

We are here tonight so that we, the National Park Service, may share our plans for the upcoming work with you, the community.

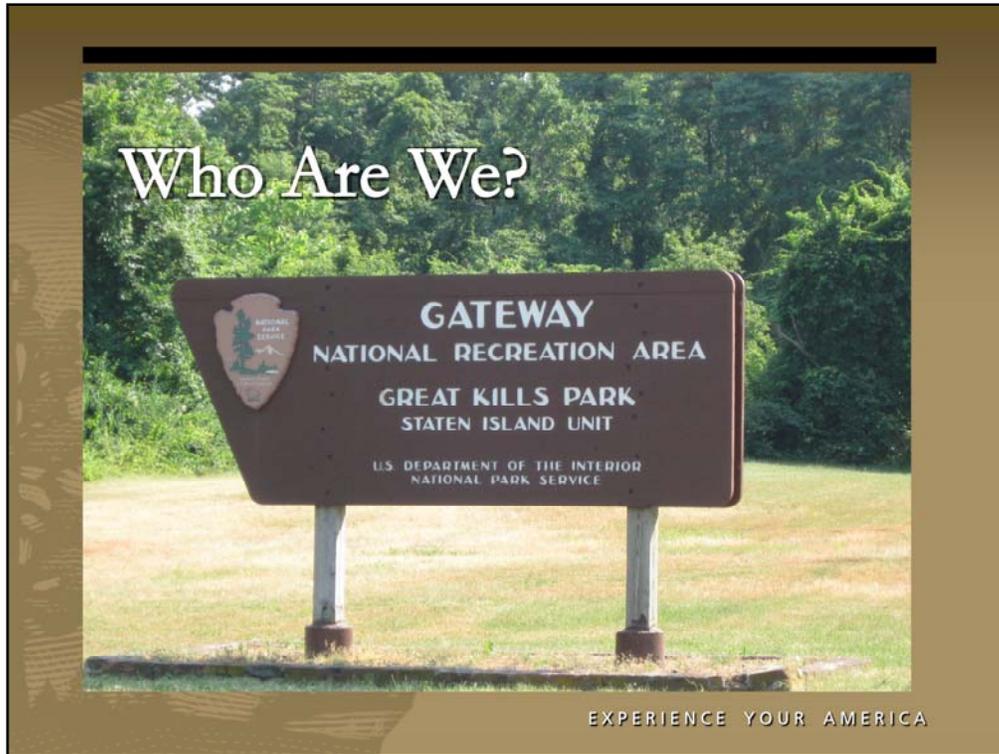
Gateway National Recreation Area is committed to providing more frequent communications to our neighbors and visitors.

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## Meeting Agenda

- Who We Are
- History of Great Kills Park
- Contamination Found
- Activities to Date
- Cleanup Process
- Community Involvement
- Questions

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The National Park Service is a federal agency within the Department of Interior.

Gateway National Recreation Area. You will often hear us refer to the area simply as Gateway. It consists collectively of 3 units within the NY Harbor National Park System:

1. Jamaica Bay Unit
2. Sandy Hook Unit
3. Staten Island Unit

Gateway crosses two states and three NYC boroughs, covering 26,000 acres.

Great Kills Park is one of the parks within the Staten Island Unit that makes up Gateway.



The Project Team responsible for the environmental investigation consists of:

-National Park Service

- Kathleen Cuzzolino, Environmental Protection Specialist, Gateway NRA
- Brian Feeny, Staten Island Unit Coordinator, Gateway NRA
- John Warren, Public Affairs Specialist, Gateway NRA
- Raina Williams, Public Affairs Officer, Gateway NRA
- Greg Nottingham, CERCLA Program Manager, NPS Washington Support Office
- Scott Mitchell, Attorney, Office of the Solicitor, Department of Interior

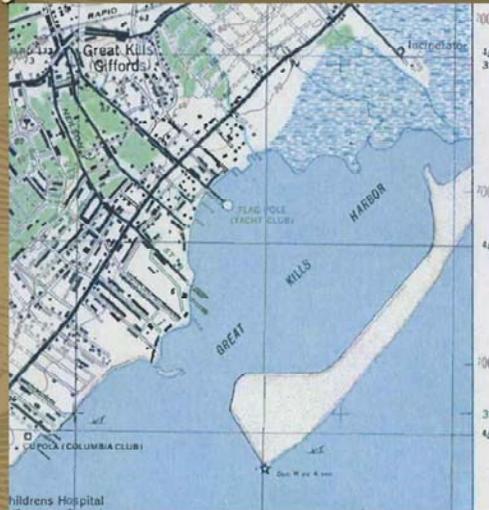
-US Army Corps of Engineers: technical and contractual support. Vast experience conducting cleanups of this type, an important resource to us at the NPS.

