An aerial photograph of the Hunters Point Shipyard area in San Francisco. The shipyard's industrial buildings are visible in the lower foreground, surrounded by a fence. Beyond the shipyard is a large green field, followed by a body of water (the shipyard's lagoon). In the background, there are hills and a residential neighborhood. The sky is clear and blue.

Draft Final Parcel E-2 Remedial Investigation/ Feasibility Study Report Summary

Hunters Point Shipyard

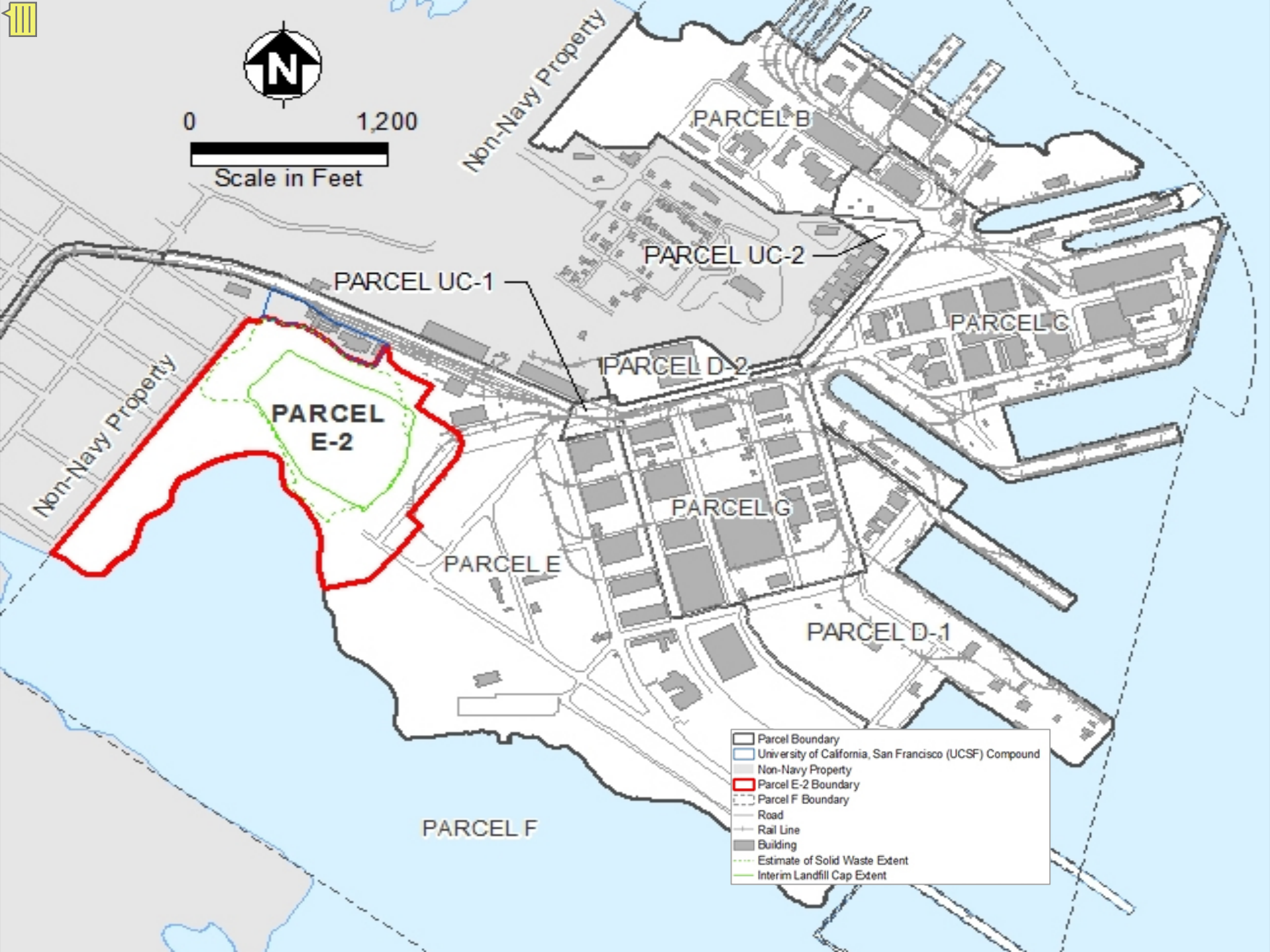
May 28, 2009



0 1,200



Scale in Feet



Non-Navy Property

Non-Navy Property

PARCEL B

PARCEL UC-2

PARCEL C

PARCEL E-2

PARCEL D-2

PARCEL G

PARCEL E

PARCEL D-1

PARCEL F

- Parcel Boundary
- University of California, San Francisco (UCSF) Compound
- Non-Navy Property
- Parcel E-2 Boundary
- Parcel F Boundary
- Road
- Rail Line
- Building
- Estimate of Solid Waste Extent
- Interim Landfill Cap Extent



Summary Topics



- What is a Remedial Investigation/Feasibility Study?
- What do we know about Parcel E-2?
- What is in the Parcel E-2 Landfill?
- What are the cleanup options for Parcel E-2?
- What's next?



What is the Goal of this Summary?



