CLEAN

Contract No. N62474-88-D-5086

Contract Task Order 0121

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JMM Project Manager: Ken Leung

NAVAL AIR STATION, ALAMEDA
ALAMEDA, CALIFORNIA

DATA SUMMARY REPORT
RI/FS PHASES 2B AND 3
VOLUME 1 OF 2
FINAL

October 27, 1992

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NAS ALAMEDA - RI/FS PHASES 2B AND 3
DATA SUMMARY REPORT

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1.0 INTRODUCTION

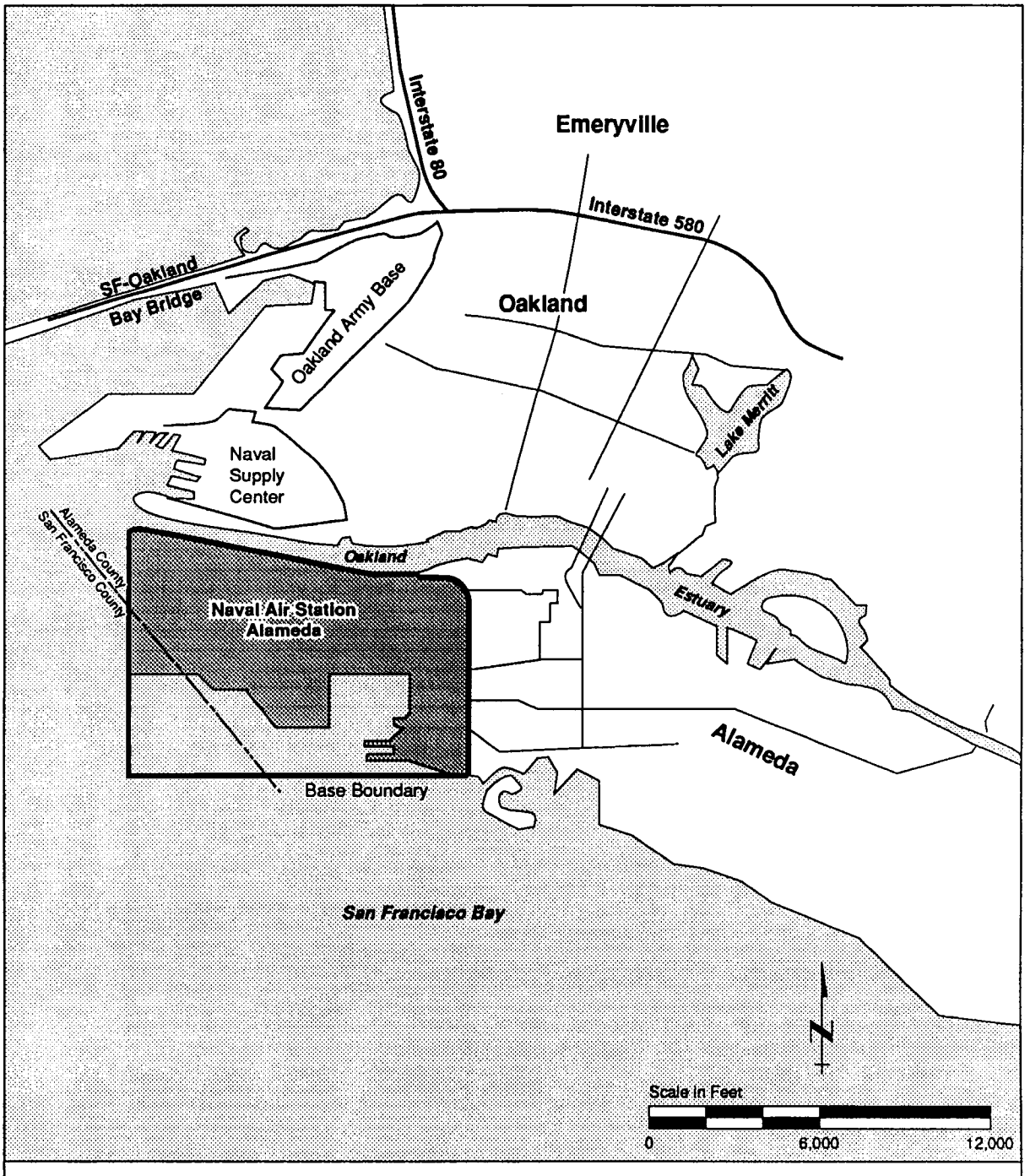
1.1 PURPOSE

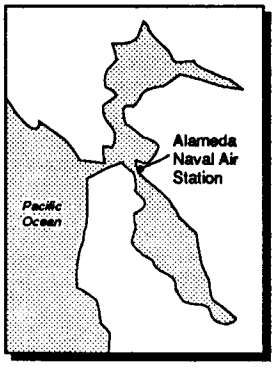
This report presents the results of an investigation performed at Naval Air Station (NAS) Alameda, located in Alameda, California (Figure 1-1). The investigation was performed under the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract No. N62474-88-D5086, Contract Task Order No. 0121 by James M. Montgomery, Consulting Engineers, Inc. (JMM) and PRC Environmental Management Inc. (PRC), referred to herein as the PRC team. This investigation focuses on sites identified in a Remedial Action Order (Order) received by the Navy from the California Department of Health Services (DHS), now known as the Department of Toxic Substances Control (DTSC). The 20 sites identified in the Order are shown on Figure 1-2.

The Navy undertook investigations at the 20 sites using a phased approach as described below. Ten of these sites were included in this investigation (Phases 2B and 3). Six sites identified in the Order were investigated earlier by Canonie Environmental Services Corp. (Canonie) as part of Phase 1 and 2A activities. Results of Canonie's investigations will be included in a future data summary report. Two offshore areas (Sites 17 and 20) identified in the Order will be included in a future ecological assessment investigation that is being performed as Phase 4. The two landfills identified in the Order are currently undergoing solid waste assessment test (SWAT) investigations that will be reported separately under Phases 5 and 6. Phases 7 and 8 will consist of the comprehensive remedial investigation and feasibility study (RI/FS) reports that are scheduled to be initiated in mid-1992.

Phase	Description	Sites Investigated
Phases 1 and 2A	Field investigation and data summary report	Sites 1, 2 (partial), 3, 4 (partial), 9, 10B, 13, 16, and 19
Phases 2B and 3	Field investigation and data summary report	Sites 4 (partial), 5, 6, 7A, 7B, 8, 10A, 11, 12, 14, and 15
Phase 4	Ecological assessment	Sites 17 and 20
Phases 5 and 6	SWAT investigation	Sites 1 and 2 (1943-1956 Disposal Area and West Beach Landfill)
Phase 7	Comprehensive RI report	All Sites
Phase 8	Feasibility study report	All Sites

This investigation (Phases 2B and 3) was performed as described in the work plans prepared by Canonie, Volumes 1 through 8 (Canonie a through j, 1989 through 1990), and addenda to these plans





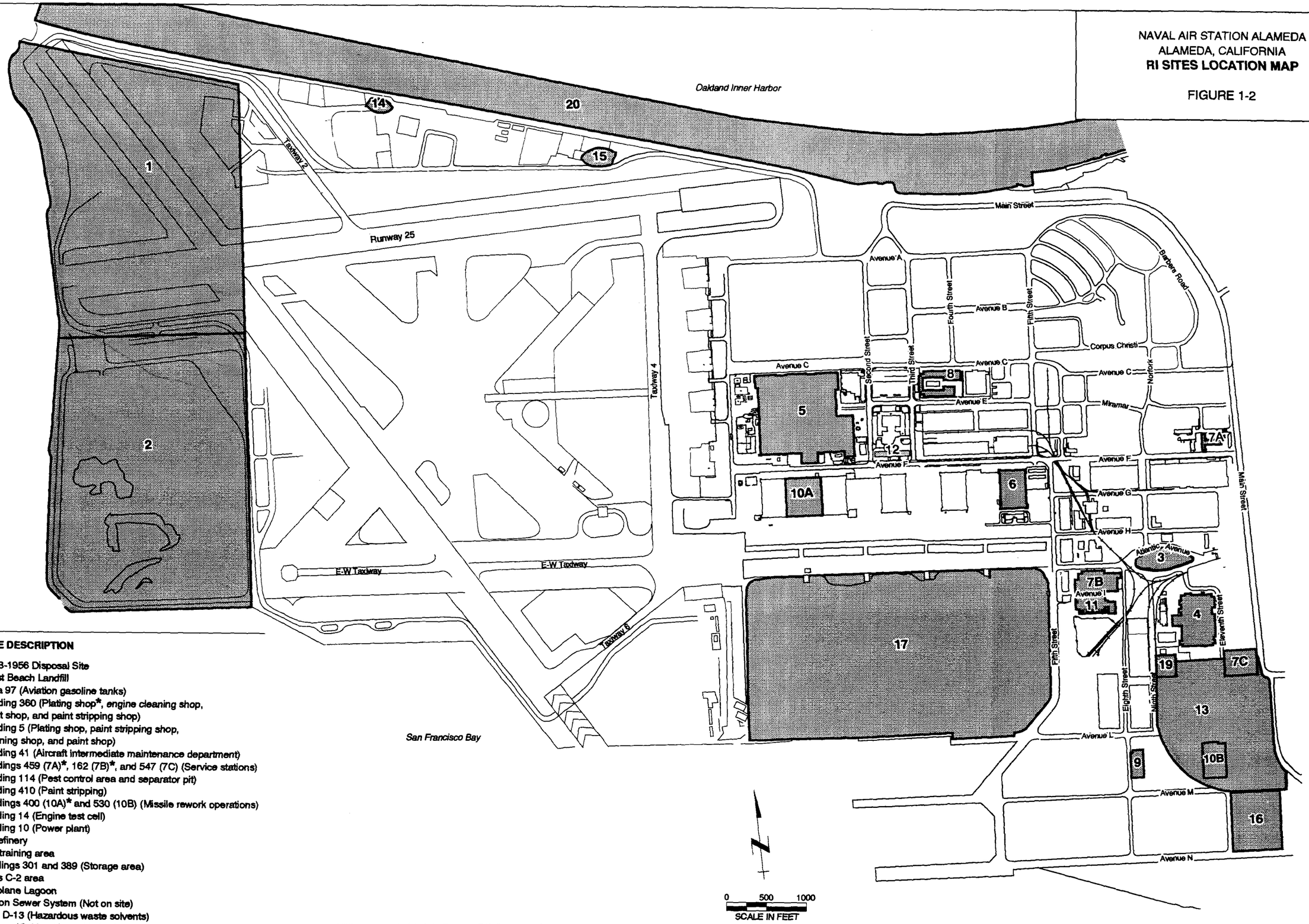
NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA

LOCATION MAP

FIGURE 1-1

NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA
RI SITES LOCATION MAP

FIGURE 1-2



LEGEND:

SITE NO.	SITE DESCRIPTION
1	1943-1956 Disposal Site
2	West Beach Landfill
3	Area 97 (Aviation gasoline tanks)
4	Building 360 (Plating shop*, engine cleaning shop, paint shop, and paint stripping shop)
5*	Building 5 (Plating shop, paint stripping shop, cleaning shop, and paint shop)
6*	Building 41 (Aircraft intermediate maintenance department)
7	Buildings 459 (7A)*, 162 (7B)*, and 547 (7C) (Service stations)
8*	Building 114 (Pest control area and separator pit)
9	Building 410 (Paint stripping)
10	Buildings 400 (10A)* and 530 (10B) (Missile rework operations)
11*	Building 14 (Engine test cell)
12*	Building 10 (Power plant)
13	Oil refinery
14*	Fire training area
15*	Buildings 301 and 389 (Storage area)
16	Cans C-2 area
17	Seaplane Lagoon
18	Station Sewer System (Not on site)
19	Yard D-13 (Hazardous waste solvents)
20	Estuary (Oakland Inner Harbor)

* Sites presented in this Phase 2B/3 Summary Report

prepared by the PRC team (PRC/JMM, 1991). These work plans and addenda were prepared to comply with the remedial investigation guidance developed by the U.S. Environmental Protection Agency (EPA) under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA).

This data summary report describes the field work, analytical methods, and results of the Phases 2B and 3 investigation only. Field work for Phases 1 and 2A was performed by Canonie in 1990. Results for Canonie's work will be summarized in a separate data summary report that will be completed in mid-1992. All remaining phases of the work are planned or are in progress, in accordance with a schedule approved by the DTSC.

1.2 OVERALL REMEDIAL INVESTIGATION PROGRAM

Prior to receipt of the Order, the Navy had begun investigations at NAS Alameda under the Naval Assessment and Control of Installation Pollutants (NACIP) Program. Under the NACIP program, an initial assessment study (IAS) was conducted by Ecology & Environment, Inc. (E&E, 1983). A confirmation study (CS) was then performed at sites identified for further study in the IAS (Wahler Associates, 1985). Results for individual sites addressed by the IAS and CS investigations are summarized in the section of this report associated with that individual site.

In 1988, the Navy retained Canonie to review the DTSC and EPA comments on the IAS and CS reports, and to develop a work plan to satisfy CERCLA guidance for remedial investigations. Canonie prepared work plans for investigations at sites identified for further study in the CS performed by Wahler (1985). These plans, including a sampling plan, quality assurance project plan, and a health and safety plan were approved by the DTSC.

The PRC team prepared addenda to these plans prior to the beginning of the Phase 2B and 3 investigation. Addenda describing modifications to sampling at Sites 4 and 5, and proposing a reduction in the number of geotechnical samples to be collected were prepared. Details of these addenda are described in Section 4.0.