-Sterling H. Johnson, Project Manager, Philadelphia District

-With engineering and technical support from Cabrera Services, company specializing in radiological investigations, engineering, and cleanup actions.

- Carl Young, Project Manager
- Ann Johnson, Health Physicist, Radiation Scientist, Community Involvement Specialist
- Hank Siegrist, Health Physicist

## History of the Park - 1946

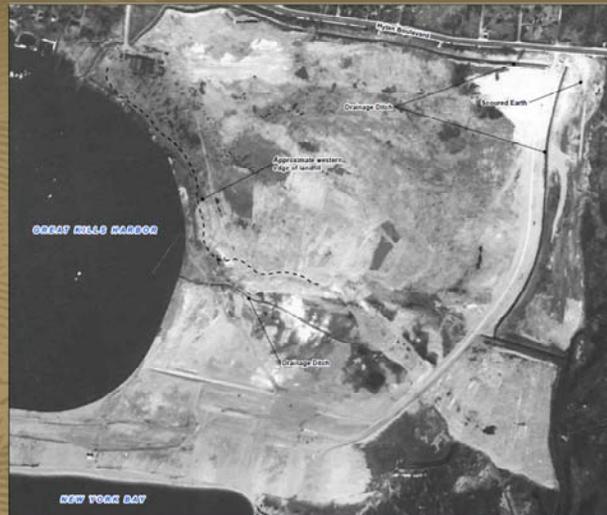


Marsh and Barrier Island

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Initially the land belonged to the State of New York then transferred to NYC in 1930s. In 1933 NYC parks department began construction of what they called the “Marine Park Project.”

## The Park in 1949

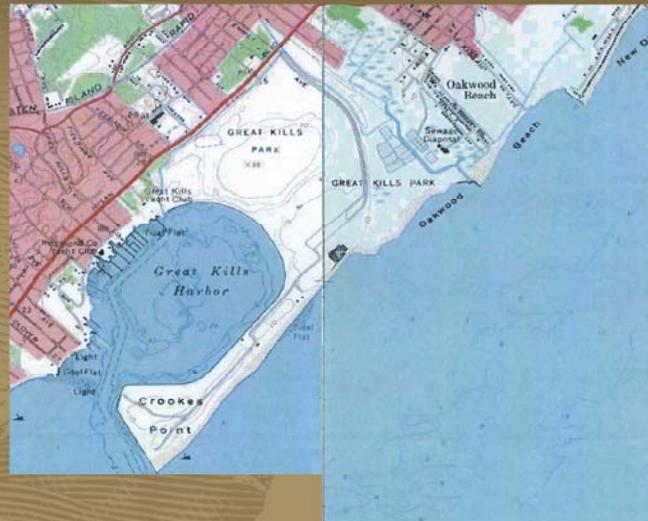


Filling operations extend from south of Hylan Blvd to the barrier island

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Beginning in November 1944, an estimated 15 million cubic yards of refuse (“sanitation controlled fill”) from around NYC was brought in by truck and by barge. NYC conducted the filling operations to build up the land between Hylan Blvd and the barrier island. Wetlands and marsh areas were filled in to build up/create the land area. The filling operations were completed in July 1948 with a top layer of clay and sewage sludge placed over the fill material.

## The Park in 1966



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By looking at this topographic map (s) we see that the elevation of the former marsh was raised up to 35 feet above sea level in the area just south of Hylan Blvd and then slopes downward toward the barrier island.

In the 1940's and 50's the area was not popular and frequent illegal dumping took place.

In the 1960's NY Harbor became cleaner and more suitable for swimming and the population of Staten Island increased. Great Kills became a very popular beach area for local residents.