- To explain the environmental cleanup options that the Navy is considering to make Parcel E-2 safe for humans and the environment

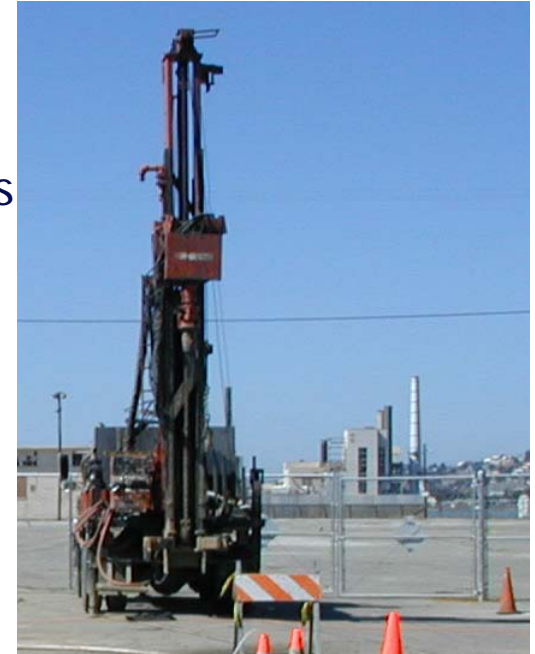




What is a Remedial Investigation/Feasibility Study Report?

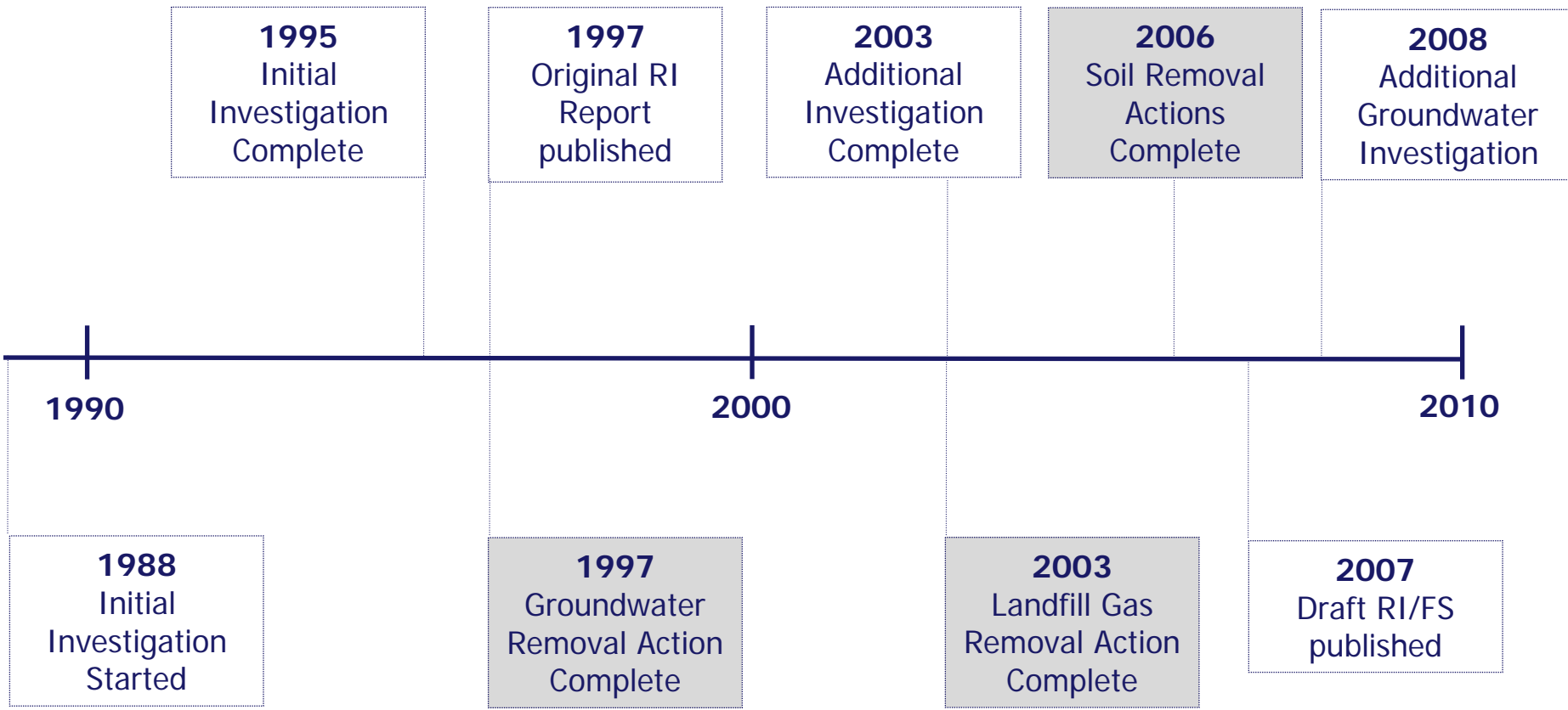


- What is a Remedial Investigation?
 - Investigates sites for the number of contaminants and level of contamination
 - Collects and validates data from the soil, groundwater, and air
- What is a Feasibility Study?
 - Develops chemical cleanup goals that will help make the site safe for humans and wildlife
 - Identifies and compares cleanup options