The work plans for 19 of the sites are being implemented in a phased approach, as described earlier. Site 18, the base sewer system, was not investigated separately. Rather, as described in the Canonie work plan, samples collected near sewer lines at Sites 4, 5, 8, 9, 10, 11, and 12 will be used to assess the general integrity of the system in those areas. A discussion of the sewer system integrity will

be included in the Phase 7 RI report. Figure 1-3 presents the current schedule for implementation of the phased program.

1.3 NAS ALAMEDA - SITE DESCRIPTION

This section describes the location and history of NAS Alameda. Climatic and hydrogeologic information are presented in Section 2.0, Site Conceptual Model.

1.3.1 Location of NAS Alameda

NAS Alameda lies on the western end of Alameda Island, in Alameda and San Francisco Counties (Figure 1-1). Alameda Island lies along the eastern side of the San Francisco Bay, adjacent to the city of Oakland. The base, rectangular in shape, is approximately 2 miles in length and 1 mile in width, and occupies 2,634 acres. Approximately 1,526 acres of NAS Alameda are land and 1,108 acres are ocean.

1.3.2 Physiographic Setting/Climate

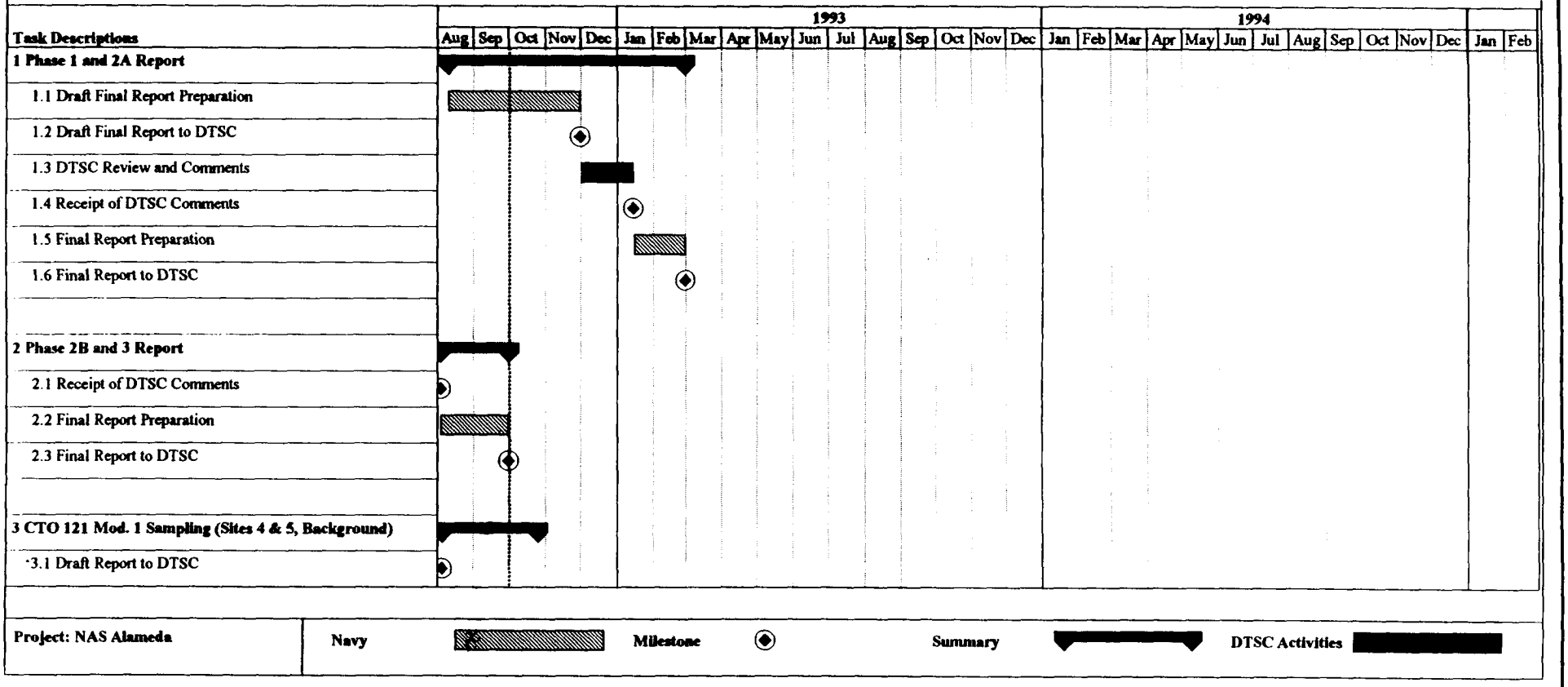
Alameda Island is located within the San Francisco Bay Basin, which lies within the Coast Range Physiographic Province of California. The island lies at the foot of a gently westward-sloping plain that extends from the Oakland/Berkeley hills on the east to the shore of the San Francisco Bay on the west. Originally a peninsula, Alameda Island was detached from the mainland in 1876 when a channel was cut linking San Leandro Bay and San Francisco Bay. The channel was later dredged to allow access for commercial ship traffic to and from the island's early industrial sites.

The San Francisco Bay area experiences a maritime climate with mild summer and winter temperatures. Rainfall occurs primarily during the months of October through April. Due to the varied topography of the Bay area, climatic conditions vary considerably throughout the region. Eastern Alameda County averages approximately 12 inches per year of rainfall (USGS, 1988; RWQCB, 1986). The area has been experiencing drought conditions since 1987, thus, precipitation has dropped below normal levels.

1.3.3 History of Use - NAS Alameda

At least two large industrial sites, a borax processing plant and an oil refinery, were located on the island near what is now NAS Alameda prior to 1930. The refinery was located in what is now

Draft Proposed RI/FS Schedule - Phases 1, 2A, 2B, 3, 4, 5, and 6 Sites
NAS Alameda



Major Assumptions:

1. Extensive effort is not required to reformat or restructure the Phases 1 and 2A site data base for QA/QC review.
2. It is assumed that DTSC will take between four to six weeks to review and comment on work plans and draft final reports for the sites at NAS Alameda undr CTO Nos. 107 and 121.
3. No additional assessmnet work is required after the submittal of the final report on the ecological assessment (Phase 4). The phase 4 work is anticipated to be awarded by the end of August, 1992. The actual start date of the the Phase 4 work will depend on the award date of the Phase 4 work.
4. Only one additional phase of field work for Phases 1, 2A, 2B, 3, 5, and 6 will be needed for the completion of the RI/FS.
5. Only four quarterly groundwater sampling and analyses are required for the RI/FS. No major aquifer testing is required for the RI/FS.

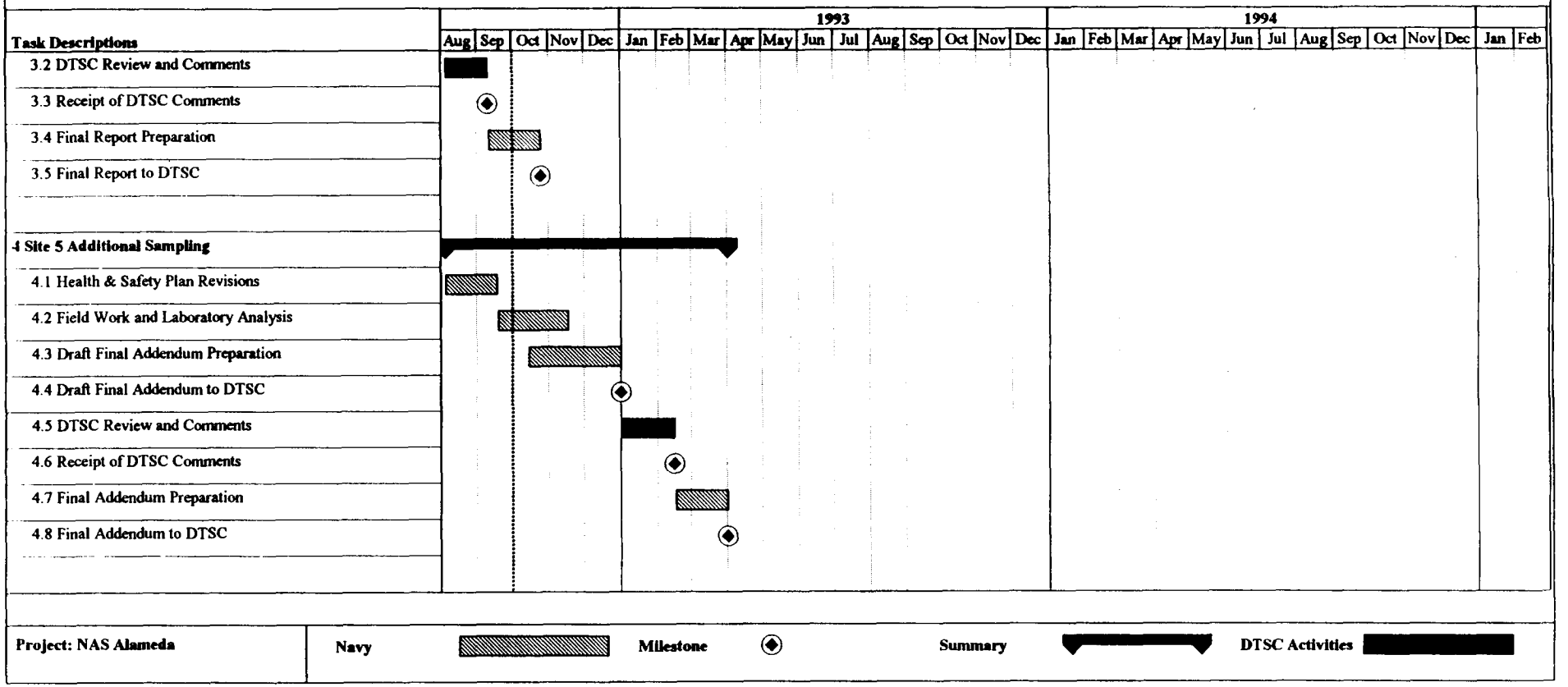
NAVAL AIR STATION ALAMEDA

ALAMEDA, CALIFORNIA

DRAFT PROPOSED SCHEDULE FOR IMPLEMENTATION OF OVERALL RI PROGRAM

FIGURE 1-3

Draft Proposed RI/FS Schedule - Phases 1, 2A, 2B, 3, 4, 5, and 6 Sites
NAS Alameda



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NAVAL AIR STATION ALAMEDA

ALAMEDA, CALIFORNIA

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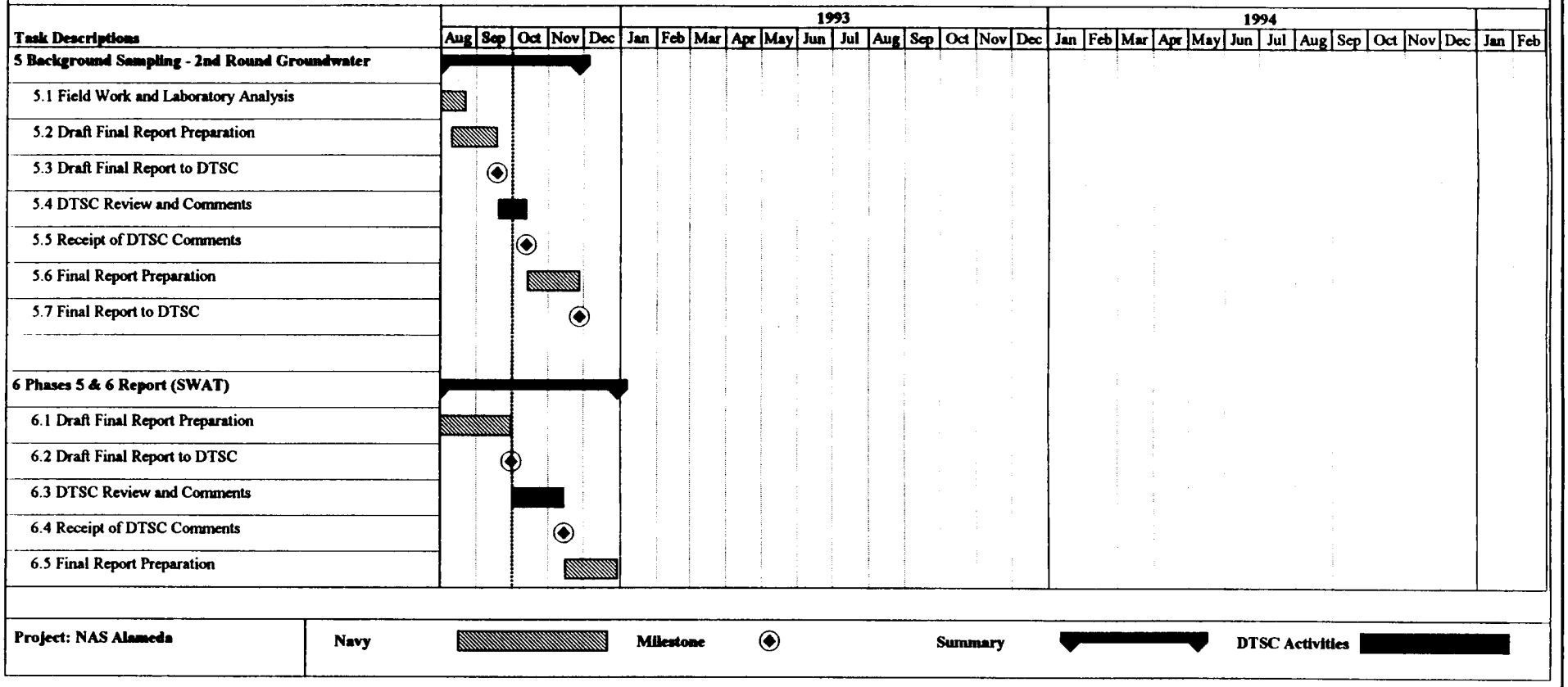

