A sunset scene over a body of water. The sun is low on the horizon, casting a warm orange glow. In the foreground, there is a dark silhouette of a hill or cliff. In the middle ground, a long pier extends into the water, and a large ship is visible in the distance.

Parcel E (Site 03) Treatability Study and Parcel C Remedial Action

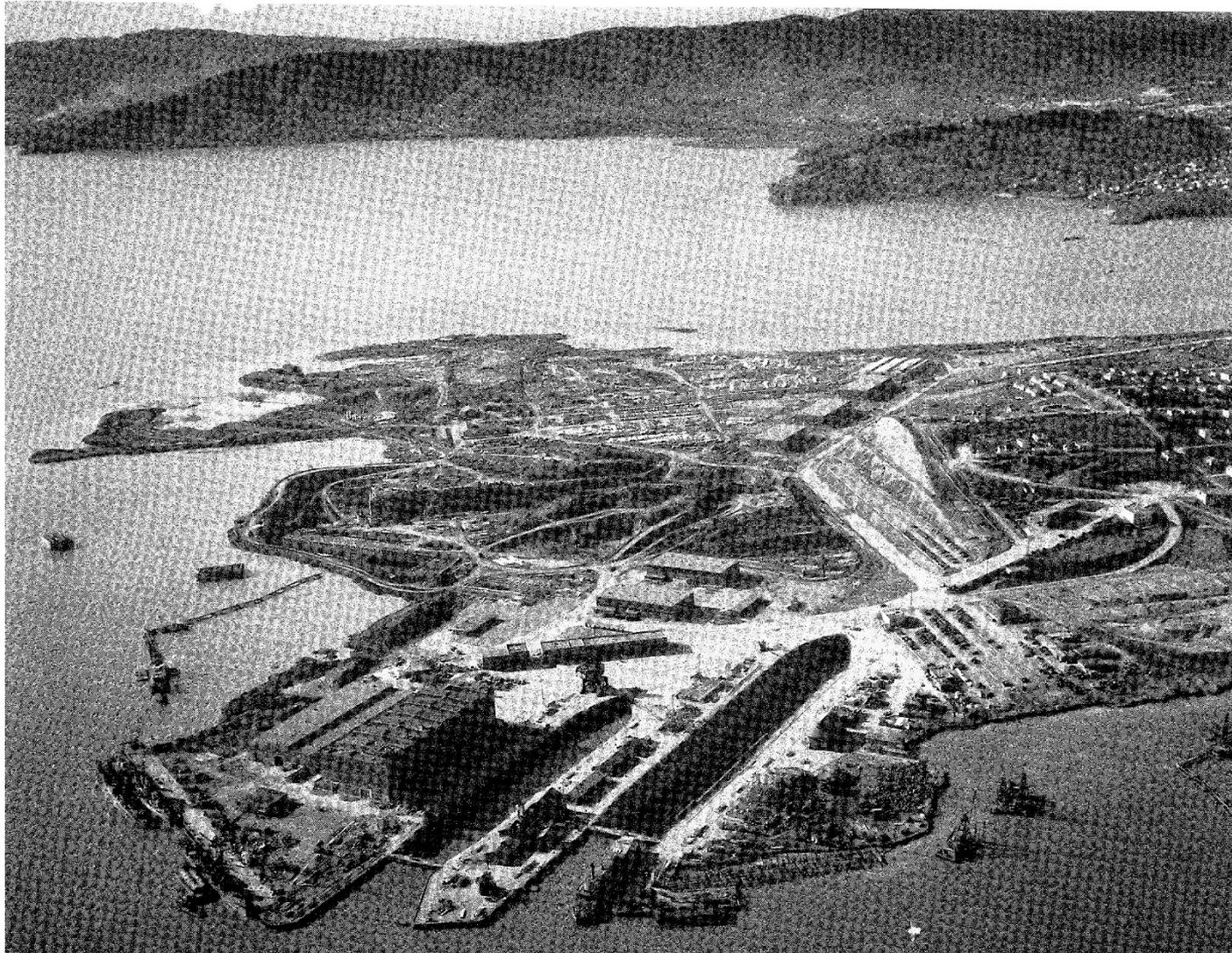
Hunters Point Naval Shipyard

**Community Meeting
December 3, 2014**

December 3, 2014

Parcel C Cleanup Actions

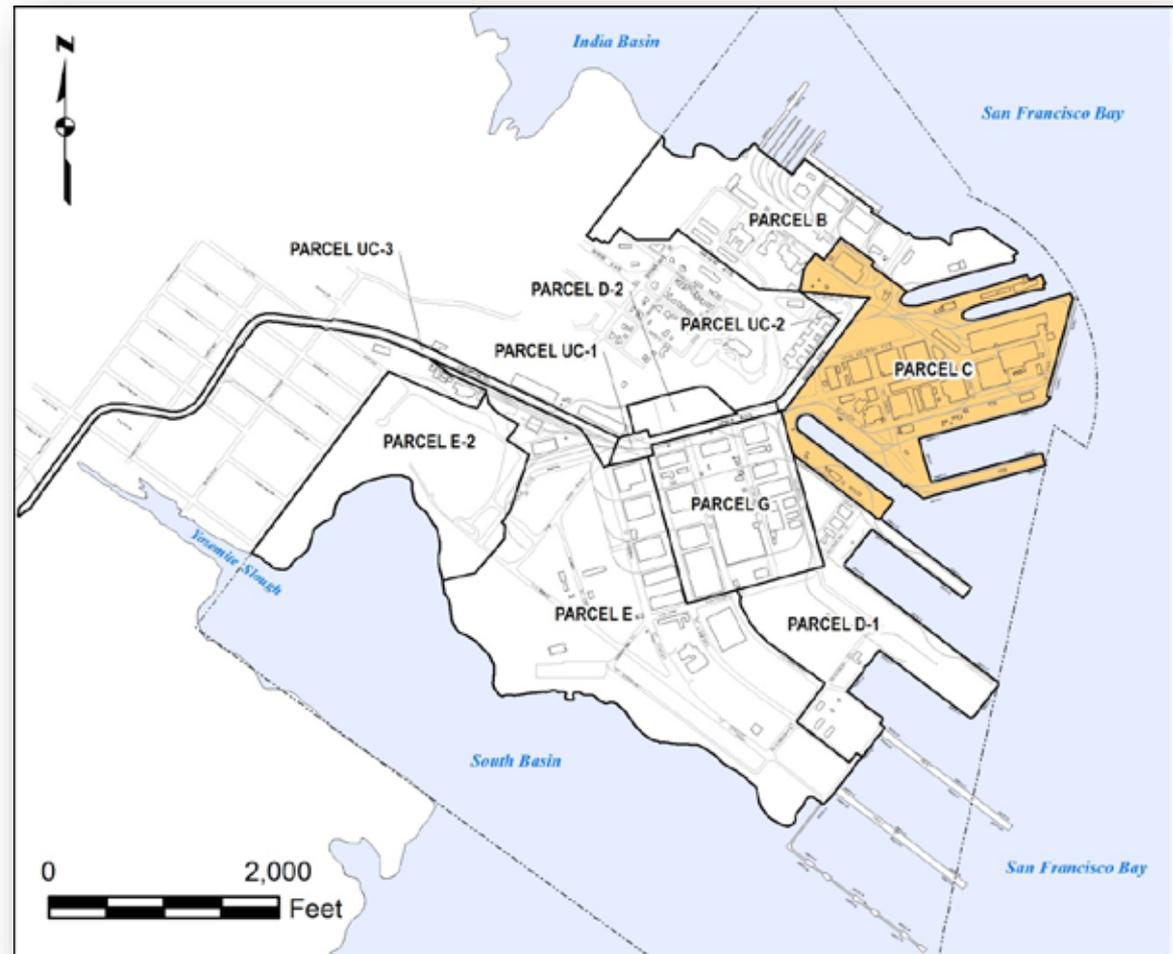
Hunters Point Naval Shipyard in 1941



Location of Parcel C

Parcel C

- Located in the eastern part of Hunters Point Naval Shipyard
- Includes about 73 acres formerly used for ship repair activities



History of Parcel C



- **By 1941, the Navy had acquired the HPNS site, including Parcel C, for shipbuilding, repair and maintenance. HPNS was deactivated in 1974.**
- **Parcel C was historically used for shipping, ship repair, and office and commercial activities. Ship repair dominated the land use at Parcel C and included a foundry, power plant, sheet manufacturing shop, paint shop, and various machine shops.**