Parcel E-2 Investigation Timeline



RI – remedial investigation

RI/FS – remedial investigation/feasibility study



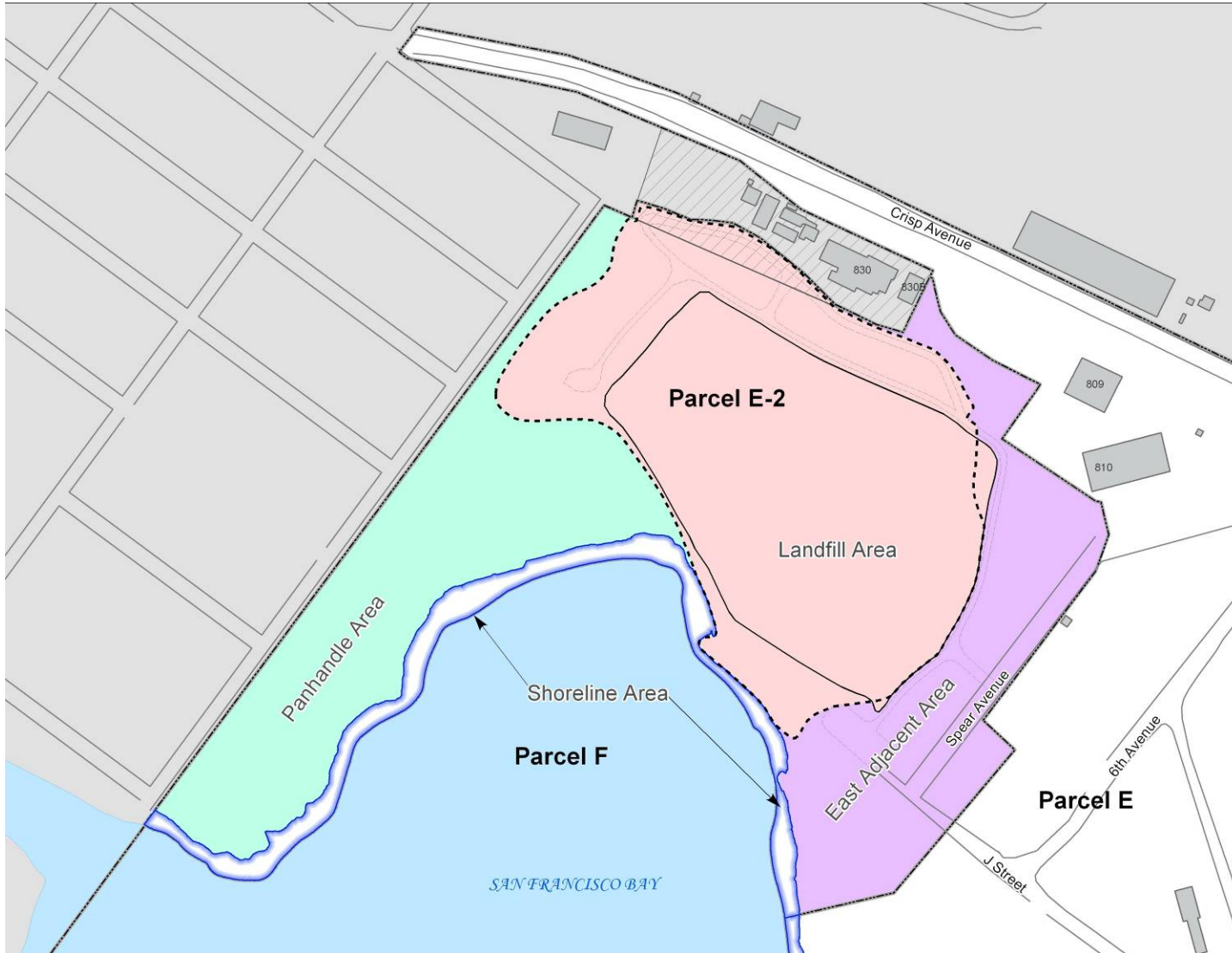
Parcel E-2 is More Than a Landfill



- To help evaluate the parcel, it was broken up into 4 study areas (see the study area map on the next slide):
 - Landfill Area (pink/salmon)
 - Non-Landfill Area
 - Panhandle Area (green)
 - East Adjacent Area (purple)
 - Shoreline Area (white with blue outline)
 - this is the tidal area that is being evaluated in conjunction with Parcel F (the offshore parcel at HPS).