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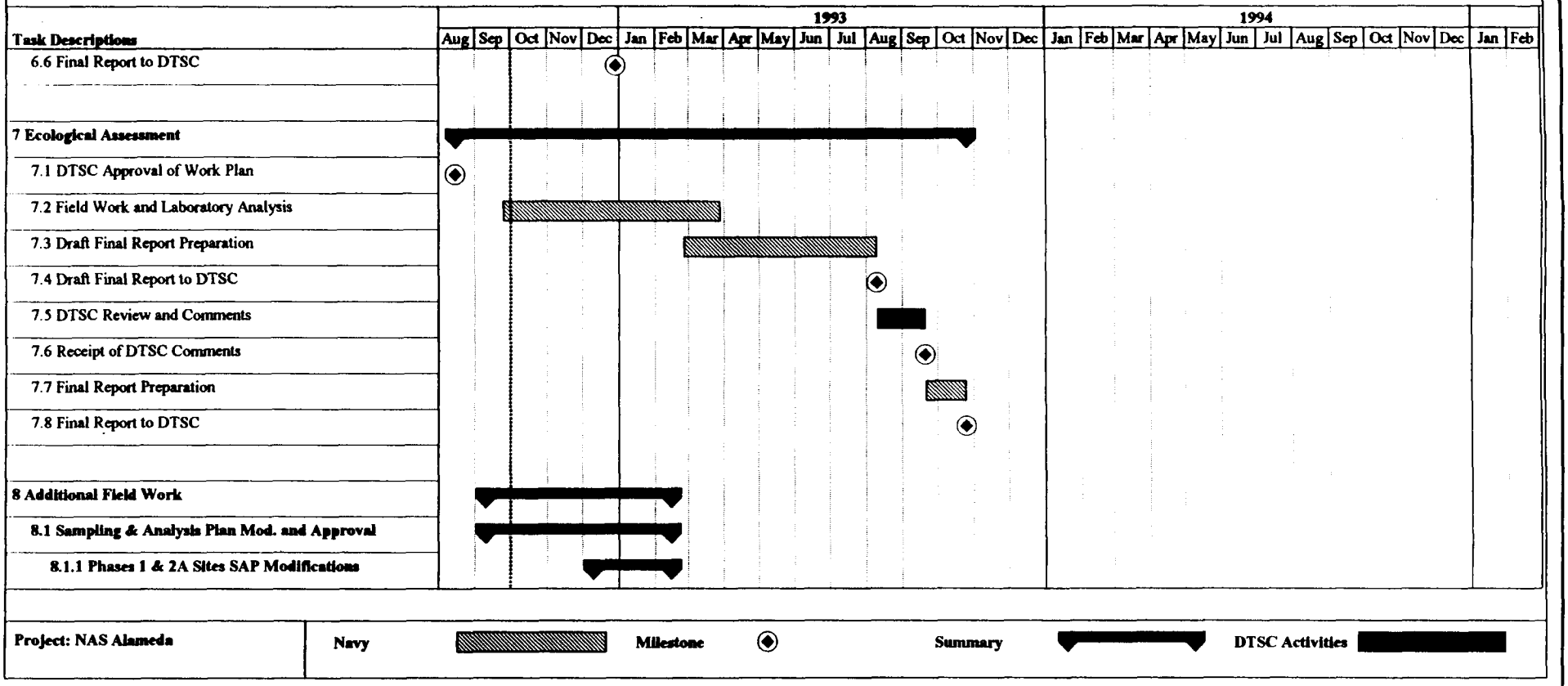

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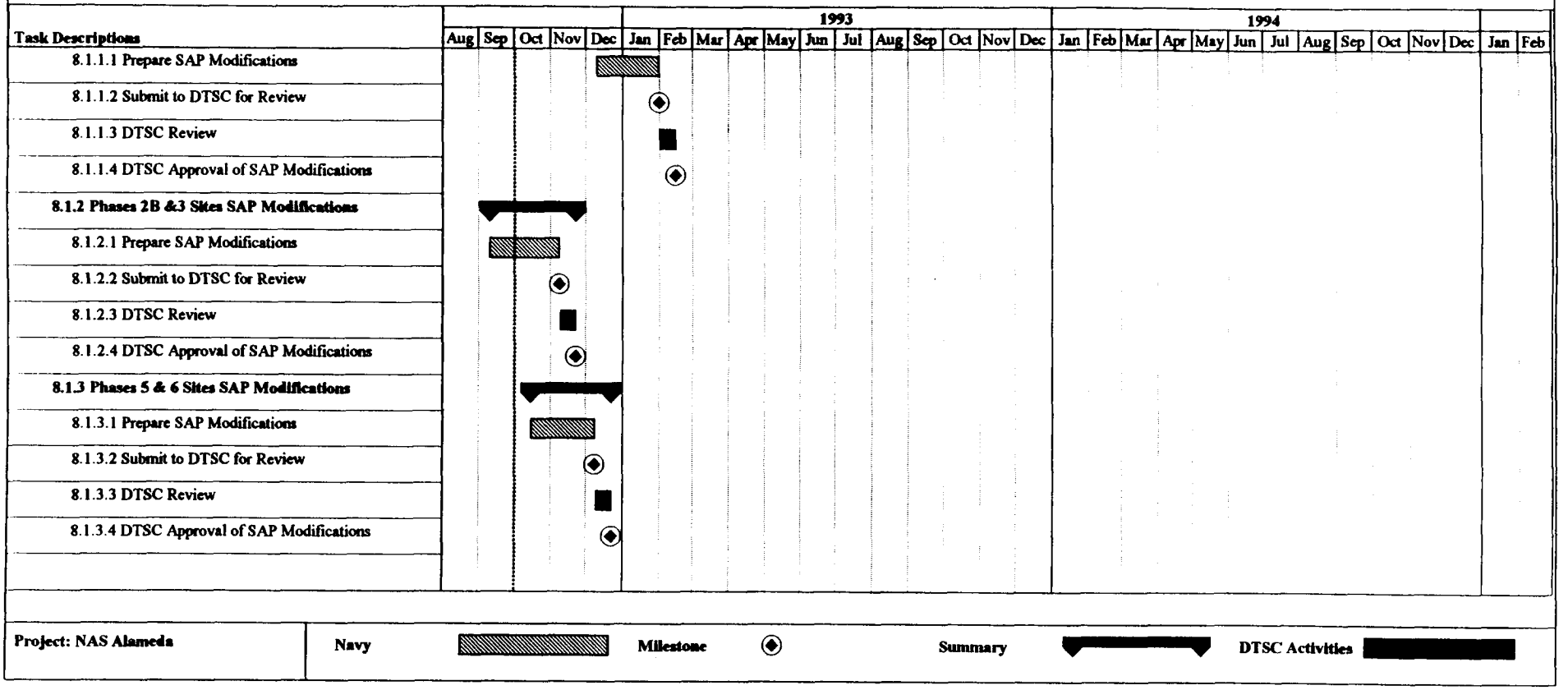

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NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA

DRAFT PROPOSED SCHEDULE FOR IMPLEMENTATION OF OVERALL RI PROGRAM

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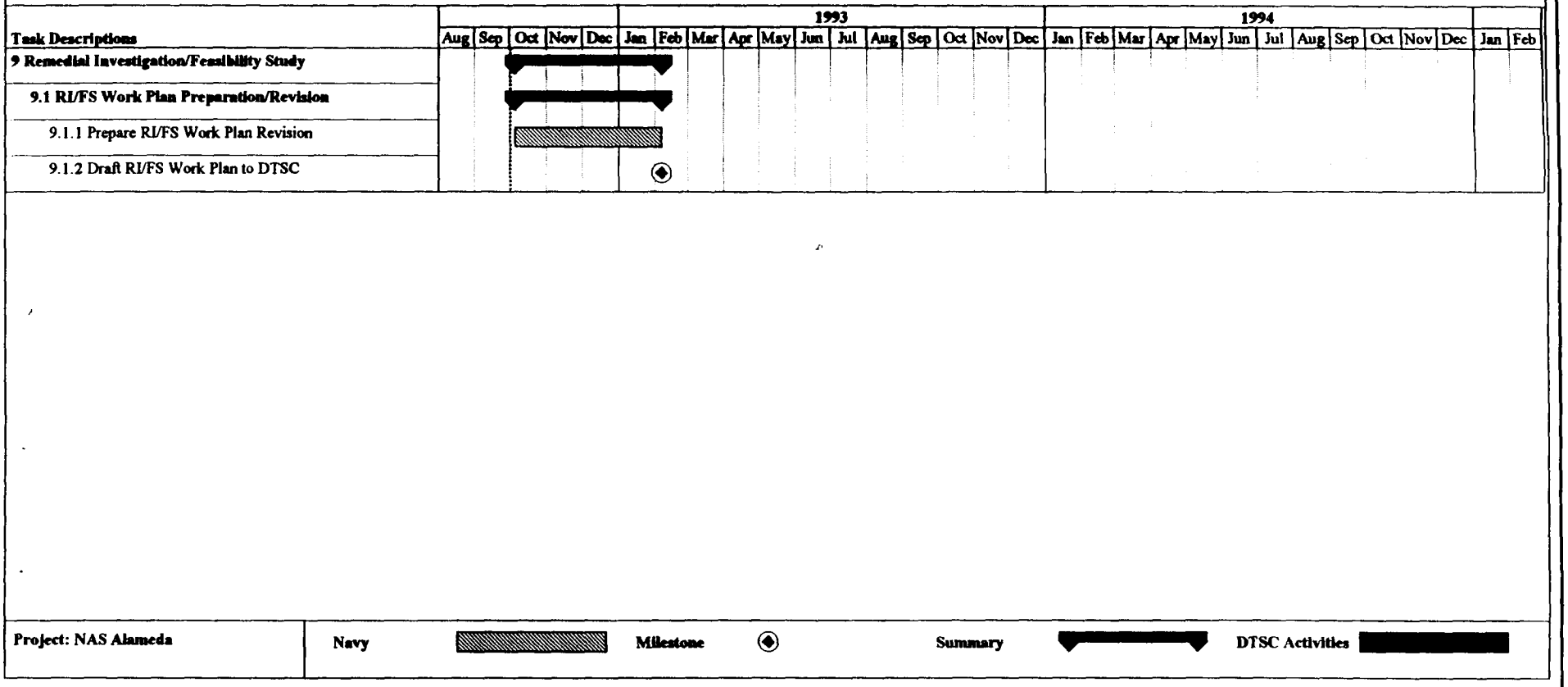

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NAVAL AIR STATION ALAMEDA

ALAMEDA, CALIFORNIA

DRAFT PROPOSED SCHEDULE FOR IMPLEMENTATION OF OVERALL RI PROGRAM

FIGURE 1-3

considered Site 13 (Figure 1-2). The borax plant was located on what is now the southeast corner of Atlantic and Eighth Streets (Sanborn, 1897). The U.S. Army acquired the NAS site from the city of Alameda in 1930 and began construction activities in 1931. In 1936, the U.S. Navy acquired title to the land from the Army and began building the air station in response to the military buildup in Europe prior to World War II. The station is largely constructed on hydraulic fill material, as discussed in Section 2.1. After the 1941 entry of the U.S. into the war, more land was acquired adjacent to the air station. Following the end of the war, NAS Alameda returned to its original primary mission of providing facilities and support for fleet aviation activities.

Currently, the eastern portion of the station is developed with offices, residences, and industrial facilities. The western portion of the station is primarily developed with runways and support facilities. Known past and present industrial practices are presented in each site specific description.

1.4 REPORT ORGANIZATION

This report is organized such that all site-specific information for each site investigated is presented in a single section. Elements common to all sites are discussed in Sections 2.0 through 4.0 and 15.0 through 18.0. Section 19.0 summarizes the results and includes recommendations.

It should be noted that this is only a data summary report. A subsequent RI report will describe chemical fate and transport, provide a risk assessment, and address potential applicable or relevant and appropriate requirements (ARARs).

The report is organized as follows:

- Section 1 - Introduction
- Section 2 - Site Conceptual Model
- Section 3 - Criteria for Preliminary Data Evaluation
- Section 4 - Phase 2B and 3 Investigation Description
- Section 5 - Site 4 / Building 360 Investigation
- Section 6 - Site 5 / Building 5 Investigation
- Section 7 - Site 6 / Building 41 Investigation
- Section 8 - Site 7A / Building 459 Investigation
- Section 9 - Sites 7B and 11 / Buildings 162 and 14 Investigation
- Section 10 - Site 8 / Building 114 Investigation
- Section 11 - Site 10A / Building 400 Investigation
- Section 12 - Site 12 / Building 10 Investigation

- Section 13- Site 14 / Fire Training Area Investigation
- Section 14 - Site 15 / Buildings 301 and 389 Investigation
- Section 15 - Basewide Groundwater Occurrence
- Section 16 - Basewide Polynuclear Aromatic Hydrocarbon Occurrence
- Section 17 - Public Health Evaluation
- Section 18 - ARARs
- Section 19 - Conclusions and Recommendations
- Section 20 - Response to Comments
- Section 21 - References

2.0 SITE CONCEPTUAL MODEL

This section presents a conceptual model for NAS Alameda that includes an overview of the geology and hydrogeology of the area, and a discussion of the occurrence and quality of groundwater. Site-specific geologic information is presented in the individual site sections, along with the results of the investigation for each site.

