

# 3.6

## GROUNDWATER AND SOILS

### 3.6.1 Introduction

### 3.6.2 Environmental Setting

#### 3.6.2.1 Groundwater

Four major aquifers—the Silverado, Lynwood, Gage, and Gaspar—are present within the Los Angeles Basin and are used for industrial and municipal water supply outside of the harbor area. The two major water-bearing zones that occur beneath the proposed Project area are the Gaspar and Gage aquifers (URS Consultants 1991). Both of the aquifers are composed of fine- to medium-grained sand and silty sand. Shallow groundwater beneath the site is saline, not currently considered potable water, and would not likely be considered a potable or beneficial water source in the future. Drinking water is provided to the area by the City of Los Angeles Department of Water and Power (CH2M Hill 2000).

Groundwater is highly variable beneath Berths 136-147. Perched groundwater, which receives very limited recharge in the Port area due to the abundance of impermeable paving, occurs as shallow as 3 feet at Berths 148-150 (TRC 2002). However, in the vicinity of Berths 136-139, this shallow perched aquifer is absent and shallow unconfined groundwater is present at a depth of approximately 40 to 60 feet (LAHD 1993a). Groundwater flow in the shallow perched unconfined aquifer is generally toward the center of the West Basin; however, tidal influences are also prevalent (Montgomery Watson 1994a; Earth Tech 2002; ARCADIS G&M, Inc. 2004). Other groundwater influences are also locally present. In the vicinity of Berths 136-139, where the shallow unconfined aquifer is absent, groundwater flow is influenced by the Dominguez Channel and seawater intrusion. Leakage from Dominguez Channel, in combination with groundwater injection activities designed to abate seawater intrusion, has caused the groundwater to flow to the northwest, in contrast to the regional flow direction to the south (LAHD 1993a, URS Consultants 1991). In the vicinity of Berths 142-147, the north-south-trending concrete bulkhead reduces the tidal cycling fluctuations in the shallow unconfined aquifer (Montgomery Watson 1994a).

Locally, beneath Berths 142-143, a 1- to 5-foot-thick, relatively impermeable layer of soil (i.e., an aquiclude) and an underlying confined aquifer are present at a depth of approximately 17 to 28 feet (Montgomery Watson 1994a; URS Consultants 2002). Other investigators believe this aquiclude is as thick as 40 or more feet (Hart Crowser 1996a; Earth Tech 2004a). At nearby Berths 148-150, this shallow aquiclude is not present, but a slighter deeper aquiclude is present at a depth of 40 to 50 feet below ground surface (RETEC 1997a). No aquicludes are present in the vicinity of Berths 136-139 (LAHD 1993a).

Total dissolved solids (TDS) and specific gravity analyses of groundwater samples collected from the shallow and deep aquifers beneath Berths 142-143 and 148-151 suggest considerable saltwater intrusion (Montgomery Watson 1994a; RETEC 1997a; Earth Tech 2004a).

### **3.6.2.2 Soil Conditions**

Prior to development of the Los Angeles Harbor, extensive estuarine deposits were present at the mouth of Bixby Slough, Dominguez Channel, and the Los Angeles River. The organic tidal muds were dredged extensively and mostly covered with artificial fill. Underlying the surface soils of the West Basin are subsurface soils consisting of dredged fill material, underlain by naturally deposited alluvial soils that overlay the Malaga mudstone of the Miocene Monterey Formation. Dredge fill and natural alluvial soils represent a mix of soil types, predominantly unconsolidated layers of soft-to-hard clays and silts, with sandy soils present in some areas to depths of 40 feet.

### **3.6.2.3 Soil and Groundwater Investigations**

#### **3.6.2.3.1 TraPac Container Terminal Area**

#### **3.6.2.3.2 Harry Bridges Boulevard Buffer Area**

#### **3.6.2.3.2.9 McDonald Avenue**

**214 and 220 McDonald Avenue.** A Phase I Environmental Site Assessment (Woodward-Clyde 1996aq, Appendix K) indicated that the western portion of the property was used for truck and truck-trailer parking, while the eastern portion contained business operations and parking. Previous tenants include D.E. Truck Services and Gonzales Ornamental Iron, at 214 MacDonal, and Shimizu Automotive, plus an oil and industrial supplies company and a cabinet shop. Suspected illegal solvent storage and suspected dumping of chemical was noted. A 1991 audit also located a UST that had been abandoned in place in a parking area adjacent to the [neighboring “Keep On Trucking” property, located at 607 Harry Bridges Boulevard.](#)

