

# **APPENDIX I-3**

## *Phase II Soil and Groundwater Quality Investigation*



**Phase II Soil and Groundwater Quality Investigation  
General Mills Facility  
Vallejo, California**

February 7, 2007

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## **1.0 INTRODUCTION**

This report presents the results of a Phase II Soil and Groundwater Quality Investigation performed by Northgate Environmental Management, Inc. (Northgate) at the General Mills property, located at 800 and 790 Derr Street in Vallejo, California (Site). The Site consists of approximately 39 acres of land developed with a flour mill and associated structures. A Site Location Map is shown on Figure 1 and a Site Plan is shown on Figure 2.

The purpose of the Phase II Investigation has been to evaluate the possible presence of contaminants in soil and groundwater at select areas of the Site identified during Northgate's Phase I Environmental Site Assessment (ESA). It is understood that Brooks Street intends to purchase and redevelop the Site.

### **1.1 Limitations and Exceptions**

The purpose of an environmental assessment is to reasonably evaluate the potential for, or actual impact of, past practices on a given area. In performing an environmental assessment, it is understood that a balance must be struck between a reasonable inquiry into the environmental issue and an exhaustive analysis of each conceivable issue of potential concern. No investigation is thorough enough to absolutely rule out the presence of hazardous materials at a given site. If hazardous conditions have not been identified during the assessment, such a finding should not be construed as a guarantee of the absence of such materials on the site, but rather as the result of services performed within the scope, limitations, and cost of the work performed.

Environmental conditions may exist at the Site that cannot be identified by visual observation. Where subsurface work was performed, our professional opinions are based in part on interpretation of data from discrete sampling locations that may not represent actual conditions at unsampled locations.

Except where there is express concern of our client, or where specific environmental contaminants have been previously reported by others, naturally occurring toxic substances, potential environmental contaminants inside buildings, or contaminant concentrations that are not of current environmental concern may not be reflected in this document.

Where the scope of services is limited to interview and/or review of readily available reports and literature, any conclusions and/or recommendations are necessarily based largely on information supplied by others, the accuracy or sufficiency of which may not be independently reviewed by Northgate.



Any opinions and/or recommendations presented apply to Site conditions existing at the time of performance of services. We are unable to report on, or accurately predict, generally unforeseeable events that may impact the Site following performance of services, whether occurring naturally or caused by external forces. Therefore, we cannot assume responsibility of such events or their impact. We also cannot assume responsibility for changes in environmental standards, practices, or regulations.

## **1.2 User Reliance**

This report has been prepared for the exclusive use of Brooks Street and its lenders, partners, successors, and assigns. Others may not rely on the information contained in this report without the express written consent of Northgate.



## **2.0 SITE SETTING**

### **2.1 Location and Legal Description**

The Site consists of approximately 39 acres of land located southeast of the intersection of Derr Street and Lemon Street, along the Mare Island Strait in Vallejo, California. The Site consists of nine adjacent parcels. The largest parcel, assessor's parcel number (APN) 0061-160-090, is developed as a flour mill facility, located at 800 Derr Street, and a residence located at 790 Derr Street with associated structures. The remaining parcels, APNs 0062-010-130, 0062-010-110, 0061-111-030, 0062-020-010, 0062-020-020, 0062-020-030, 0062-020-040, and 0062-010-180 are vacant shoreline land.

### **2.2 Site and Vicinity General Characteristics**

The Site is developed with a flour mill facility, which is no longer in operation. The Site consists of an old flour mill, two warehouses, other structures associated with the processing and storage of flour and flour products, a plant residence, and other associated structures. The western portion of the Site is currently being remediated for petroleum hydrocarbons. The Site is bordered on the north by Mare Island Strait and a rail yard, on the south by Mare Island Strait, to the east by residential development, and on the west by Mare Island Strait, beyond which lies Mare Island. The Site is generally located in a mixed residential and commercial development area.

### **2.3 Geology and Groundwater**

The subject Site is located in the northern portion of the East Bay Hills east of San Pablo Bay and The Mare Island Strait. According to geotechnical reports for the Site prepared by Engeo Incorporated (2006), previous geologic mapping indicates that the western portion of the Site is underlain by Holocene Artificial Fill, and the eastern portion of the Site is underlain by Late Cretaceous undivided sandstone, siltstone, and shale of the Great Valley Complex. Additional geologic mapping indicates that the eastern portion of the Site is underlain by Panoche formation consisting of micaceous shale with minor thin sandstone beds and arkosic sandstone.

According to the U.S. Geological Survey Topographic Map of the Benicia Quadrangle, the Site is situated at an elevation of approximately 100 to 140 feet above sea level on the upper eastern portion of the site, and 10 feet to sea level on the western portion of the Site. Locally, surface topography slopes to the west.

Near surface fill soils on the western portion of the Site consist of silty clay or clayey sand with claystone fragments of moderate to high plasticity (Engeo, 2006). This material extends to





approximately 11 to 19 feet below ground surface (bgs). Soft clay was encountered from 19 feet to 20.5 feet bgs. Claystone was encountered below surface soils to at least 25.5 feet bgs.

Exploratory borings drilled on the Site during Northgate's Phase II investigation encountered groundwater at a depth of about 5 to 12 feet bgs. Fluctuations in groundwater levels may occur seasonally and over a period of years due to variations in precipitation and other factors.

According to a groundwater monitoring report and tidal survey conducted by Malcolm Pirnie (May 2006), groundwater flow at the subject Site is generally towards the west.