The federal government purchased the land and Congress established Gateway National Recreation Area in 1972 so that the special places in the New York Bay Area could be enjoyed by present and future generations.

# Great Kills Park - Today



Enjoyed by more than 155,000 visitors each year

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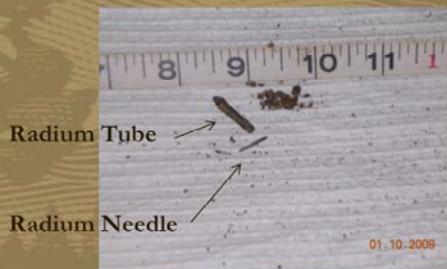
What resulted was a beautiful seashore area and park that is enjoyed by more than 155,000 visitors each year. Many visitors come to Great Kill Park to view the lovely sunsets, walk the hiking trails, and enjoy the beaches, marina, athletic fields, model airplane flying field, and the many recreational activities.

The shaded area was closed to visitor activities in 2009 after further contamination was found. We'll discuss the reasons and what led to that in just a few minutes.

So today, although 255 acres are temporarily closed to visitor activities, much of the park is still open for beaching, boating, fishing, and hiking. Gateway is working hard to correct the problems once and for all. The National Park Service looks forward to the day that the entire Great Kills Park will be open for all to enjoy.

## Contamination Found

- Radium identified as primary contaminant
- Source of Radium = small medical devices
- Small needles used in early cancer treatment
- Result in "Hotspots" of elevated radioactivity
- Other contaminants (uranium ore)



Radioactive contamination was found at the park as a result of a routine NYC survey related to Homeland Security and the protection of our city.

These sources give off radiation to the surrounding soil. Although the level in the immediate locations can be very high, if you move a short distance away, the radiation levels do drop off significantly.

The uranium ore found at the site is in its natural form versus enriched uranium which can be found at a nuclear power plant. This uranium is far less radioactive than the radium found. Although it is a natural form of uranium it is not typical for this area.

## What is Radium?

- Radioactive substance
- Found in nature
- Highly radioactive
- Penetrating radiation
- Exposure to high levels known to increase chance of cancer



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Radium is the primary contaminant that is causing elevated readings in the park.

It is a highly radioactive substance compared to other naturally occurring radioactive elements or materials.

Radium stays around a long time (half life of 1,590 years) and is known to increase the chance of cancer, if people are exposed over a long time and to high levels.

# Radiation – Natural & Man-Made

## Normal annual exposure from natural radiation



### About 300 mrem/yr

- Radon gas ~ 200 mrem
- Human body 40 mrem
- Rocks, soil 28 mrem
- Cosmic rays 27 mrem



## Normal annual exposure from man-made radiation



### About 320 mrem/yr

- Medical procedures ~ 300 mrem
- Consumer products 13 mrem
- One coast to coast airplane flight 2 mrem
- Watching color TV 1 mrem
- Sleeping with another person 1 mrem
- Weapons test fallout less than 1 mrem
- Nuclear industry less than 1 mrem



One hour of direct contact with one of the radium sources found at the park would be greater than five times the amount of radiation an individual would normally receive in one year.

Radiation experts agree that the average person receives a total of about 620 mrem of radiation exposure each year from different sources, some natural and some man-made sources. A millirem (mrem) is a way to measure the amount of the radiation. Just one of the ways scientist measure it.

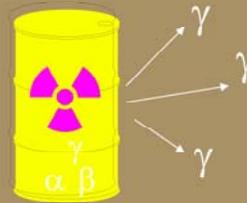
There are natural sources and man-made sources of radiation. The amount of natural radiation received by someone is higher if one lives in the high mountains of Colorado versus living at sea level.

The amount from man-made sources has been increased in recent years to account for the increased exposure due to the increase in the number of medical procedures that we likely will receive.

One hour of direct contact with one of the radium sources found at the park would be greater than five times the amount of radiation an individual would normally receive in one year.