*Impacted Soils.* A subsurface investigation conducted in the vicinity of the UST found that no gross contamination of subsurface soil exists in the areas investigated (Woodward-Clyde 1996aq, Appendix K); however, a 1991 study indicated the presence of petroleum hydrocarbons in soils. TPH concentrations ranged from 80 to 650 mg/kg in the gasoline/light naphtha range and acetone was detected at 13µg/kg

(URS Consultants 1991, Appendix K). The results indicate the possibility of on-site contamination migration from the abandoned UST located on the adjacent property.

**222-226 McDonald Avenue (Northern Half).** A Phase I Environmental Site Assessment (Woodward-Clyde 1996as, Appendix K) indicated that two oil wells were present in the eastern portion of the property in 1969. A review of aerial photographs also showed ASTs located on the western corner of the property.

**222-226 McDonald Avenue (Southern Half).** A Phase I Environmental Site Assessment (Woodward-Clyde 1996at, Appendix K) indicated that two petroleum ASTs were present in the western portion of the property in 1969. This was corroborated by aerial photographs also showing ASTs located on the southwestern corner of the property. The ASTs were removed sometime before 1979.

**230 McDonald Avenue.** Woodward-Clyde performed a limited Phase II Site Investigation on the property located at 230 McDonald Ave (Woodward-Clyde 1996au, Appendix K). No historic background on the property was provided.

*Impacted Soils.* Soil borings were conducted around the vicinity of former oil wells, a former oil pipeline, and potential former piping located between ASTs and oil wells. TPHs were detected in the vicinity of the former oil pipeline, at a depth of 5 feet bgs, at a concentration of 374 mg/kg. No TPHs were detected in either the former oil well or AST areas. Phase II recommendations were to monitor and evaluate the site for petroleum hydrocarbons during demolition, to monitor air quality with respect for worker safety, and to evaluate the extent of impacted conditions (Woodward-Clyde November 1996au, Appendix K).

### 3.6.2.4 Potential Site Contamination

#### 3.6.2.4.1 TraPac Container Terminal Area

Based on the site assessment reports discussed above, the following is a summary of soil and groundwater contamination in the TraPac Terminal area. These sites, as well as others sites within the TraPac site boundary, are also summarized in Table 3.6-1.

**Table 3.6-1. Known On-site Soil Contamination**

<i>Proposed Project Area Requiring Remediation</i>	<i>Identified Contamination</i>
Berth 142-144	SVOCs, PAHs, VOCs, fuel range petroleum hydrocarbons, dioxin, arsenic, chromium, copper, lead, and zinc, associated with former creosote facility.
Berth 144	Petroleum hydrocarbons due to pipeline leak, currently under investigation.
Berth 147	Lead concentrations in soil above risk-based action levels. Approximately 2,515 cubic yards of petroleum hydrocarbon contaminated soil, extending to 5 feet bgs along the waterfront and 1 foot bgs in the backland areas.
Pier A Rail Yard	Possible TPH, metals, oil and grease, and benzene in the vicinity of train maintenance facilities.
Pier A Rail Yard	Possible TPH, VOCs, and SVOCs in the vicinity of oil well.