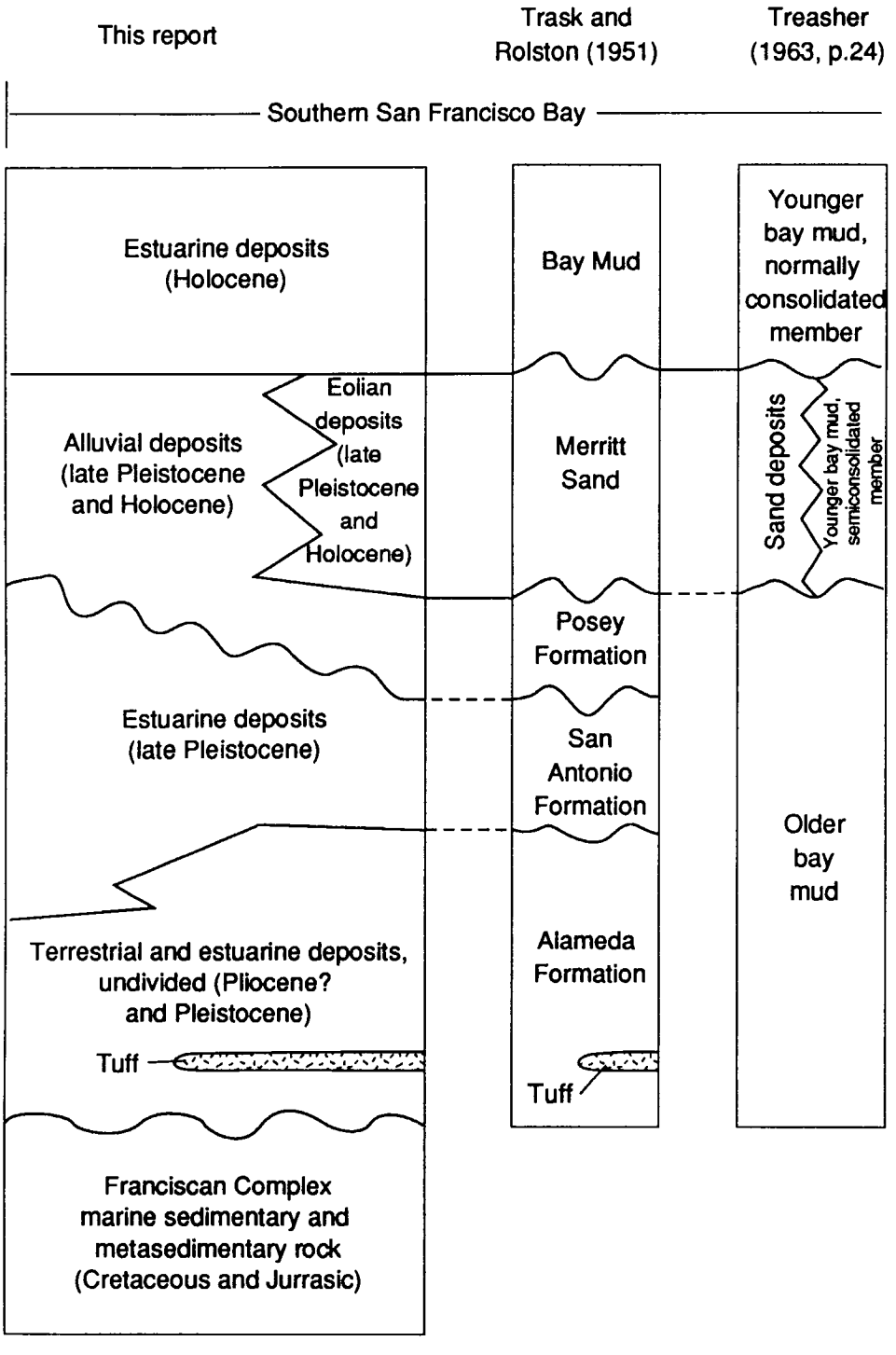
2.1 REGIONAL GEOLOGY/HYDROGEOLOGY

Alameda Island is underlain by approximately 300 feet of unconsolidated sediments overlying consolidated Franciscan bedrock (Radbruch, 1957). The unconsolidated units, from oldest to youngest are, Early Pleistocene terrestrial and estuarine deposits, Late Pleistocene estuarine deposits, Late Pleistocene/Holocene alluvial and eolian deposits, and Holocene estuarine deposits (Atwater, Hedel, and Helley, 1977). These units are roughly equivalent to the Alameda, San Antonio, and Posey formations, the Merritt Sand, and Young Bay Mud described by previous authors (Trask and Rolston, 1951; Radbruch, 1957). The Holocene estuarine deposits are overlain by artificial fill at the NAS Alameda site. Figure 2-1 presents a stratigraphic column for the area with a comparison to stratigraphic nomenclature previously applied to units in the NAS Alameda area. Generalized cross sections illustrating the lateral and vertical relationships of these units are presented in Figure 2-2.

The Alameda, San Antonio, and Posey Formations have been previously referred to collectively as the Old Bay Mud (Treasher, 1963). This terminology implies estuarine (bay) deposition for the entire sequence, much of which is in fact terrestrial alluvium (stream) deposits. The term Old Bay Mud is therefore not used in this report. The Holocene estuarine units have been previously identified as Young Bay Mud, and the terminology Holocene Bay Mud has been adopted for this report.

The units of primary concern in this investigation were the Holocene Bay Mud and overlying artificial fill material. Descriptions of the entire sequence are presented below, beginning with the oldest (deepest), for completeness.

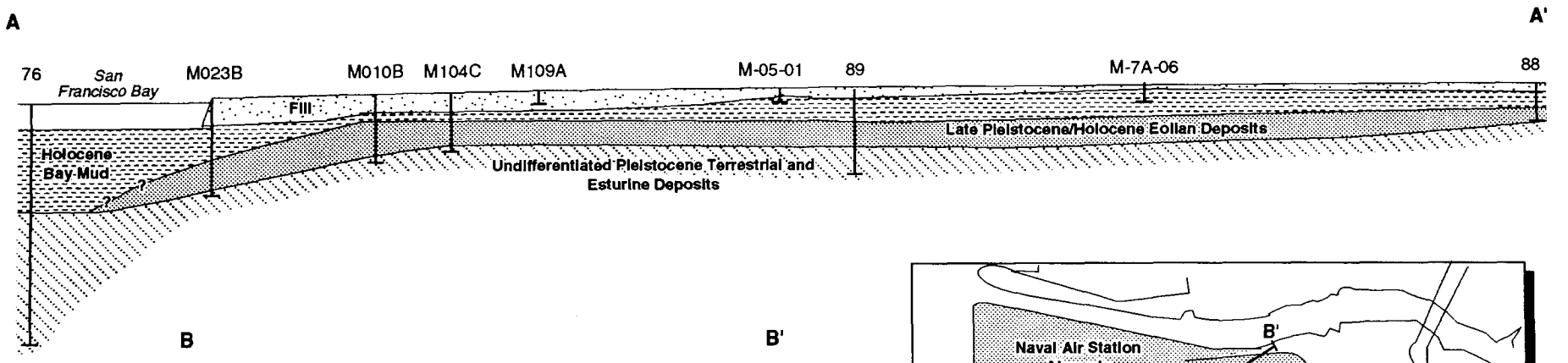
Pleistocene Deposits (Undifferentiated). Pleistocene deposits immediately overlie Franciscan bedrock in the vicinity of Alameda Island. These Pleistocene deposits are approximately correlative with the Alameda Formation of Trask and Rolston (1951) (Figure 2-1). The unit consists of undifferentiated terrestrial and estuarine deposits of Early Pleistocene age (Atwater, Hedel, and Helley, 1977). The terrestrial portion was deposited as alluvial fans that were shed off the Oakland/Berkeley hills located east

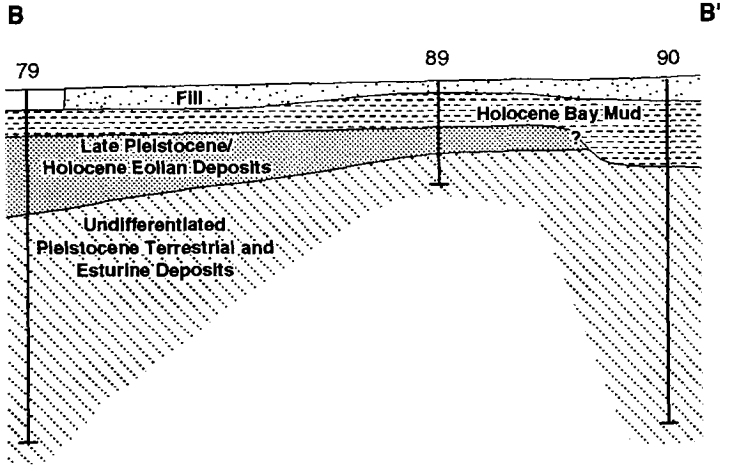


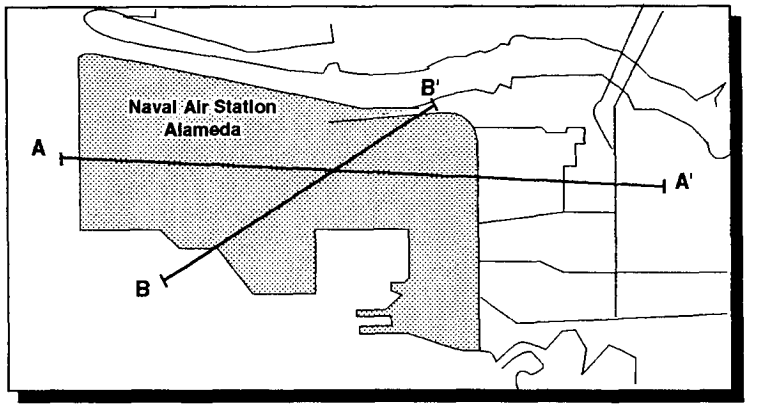
NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA
IDEALIZED STRATIGRAPHIC COLUMN FOR ALAMEDA AREA

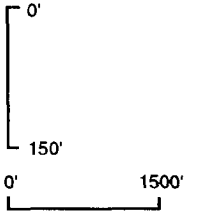
FIGURE 2-1

Source: Atwater, Hedel and Helley, 1977.









SCALE IN FEET
VERTICAL EXAGGERATION 10:1

LEGEND:

- Fill
- Holocene Bay Mud
- Late Pleistocene/Holocene Eolian Deposits
- Undifferentiated Pleistocene Terrestrial and Esturine Deposits
- Water

- Borings beginning with "M" are JMM monitoring wells
- Other borings are from "Areal and Engineering Geology of the Oakland West Triangle, California", Dorothy R. Radbruch, 1957.

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NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA

BASEWIDE GEOLOGIC CROSS SECTIONS

FIGURE 2-2

of the island. The estuarine portion was deposited west of the alluvial fans in a shallow estuary at the site of the present-day San Francisco Bay. The terrestrial portion consists of channels of sands and gravel, with silt and clay interbeds. The estuarine portion consists of relatively finer-grained material and contains sparse microscopic marine fossils. The thickness of the Early Pleistocene deposits in the vicinity of Alameda Island is not known. However, the Alameda Formation has a known maximum thickness of 1,050 feet and is approximately 360 feet thick in the vicinity of NAS Alameda (Radbruch, 1957). This unit was not sampled in the Phase 2B and 3 investigation and the depth at which it occurs under the sites investigated is not known.

Late Pleistocene Estuarine Deposits. Estuarine deposits of Late Pleistocene age overlie the undifferentiated Early Pleistocene deposits. These estuarine deposits include most of the San Antonio Formation of Trask and Rolston (1951) (Figure 2-1). The estuarine deposits, in the vicinity of NAS Alameda, consist of a dark greenish-gray silty clay. The unit is approximately 12 feet thick under the westernmost portion of Alameda Island (Atwater, Hedel, and Helley, 1977). The unit is considered an aquitard in the NAS Alameda area and is present at a depth of approximately 90 feet under the westernmost portions of NAS Alameda (PRC, 1991).

Late Pleistocene/Holocene Deposits. Alluvial and eolian deposits of Late Pleistocene to Holocene age unconformably overlie the Late Pleistocene estuarine deposits (Atwater, Hedel, and Helley, 1977). The oldest portions of the alluvial deposits are approximately equivalent to the Posey Formation of Trask and Rolston (1951). The younger portions of the alluvial deposits were deposited east of the Alameda area and are not discussed further in this report. The eolian (windblown) deposits are approximately equivalent to the Merritt Sand of Trask and Rolston (1951). These deposits formed as sand dunes when sea level was much lower than today and the shoreline of the west coast was outside the Golden Gate passage between the Bay and the ocean on what is today the continental shelf (Atwater, Hedel, and Helley, 1977).