### **3.0 PHASE II SOIL AND GROUNDWATER QUALITY INVESTIGATION**

Northgate performed a Phase II soil and groundwater quality investigation at the Site on December 7 and 8, 2006 to evaluate areas of potential environmental concern identified during the Phase I ESA. These areas include:

- Southern end of Old Warehouse, where a machine shop was reportedly located
- The former etching and printing shop located on the southern end of the Site
- The reported Dump/Debris Area located in the leasehold portion of the Site near the former wharf area

Soil and groundwater samples were collected and select samples were analyzed for total petroleum hydrocarbons quantified in the diesel and motor oil range (TPH-D and TPH-MO), volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and metals (CAM 17 [Title 22] Metals). A total of 11 soil borings were drilled at the Site, at the locations shown in Figure 4. Six of these borings (NG-2, and NG-6 through NG-10) were located on the portion of the Site designated for commercial use. The remaining five borings (NG-1, NG-3, NG-4, NG-5, and NG-11) were located on the portion of the Site designated for residential development. Table 1 summarizes the soil and groundwater analyses performed on selected samples from each boring. The Phase II Investigation methods and results are summarized in the following sections.

#### **3.1 Investigation Methods**

##### **3.1.1 Site Soil Borings**

Soil borings were advanced to groundwater or to depths up to 15 feet bgs using direct push technology (Geoprobe® Model 6620DT) at 11 locations. Soil samples were collected as continuous cores within clear Macro-Core® 1.5 inch internal diameter (ID) buterate liners during boring advancement. Discrete soil samples were removed from the continuous core, with liners intact, in 6-inch sections at intervals of one, five, ten and fifteen feet bgs when those intervals were located above the water table. Additional discrete samples were also removed in 6-inch sections from any intervals of the core showing indications of discoloration or staining. Discrete samples were immediately capped on both ends with Teflon-lined end caps, labeled, and stored on ice in a cooler for transport to the laboratory under chain-of-custody control.



The remaining sections of core not retained for sampling had their liners cut open using Macro-Core® Liner Cutter. At those boring locations specified in the project work plan, additional soil samples were collected from the remaining portions of core at locations directly above the previously removed discrete sample intervals using pairs of 5-gram Encore™ samplers in accordance with EPA Method 5035. The lithology of each boring was logged from the continuous core during the sampling process in accordance with the Unified Soils Classification System. Boring logs are presented in Appendix B.

The Macro-Core® sampling equipment was steam-cleaned between borings. All other drilling and sampling equipment was washed between borings using a non-phosphate detergent, followed by a double rinse with de-ionized water.

### **3.1.2 Groundwater Sample Collection**

Soil borings were advanced to groundwater or a maximum depth of 15 feet bgs at all 11 boring locations. One inch ID PVC well casing was inserted into borings at those locations specified in the work plan in order to facilitate groundwater sampling. Each complete well casing consisted of a five foot section of one inch slotted well casing and up to ten feet of solid casing. Groundwater samples were collected using new, clean, disposable plastic bailers lowered into the boring through the inserted well casing.

Samples were decanted into appropriate laboratory-supplied sample bottles, labeled, and stored on ice in a cooler for transport to the laboratory under chain-of custody control. Groundwater samples to be analyzed for Title 22 Metals were decanted into 500 milliliter (ml) containers preserved with nitric acid and were not field-filtered prior to preservation. Groundwater samples to be analyzed for TPH-D or TPH-MO were decanted into one-liter, amber, unpreserved glass containers. Groundwater samples to be analyzed for VOCs and SVOCs were decanted into 40 ml VOA containers preserved with hydrochloric acid (HCl).

Well casings were removed from their boring and discarded upon completion of sample collection. Disposable bailers were discarded and not reused at subsequent borings. Upon completion of soil and groundwater sampling, all borings were backfilled to the surface with neat cement grout with 5% bentonite.



## **3.2 Investigation Findings**

### **3.2.1 Southern End of Old Warehouse Building**

Soil samples were collected at 2 locations inside the Old Warehouse and 2 locations outside of the Old Warehouse, as shown in Figure 4. Selected samples were analyzed for VOCs using EPA Method 8260B and also for TPH-D and TPH-MO using EPA Method 8015C.

In addition to these soil samples, a single groundwater sample was collected from boring NG-2. This groundwater sample was analyzed for VOCs using EPA Method 8260B.

Analytical test results for TPH-D, TPH-MO, and VOCs in soil are shown in Table 2. The laboratory analytical reports are presented in Appendix C. As shown in Table 2, results for TPH-D in soil ranged from non-detect (ND) to 13 mg/kg, significantly below the approved Site Specific Environmental Screening Levels (ESLs) of 100 mg/kg and 1,875 mg/kg for residential and commercial/industrial uses, respectively. Similarly, results for TPH-MO in soil ranged from ND to 330 mg/kg, again significantly below the Site Specific ESLs (500 mg/kg for residential redevelopment and 11,500 mg/kg for commercial/industrial redevelopment).

Analytical results for VOCs in soil were below the laboratory detection limits for all but one sample. Tetrachloroethene (PCE) was detected in sample NG-10S-2-EC at a concentration of 0.054 mg/kg. This concentration is below both the RWQCB Residential ESL for direct exposure (0.087 mg/kg), and the proposed Site Specific Residential ESL for PCE of 0.24 mg/kg.