Parcel E-2 Study Areas





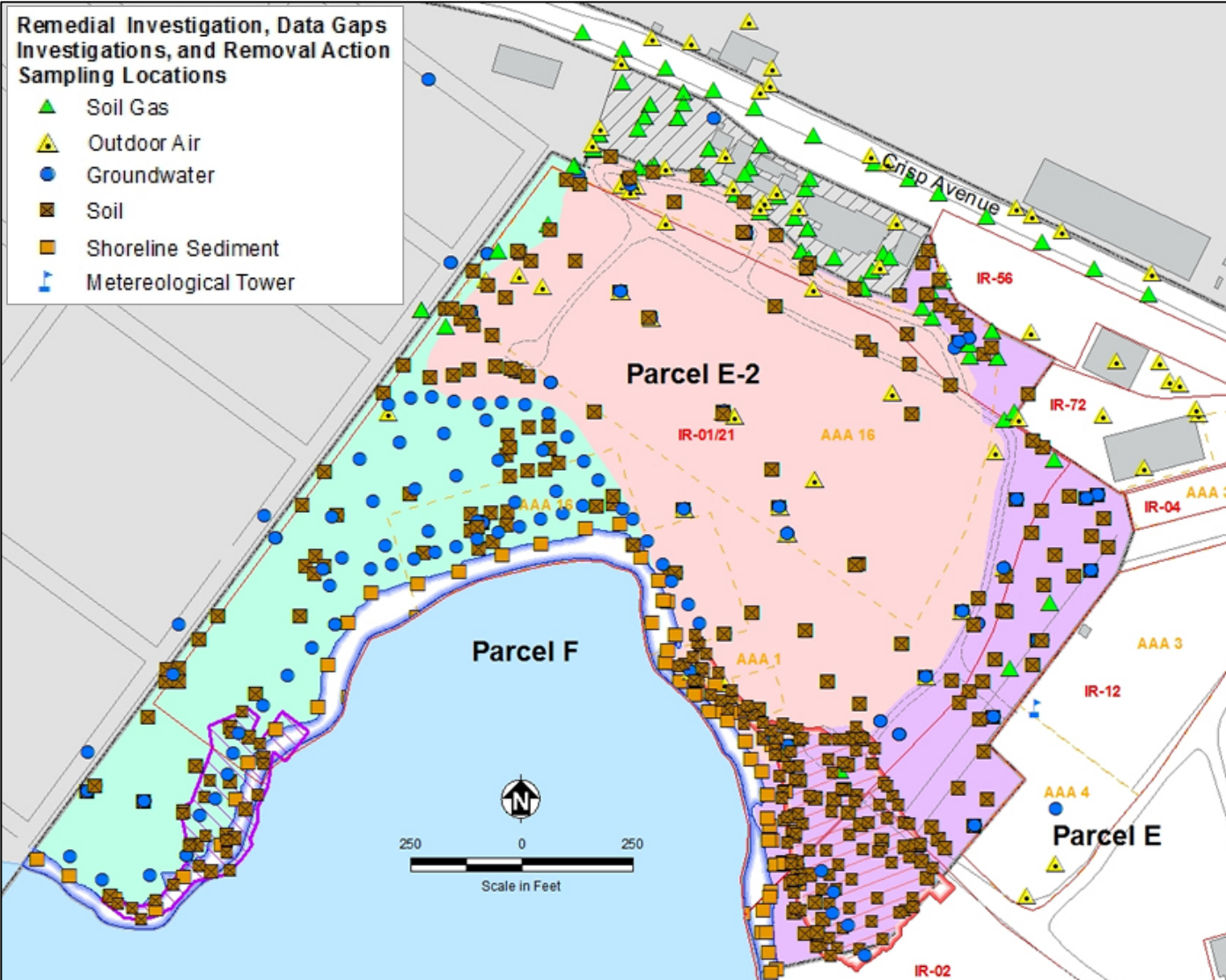
Previous Investigations at Parcel E-2



- Navy performed environmental investigations from 1988 through 2008
 - 124 soil borings
 - 40 investigation trenches
 - 103 groundwater monitoring wells
 - 32 soil gas monitoring probes
- Environmental samples were collected from these borings, trenches, groundwater monitoring wells, and soil gas monitoring probes
 - 1,113 soil samples
 - 754 groundwater samples
 - Over 3,000 soil gas samples



Previous Investigations





Previous Cleanup at Parcel E-2

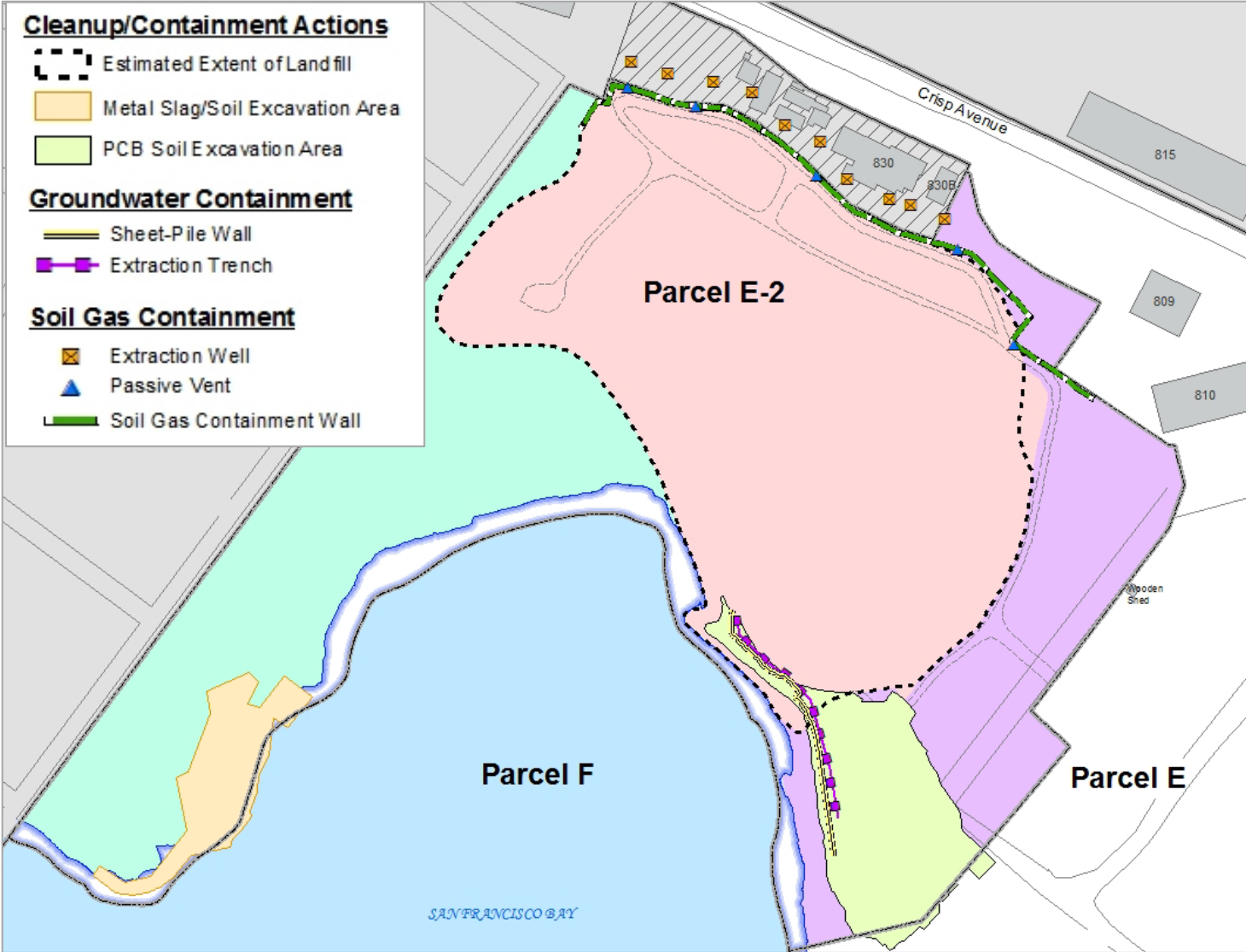


- Navy has taken some early actions to address contamination
 - Groundwater containment
 - Landfill gas removal and control
 - Soil hot spot removal





Previous Cleanup Actions





What Do We Know About the Landfill?