Eolian deposits in the vicinity of NAS Alameda consist of a fine-grained sand to silty sand. Bivalve shells and shell hash are common throughout the unit, indicating some marine reworking during the most recent sea level rise. A paleochannel has been previously identified in the eolian deposits in the vicinity of NAS Alameda (Radbruch, 1957; PRC, 1990). The paleochannel trends roughly east-west through the central portion of NAS Alameda (Figure 2-2). Thus, the eolian deposits are not present in the central portion of the base, and Holocene Bay Mud deposits directly overlie Late Pleistocene estuarine or Early Pleistocene undifferentiated terrestrial and estuarine deposits.

Holocene Bay Mud. Holocene Bay Mud is the youngest naturally-occurring unit in the vicinity of NAS Alameda. The unit consists of fine-grained material deposited in an estuarine environment. The unit is still being deposited in the present-day San Francisco Bay. In the vicinity of NAS Alameda, Holocene Bay Mud consists of clay to silty clay with silty and clayey sand interbeds. Bivalve shells are present in some portions of the unit. In the eastern portion of the base, the uppermost portions of the unit contain abundant plant remains. This area of the base was mapped as tidal flats in an 1856 U.S. Coast and Geodetic Survey (Figure 2-3; Radbruch, 1957). These tidal flat deposits are interpreted to grade westward into subtidal deposits and both are considered a portion of the Holocene Bay Mud in this report.

Artificial Fill. Holocene Bay Mud is overlain by fill material ranging in thickness from 0 to 30 feet over most of NAS Alameda. The fill is thinnest in the 1856 tidal flat area and thickens westward. The fill consists of dredge spoils from the surrounding San Francisco Bay, the Sea Plane Lagoon, and the Oakland Channel. The composition of the fill varies, but it is generally silty sand to sand with minor inclusions of clay and/or gravels. The sand fill is similar to the Late Pleistocene/Holocene eolian deposits (Merritt Sand), which may have served as a source for the fill material where it underlies the surrounding Bay.

Little information on the timing or the nature of the fill operations (i.e., hydraulic, or other) is available. However, historical aerial photographs indicate that by 1939 the central portion of the base (north of the Sea Plane Lagoon) had been filled by what appears to be hydraulic fill operations. In a May of 1940 photo, the north half of the air field appears to be filled. Fill operations in these photos appear to be in east-west linear rows with the intervening swales filled with water. This fill procedure may have produced a systematic variation in grain size of the fill material, with finer-grained material being deposited closer to the water-filled swales and coarser-grained material being deposited closer to the point at which the hydraulic fill pipe discharged. This systematic variation in grain size, if present, could affect shallow groundwater flow by creating preferential flow paths within the coarser-grained material. In the 1939 photos, portions of the present-day base located both northeast and northwest of the Sea Plane Lagoon are still submerged.

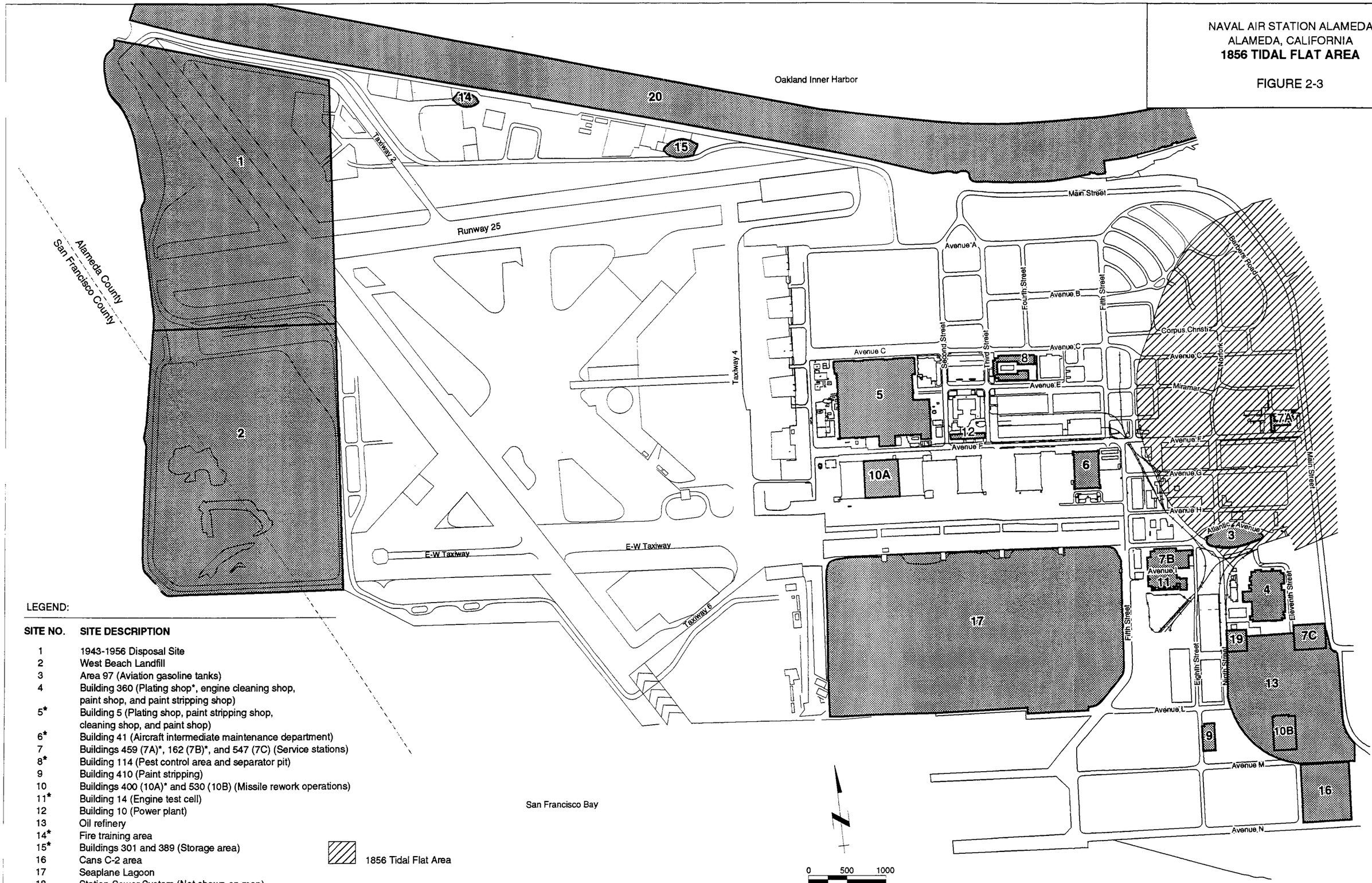
2.2 GROUNDWATER OCCURRENCE

The fill material comprises the uppermost water-bearing unit underneath NAS Alameda. The water-bearing fill material underlies most of NAS Alameda, with the exception of the easternmost portion of the base where the fill material is thinnest. In this portion of the base, the uppermost water-bearing unit includes native sediments of the Holocene Bay Mud.

NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA
1856 TIDAL FLAT AREA

FIGURE 2-3

CTO121.A-19



LEGEND:

SITE NO.	SITE DESCRIPTION
1	1943-1956 Disposal Site
2	West Beach Landfill
3	Area 97 (Aviation gasoline tanks)
4	Building 360 (Plating shop*, engine cleaning shop, paint shop, and paint stripping shop)
5*	Building 5 (Plating shop, paint stripping shop, cleaning shop, and paint shop)
6*	Building 41 (Aircraft intermediate maintenance department)
7	Buildings 459 (7A)*, 162 (7B)*, and 547 (7C) (Service stations)
8*	Building 114 (Pest control area and separator pit)
9	Building 410 (Paint stripping)
10	Buildings 400 (10A)* and 530 (10B) (Missile rework operations)
11*	Building 14 (Engine test cell)
12	Building 10 (Power plant)
13	Oil refinery
14*	Fire training area
15*	Buildings 301 and 389 (Storage area)
16	Cans C-2 area
17	Seaplane Lagoon
18	Station Sewer System (Not shown on map)
19	Yard D-13 (Hazardous waste solvents)
20	Estuary (Oakland Inner Harbor)

1856 Tidal Flat Area

* Phases 2B and 3 sites

The late Pleistocene/Holocene alluvial and eolian deposits (Merritt Sand) are also a water-bearing unit in the NAS Alameda area. The eolian deposits were considered by Canonie to comprise a separate aquifer separated from the water-bearing fill by the Holocene Bay Mud (Canonie, 1990a; PRC, 1991). However, the Holocene Bay Mud has been found to be discontinuous in the westernmost portion of the site, and thus, all units above the Late Pleistocene estuarine deposits (San Antonio equivalent) are considered to be in hydraulic connection (PRC, 1991). The alluvial portion of the Pleistocene (Undifferentiated) deposits comprises a second, deeper aquifer. Existing information on the occurrence and quality of groundwater within these aquifers is presented below.

2.3 GROUNDWATER QUALITY

Groundwater can be classified as fresh, brackish, or saline based on total dissolved solids (TDS) and/or specific conductivity values (Table 2-1). Analytical results for either one or both of these parameters are available for groundwater in all wells installed in the Phase 2B and 3 investigation. While no samples were collected from the deeper aquifer in this investigation, historical information on water quality is available for wells installed in this aquifer. A description of water quality in the NAS Alameda area is presented below.

2.3.1 Shallow Aquifer

Water quality problems have been identified in wells that tap shallow aquifers in the Alameda area. The Alameda County Flood Control and Water Conservation District (ACFCWCD) defines wells that tap the shallow aquifer as those with depths generally not exceeding about 100 feet. Water quality problems identified in these wells include high concentrations of nitrates and salt-water intrusion (ACFCWCD, 1988). Nitrate concentrations in excess of public health standards have been identified in wells in the east bay plain area for many years (ACFCWCD, 1988). Salt-water intrusion into the Pleistocene/Holocene eolian deposits (Merritt Sand) has also been identified (ACFCWCD, 1988). The intrusion of salt water into the Merritt Sand is thought to be related to density differences between salt water and fresh water rather than pumping of groundwater. Moreover, observations of water levels in many of the wells installed in the investigation indicates the shallow aquifer is influenced by tidal fluctuations, thus helping to account for elevated levels of TDS.

Table 2-2 summarizes general groundwater quality data for wells installed in the uppermost water-bearing zone during this investigation. With the exception of the Site 4 and Site 10A areas, groundwater is generally classified as brackish based on TDS concentrations and/or specific conductivity (Freeze and Cherry, 1979; Driscoll, 1987). Groundwater in the vicinity of Sites 4 and 10A is classified as

TABLE 2-1
CLASSIFICATION OF WATER BY TDS AND SPECIFIC CONDUCTIVITY

Classification	Total Dissolved Solids (mg/l)	Specific Conductivity (μmhos/cm)
Fresh Water	0-1,000	0 - [1300-1800]
Brackish Water	1,000-10,000	[1300-1800] - [13,000-18,000]
Saline Water	10,000-100,000	[13,000-18,000] - [130,000-180,000]
Brine	More than 100,000	More than [130,000-180,000]

Notes: [ ] = Conductivity varies by anion so conversion from TDS is inexact. Range is specific conductivity multiplied by (.55 to .75) = TDS.
mg/L = Milligrams per liter
μmhos/cm = Micromhos per centimeter
Total Dissolved Solids from Freeze and Cherry, 1979
Specific Conductivity from Driscoll, 1986

TABLE 2-2

WATER QUALITY DATA FOR SHALLOW GROUNDWATER MONITORING WELLS

(Sheet 1 of 3)

Site Number Well Number	Date Sampled	Specific Conductance (micromhos)	pH	Total Alkalinity (mg/L-CaCO3)	TDS (mg/L)	Hardness (mg/L-CaCO3)	Total Organic Carbon (mg/L)	Anions			
								Chloride (mg/L)	Fluoride (mg/L)	Nitrate (mg/L as N)	Sulfate (mg/L)
Site 4											
G-04-01	9/9/91	800	6	335	499	140	38.6	11.36	14.2	<0.010	26.00
G-04-02	9/9/91	150	7	75.0	186	64.0	16.6	1.898	4.11	<0.010	5.327
G-04-03	9/9/91	800	7	280	470	188	92.1	12.75	36.1	0.928	31.45
G-04-04	9/6/91	710	7	108	448	148	31.8	7.515	9.31	0.052	3.090
G-04-05	9/9/91	700	7	270	884	48.0	44.1	51.17	1.63	<0.010	93.18
G-04-06	9/9/91	390	7	215	370	64.0	19.5	10.30	0.92	2.73	20.50
G-04-07	9/10/91	190	5	170	223	80.0	21.8	5.924	1.32	1.19	12.48
G-04-08	9/9/91	250	5	145	228	96.0	68.5	6.981	1.98	0.348	10.71
G-04-09	9/9/91	240	6.5	120	257	250	34.3	7.652	3.53	0.572	14.13
Site 5											
M-05-01	8/28/91	9,200	8.4	107	4530	812	8.4	2,459	0.36	0.055	163.0
M-05-02	8/28/91	7,500	8.4	138	8340	1,330	7.2	2,983	0.31	0.085	73.00
M-05-03	8/28/91	2,900	6.8	211	1770	392	33.7	565.8	0.42	<0.010	9.218
M-05-04	8/28/91	9,000	8.3	181	3920	480	20.5	1,798	0.87	0.047	66.76
M-05-05	8/28/91	3,100	7.3	96.0	2430	400	5.7	1,036	0.48	1.22	79.26
Site 6											
M-06-01	8/23/91	4,100	7.6	103	NA	NA	6.9	913.7	0.39	0.034	41.91
M-06-02	8/23/91	2,500	6.0	25.0	NA	NA	7.5	21.58	0.56	0.125	34.32
M-06-03	8/23/91	2,000	8.5	59.0	NA	NA	9.7	559.6	0.28	0.397	53.58
M-06-04	8/23/91	280	8.3	14.0	NA	NA	6.8	69.24	0.49	0.265	9.899
M-06-05	8/23/91	1,500	8.2	35.0	NA	NA	27.5	295.2	0.89	0.020	22.07