Analytical test results for VOCs in groundwater from boring NG-2 are shown in Table 6. The only analyte detected above the reporting limit was cis-1, 2-Dichloroethene (cis-1, 2-DCE), which was detected at a concentration of 0.87 micrograms per liter ( $\mu\text{g/l}$ ). The measured level of cis 1, 2 DCE is significantly below the RWQCB's Tier I ESL for that analyte in groundwater (1.6  $\mu\text{g/l}$ ).

### **3.2.2 Former Etching and Print Shop**

Using direct push technology, soil samples were collected in this area from 3 soil borings at depths ranging from 1 foot bgs to groundwater, if observed during drilling, or until refusal occurred. Groundwater was not observed in boring NG-3, and was observed at depths of approximately 8 to 9.5 feet bgs in borings NG-4 and NG-5. Sample locations are shown in Figure 4. A thin (approximately 2-inch) layer of reddish-colored soil was observed in Boring NG-4. Samples from all three borings were analyzed for Title 22 Metals using EPA Method 6010B. Samples from boring NG-4 were also analyzed for and SVOCs using EPA Method





8270C. In addition to these soil samples, grab groundwater samples were collected from borings NG-4 and NG-5. These two groundwater samples were both analyzed for Title 22 Metals using EPA Method 200.8.

Analytical test results for Title 22 Metals in soil are shown in Table 5. The laboratory analytical reports are presented in Appendix C. Arsenic concentrations ranged from 1.6 to 12 mg/kg. As shown in Table 4, results for arsenic exceeded the CalEPA Residential CHHSL and Commercial/Industrial CHHSL of 0.07 mg/kg and 0.24 mg/kg, respectively, in all samples. Notwithstanding the CHHSLs, regulatory agencies generally do not require parties to remediate properties to levels less than naturally occurring background values. Malcolm Pirnie has indicated that background arsenic concentrations for the site vicinity can range in value up to at least 19 mg/kg.

Analytical test results for SVOCs in samples from boring NG-4 are shown in Table 3. The only SVOC detected was phenol, which was detected at concentrations of 0.92 mg/kg and 1.3 mg/kg. Phenol has not been detected as a COC, and no site-specific cleanup goal has been established for this chemical. Neither of the reported concentrations exceeds the RWQCB Residential ESL of 19 mg/kg.

Grab groundwater samples were collected from borings NG-4 and NG-5. As shown in Table 5, most of the metal concentrations reported for these water samples exceed the Tier 1 ESLs established by the RWQCB for aquatic habitat protection. However, given the fact that the samples were unfiltered, and the water was noticeably turbid, it is likely that the reported concentrations are elevated due to the presence of metals associated with sediment.

### **3.2.3 Debris/Dump Area**

Historical site maps indicate that a portion of the fill area in the western part of the site was used as a "Dump" and "Debris" area. General Mills contractor (Malcolm Pirnie) is currently encountering construction debris from this area while excavating soil as part of the TPH cleanup in this area (see Figure 3). Northgate drilled four borings beyond the current cleanup area to assess potential soil contamination (see Figure 4). Soil samples were collected from these borings at depths ranging from 1 foot bgs to groundwater, if observed during drilling, or until refusal occurred. Groundwater was observed at depths of approximately 7 to 8 feet bgs in borings NG-6 through NG-9. Samples from borings NG-6, NG-7, and NG-9 were analyzed for TPH-D and TPH-MO using EPA Method 8015C, VOCs using EPA Method 8260B, SVOCs using EPA Method 8270C, and Title 22 Metals using EPA Method 3050B. Samples from boring NG-8 were analyzed for TPH-D and TPH-MO using EPA Method 8015C. Although organic



debris was observed in the samples, no debris was encountered in any of the fill that prevented completion of the borings.

Analytical test results for TPH-D and TPH-MO, as well as VOCs are shown in Table 2. TPH-D concentrations ranged from ND to 34 mg/kg, and TPH-MO concentrations ranged from ND to 190 mg/kg. None of the samples contained petroleum hydrocarbon concentrations that exceed the approved Site Specific ESLs for residential redevelopment and commercial/industrial redevelopment (100 mg/kg and 1,875 mg/kg, respectively for TPH-D, and 500 mg/kg and 11,500 mg/kg, respectively for TPH-MO).

Analytical test results for SVOCs are shown in Table 3. None of the samples contained SVOCs above the laboratory reporting limits.

Finally, analytical test results for Title 22 Metals in soil are shown in Table 4. The arsenic concentrations for samples from this area ranged from 8.7 to 23 mg/kg. These results exceed the CalEPA Residential CHHSL and Commercial/Industrial CHHSL of 0.07 mg/kg and 0.24 mg/kg, respectively. Notwithstanding the CHHSLs, regulatory agencies generally do not require parties to remediate properties to levels less than naturally occurring background values. Malcolm Pirnie has indicated that background arsenic concentrations for the site vicinity can range in value up to at least 19 mg/kg.

### 3.3 Phase II Investigation Summary

Key findings of the Phase II investigation are as follows:

- Southern Area of Old Warehouse. According to Mr. Floyd Miller (General Mills' onsite representative), a machine shop formerly existed in this part of the site. Selected samples were tested for TPH-D, TPH-MO and VOCs. While relatively low concentrations of TPH-D, TPH-MO, and VOCs were detected, the sampling results did not indicate the presence of chemicals above relevant screening levels in this area.
- Former Etching and Printing Building. Selected samples were tested for metals and SVOCs. A thin (approximately 2-inch) layer of reddish-colored soil was observed in a sample from Boring NG-4. Laboratory analysis of this sample indicated low concentrations of the SVOC phenol (approximately 1 mg/kg). No other SVOCs were detected. The highest arsenic concentration was 12 mg/kg. It is possible that the reddish-colored soil is due to iron oxide pigments or other substances disposed in the vicinity of Boring NG-4. While the available chemical analyses do not indicate significant soil impacts, if this area is excavated as part of Site re-development, Northgate recommends





that soil conditions be monitored for indications of odors or staining, and further assessed if additional areas of such soil are encountered.