## In Summary - What Do We Know?

- Radioactive material present
- Dangerous if handled
- Located near the surface
- Radium needles or tubes
- Uranium bearing ore
- Contaminated soil

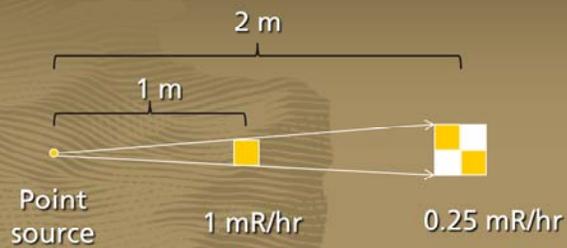


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We also know that as you move away from the source, whether it's been the medical device(s) or the affected soil, the radiation levels decrease quickly.

Radium is the primary contaminant of concern. While uranium is present it is not nearly as radioactive as the radium. The acceptable levels of uranium are significantly higher than radium.

## Distance Reduces Radioactive Levels



Doubling the distance from a radiation source  
decreases the radiation level by a factor of 4

### Inverse Square Law

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By closing the area suspected to contain the radioactive contamination, we are keeping our visitors at a safe distance to eliminate their potential for exposure to the radioactive contamination present at the park.

## Estimated Dose

*5,000 – 10,000 mreml/yr - No evidence of increase in cancer*

*5,000 mreml/yr - NRC limit for nuclear workers*

*620 mreml/yr - US average exposure from all sources – natural and man-made*

*300 mreml/yr - US average from medical procedures*

*83 mreml/yr - Average from natural sources other than radon*

*56 mreml/yr - Estimated yearly dose from regularly walking near hotspots*

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A health assessment was conducted by the Agency of Toxic Substances and Disease Registry (ATSDR) to give park visitors an idea of the severity of the contamination at the park.

Report was based on the limited amount of data available at the time. The report estimated a yearly dose that someone may receive if they walk by the hotspots every day. This is a very conservative estimate. An additional 56 mrem/year would be added to one's normal annual exposure. This is about the same increase in annual radiation exposure as a person would receive if they moved from Staten Island to Denver, Colorado.

**Hazardous Substance Cleanup Law**

**C** Comprehensive  
**E** Environmental  
**R** Response,  
**C** Compensation, and  
**L** Liability  
**A** Act

**Federal Law better known as  
Superfund**

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CERCLA is a federal law that was passed in 1980 by Congress to cleanup polluted sites. Gateway's actions are based on the requirements of this law.

The goals of the Superfund Law are to:

Protect human health and the environment by cleaning up polluted (contaminated) sites;

Involve communities in the process;

Make responsible parties pay for the work performed, if those parties are known.

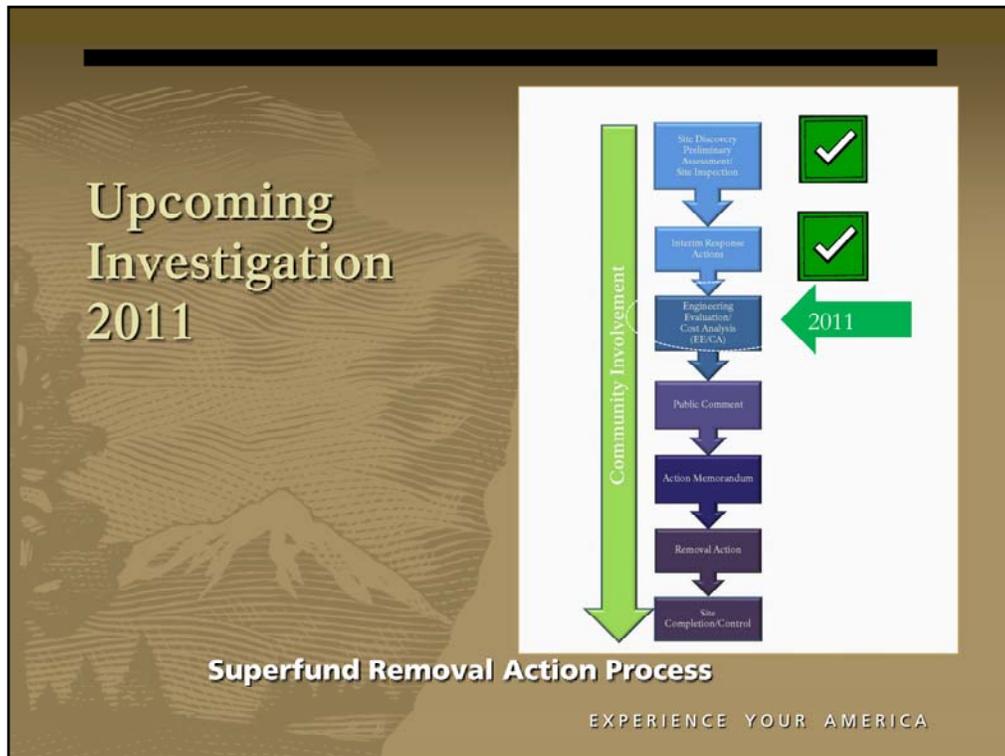
In order to achieve these goals, the law sets the guidelines and to thoroughly investigate the problem and determine the best way to clean things up.