TABLE 2-2

WATER QUALITY DATA FOR SHALLOW GROUNDWATER MONITORING WELLS

(Sheet 2 of 3)

Site Number / Well Number	Date Sampled	Specific Conductance (micromhos)	pH	Total Alkalinity (mg/L-CaCO3)	TDS (mg/L)	Hardness (mg/L-CaCO3)	Total Organic Carbon (mg/L)	Anions			
								Chloride (mg/L)	Fluoride (mg/L)	Nitrate (mg/L as N)	Sulfate (mg/L)
Site 7A											
M-07A-01	8/20/91	23,500	7	NA	NA	4,700	39.2	NA	NA	NA	NA
M-07A-02	8/20/91	39,000	7	NA	NA	6,000	77.8	NA	NA	NA	NA
M-07A-03	8/20/91	40,000	7	NA	NA	6,400	69.8	NA	NA	NA	NA
M-07A-04	8/20/91	15,000	7	NA	NA	2,800	34.4	NA	NA	NA	NA
W-1	8/21/91	14,000	7	NA	NA	1,500	40.2	NA	NA	NA	NA
W-2	8/20/91	6,000	7	NA	NA	1,200	191	NA	NA	NA	NA
W-3	8/21/91	22,000	7	NA	NA	2,500	41.3	NA	NA	NA	NA
Sites 7B and 11											
M-07B-01	8/21/91	1,300	7.8	175	NA	112	23.8	152.0	0.74	0.063	44.79
WA-8	9/4/91	4,500	7.6	233	NA	460	90.5	1,332	0.75	0.061	80.12
M-11-01	8/22/91	1,600	7.9	138	NA	NA	10.8	248.9	0.83	0.071	7.480
M-11-02	8/22/91	1,800	7.6	97.0	NA	NA	23.3	251.4	0.65	0.042	130.7
M-11-03	8/22/91	2,500	7.0	79.0	NA	NA	13.1	59.06	0.31	0.071	7.024
M-11-04	8/22/91	3,000	6.0	101	NA	NA	17.6	32.63	0.49	0.069	97.31
Site 8											
M-08-01	9/3/91	3,100	8	NA	NA	NA	47.6	NA	NA	NA	NA
M-08-02	9/3/91	1,400	7	NA	NA	NA	9.0	NA	NA	NA	NA
M-08-03	9/3/91	1,400	7	NA	NA	NA	11.5	NA	NA	NA	NA
M-08-04	9/4/91	3,000	7	NA	NA	NA	15.3	NA	NA	NA	NA
M-08-05	9/3/91	14,000	8	NA	NA	NA	15.4	NA	NA	NA	NA

TABLE 2-2

WATER QUALITY DATA FOR SHALLOW GROUNDWATER MONITORING WELLS

(Sheet 3 of 3)

Site Number / Well Number	Date Sampled	Specific Conductance (micromhos)	pH	Total Alkalinity (mg/L-CaCO3)	TDS (mg/L)	Hardness (mg/L-CaCO3)	Total Organic Carbon (mg/L)	Anions			
								Chloride (mg/L)	Fluoride (mg/L)	Nitrate (mg/L as N)	Sulfate (mg/L)
Site 10A											
M-10-01	8/29/91	1,000	8	53.0	NA	NA	9.0	227.8	0.44	0.023	27.69
M-10-02	8/29/91	195	10	15.0	NA	NA	12.0	6.487	0.39	0.063	17.71
M-10-03	8/29/91	90	9	<5.0	NA	NA	16.8	4.022	0.61	0.058	6.545
Site 12											
M-12-01	8/27/91	14,500	7.8	184	6800	NA	19.8	3,541	0.54	0.106	62.34
M-12-02	8/27/91	1,300	8.1	110	1040	NA	24.8	132.1	0.93	0.085	3.856
M-12-03	8/27/91	3,000	7.1	93.0	1670.0	NA	11.9	668.3	0.22	0.028	49.14
M-12-04	8/27/91	2,600	7.6	85.0	1640.0	NA	21.3	697.8	0.55	0.023	49.27
Site 14											
M-14-01	8/26/91	6,000	7	85.0	NA	NA	39.4	2,146	0.25	0.071	327.6
M-14-02	8/26/91	1,200	7.6	114	NA	NA	30.7	100.1	0.48	0.098	40.93
M-14-03	8/26/91	850	6.7	73.0	NA	NA	12.8	17.43	0.28	0.098	110.0
Site 15											
M-15-01	9/4/91	12,000	7	71.0	5,080	1,230	7.9	2,707	0.30	0.434	282.5
M-15-02	9/4/91	28,000	7	27.0	19,400	6,500	28.5	11,090	0.30	0.039	1,537
M-15-03	9/4/91	6,000	7	77.0	2,050	372	6.4	1,043	0.70	0.085	44.18

pH and Specific Conductivity are field measurements. Reported precision is subject to varying measurement techniques.
NA - Not Analyzed

fresh based upon either TDS or specific conductivity. Groundwater at Site 4 may be influenced by freshwater recharge in areas east of NAS Alameda. Groundwater monitoring wells installed at Site 10A are located near a storm sewer line and two large water mains. Groundwater samples collected from these wells may be affected by leakage of fresh water from these utilities.

Groundwater monitoring wells were constructed within the Pleistocene/Holocene eolian deposits underneath the westernmost portion of the base as part of Phase 5 and 6 SWAT activities. Groundwater in eolian deposits located underneath the runway area of the base has TDS concentrations ranging from 17,800 to 29,100 milligrams per liter (mg/L). Groundwater with TDS levels in this range is classified as saline (Freeze and Cherry, 1979).

2.3.2 Deeper Aquifer

Groundwater within the gravel and sand beds of the Pleistocene (Undifferentiated) alluvial fan deposits was at one time used for industrial supply wells on Alameda Island. The wells were abandoned due to naturally occurring mercury contamination derived from the Franciscan Formation (E&E, 1983). Information on the well depths and the concentrations of mercury detected in the wells was not included in the E&E (1983) report and no source of the information was referenced in the E&E document.

2.4 POTENTIAL USES OF GROUNDWATER

The California Regional Water Quality Control Board (RWQCB), San Francisco Bay Region, has designated the groundwater basin in which Alameda Island lies for potential use as "domestic or municipal supply, industrial process supply, industrial service supply, and agricultural supply" (RWQCB, 1986). However, the RWQCB indicates that "local groundwater quality conditions may vary significantly, due to natural factors, making some groundwater supplies unsuitable for the uses indicated."

Historical data indicate that shallow groundwater in the east bay plain area is affected by high nitrate concentrations and salt water intrusion (ACFCWCD, 1988). Based on TDS and/or specific conductivity, groundwater within the shallow aquifer at NAS Alameda is not suitable for use as a drinking water source. Deeper aquifers in the NAS Alameda area are not suitable as a drinking water source due to the presence of naturally occurring mercury.

3.0 CRITERIA FOR PRELIMINARY DATA EVALUATION

This section provides a discussion of several issues related to the evaluation of analytical data generated in this investigation. It should be recognized that this is a data summary report and that interpretations are generally presented in the RI report. As such, data presented here are intended to provide an initial indication of the compounds identified at each site and to provide a basis for evaluating whether additional activities such as drilling and sampling are necessary at this stage of the RI/FS process.

In the absence of site-specific background data, fate and transport modeling, and risk assessment data, the criteria described below were established for use in this preliminary data evaluation. These criteria were intended to provide a consistent basis for considering further action at individual sites. These criteria may subsequently be modified based on the results of background sampling, and performance of modeling and a risk assessment in future phases of work. The significance of these compounds will be fully developed in the comprehensive RI report.

3.1 ANALYTICAL DATA QUALITY CONSIDERATIONS

When reviewing the analytical data presented herein, it is important to consider the limitations of these data. Limitations could include errors during execution of the chemical analyses or cross contamination during sample collection. The data presented in this report represent a single sampling event which should not be interpreted as an absolute indicator of contaminant levels at the sites. The quality control (QC) data also indicate that some of the reported results have been affected by contaminants introduced in the laboratory. These items are discussed below.

Field QC samples consisted of field duplicates, travel blanks, source water, and equipment rinsate samples from equipment decontamination activities. Laboratory QC samples included method blanks, surrogates, replicates, laboratory control samples (LCS), and matrix spikes and matrix spike duplicates (MS/MSD). Results of QC samples were used to qualify laboratory results presented in this report. The methods used in qualifying the data, and the flags used to indicate the type of qualifiers placed on a particular result, are discussed below.

3.1.1 Data Qualification - Method Blanks

Numerous QC batches had detectable quantities of common laboratory contaminants in the associated method blank results. The contaminants found in the volatile organic compound (VOC) method

blanks were acetone and methylene chloride. Bis(2-ethylhexyl)phthalate, a plasticizer, was present in several semivolatile organic compound (SVOC) method blanks. Detectable quantities of these analytes in the associated field samples must be qualified (treated as though they may be higher than true values) due to the positive bias. The sample results presented in tables in this report are not corrected by subtracting the amount detected in the blank sample. Rather, they are assessed by comparing the sample result to a value 10 times the analyte concentration found in the method blank (EPA, 1988a, b). Samples that contain the contaminant at a concentration of 10 times or higher than the method blank concentration are flagged with a "J" qualifier, indicating an estimated value due to the influence of the blank contaminant. Samples that contain less than the 10 times guideline for the blank contaminant are considered as not detected for that compound and are flagged with a "UJ." No action is taken on samples which do not contain detectable concentrations of the blank contaminant.

3.1.2 Data Qualification - Matrix Spike/Matrix Spike Duplicates, Laboratory Control Samples, and Surrogate Samples

Systematic methods are used in qualifying data based on QC data sets or batches. MS/MSD associated with each batch of samples are used to assess possible matrix interferences. The percent recovery of the MS/MSD are used to evaluate the accuracy of the analytical methods. The associated relative percent differences (RPD) in recovery between the matrix spike and the matrix spike duplicate provide an assessment of the laboratory's precision. LCS associated with each batch of samples are used to measure the laboratory's accuracy for target analytes in a matrix without interferences. The LCS are used to distinguish a matrix interference from a laboratory performance problem. Data are initially evaluated on the basis of MS/MSD results. The results are compared to acceptance limits established in the U.S. EPA Contract Laboratory Program Statement of Work (EPA, 1988c, d). If the MS/MSD results are unacceptable, the LCS results are reviewed. Data qualifiers are assigned as described below.

If the MS/MSD and associated RPD results do not meet acceptable values, and the LCS values are acceptable, then there are possible matrix interferences in the data batch. Therefore, data in the batch may be qualified as follows. If the MS/MSD and LCS values are above the upper acceptance limits, the positive results within the batch may have a positive bias (results are higher than what may actually be in the sample) and are therefore qualified as estimated values and flagged with a "J". When the MS/MSD and LCS results for a batch are below the lower acceptance limits, poor laboratory accuracy is indicated. The sample data within the batch may have a negative bias (results are lower than what may actually be in the sample) and both positive and non-detected results are qualified as estimated values and flagged with a "J". If MS/MSD and LCS recoveries are equal to or less than 10 percent, only the non-detected results within the batch are qualified as rejected and flagged with an "R".

Surrogate and post digestion spike recoveries provide individual sample assessment. Batch QC (i.e., MS/MSD, LCS, and replicates) may be acceptable, but individual sample recovery values within a batch may fail to meet method criteria limits for a specific analysis. Samples with recoveries above method criteria limits for a specific analysis may have positive bias; those with recoveries below method criteria limits for a specific analysis may have negative bias. When positive bias for a specific analysis is indicated in an individual sample, all positive sample results for that analysis are qualified as estimated values and flagged with a "J". When negative bias is indicated in an individual sample, all results, both positive and non-detected, for that analysis are qualified as estimated values and flagged with a "J". If surrogate and post digestion spike recoveries are equal to or below 10 percent, all non-detected results for that analysis are qualified as rejected and flagged with an "R".

3.2 QUALITY CONTROL SUMMARY REPORT

The Quality Control Summary Report (QCSR), submitted under separate cover, provides a review of the QC data for all analyses performed and rationale for qualification of all sample results flagged in this report. The QC assessment uses the data quality objectives (DQO) expressed as precision, accuracy, representativeness, completeness, and comparability (PARCC) that are based on the U.S. Environmental Protection Agency (EPA) procedures. The QCSR is presented as a discussion of each PARCC criteria for each matrix. The QCSR also contains support batch QC documentation, including method blank results, surrogate percent recoveries, matrix and matrix spike duplicate (MS/MSD) recoveries and relative percent differences (RPD), and associated laboratory control sample QC.

Documents necessary for evaluation of the PARCC criteria are included as appendices to the QCSR. These include cross-reference tables, duplicate summary tables, equipment and trip blank analyses, purified and source water analyses, reporting limits, sample schedules, sample dilution sheets, and chain-of-custody forms with associated ice chest or cooler receipts.

3.3 EVALUATION OF DATA FOR SOILS

Background sample collection and an evaluation of background levels of metals in soils were not included in Phase 2B and 3 activities. However, collection of background samples and an evaluation of that data are currently being conducted and will be presented in the Phase 7 RI report.