Grab groundwater samples were collected from borings NG-4 and NG-5. These samples contained several metals at concentrations that exceed the Tier 1 ESLs established by the RWQCB. However, given the fact that the samples were unfiltered, and the water was noticeably turbid, it is likely that the reported concentrations are considerably higher than the metal concentrations actually dissolved in the groundwater. Considering the turbid nature of the water samples, and given that significant metal concentrations were not found in soils, it is not likely that remedial actions would be required for metals in groundwater.

- Reported Dump/Debris Area. Historical site maps indicate that a portion of the fill area in the western part of the site was used as a “Dump” and “Debris” area. General Mills contractor (Malcolm Pirnie) is currently encountering construction debris from this area while excavating soil as part of the TPH cleanup in this area. Northgate drilled four borings beyond the current cleanup area to assess potential soil contamination. Although organic debris (i.e., wood fragments) was observed in the samples, no debris was encountered in any of the fill that prevented completion of the borings. Selected soil samples were tested for VOCs, TPH, SVOCs, and metals. Relatively low concentrations of TPH-D and TPH-MO were detected, but below the approved cleanup goals for this part of the site. No SVOCs or VOCs were detected. The highest arsenic concentration detected in this area was 23 mg/kg.
- Arsenic Concentrations in Soil. A concentration of 23 mg/kg was detected in a sample from Boring NG-9S-2. Other sampling results for arsenic were generally in the range of 5 to 10 mg/kg. No site-specific cleanup goal for arsenic has been established. The Cal EPA CHHSLs for arsenic are 0.07 mg/kg (residential) and 0.24 mg/kg (commercial/ industrial). Notwithstanding the CHHSLs, regulatory agencies generally do not require parties to remediate properties to levels less than naturally occurring background values. Malcolm Pirnie has indicated that background arsenic concentrations for the site vicinity can range in value up to at least 19 mg/kg.

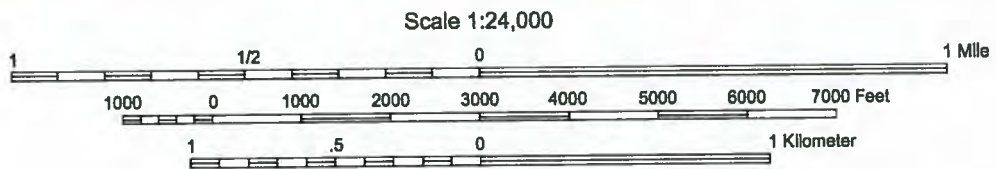
While the County is not requiring any remediation of soil containing arsenic at this time, arsenic concentrations may need to be further evaluated prior to site development. If further evaluation indicates that arsenic concentrations in localized areas exceed regional background values, it may be necessary to develop a management strategy for arsenic. Such a strategy would likely include containing affected soil below future building footprints or paved areas of the Site.



**FIGURES**



© Project: Temp011641164.02 General Mills Co. Phase II Report (PH II) Figures/Plots 1. Site Location.dwg Layout: 8.5x11.P User: csl Feb 07, 2007 - 4:56pm