This shows the Superfund process that we are following to fully investigate the area in Great Kills Park. (Download image from Community Involvement webpage, <http://www.nps.gov/gate/parkmgmt/greatkillscommunityinvolvement.htm> )

Once a site is discovered it is evaluated through early assessments to determine if a health or environmental risk exists due to contamination. From there, more detailed investigations or early actions can be started.

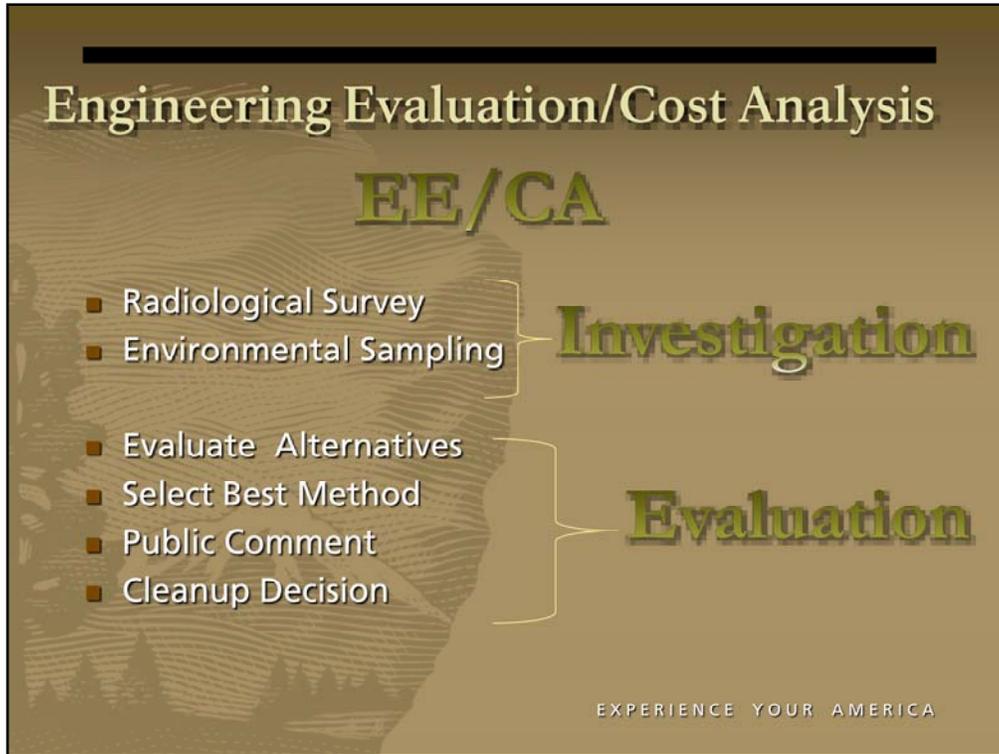
Depending on the complexity of the site, more investigation might be needed. The result is to determine what action is needed in order to protect human health and the environment.



The step by step process is also shown here.

Note that community involvement begins early in the superfund process and continues through all phases of work, until cleanup is complete.

As noted here we have completed early assessments, we took action to remove known hotspots (Interim Response Action), and now we're completing a full and thorough investigation in this step, the Engineering Evaluation/Cost Analysis.



First, as part of the EE/CA, we will conduct a radiological survey over 100% of the area. Additionally, we will collect and analyze soil and groundwater samples. This work will give us a complete picture of what contamination exists.

The evaluation will include analyzing risk to humans and the environment, developing clean up action levels for contaminants found, developing alternatives for how to address the determined risks, request public comment, and then make a decision.