Hunters Point Naval Shipyard in 1949



Parcel C

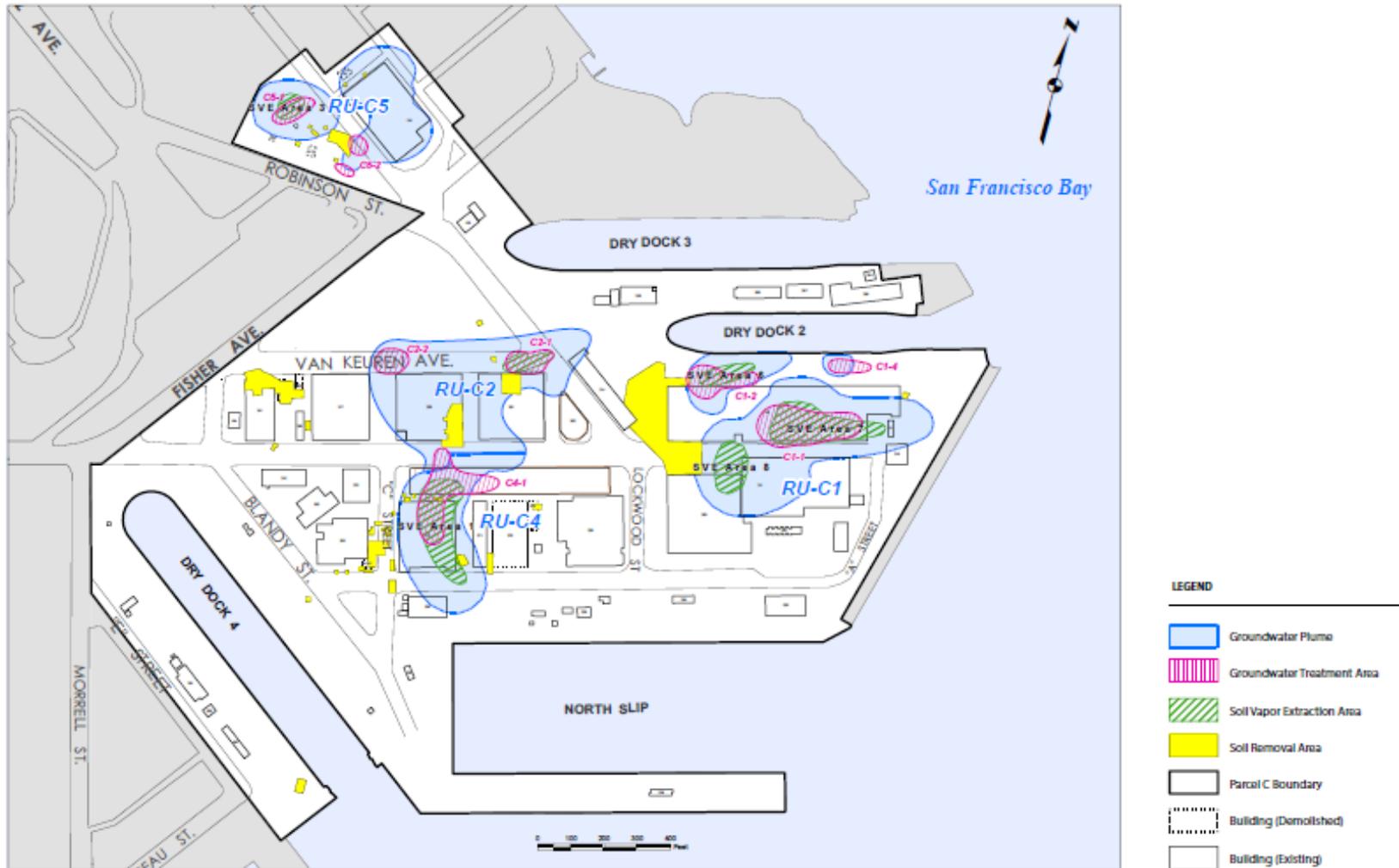
Selected Remedy

Remedy Components

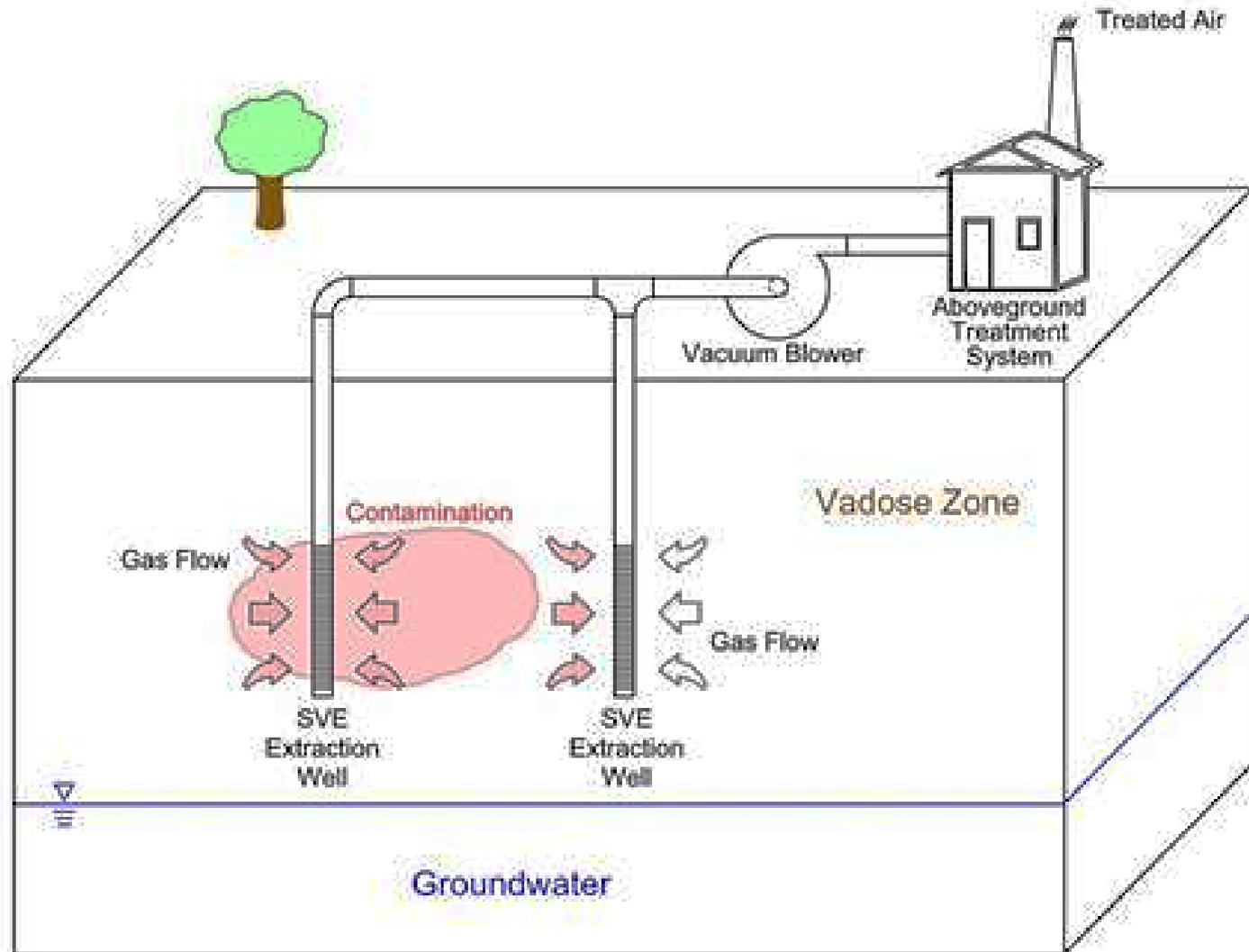


- **Cleanup for soil consists of excavation, offsite disposal, soil vapor extraction (SVE), soil containment by a durable cover and institutional controls**
 - Chemicals of concern to be treated in soil include: arsenic, lead, zinc, chlorinated volatile organic compounds (VOCs) & polyaromatic hydrocarbons
- **Cleanup for Groundwater Remedy consists of insitu bioremediation, monitoring of groundwater and institutional controls**
 - Chemicals of concern to be treated in groundwater include: VOCs and hexavalent chromium