**FIGURE 1**  
**Site Location Map**

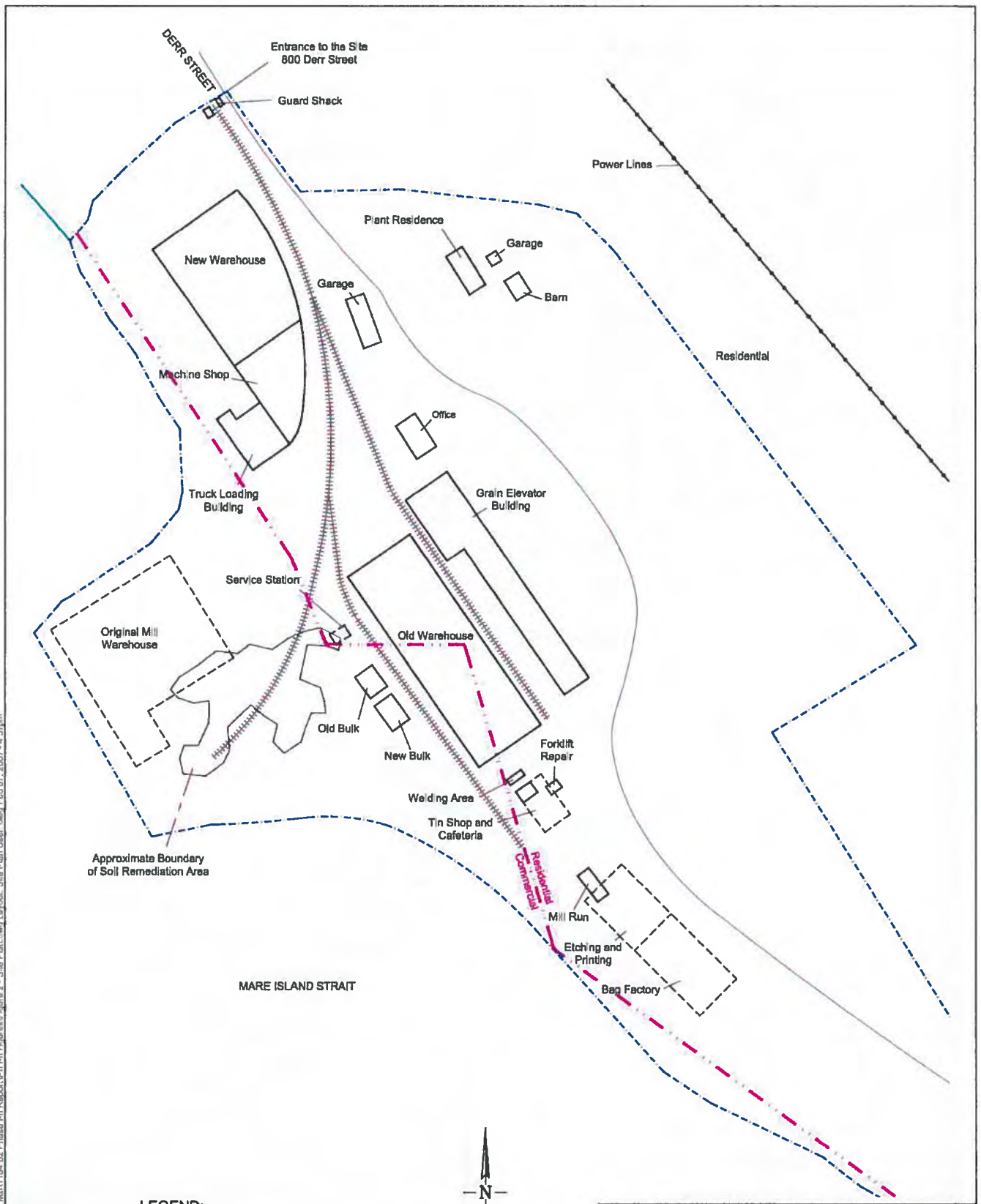
General Mills Facility  
Phase II Soil and Groundwater Quality Investigation  
Vallejo, California



Project No. 1164.02

Source: National Geographic USGS TOPO! 2000

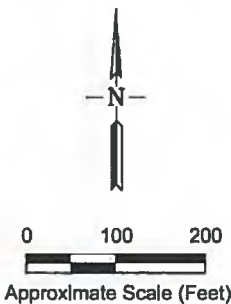




G:\Projects\Temp\1164\1164\_02\_General Mills\1164\_02\_Phase II Report\PH I-II Figures\Figure 2 - Site Plan.dwg Layout: Site Plan User: oleg Feb 07, 2007 - 4:57pm

**LEGEND:**

- - - - - Site boundary
- - - - - Residential survey line
- Existing building
- Former building