- Parcel E-2 Landfill (22 acres) was created between 1958 and 1974 by filling with a variety of shipyard wastes
 - Mostly wood, paper, plastic, metal, glass, asphalt, concrete, and bricks
 - Waste is mixed with soil that is contaminated with chemicals (mostly PCBs)
 - Sandblast waste, low level radioactive materials, paint sludge, solvents, and waste oils
- Landfill was a potential disposal area for wastes from decontamination of ships used in atomic testing
- After waste disposal activities ended, the Navy covered the landfill with 2 to 5 feet of soil



What is the Difference between the Landfill and Surrounding Areas?



- Landfill: Contamination is mixed with over 470,000 cubic yards of trash and construction debris
- Surrounding Areas: Contamination is mixed with mostly soil and small amounts of construction debris



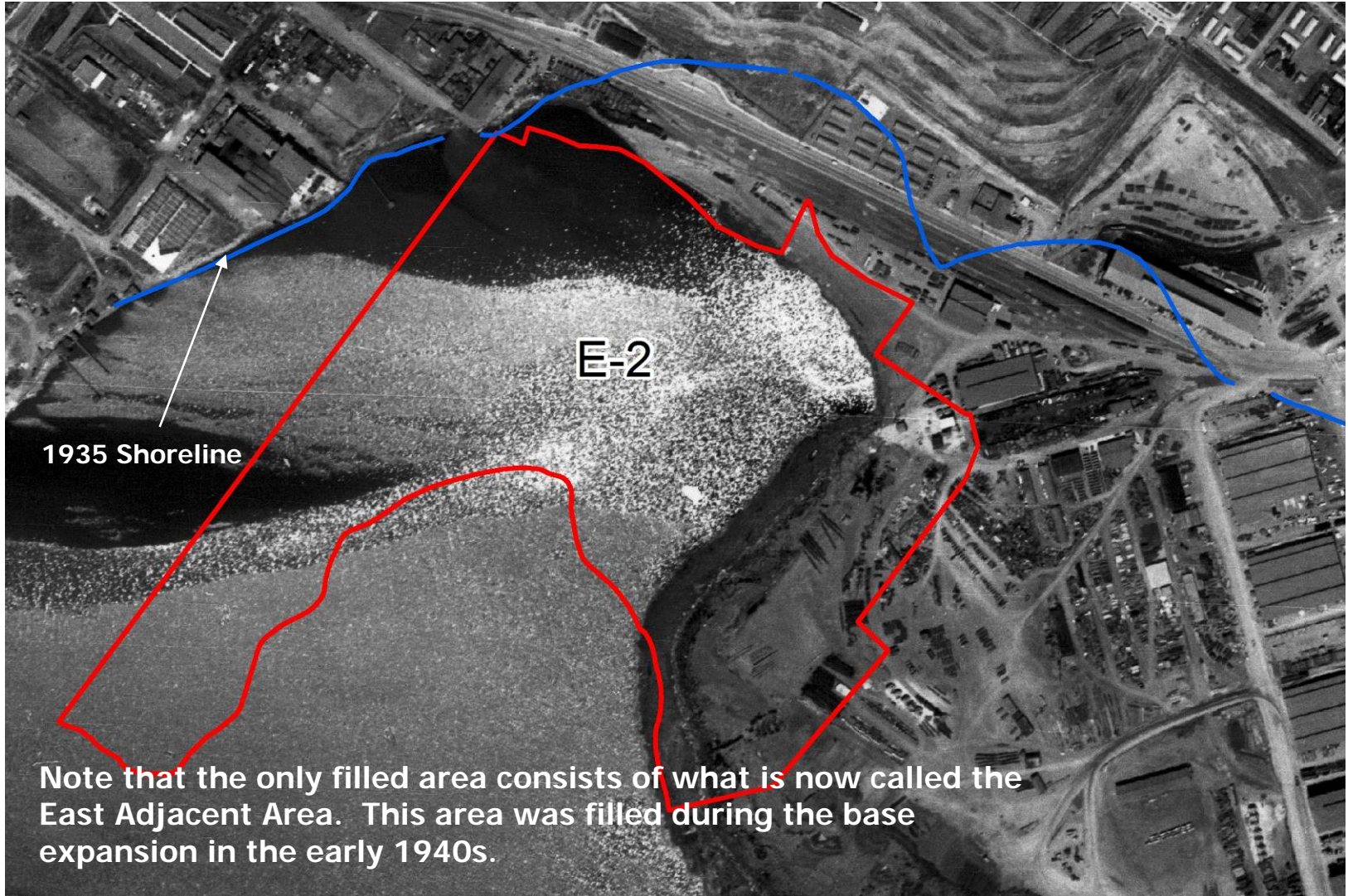
Parcel E-2 Fill History



The next series of slides show the fill history at Parcel E-2 from 1946 to 1986.