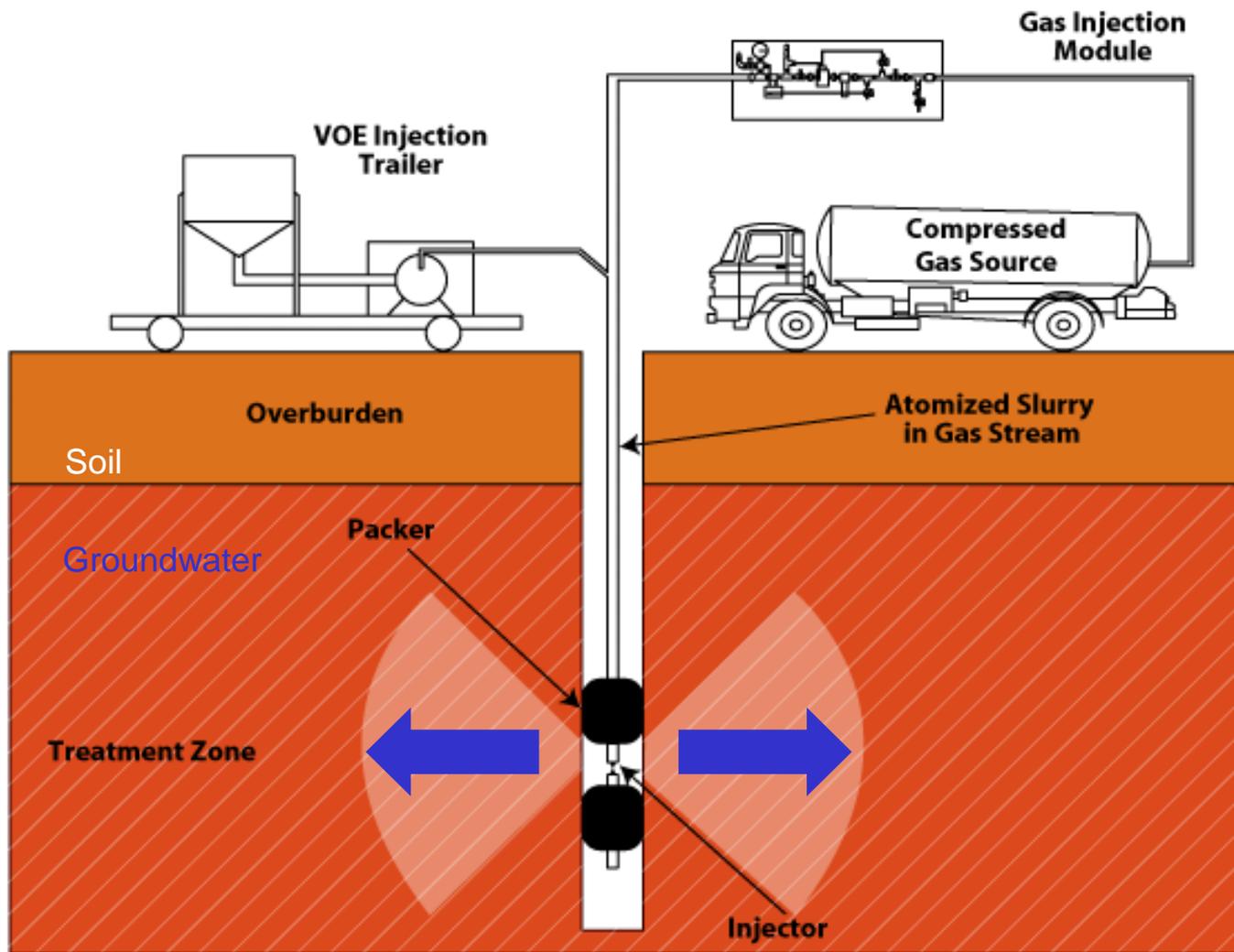
Soil and Groundwater Treatment Areas in Parcel C



How Does Soil Vapor Extraction Work?



How Does Groundwater Injection & Insitu Bioremediation Work? (using the Ferox™ Process)



Parcel C

Remedial Action

Photographs 2013 - 2014

Soil Excavation and Removal at Parcel C



Over 1,800 truck loads of impacted soil were excavated between Fall 2013 and Spring 2014 to achieve remedial objectives