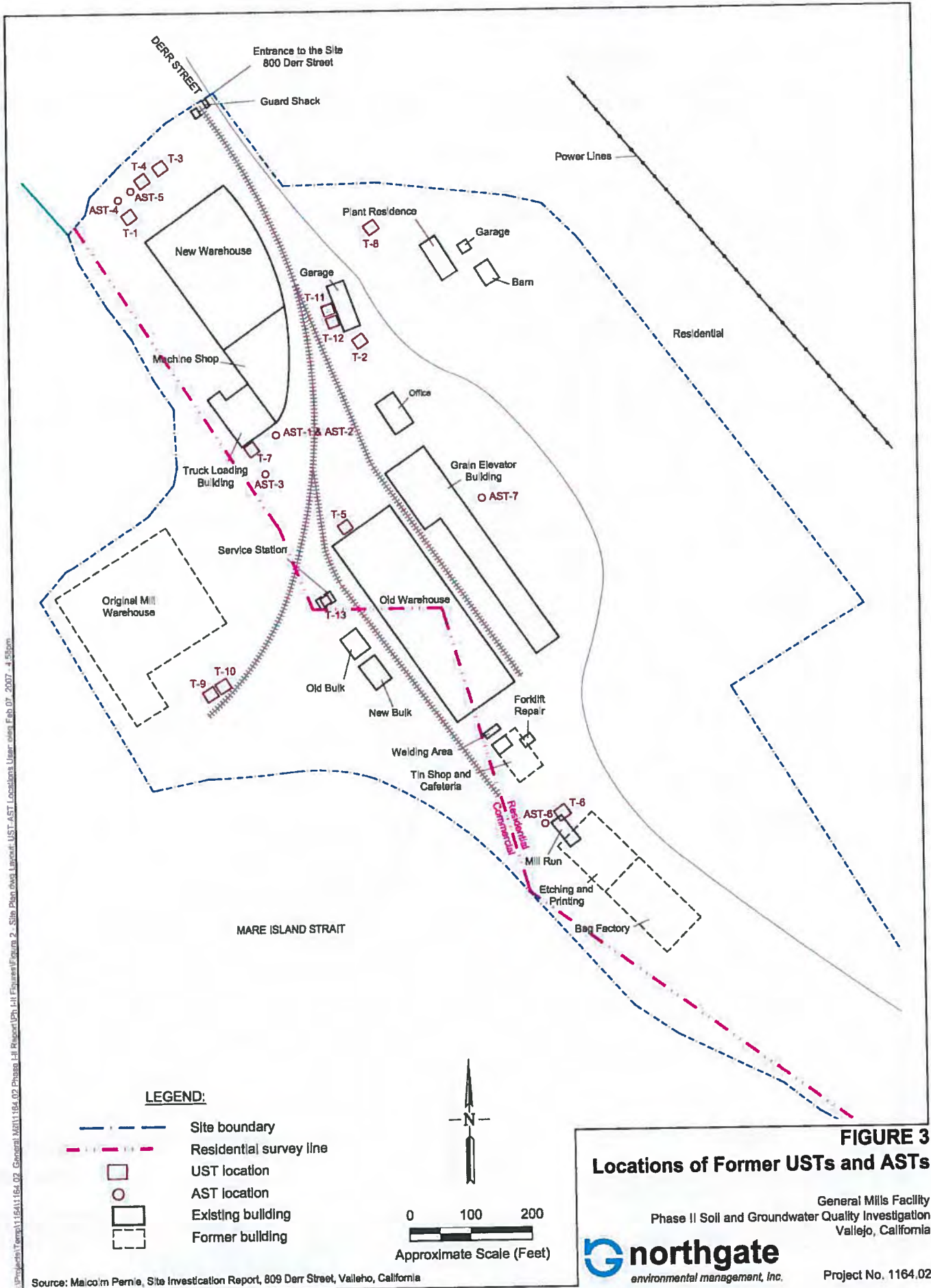
**FIGURE 2**  
**Site Plan**

General Mills Facility  
Phase II Soil and Groundwater Quality Investigation  
Vallejo, California



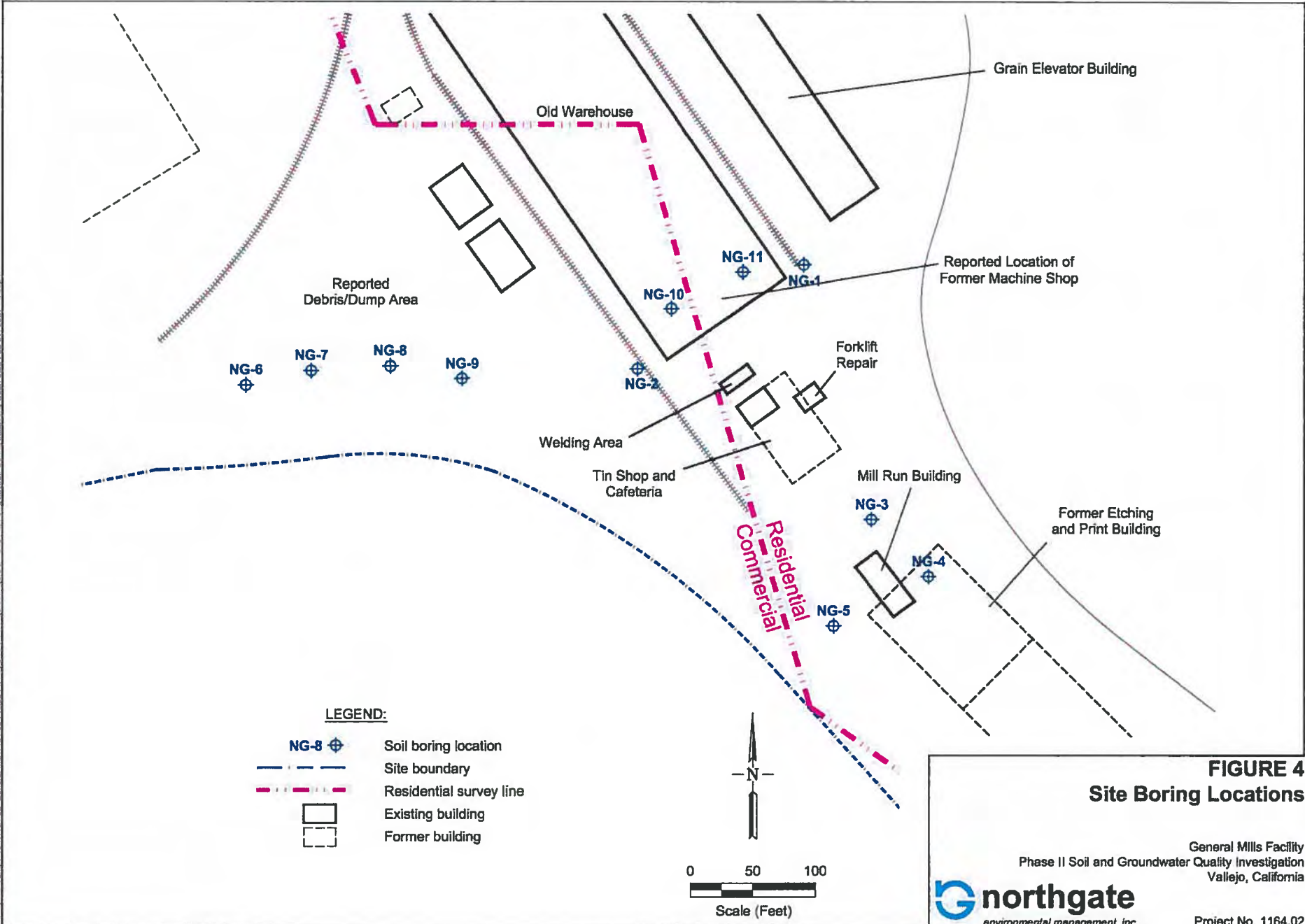
Project No. 1164.02

Source: Malcolm Pirnie, Site Investigation Report, 809 Derr Street, Vallejo, California



C:\projects\Temp\11641164.02\_General Mills\1164.02\_Phase II Report\PH II Figures\Figure 3 - Site Plan.dwg Layer: UST, AST Locations User: jsls Feb 07 - 4:55pm

