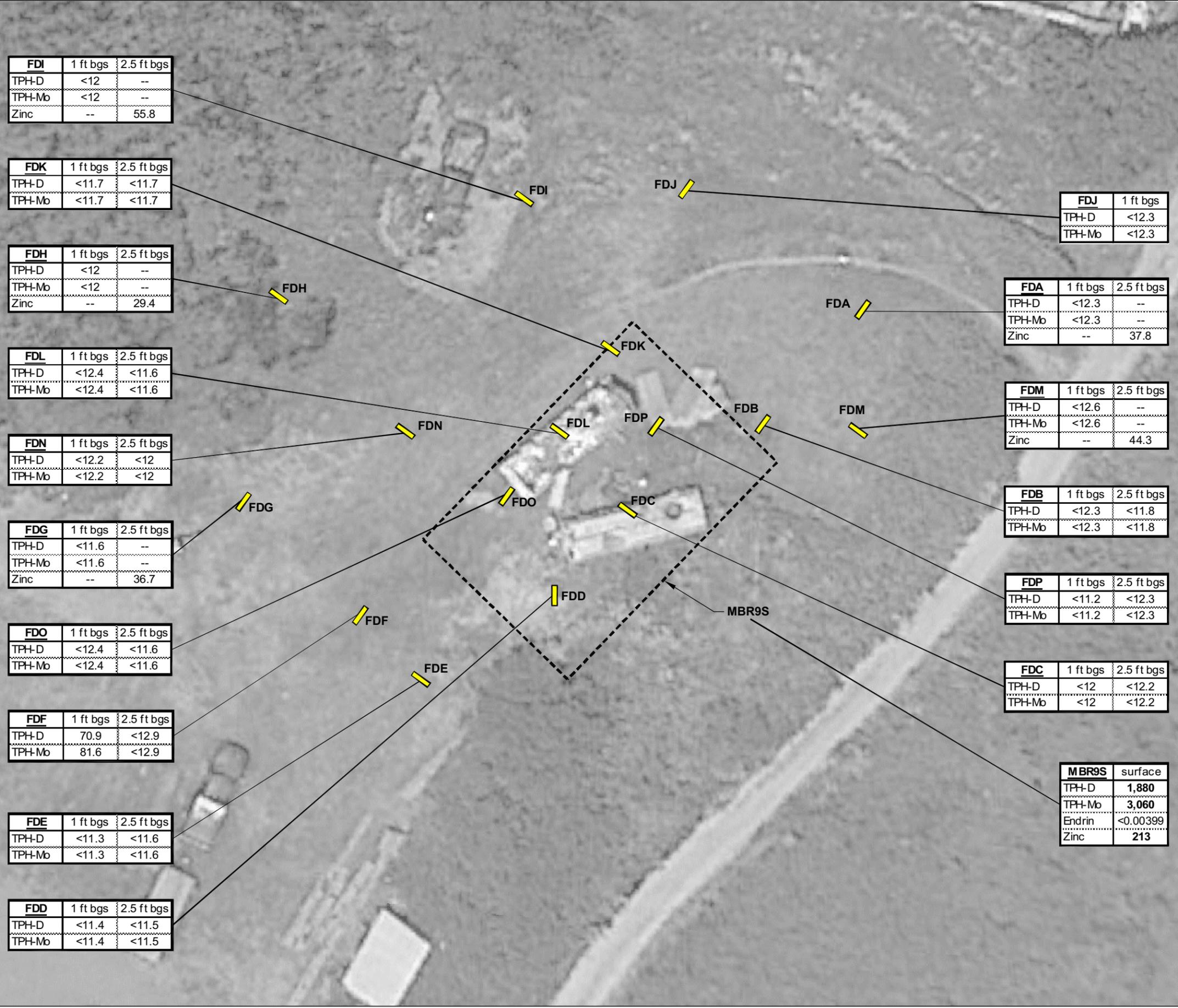
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Moss Beach Ranch Trailer Disposal Area Sampling Results

Rancho Corral de Tierra
Moss Beach, CA
October 2012
EKI B10014.01

Figure 3

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Legend:
 Test Pit Location
 Multi-Increment Soil Sample Location

Abbreviations:
 ft bgs = Feet below ground surface
 TPH-d = Total petroleum hydrocarbons as diesel
 TPH-mo = Total petroleum hydrocarbons as motor oil

Notes:

1. All locations are approximate.
2. Sample MBR9S was collected in April 2011. All other samples were collected in February 2012.
3. Basemap source: Google Earth Pro, date of imagery June 19, 2011.
4. Concentrations in milligrams per kilogram "mg/kg".

Erler & Kalinowski, Inc.

Moss Beach Ranch
Former Debris Area Sampling Results

Rancho Corral de Tierra
Moss Beach, CA
October 2012
EKI B10014.01

Figure 4