In the absence of background metals data, the results of selected metal analyses for each site were compared to the same compounds at the remaining sites. This comparison indicates which sites have

higher relative metals concentrations than others, thus indicating a potential impact by activities at that site. To facilitate this comparison, a graphical presentation of the selected metals for all sites is presented in Section 19.0. A brief discussion of the occurrence of selected metals is presented in each site section. The full reporting of detected metals is presented in individual tables within each site section of this report.

The metals selected for discussion and graphical representation include beryllium, chromium, copper, lead, mercury, and nickel. The basis for their selection was a review of the types of industrial activities known to have occurred at the the sites or on the basis of human carcinogenicity. For example, chromium, copper, and nickel are commonly associated with plating and machining activities. Copper is also a major component of bronze which is used extensively in marine applications. Lead was selected because of its association with fuels and paints. Beryllium, chromium, and lead are known or suspected carcinogens. Mercury was selected because of its suspected use at some sites. The remaining metals included in the laboratory analyses are not being dismissed, but are not being addressed on an individual basis until a risk assessment is performed.

Organic analyses are reported in individual site sections of this report. However, unlike metals that are naturally occurring in the environment, most of the organic compounds detected at the sites are typically associated with past industrial activities. It is premature at this stage of the RI/FS process to establish standards for allowable concentrations of organics in soils. Moreover, very few standards exist and the need for remediation is typically based on the results of a risk assessment. Therefore, no comparison to organic standards for soils is presented in this data summary report.

3.4 EVALUATION OF DATA FOR GROUNDWATER

An evaluation of the background levels of metals in groundwater was not included in this portion of the Phases 2B and 3 activities. Background wells will be installed in early 1992, under a modification to the Phases 2B and 3 contract, and will help establish naturally occurring levels.

For the purpose of this data summary report, analytical results for metals in groundwater were compared to potential applicable or relevant and appropriate requirements (ARARs), described in Section 18.0. Where metals in groundwater are present at levels one order of magnitude greater than the potential ARAR, the site was considered for further field investigations. Where metals are present in groundwater at levels less than one order of magnitude greater than the potential ARAR, or at levels below the ARAR, no further field investigations were recommended at this time. This procedure was used only as a screening mechanism to assess whether a site would be considered for immediate further field investigations based on levels of metals in groundwater. Evaluation of whether a site requires future investigation regarding

inorganics (metals) or organics in groundwater may be modified based on the planned background sampling and/or input from regulatory agencies on the potential ARARs.

4.0 PHASES 2B AND 3 INVESTIGATION DESCRIPTION AND METHODS

This investigation was performed under the CLEAN program. This phase of investigation (Phases 2B and 3) included 10 sites at NAS Alameda. The purpose of the investigations was to determine whether soil and/or groundwater contamination exists at NAS Alameda. Methods used in the field portion of the investigation are described in the work plans and addenda to those plans prepared by Canonie and the PRC team (PRC/JMM, 1991). Those plans followed applicable EPA CERCLA guidance for RI/FS activities. A general description of the methods used, and the variations from the work plans due to unexpected field conditions, are also described in Appendix A.

Addenda prepared by the PRC team involved modifications to the number of geotechnical samples to be collected, and changes in the sampling plan for the plating shop interior of Building 360. The reduction in geotechnical samples was based upon a reinterpretation of the Canonie plan. Changes in the sampling plan for the interior of the plating shop were required because the Navy has not yet removed the plating baths. Revisions to the plan included sampling adjacent to trenches rather than beneath them, and the collection of scrap samples from the plating shop interior. DTSC approved all changes to the work plans prior to implementation.

4.1 FOCUS OF INVESTIGATION

The focus of the investigation varied according to activities historically performed at each site (Table 4-1). At the majority of the sites, the investigation focused on the sanitary, industrial, and storm sewers as potential conduits for contamination to enter the soil and/or groundwater. Borings were situated as close as possible to sewer lines, with particular emphasis at junction locations. Where appropriate (based on a review of past activities), potentially impacted surface areas (burn areas, wash pads) and/or other potential subsurface conduits (underground storage tanks, sumps) were investigated. Interviews and records searches related to determination of the investigation focus at each site were performed by E&E as part of the IAS, and/or Canonie as part of work plan preparation (E&E, 1983; Canonie, 1990a).

4.2 CHEMICAL ANALYSES

The suite of chemical analyses performed on soil and groundwater samples varied according to past and on-going activities at each site. Analyses were selected on the basis of known or suspected possible discharges to the sewer systems and/or known or suspected possible releases to the surface soils. Rationale for selection of chemical analyses is presented in the Canonie work plan (Canonie, 1990a).

TABLE 4-1

FORMER SITE USES AND RI TARGET AREAS

Site Number	Building Number	Historical Activities*	Investigation Focus
4	360	Metal Plating shop.	Piping and trenches in plating shop.
5	5	Aircraft rework facility	Industrial, sanitary, and storm sewers.
6	41	Aircraft repair, parts stripping and hazardous waste storage	Industrial, sanitary, and storm sewers.
7A	459	Current Navy Exchange fuel station	Former and current underground tanks and piping.
7B	162	Former Navy Exchange fuel station	Former and current underground tanks and piping. Industrial, sanitary, and storm sewers.
8	114	Pest control area and separator pit	Industrial, sanitary, and storm sewers.
10A	400	Missile rework operations	Industrial, sanitary, and storm sewers.
11	14	Engine test shop	Industrial, sanitary, and storm sewers.
12	10	Power plant	Former underground storage tanks. Industrial, sanitary, and storm sewers.
14	FTA	Fire training area	Bermed fire training area.
15	301 and 389	Transformer storage area	Surface soils.

*Source - Canonie Sampling Plan, Remedial Investigation/Feasibility Study, Feb. 12,1990

Tables 4-2 and 4-3 summarize the types of chemical analyses and laboratory methods performed on surface and subsurface soil samples and groundwater samples at each site. As indicated in Tables 4-2 and 4-3, surface samples were not analyzed for volatile constituents. This analysis was omitted because volatile constituents are not generally present in surface soils.

Table 4-4 presents the complete list of compounds detectable by each analysis. Data tables presented in the following sections include only those compounds detected in site samples.

4.3 SAMPLING INTERVALS

At each boring, four soil samples were collected for chemical analysis. One sample was collected at the ground surface or immediately beneath any asphalt or concrete present at the surface. Where an asphalt basecoat or baserock was present, the surface sample was collected from beneath these materials. One sample was also collected at the bottom of each boring, generally at 14.5 to 15 feet below ground surface. The remaining two samples were collected at varying depths depending on the focus of the investigation at that particular site and the depth to groundwater. One sample was typically collected immediately above or at the groundwater interface. Where sewers were being targeted, the remaining sample was collected at a depth approximately equivalent to the bottom of the sewer pipeline. The depth to the bottom of the sewer was approximated by opening manholes in the vicinity of the boring and measuring the depth to the sewer pipeline. At sites where sewer lines were not targeted, the remaining sample was collected at either the midpoint between the groundwater interface sample and the bottom of the hole, or at intervals with suspected contamination based on field screening.

Between 25% and 50% of the soil samples were collected from beneath the groundwater surface. Comparisons between saturated and unsaturated soil samples must be made with care, because saturated soil sample results may include compounds that are dissolved in the groundwater.

TABLE 4-2

SITE-SPECIFIC LABORATORY ANALYSES - SOIL

SITE NO.	Analysis Method	VOC CLP	SVOC CLP	PEST/ PCBs CLP	TRPH EPA 418.1	METALS CLP	TOTAL CYANIDE CLP	ASBESTOS PLM	ETHYLENE DIBROMIDE EPA 504	HERBICIDES EPA 8150	OP PEST EPA 8140	CARBAMATE/ UREA PEST EPA 632 modified	DIOXIN FURAN EPA 8280
4	Surface		x			x	x						
5	Surface		x			x	x	x					
	Subsurface	x	x			x	x	x					
6	Surface		x	x		x							
	Subsurface	x	x	x		x							
7A	Surface		x	x	x	x							
	Subsurface	x	x	x	x	x			x				
7B	Surface		x	x	x	x							
	Subsurface	x	x	x	x	x			x				
8	Surface		x	x		x				x	x	x	
	Subsurface	x	x	x		x				x	x	x	
10A	Surface		x			x							
	Subsurface	x	x			x							
11	Surface		x		x	x							
	Subsurface	x	x		x	x			x				
12	Surface		x	x	x	x							
	Subsurface	x	x	x	x	x			x				
14	Surface		x	x	x	x							x
	Subsurface	x	x	x	x	x			x				
15	Surface		x	x		x							
	Subsurface	x	x	x		x							

VOC -Volatile Organic Compounds
SVOC - Semivolatile Organic Compounds
PEST/PCBs - Pesticides and Polychlorinated Biphenyls
TRPH - Total Recoverable Petroleum Hydrocarbons
Metals include Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mn, Mg, Hg, Ni, K, Se, Ag, Na,
OP PEST - Organophosphorus Pesticides

CLP - Contract Laboratory Program
PLM - Polarized Light Microscopy
Surface - 0" to 6"
Subsurface - Deeper than 6"

TABLE 4-3

SITE SPECIFIC LABORATORY ANALYSES - GROUNDWATER

SITE NO.	Analysis Method	VOC CLP	SVOC CLP	PEST/ PCBs CLP	TRPH EPA 418.1	OIL& GREASE EPA 413.2	METALS CLP	TOTAL CYANIDE CLP	EDB EPA 504	HERBICIDES EPA 8150	OP PEST EPA 8140	CARBAMATE/ UREA PEST EPA 632	GEN. MIN. VAR
4	Grab	x	x		x		x	x					x
5	MW	x	x				x	x					x
6	MW	x	x	x		x	x						x
7A	MW	x	x	x	x		x		x				
7B	MW	x	x	x	x		x		x				x
8	MW	x	x	x			x			x	x	x	
10A	MW	x	x				x						x
11	MW	x	x		x		x		x				x
12	MW	x	x	x	x		x		x				x
14	MW	x	x	x	x	x	x						x
15	MW	x	x	x	x		x						x

Grab samples are from temporary monitoring wells.
MW samples are from permanent monitoring wells.
CLP - Contract Laboratory Protocol
VAR - Various Methods
VOC - Volatile Organic Compounds
SVOC - Semivolatile Organic Compounds
PEST/PCBs - Pesticides and Polychlorinated Biphenyls
TRPH - Total Recoverable Petroleum Hydrocarbons
Metals include Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mn, Mg, Hg, Ni, K, Se, Ag, Na,
OP PEST - Organophosphorus Pesticides
GEN. MIN. - General Minerals

TABLE 4-4

DETECTABLE ANALYTES PER ANALYTICAL METHOD
(Sheet 1 of 2)

VOCs	SVOCs	Pesticides/PCBs	Carbamate/Urea Pesticides	Herbicides	Metals	Dioxin/Furan
1,1,1-Trichloroethane	1,2,4-Trichlorobenzene	4,4'-DDD	Diuron	2,4,5-T	Aluminum	Tetrachlorodibenzofuran
1,1,2,2-Tetrachloroethane	1,2-Dichlorobenzene	4,4'-DDE	Monuron	2,4,5-TP/Silvex	Antimony	Pentachlorodibenzofuran
1,1,2-Trichloroethane	1,3-Dichlorobenzene	4,4'-DDT		2,4-D	Arsenic	Hexachlorodibenzofuran
1,1-Dichloroethane	1,4-Dichlorobenzene	Aldrin		2,4-DB	Barium	Heptachlorodibenzofuran
1,1-Dichloroethylene	2,4,5-Trichlorophenol	Aroclor-1016		Dalapon	Beryllium	Octachlorodibenzofuran
1,2-Dichloroethane	2,4,6-Trichlorophenol	Aroclor-1221		Dicamba (Banvel)	Cadmium	Tetrachlorodibenzo-p-dioxin
1,2-Dichloropropane	2,4-Dichlorophenol	Aroclor-1232		Dichloroprop	Calcium	Pentachlorodibenzo-p-dioxin
2-Hexanone	2,4-Dimethylphenol	Aroclor-1242		Dinoseb	Chromium	Hexachlorodibenzo-p-dioxin
Acetone	2,4-Dinitrophenol	Aroclor-1248			Cobalt	Heptachlorodibenzo-p-dioxin
Benzene	2,4-Dinitrotoluene	Aroclor-1254			Copper	Octachlorodibenzo-p-dioxin
Bromodichloromethane	2,6-Dinitrotoluene	Aroclor-1260			Iron	
Bromoform	2-Chloronaphthalene	Dieldrin			Lead	
Bromomethane	2-Chlorophenol	Endosulfan I			Magnesium	
Carbon Disulfide	2-Methyl-4,6-Dinitrophenol	Endosulfan II			Manganese	
Carbon Tetrachloride	2-Methylnaphthalene	Endosulfan Sulfate			Mercury	
Chlorobenzene	2-Methylphenol	Endrin			Nickel	
Chloroethane	2-Nitroaniline	Endrin ketone			Potassium	
Chloroform	2-Nitrophenol	Heptachlor			Selenium	
Chloromethane	3,3-Dichlorobenzidine	Heptachlor Epoxide			Silver	
Cis-1,3-Dichloropropene	3-Nitroaniline	MCPA			Sodium	
Dibromochloromethane	4-Bromophenyl Phenyl Ether	MCPP			Thallium	
Ethylbenzene	4-Chloro-3-Methylphenol	Methoxychlor			Vanadium	
Methyl Ethyl Ketone	4-Chloroaniline	Toxaphene			Zinc	
Methyl Isobutyl Ketone	4-Chlorophenylphenyl Ether	alpha-BHC				
Methylene Chloride	4-Methylphenol	alpha-Chlordane				
Styrene	4-Nitroaniline	beta-BHC				
Tetrachloroethene	4-Nitrophenol	delta-BHC				
Toluene	Acenaphthene	gamma-BHC (Lindane)				
Trans-1,2-Dichloroethene	Acenaphthylene	gamma-Chlordane				
Trans-1,3-Dichloropropene	Anthracene					
Trichloroethene	Benzo(a)Anthracene					
Vinyl Acetate	Benzo(a)Pyrene					
Vinyl Chloride	Benzo(b)Fluoranthene					
Xylene	Benzo(g,h,i)Perylene					
	Benzo(k)Fluoranthene					
	Benzoic Acid					