G:\Projects\TombA\1164\1164\_02\_General Mills\1164\_02\_Phase II\1164\_02\_Phase II\Figures\Figure 2 - Site Plan and Layout\Boring Locations User.dwg, Feb 07, 2007, 4:55pm



Grain Elevator Building

Old Warehouse

Reported Debris/Dump Area

NG-6

NG-7

NG-8

NG-9

NG-2

Welding Area

Tin Shop and Cafeteria

NG-11

NG-10

NG-1

Reported Location of Former Machine Shop

Forklift Repair

Commercial/Residential

Mill Run Building

NG-3

NG-4

NG-5

Former Etching and Print Building

**TABLES**

**TABLE 1**  
**Summary of Soil and Groundwater Analyses Performed**

Sample ID	Location	Matrix	Analyses			
			VOCs EPA Method 8260B	TPH EPA Method 8015C	SVOCs EPA Method 8270D	Metals CAM 17 EPA Method 6020A
NG-1S-3	South Side of Old Warehouse	SOIL		X		
NG-1S-3-EC		SOIL	X			
NG-2S-1		SOIL		X		
NG-2S-2		SOIL		X		
NG-2S-2-EC		SOIL	X			
NG-2W-VOC		WATER	X			
NG-3S-1		Reported Debris/Dump Area	SOIL			
NG-3S-2	SOIL					X
NG-4S-2	SOIL				X	X
NG-4S-3	SOIL				X	X
NG-4-W	WATER					X
NG-5S-2	SOIL					X
NG-5W	WATER					X
NG-6S-2	Former Etching and Printing Building	SOIL		X	X	X
NG-6S-2-EC		SOIL	X			
NG-7S-2		SOIL		X	X	X
NG-7S-2-EC		SOIL	X			
NG-8S-2		SOIL		X		X
NG-9S-2		SOIL		X	X	X
NG-9S-2-EC		SOIL	X			
NG-9S-3-EC	SOIL	X				
NG-10S-2	South Side of Old Warehouse	SOIL		X		
NG-10S-2-EC		SOIL	X			
NG-11S-1		SOIL		X		
NG-11S-2		SOIL		X		
NG-11S-2-EC		SOIL	X			
Total # of Samples			9	10	5	11



**TABLE 2**  
**Soil Sample Analytical Results—Hydrocarbons and VOCs (EPA Methods 8015C and 8260B)**  
 (results in mg/kg)

Sample ID	Sample Depth (ft)	Petroleum Hydrocarbons		Volatile Organic Compounds (VOCs)						
		TPH as Diesel	TPH as Motor Oil	Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	MTBE	Other VOCs
NG-1S-3	9.5	ND	ND	NA	NA	NA	NA	NA	NA	NA
NG-2S-1	1	9.3	82	NA	NA	NA	NA	NA	NA	NA
NG-2S-2	5	1.2	13	NA	NA	NA	NA	NA	NA	NA
NG-6S-2	5	ND	ND	NA	NA	NA	NA	NA	NA	NA
NG-7S-2	5	ND	ND	NA	NA	NA	NA	NA	NA	NA
NG-8S-2	5	ND	ND	NA	NA	NA	NA	NA	NA	NA
NG-9S-2	5	34	190	NA	NA	NA	NA	NA	NA	NA
NG-10S-2	5	13	330	NA	NA	NA	NA	NA	NA	NA
NG-11S-1	1	ND	ND	NA	NA	NA	NA	NA	NA	NA
NG-11S-2	5	ND	ND	NA	NA	NA	NA	NA	NA	NA
NG-1S-3-EC	9.5	NA	NA	ND	ND	ND	ND	ND	ND	ND
NG-2S-2-EC	5	NA	NA	ND	ND	ND	ND	ND	ND	ND
NG-6S-2-EC	5	NA	NA	ND	ND	ND	ND	ND	ND	ND
NG-7S-2-EC	5	NA	NA	ND	ND	ND	ND	ND	ND	ND
NG-9S-2-EC	5	NA	NA	ND	ND	ND	ND	ND	ND	ND
NG-9S-3-EC	10	NA	NA	ND	ND	ND	ND	ND	ND	ND
NG-10S-2-EC	5	NA	NA	ND	ND	ND	ND	ND	ND	0.054*
NG-11S-2-EC	5	NA	NA	ND	ND	ND	ND	ND	ND	ND
Residential ESL (Direct Exposure)		400	1000	0.18	100	400	330 <sup>1</sup>	330 <sup>1</sup>	30	**
Site Specific Residential ESL		100	500	--	--	--	--	--	--	**
Site Specific Commercial/Industrial ESL		1875	11500	--	--	--	--	--	--	--



Notes

NA: not analyzed

ND: not detected at or above the laboratory method reporting limit (varies with specific compounds)

TPH: total petroleum hydrocarbons

\*Tetrachloroethene Residential ESL (Direct Exposure): 0.087, Proposed Site Specific Commercial/Industrial ESL: 0.24

\*\* : varies with specific compound

--: not established

ESL: Environmental Screening Level for direct exposure in a residential land use setting (San Francisco Bay Regional Water Quality Control Board, 2005)

mg/kg: milligrams per kilogram (parts per million, ppm)