**Table 3.6-1. Known On-site Soil Contamination (continued)**

<i>Proposed Project Area Requiring Remediation</i>	<i>Identified Contamination</i>
Proposed PHL Rail Yard	Possible metals, volatile organic compounds, semi-volatile organic compounds, and total petroleum hydrocarbons (as diesel fuel) in soil and groundwater.
West Water Street	Potentially hazardous concentration of lead.
535 West Harry Bridges Blvd.	Approximately 300 cubic yards of petroleum hydrocarbon contaminated soil, associated with pipeline and storage infrastructure.
831 W Harry Bridges Blvd.	Lead (320 mg/kg) reported above the Residential PRG.
921 W Harry Bridges Blvd.	Arsenic (35 mg/kg) above background levels and PRGs.
927 W Harry Bridges Blvd.	Arsenic (57 mg/kg) above background levels and PRGs.
1001 West Harry Bridges Blvd.	Petroleum hydrocarbons to depth of 10 feet.
1113 W Harry Bridges Blvd.	Lead (420 mg/kg) reported above the Residential PRG.
1231 W Harry Bridges Blvd.	Arsenic (22 mg/kg) above background levels and PRGs, and chromium (420 mg/kg) above the Residential PRG.
600-604 West “C” Street	Petroleum hydrocarbons to depth of 5 feet.
822 West “C” Street	Approximately 1,100 cubic yards of petroleum hydrocarbons to depth of 10 feet.
1032 and 1130 West “C” Street	Petroleum hydrocarbons at various locations.
225 Mar Vista Avenue	Petroleum hydrocarbons and pesticides.
239-241 Mar Vista Avenue	Petroleum hydrocarbons and potentially hazardous concentrations of lead.
251 Mar Vista Avenue	Approximately 60 cubic yards of petroleum hydrocarbon impacted soil.
231 Hawaiian Avenue	Petroleum hydrocarbons to a depth of 15 feet.
214 and 223 King Avenue	Release of copper and nickel.
228 King Ave.	Lead (150 mg/kg) reported at the Residential PRG, and two PAHs reported above the Residential PRGs.
233 King Avenue	Potentially hazardous concentration of nickel, elevated petroleum hydrocarbons, limited VOCs, and lead above residential PRGs.
221 Wilmington Avenue	Approximately 700 cubic yards of petroleum hydrocarbon impacted soil, to a depth of 10 feet.
224 Wilmington Blvd.	Lead (240 mg/kg) reported above the Residential PRG.
233 Wilmington Blvd.	Four PAHs reported above at or above the Residential PRGs.
214 and 220 McDonald Avenue	Petroleum hydrocarbons, possibly from UST on adjacent property.
222-226 McDonald Avenue	Petroleum hydrocarbons associated with two abandoned oil wells and associated former ASTs
230 McDonald Avenue	Petroleum hydrocarbons, to a depth of 5 feet.
215 Lagoon Ave.	Lead (150 mg/kg), vanadium (210 mg/kg), and five PAHs reported above at or above the Residential PRGs.

**3.6.2.4.2 Harry Bridges Boulevard Buffer Area****3.6.2.4.3 Pier A Rail Yard****3.6.2.4.4 Proposed PHL Rail Yard (near Berth 200)**

### 3.6.3 Applicable Regulations

Applicable federal, state, and local laws each contain lists of hazardous materials or hazardous substances that may require special handling if encountered in soil or groundwater during construction of the proposed Project. These include “hazardous substances” under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 and the state Hazardous Substances Account Act (Health and Safety Code Section 25300, et seq.); “hazardous materials” under Health and Safety Code Section 25501, California Labor Code Section 6380 and California Code of Regulations (CCR) Title 8, Section 339; “hazardous substances” under 40 CFR Part 116; and, priority toxic pollutants under CFR Part 122. In addition, “hazardous materials” are frequently defined under local hazardous materials ordinances, such as the Uniform Fire Code.

Generally speaking, “hazardous materials” means any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. Hazardous materials that are commonly found in soil and groundwater include petroleum products, fuel additives, heavy metals, and volatile organic compounds. Hazardous substances are defined by State and Federal regulations as substances that must be regulated in order to protect the public health and the environment. Hazardous materials are characterized by certain chemical, physical, or infectious properties. CCR Title 22, Chapter 11, Article 2, Section 66261 defines a hazardous material as a substance or combination of substances which, because of its quantity, concentration, or physical, chemical, or infectious characteristics, may either: (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported, or disposed of or otherwise managed.

According to Title 22 (Chapter 11, Article 3, CCR), substances having a characteristic of toxicity, ignitability, corrosivity, or reactivity are considered hazardous. Hazardous wastes are hazardous substances that no longer have a practical use, such as material that has been abandoned, discarded, spilled, or contaminated, or which is being stored prior to disposal.

Depending on the type and degree of contamination that is present in soil and groundwater, any of several governmental agencies may have jurisdiction over the proposed Project’s site. Generally, the agency with the most direct statutory authority over the affected media is designated as the lead agency for purposes of overseeing any necessary investigation or remediation. Typically, sites that are nominally contaminated with hazardous materials remain within the jurisdiction of local hazardous materials agencies, such as the Los Angeles Fire Department.