1946 Aerial Photograph





1955 Aerial Photograph





1965 Aerial Photograph



By 1965, Navy operations at the landfill had begun, and consisted primarily of filling in the eastern portions of Parcel E-2.



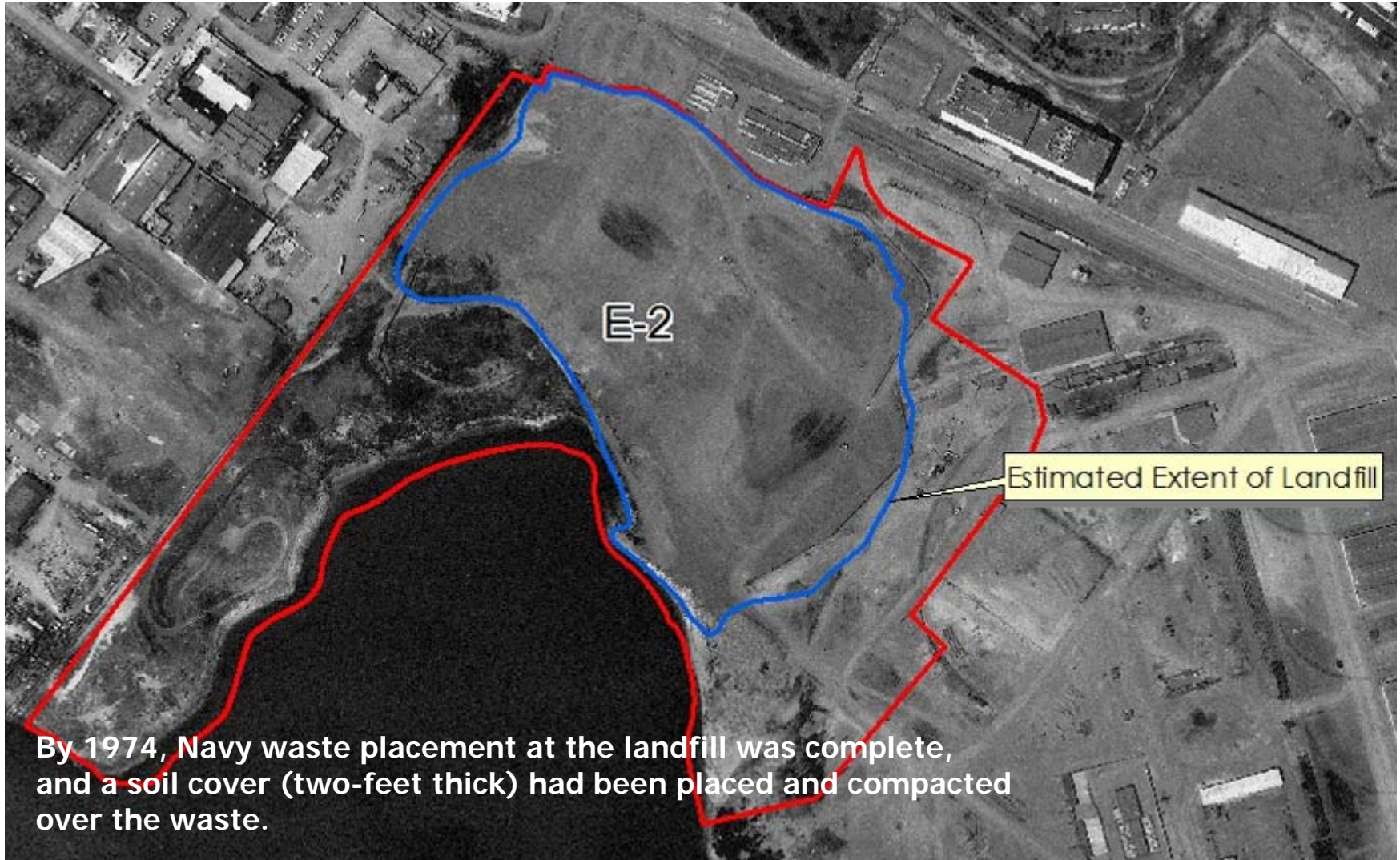
1969 Aerial Photograph



Note that Navy operations at the landfill were nearly complete in 1969, with only a narrow channel remaining.