1. Xylenes, not m,p - Xylenes or o-Xylenes specifically



**TABLE 3**  
**Soil Sample Analytical Results—SVOCs (EPA Method 8270C)**  
 (results in mg/kg)

Sample ID	Sample Depth (ft)	Semi-Volatile Organic Compounds (SVOCs)						
		Acenaphthene	Benzo(a)pyrene	Fluorene	Naphthalene	Phenol	Pyrene	Other SVOCs
NG-4S-2	5	ND	ND	ND	ND	0.92	ND	ND
NG-4S-3	5.7	ND	ND	ND	ND	1.3	ND	ND
NG-6S-2	5	ND	ND	ND	ND	ND	ND	ND
NG-7S-2	5	ND	ND	ND	ND	ND	ND	ND
NG-9S-2	5	ND	ND	ND	ND	ND	ND	ND
Residential CHHSL		--	0.038	--	--	--	--	**
Residential ESL (Direct Exposure)		13	0.038	8.9	0.46	19	85	**
Site Specific Residential ESL		--	0.38	--	--	--	--	**
Commercial/Industrial ESL		--	0.13	--	--	--	--	**
Commercial/Industrial ESL (Direct Exposure)		4400	0.13	3700	3.8	37000	3600	**
Site Specific Commercial/Industrial ESL		19	0.13	8.9	--	--	--	**

Notes

SVOCs: Semi-volatile organic compounds

\*\* : varies with specific compound

-- : not established

< : not detected at or above the indicated laboratory method reporting limit

CHHSL: California Human Health Screening Level (California Environmental Protection Agency, 2005)

ESL: Environmental Screening Level for direct exposure in a residential land use setting (San Francisco Bay Regional Water Quality Control Board, 2005)

mg/kg: milligrams per kilogram (parts per million, ppm)

ND: not detected at or above the laboratory method reporting limit (varies with specific compounds)

**TABLE 4**  
**Soil Sample Analytical Results - Metals (EPA Method 6010B)**  
(results in mg/kg)

Sample ID	Sample Depth (feet)	Metals																
		Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
NG-3S-1	1	0.53	<b>6.8</b>	140	ND	ND	49	<b>18</b>	52	7.7	0.066	0.58	57	ND	ND	ND	84	101
NG-3S-2	9.5	ND	5.4	55	2.8	ND	4.9	1.9	2.8	30	ND	2.6	2.9	ND	ND	ND	8.8	45
NG-4S-2	5	0.51	<b>1.6</b>	180	ND	ND	50	12	75	8.0	0.082	ND	58	ND	ND	ND	69	100
NG-4S-3	5.7	0.65	<b>12</b>	140	0.51	ND	62	26	74	9.2	0.080	.57	68	0.90	ND	ND	88	120
NG-5S-2	5	0.54	<b>5.3</b>	100	0.55	ND	51	11	74	7.6	0.061	ND	46	0.53	ND	ND	93	99
NG-6S-2	5	0.75	<b>8.7</b>	360	0.55	ND	54	18	69	15	0.11	0.62	56	ND	ND	ND	95	110
NG-7S-2	5	0.62	<b>9.1</b>	240	0.54	ND	45	16	56	15	0.080	ND	50	ND	ND	ND	85	110
NG-8S-2	5	0.66	<b>9.9</b>	220	0.51	ND	50	17	64	12	0.090	0.57	56	ND	ND	ND	86	100
NG-9S-2	5	4.4	<b>23</b>	140	ND	ND	50	17	58	61	0.11	1.9	48	0.54	ND	ND	77	110
Residential CHHSL <sup>1</sup>		30	0.07	5,200	150	1.7	100,000	660	3,000	150	18	380	1,600	380	380	5	530	23,000
Commercial/Industrial CHHSL <sup>1</sup>		380	0.24	63,000	1700	7.5	100,000	3,200	38,000	3,500	180	4,800	16,000	4,800	4,800	63	6,700	100,000
Site Specific Residential ESL		-	-	-	-	-	-	-	-	750	-	-	-	-	-	-	1,300	-

Notes

ND: not detected at or above the indicated laboratory method reporting limit

<sup>1</sup> Naturally occurring background concentration may be used in place of CHHSL

**bold:** exceeds CHHSL

CHHSL: California Human Health Screening Level (California Environmental Protection Agency, 2005)

mg/kg: milligrams per kilogram (parts per million, ppm)

**TABLE 5**  
**Groundwater Sample Analytical Results - Metals (EPA Method 8210)**  
 (results in µg/L)

Analyte	Groundwater Samples	
	NG-4W	NG-5W
Antimony	0.55	0.64
Arsenic	68	55
Barium	6600	1700
Beryllium	7.9	2.0
Cadmium	8.6	2.6
Chromium	570	2.6
Cobalt	400	210
Copper	1500	600
Lead	170	210
Mercury	3.5	1.6
Molybdenum	7.8	3.6
Nickel	1200	490
Selenium	71	3.8
Silver	10	1.6
Thallium	13	0.81
Vanadium	830	470
Zinc	4100	1500

Notes

\* Groundwater IS NOT a potential source of drinking water

µg/L: micrograms per liter (parts per billion, ppb)

Samples were not field filtered prior to nitric acid preservation.

**TABLE 6**  
**Groundwater Sample Analytical Results - VOCs (EPA Method 8260B)**  
 (results in µg/L)

Analyte*	Groundwater Samples	Regulatory Criteria	Basis for
	NG-2W-VOC	Tier I ESL**	ESL
cis 1, 2-Dichloroethene	0.87	1.6	Aquatic Habitat Goal

Notes

VOCs: volatile organic compounds

\* No other analytes detected above laboratory reporting limit

\*\* Groundwater IS NOT a potential source of drinking water

µg/L: micrograms per liter (parts per billion, ppb)