Removal of Contaminated Soil around an Old Underground Tank



Soil Excavation near Building 230



Soil Excavation Near Building 214



Soil Excavation around Former Utilities & Structures



Air Monitoring Station at Parcel C



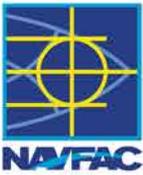
Loading Out Contaminated Soil



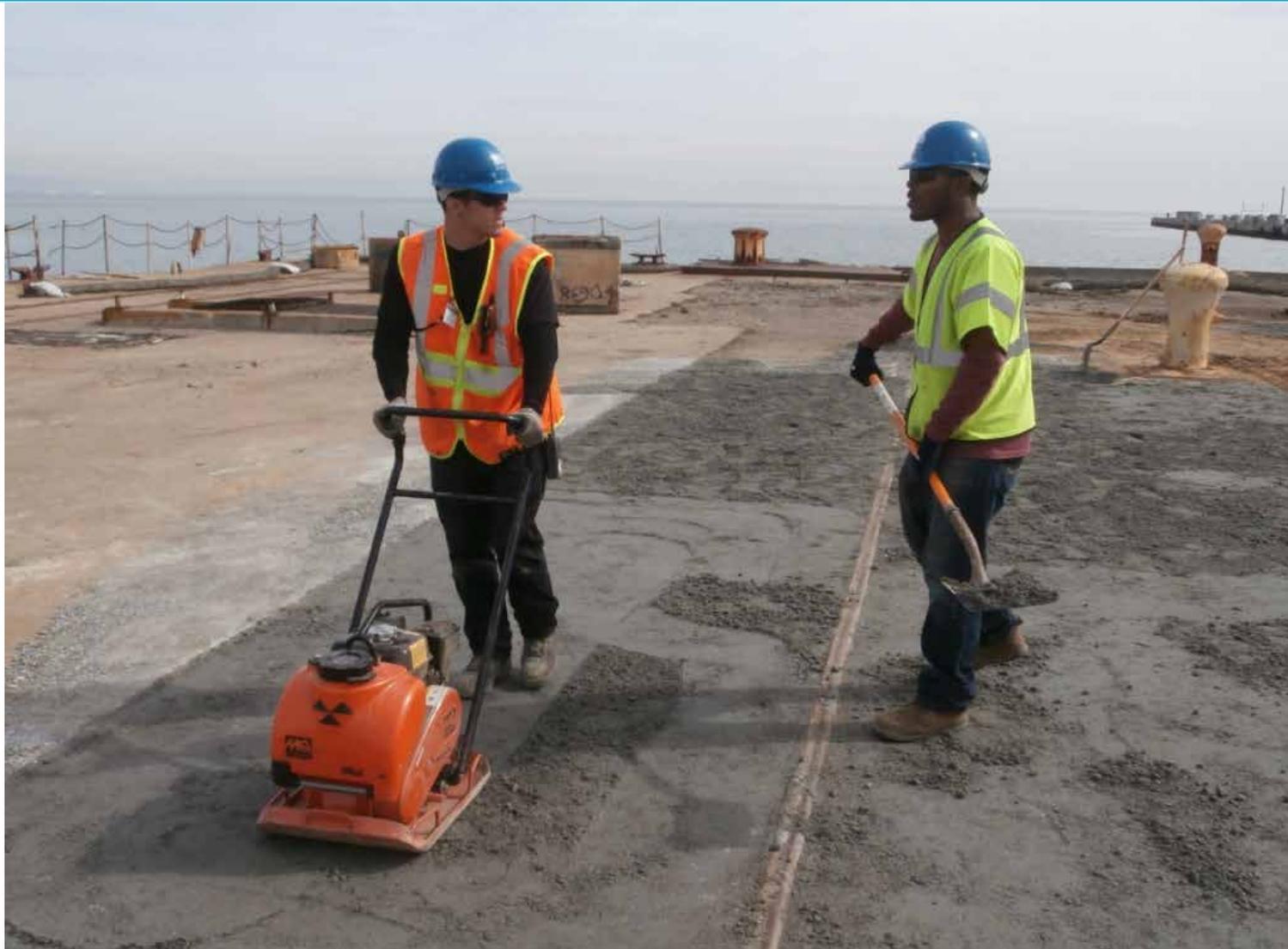
Clean Fill Material Imported for Excavation Backfilling



Backfilling Excavations with Clean Fill after Soil Removal



Excavation Area being Compacted and Restored



Building 214 Excavation being Backfilled



Soil Remediation using Soil Vapor Extraction at Parcel C



Over 13,000 cubic yards of VOC impacted soil are currently being treated using SVE

Soil Vapor Extraction System near Building 272



Groundwater Treatment using Insitu Bioremediation at Parcel C



Installation of a groundwater injection well. Over 4.4 million gallons of impacted groundwater (enough to fill 7 Olympic-sized swimming pools) were treated using Insitu Bioremediation in 2014. Performance monitoring has shown >90%reductions of chemicals in groundwater.

Mixing Tanks used to mix ZVI and Water prior to Injection



Molasses is used to treat Hexavalent Chromium in Groundwater



Groundwater Treatment Performance Monitoring Post-Injection Sampling inside Building 231



Next Steps



- **Planned 2015 Activities:**

- Continue to Operate the SVE Systems to Remediate Soil
- Continue to Monitor Groundwater Clean-up Progress
- Install Durable Cover
- Prepare Remedial Action Completion Report

- **Planned conveyance to the City in 2017. Future re-use includes research and development, residential and shoreline open space**