Sites that have more heavily contaminated soils are more likely to fall under the jurisdiction of the State Department of Toxic Substances Control (DTSC), which is authorized to administer the federal hazardous waste program under the Resource Conservation and Recovery Act and is also responsible for administering the State Superfund Program, under the Hazardous Substance Account Act. [The DTSC provides guidance for cleanup oversight through an Environmental Oversight](#)

[Agreement, for government agencies, or a voluntary Cleanup Agreement, for private parties.](#)

Sites that have contaminated groundwater fall within the jurisdiction of the Los Angeles Regional Water Quality Control Board (RWQCB) and are subject to the requirements of the Porter-Cologne Water Quality Control Act. Contaminated groundwater that is proposed to be discharged to surface waters or to a publicly owned treatment works would be subject to the applicable provisions of the CWA, including permitting and possibly pretreatment requirements. A NPDES permit is required to discharge pumped groundwater to surface waters, including local storm drains, in accordance with California Water Code Section 13260. Additional restrictions may be imposed upon discharges to water bodies that are listed as “impaired” under Section 303(d) of the CWA, including San Pedro Bay.

In July 2002, USEPA amended the Oil Pollution Prevention regulation at Title 40 of the Code of Federal Regulations, Part 112 (40 CFR 112). The regulation incorporated revisions proposed in 1991, 1993, and 1997. Subparts A through C of the Oil Pollution Prevention regulation are often referred to as the “SPCC Rule” because they describe the requirements for certain facilities to prepare, amend, and implement Spill Prevention, Control, and Countermeasure (SPCC) Plans. These plans ensure that facilities include containment and other countermeasures that would prevent oil spills that could reach navigable waters. In addition, oil spill contingency plans are required as part of this legislation to address spill cleanup measures after a spill has occurred.

## 3.6.4 Impacts and Mitigation Measures

### 3.6.4.3 Impacts and Mitigation

#### 3.6.4.3.1 Proposed Project

##### 3.6.4.3.1.1 Construction Impacts

#### *Soil and Groundwater Quality*

**Impact GW-1a: Construction activities may encounter toxic substances or other contaminants associated with historical uses of the Port, resulting in short-term exposure (duration of construction) to construction/operations personnel and/or long-term exposure to future site occupants.**

Soil and groundwater in the Berths 142-147 backland areas, the Pier A rail yard, and the proposed buffer area, have been impacted by hazardous substances and petroleum products, as a result of spills during historic industrial land uses. These areas are in various stages of contaminant site characterization and remediation, as described above. All existing Port tenants have contractually agreed to complete restoration of the premises, including clean-up of any hazardous materials contamination on or arising from the premises, before the expiration or earlier termination of each tenant agreement. The LAHD will mitigate contaminated soil and groundwater in the buffer area as required by **Mitigation Measure GW-1.**

### **CEQA Impact Determination**

Grading and construction (e.g., excavations for utilities and foundations) in backland areas could potentially expose construction personnel, existing operations personnel, and future occupants of the site to contaminated soil. Similarly, grading in the proposed buffer area could expose construction personnel and future recreational users to contaminated soil. Human health and safety impacts would be significant pursuant to exposure levels established by Cal/EPA's Office of Environmental Health Hazard Assessment (OEHHA).

#### *Mitigation Measures*

**GW-1: Site Remediation.** Unless otherwise authorized by the lead regulatory agency for any given site, the LAHD shall remediate all contaminated soils within proposed Project boundaries prior to or during demolition and grading activities. Remediation shall occur in compliance with local, state, and federal regulations, as described in Section 3.6.3, and as directed by the Los Angeles Fire Department, DTSC, and/or RWQCB.

Soil remediation shall be completed such that contamination levels are below health screening levels established by OEHHA and/or applicable action levels established by the lead regulatory agency with jurisdiction over the site. Soil contamination waivers may be acceptable as a result of encapsulation (i.e., paving) in backland areas and/or risk-based soil assessments, but would be subject to the discretion of the lead regulatory agency. [Excavated contaminated soil shall not be placed in another location on-site; it must be properly disposed off-site. All imported soil to be used as backfill in excavated areas should be sampled to ensure that the soil is free of contamination.](#)

Existing groundwater contamination throughout the proposed Project boundary shall continue to be monitored and remediated, simultaneous and/or subsequent to site redevelopment, in accordance with direction provided by the RWQCB.