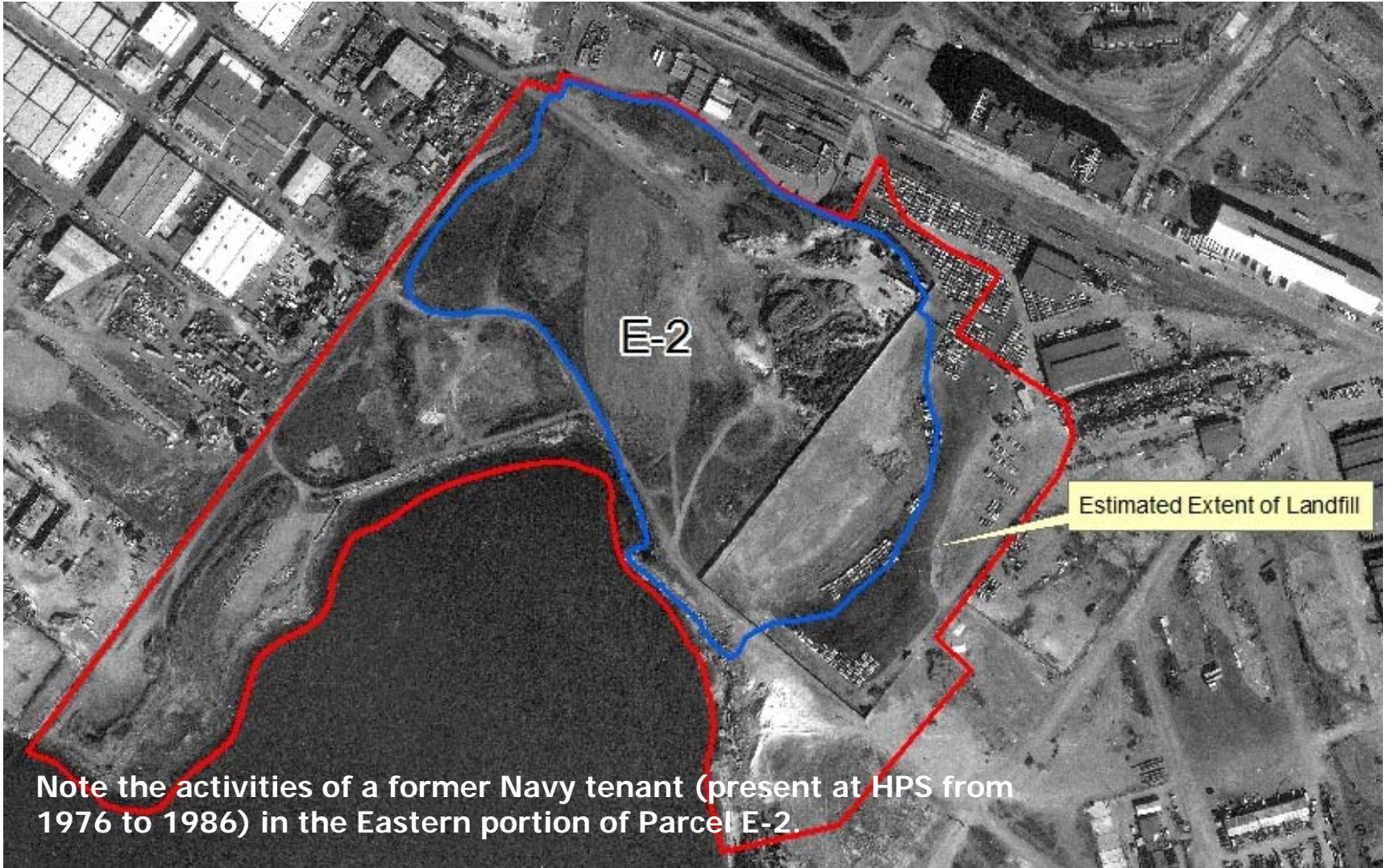
1975 Aerial Photograph



By 1974, Navy waste placement at the landfill was complete, and a soil cover (two-feet thick) had been placed and compacted over the waste.