Here's what to expect.....

## Upcoming Work – What to Expect...

### Clearing of Areas



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In order to get the 100% coverage needed to detect the type of radiological contamination we are finding at Great Kills Park, we will need to clear much of the vegetation.

Ideally we want to get the detectors within 6 inches of the surface to be able to see the contamination approximately 3 feet down.

Vegetation shields the signal from the radioactive material or soil.

## Radiation Surveys



ATV mounted radiation survey unit

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Scanning for areas with radioactivity will be conducted using hand scanning equipment and vehicle mounted equipment.

Here's a look at the sensitive equipment mounted on ATVs. Very sensitive detectors are arranged on the vehicles. Typically a spike in readings will occur when radiation is detected. An alarm will also sound if the unit goes over an area with radium needle.

## Recovery of Radioactive Sources



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During the field work this fall recovery of radioactive sources will be performed. Using hand held equipment these sources will be dug up, contained in drums, and then stored in metal vault until they can be removed for proper disposal. The storage area is shown here.

## Scanning Soil for Radioactivity



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A close up showing the scanning of some excavated soil using a hand held device (survey meter) and radiation detection device.

Most recovery of sources and soil will be performed using hand tools since the contamination is shallow. However, there is a possibility that a small backhoe could be used to recover deeper soil contamination.

## Systematic Sampling



Sampling Decision Units

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In addition systematic sampling will be conducted to get a better picture of the nature and extent of contamination in the fill area. This sampling is scheduled to occur in the Spring 2012.

Each of these grids (squares) is  $\frac{1}{4}$  acre in size. Multiple samples will be collected in each grid so that the average concentration of contaminants can be determined.

We are primarily looking for the radioactive contaminants but will also test for other possible contaminants.

At Great Kills Park we have a range of fauna and species that are susceptible, in varying degrees, to different contaminants.

## Multi-Increment Sampling



Statistically significant result for each Decision Unit

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- Multiple samples from each Decision Unit – approx 30
- Samples collected in field are combined.
- Laboratory dries and prepares subsamples for analysis
- Results in average concentrations within each Decision Unit

## Direct Push Sampling



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Where we identify a hotspot , we will then further investigate with what we call a “geoprobe.” It looks like this. The unit can be easily taken into small areas and by pushing a sampling tube into the ground we will collect samples to fully determine the extent of the problem in that location.

We will be collecting soil and groundwater samples in these locations.

This sampling will help us to determine what contaminants are present.

We call the contaminants: “Constituents of Potential Concern.” We don’t know if they’re a concern until we analyze them in a laboratory, and then evaluate the data.

We need to put all the pieces of the puzzle together so we then can determine what the best course of action is.

## Community Involvement Activities

- Administrative Record
- Community Conversations
- Community Involvement Plan
- Fact Sheets / Newsletters
- Public Website
- Cleanup Project Message Line
- Facebook / Twitter



We listened, we heard, and we understand.....

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Gateway wants to hear from you.

The superfund law encourages the public's participation throughout the investigation and cleanup of sites.

NPS appreciates the community conversations we have had. We developed a community involvement plan based on valuable information we heard from you.

The Community Involvement Plan will be posted on the Great Kills Cleanup website.

There will be future opportunities for public input as well.

## Our Commitment

- More frequent communications
  - Mailings, Newspaper notices, website, email notices
- Electronic Admin Record File
- Keep community informed through regular meetings
- Notices in *Staten Island Advance*
- Coordination with Community Boards



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Our commitment to you.

Strive for early and frequent communications

Provide Regular Project Updates

Hold more public meetings like this one

Visit the community board meetings, at project milestones.

## How to Contact Us



- Call us!
  - Great Kills Park Cleanup message line: 718-354-4606.
- Email us!
  - [GreatKillsCleanup@nps.gov](mailto:GreatKillsCleanup@nps.gov)
- Visit us! Online or at the park!
  - <http://www.nps.gov/gate/parkmgmt/greatkillscleanup.htm>
- Follow us on Twitter: GatewayNPS
- Like us on Facebook: Gateway National Recreation Area

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Don't hesitate if you have a question or comment.

Call, click, or come visit. Thanks for your time and interest.