Unless otherwise authorized by the lead regulatory agency for any given site, areas of soil contamination that shall be remediated prior to, or in conjunction with, project demolition, grading, and construction would include, but not be limited to, the proposed Project areas listed in Table 3.6-1 and summarized on the attached Figure 3.6-3. [Remediation shall also include suspected or known contamination due to leaks or spills on adjacent properties, such as that described in Section 3.6.2.3 for properties located at 231 Hawaiian Avenue, 221 Wilmington Boulevard, and 214/220 McDonald Avenue.](#)

**GW-2: Contamination Contingency Plan.** The following contingency plan shall be implemented to address previously unknown contamination during demolition, grading, and construction:

- a) All trench excavation and filling operations shall be observed for the presence of free petroleum products, chemicals, or contaminated soil. Deeply discolored soil or suspected contaminated soil shall be segregated from light colored soil. In the event unexpected suspected chemically impacted material (soil or water) is encountered during construction, the contractor shall notify the Los Angeles Harbor Department's Chief Harbor Engineer, Director of Environmental Management, and Risk Management's Industrial Hygienist. The Port shall

confirm the presence of the suspect material and direct the contractor to remove, stockpile or contain, and characterize the suspect material(s) identified within the boundaries of the construction area. Continued work at a contaminated site shall require the approval of the Chief Harbor Engineer.

- b) A photoionization detector (or other similar devices) shall be present during grading and excavation of suspected chemically impacted soil.
- c) Excavation of VOC-impacted soil will require obtaining and complying with a South Coast Air Quality Management District Rule 1166 permit.
- d) The remedial option(s) selected shall be dependent upon a number of criteria (including but not limited to types of chemical constituents, concentration of the chemicals, health and safety issues, time constraints, cost, etc.) and shall be determined on a site-specific basis. Both off-site and on-site remedial options shall be evaluated.
- e) The extent of removal actions shall be determined on a site-specific basis. At a minimum, the chemically impacted area(s) within the boundaries of the construction area shall be remediated to the satisfaction of the lead regulatory agency for the site. The Port Project Manager overseeing removal actions shall inform the contractor when the removal action is complete.
- f) Copies of hazardous waste manifests or other documents indicating the amount, nature, and disposition of such materials shall be submitted to the Chief Harbor Engineer within 30 days of project completion.
- g) In the event that contaminated soil is encountered, all on-site personnel handling or working in the vicinity of the contaminated material shall be trained in accordance with Occupational Safety and Health and Administration (OSHA) regulations for hazardous waste operations. These regulations are based on CFR 1910.120 (e) and 8 CCR 5192, which states that “general site workers” shall receive a minimum of 40 hours of classroom training and a minimum of three days of field training. This training provides precautions and protective measures to reduce or eliminate hazardous materials/waste hazards at the work place.
- h) In cases where potential chemically impacted soil is encountered, a real-time aerosol monitor shall be placed on the prevailing downwind side of the impacted soil area to monitor for airborne particulate emissions during soil excavation and handling activities.
- i) All excavations shall be filled with structurally suitable fill material which is free from contamination.

#### *Residual Impacts*

Soil and groundwater remediation of known contaminated areas, as outlined in **Mitigation Measure GW-1**, as well as implementation of a contingency plan for potentially encountering unknown soil contamination, as outlined in **Mitigation Measure GW-2**, would reduce health and safety impacts to on-site personnel in backland areas, as well as construction personnel and recreational users of the buffer area, such that residual impacts would be less than significant.



### **NEPA Impact Determination**

The proposed Project would include new wharf construction and other in-water construction activities that would not be part of the No Federal Action/NEPA Baseline. Excavations completed for new wharf construction could encounter previously unknown soil and/or groundwater contamination. Such discoveries could result in adverse impacts to construction and operations personnel. Impacts would be significant.

#### *Mitigation Measures*

**Mitigation Measure GW-2** would be implemented to address previously unknown contamination encountered during new wharf construction.