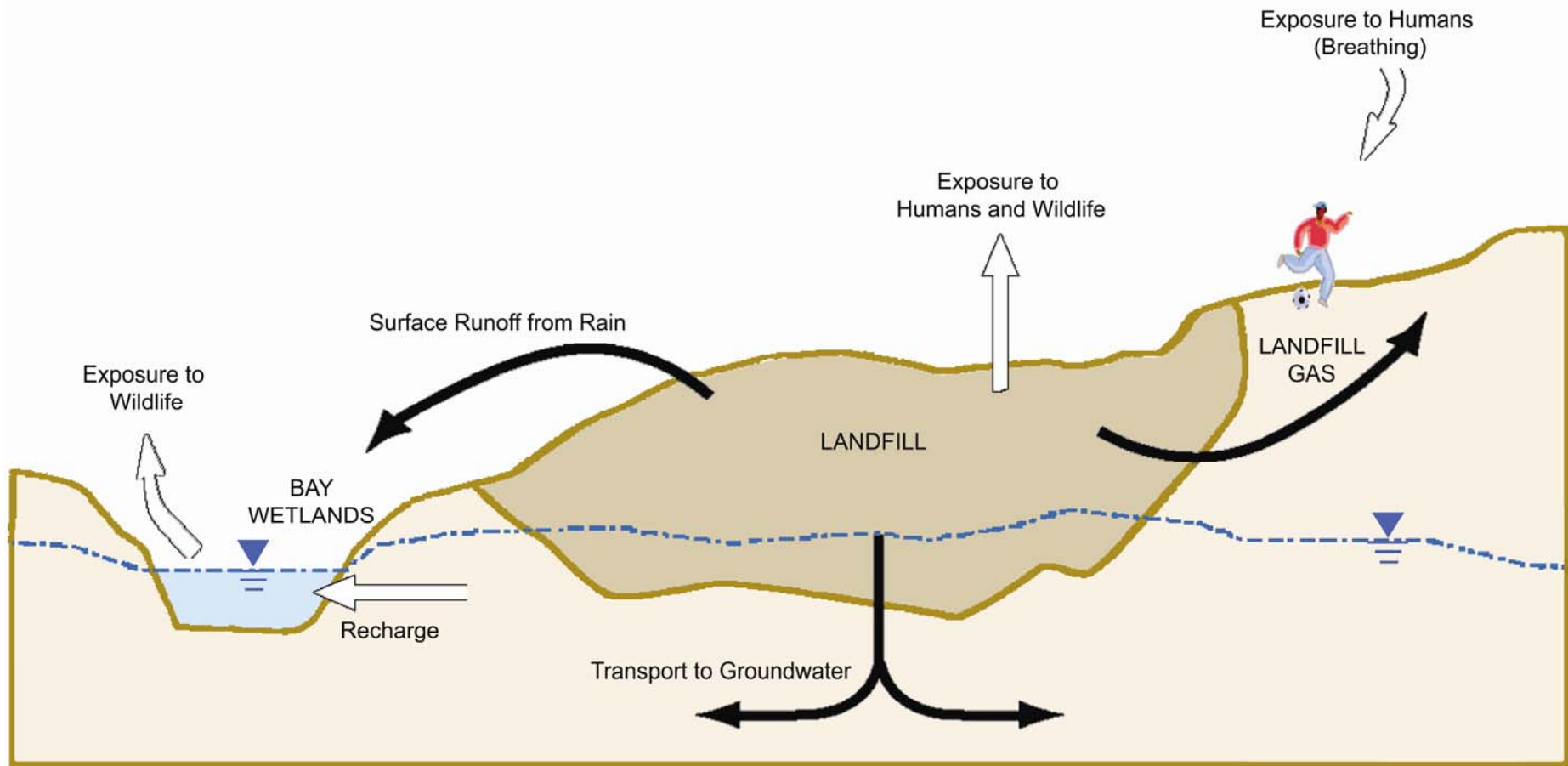
1986 Aerial Photograph



Note the activities of a former Navy tenant (present at HPS from 1976 to 1986) in the Eastern portion of Parcel E-2.



Possible Exposure Routes for Future Site Users if No Action Is Taken



-  Groundwater Table
-  Landfill Contents
-  Exposure Route
-  Release Mechanism



What Does This Mean?



- The Navy will take action to prevent possible exposure to future site users
 - This is done by evaluating cleanup options in the Feasibility Study (FS)
 - FS *compares* the cleanup options
 - FS does *not* select the cleanup options
 - Cleanup Options 2, 3, and 4 (next slide) would be protective of human health and wildlife
 - Cleanup Options 2, 3, and 4 would be engineered to protect against sea level rise and liquefaction resulting from major earthquakes



Summary of Cleanup Options



- 1 – No Action
- 2 – Dig and Remove Solid Waste, Soil, and Sediment
- 3 – Contain Solid Waste, Soil, and Sediment with some Removal of highly contaminated areas
- 4 – Contain Solid Waste, Soil, Sediment, and Groundwater with Removal of highly contaminated areas



1 – No Action



- As required by Federal regulations, the Navy evaluated taking no further action Parcel E-2
- This option would provide no protection for future site users, and will not be chosen



2 – Dig and Remove



- Dig and remove waste, soil, and sediment
 - 1,166,000 cubic yards (this is equal to about one football field with nearly 550 feet of soil)
 - This would take 4 years
 - Protective of human health and wildlife





3 – Soil Cover with Dig and Remove



- Dig and remove highly contaminated areas and cover waste, soil, and sediment
 - Dig and remove 15,500 cubic yards of highly contaminated soil and waste (this is equal to about one football field with over 7 feet of soil)
 - Build a protective cap over the landfill and some adjacent areas
 - Follows EPA's guidance for cleanup of landfills
 - Protective of human health and wildlife



3 – Soil Cover with Dig and Remove (cont.)



- What would be removed?
 - Contaminated soil and waste near the Bay
- What would be left under the covers?
 - Contaminated soil in surrounding areas (further inland)
 - Lower level contaminants in soil (in surrounding areas)
 - Waste and contaminated soil in the landfill



4 – Soil Cover, Groundwater Containment and Expanded Dig and Remove



- Dig and remove highly contaminated areas; cover waste, soil, and sediment; contain groundwater
 - Expanded Dig and Remove of 26,700 cubic yards of highly contaminated soil and waste (this is equal to about one football field with over 12 feet of soil)
 - Build a protective cap over the landfill and some adjacent areas
 - Contain groundwater to better protect the Bay
 - Follows EPA's guidance for cleanup of landfills
 - Protective of human health and wildlife



4 – Soil Cover, Groundwater Containment and Expanded Dig and Remove (cont.)



- What would be removed?
 - Contaminated soil and waste near the Bay
 - Contaminated soil in surrounding areas (further inland)
- What would be left under the covers?
 - Lower level contaminants in soil (in surrounding areas)
 - Waste and contaminated soil in the landfill



Cost of Cleanup Options



Cleanup Options	Estimated Cost
1 – No Action	\$0
2 – Dig and remove waste, soil, and sediment	\$332 million
3 – Dig and remove highly contaminated areas and cap waste, soil, and sediment	\$76 million
4 – Dig and remove highly contaminated areas; cap waste, soil, and sediment; and contain groundwater	\$82 million



Overall Ratings of Cleanup Options



Cleanup Options

Overall Rating

1 - No Action

None

2 - Many short-term risks, difficult to carry out, very expensive.

Low

3 - Fewer short-term risks, easier to carry out, lower costs when compared to Option 2.

Medium

4 - Fewer short-term risks, easier to carry out, lower costs when compared to Option 2. Improved long-term effectiveness when compared to Option 3.

Medium-High



What does the EPA think?



- EPA has studied cleanups of many landfills
 - Containment in place is chosen as the remedy at most landfills that are greater than 10 acres
 - Moving waste from one location to another causes more hazards than leaving it in place
 - Excavation of landfills may be a LOCAL solution, but is not a GLOBAL solution
 - EPA developed guidance to contain large landfills like Parcel E-2
- The “low” rating for Cleanup Option 2 at Parcel E-2 follows EPA’s findings for similar landfills



What's Next?



- Answer agency and public comments on the Draft Final Remedial Investigation/Feasibility Study
 - Comments are due on June 5, 2009
 - Send out Final Remedial Investigation/Feasibility Study Fall 2009
- Send out the Proposed Plan
 - This will be a mailer to community members that will present the preferred cleanup solution
 - A public meeting will be held to get input from the community
- Write a Record of Decision
 - This report will describe the chosen cleanup option and will take into account community input from the public meeting



QUESTIONS?

**Submit questions or comments to:
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San Diego, CA 92108-4310
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