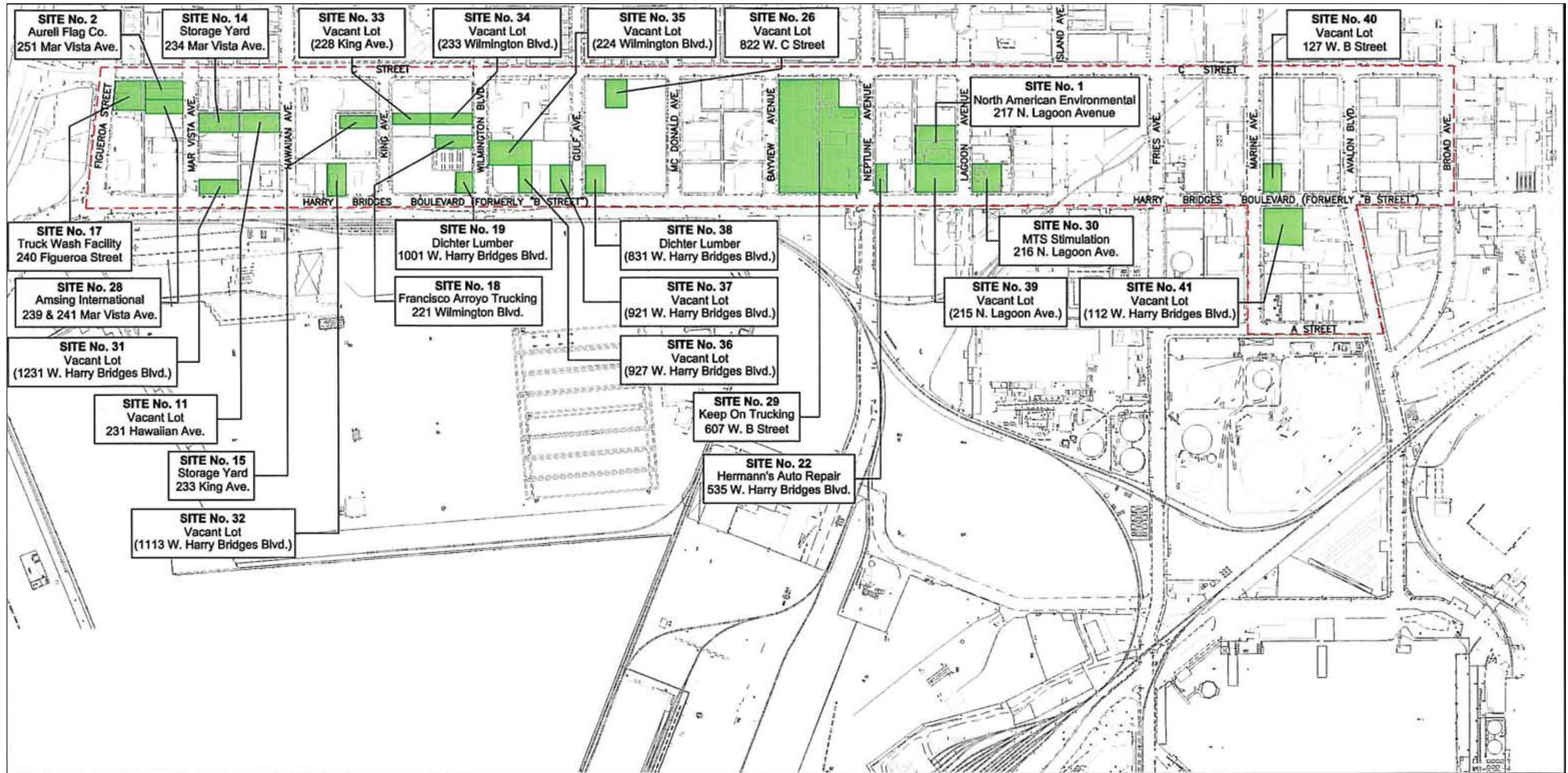
#### *Residual Impacts*

Implementation of a contingency plan for potentially encountering unknown soil contamination, as outlined in **Mitigation Measure GW-2**, would reduce health and safety impacts to on-site personnel, such that residual impacts would be less than significant.

#### **3.6.4.4 Mitigation Monitoring**

### **3.6.5 Significant Unavoidable Impacts**

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**LEGEND**

 WILMINGTON WATERFRONT STUDY AREA

 SITE WITH REMAINING AREAS OF CONCERN

**NOTE:**  
ADDRESSES SHOWN IN PARENTHESES ARE APPROXIMATE





Scale  
0 Feet 800

Source: The Source Group, Inc.

Figure 3.6-3. Summary of Pending Areas of Concern