TABLE 4-4

DETECTABLE ANALYTES PER ANALYTICAL METHOD
(Sheet 2 of 2)

VOCs	SVOCs	Pesticides/PCBs	Carbamate/Urea Pesticides	Herbicides	Metals	Dioxin/Furan
	Benzyl Alcohol					
	Bis(2-Chloroisopropyl) Ether					
	Bis(2-Chloroethoxy) Methane					
	Bis(2-Chloroethyl) Ether					
	Bis(2-Ethylhexyl) Phthalate					
	Butylbenzylphthalate					
	Chrysene					
	Di-N-Butyl Phthalate					
	Di-N-Octyl Phthalate					
	Dibenzo(a,h)Anthracene					
	Dibenzofuran					
	Diethyl Phthalate					
	Dimethyl Phthalate					
	Fluoranthene					
	Fluorene					
	Hexachlorobenzene					
	Hexachlorobutadiene					
	Hexachlorocyclopentadiene					
	Hexachloroethane					
	Indeno(1,2,3-cd)Pyrene					
	Isophorone					
	N-Nitrosodi-N-Propylamine					
	N-Nitrosodiphenolamine					
	Naphthalene					
	Nitrobenzene					
	Pentachlphenol					
	Phenanthrene					
	Phenol					
	Pyrene					

VOC -Volatile Organic Compounds
SVOC - Semivolatile Organic Compounds
Pesticides/PCBs - Pesticides and Polychlorinated Biphenyls
OP Pest - Organophosphorus Pesticides

5.0 SITE 4
BUILDING 360
PLATING SHOP

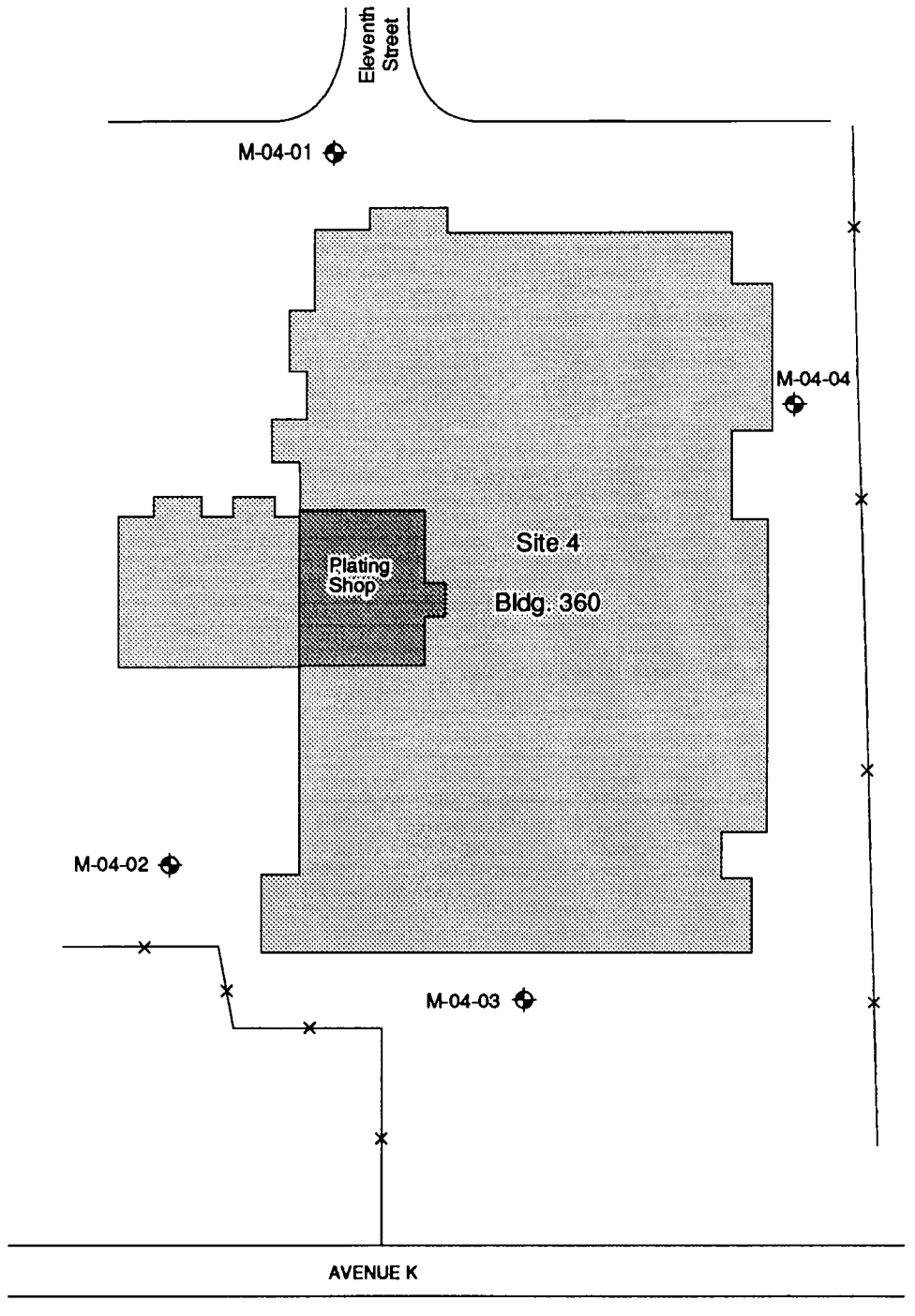
5.1 SITE DESCRIPTION AND BACKGROUND

Site 4 (Initial Assessment Study Site 7) consists of Building 360 located near the eastern perimeter of the base, south of Atlantic Avenue and east of Ninth Street (Figures 1-2 and 5-1). The building occupies approximately 5.5 acres and houses specialized process shops for the repair and testing of aircraft engines. A paint shop, a parts cleaning shop, a plating shop, and machine shops are contained in Building 360. The aircraft engine repair operations have been ongoing at the site since 1954 (Canonie, 1990a). Only the plating shop area, which was recently closed, was included in this phase of the investigation. The main portion of the building was investigated in Canonie's Phases 1 and 2A investigation in 1990. The results of this investigation will be submitted in a separate report.

Processes in the former plating shop included paint stripping by blasting; chrome, silver, and nickel stripping; etching; and chrome, silver, nickel, and copper plating. Prior to 1975, wastes from the plating shop were directly discharged to the Sea Plane Lagoon via the industrial waste sewer system. Paint sludges and spent degreasing agents were routinely disposed of in the West Beach Landfill (Canonie, 1990a). Since 1975, wastes have been treated at a central pretreatment facility prior to discharge to the East Bay Municipal Utility District (EBMUD) sewage treatment facility in Oakland.

After 1975, cyanide and chrome processes were separated into different lines that had separate sumps and drainage systems. The plating shop consisted of three process lines, each consisting of two wet trenches containing plating tanks on either side of a dry trench with ventilation ducts and utility lines (Figure 5-2). Two of the lines were used for cyanide processes and the other line was used for chromium processes. Cyanide-bearing wastewater was discharged directly to the industrial waste collection system. Chromium-bearing wastewater was discharged to an industrial waste treatment facility, located to the west of the building, before being discharged to the industrial waste collection system. Other sources of waste from the plating shop included water from the central fume scrubber and sand and grit from blasting activities. The vats containing plating solutions and the wet and dry trenches are currently still in place.

The floor of Building 360 is approximately 3 to 4 feet above grade with support provided by concrete footings. In the plating shop, the bottoms of the wet and dry trenches are roughly at grade and the floor of the shop is approximately 3 to 4 feet above the surrounding pavement surface. The floor and



LEGEND:

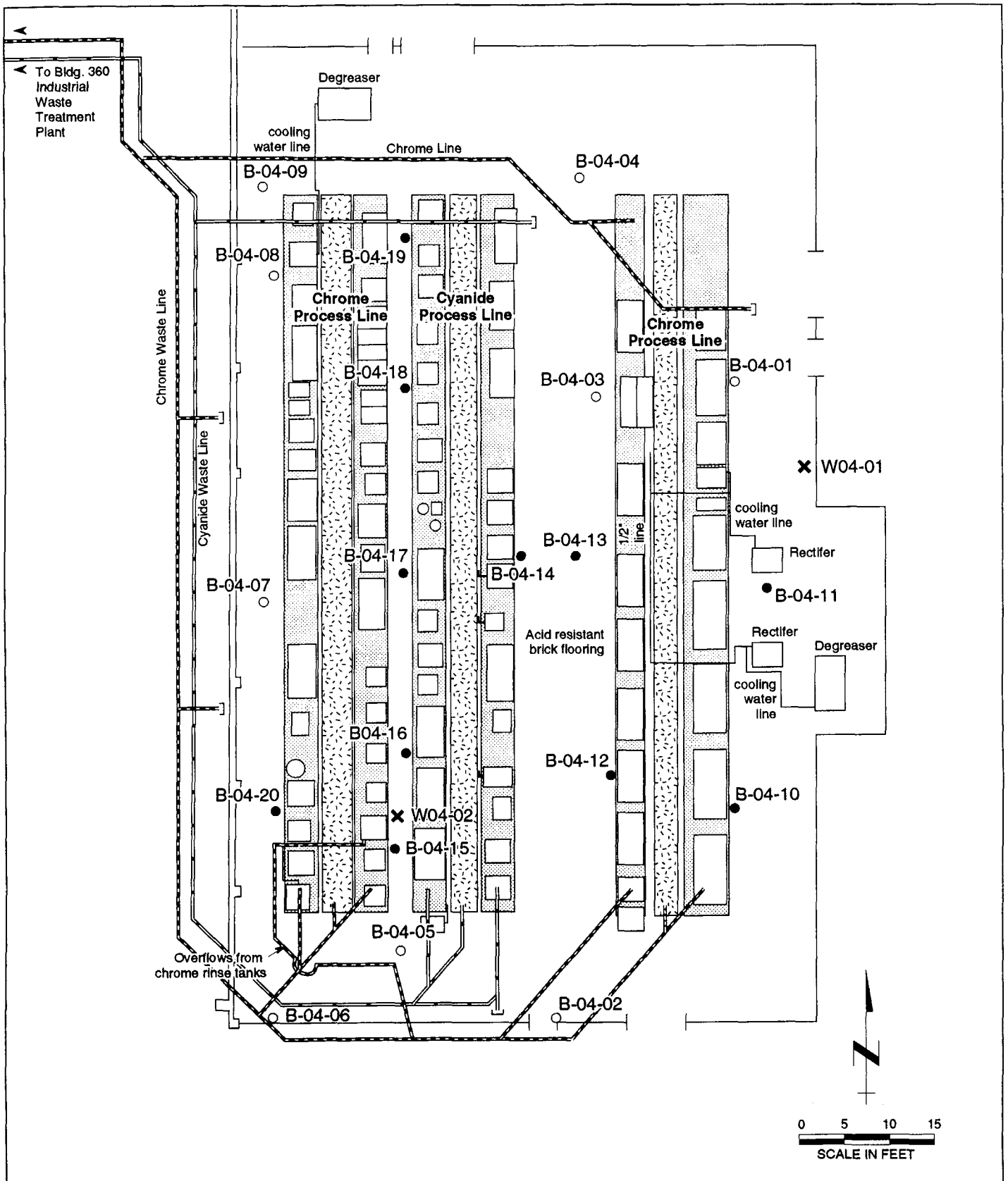
- Fence
- Canonie Monitoring Well Location

0 45 90 125
SCALE IN FEET

NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA
SITE 4
PLATING SHOP LOCATION MAP

FIGURE 5-1

A-4



LEGEND:

- ○ Boring with Groundwater Sample
- ● Boring Location
- ✕ Scrape Sample Location
- □ Vat
- ⊣ ⊢ Door
- Wet Trench
- Dry Trench
- Chrome Waste Line
- Cyanide Waste Line

A-3

NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA
SITE 4
PLATING SHOP
SITE MAP
FIGURE 5-2

interiors of the wet trenches are constructed of acid-resistant bricks on top of 6 inches of reinforced concrete. A layer of tar paper similar in appearance to the material used on roofs and a thin layer of leveling compound are present between the bricks and the concrete. The levelling compound is a spackle-like material used to smooth the rough concrete surface prior to the emplacement of the tar paper and the bricks.

The construction is designed to prevent acid liquid wastes from penetrating into soils underlying the plating shop. No information on the strength (acidic or dilute) or the composition of the solutions present in the wet trenches is available.

5.2 CURRENT USE

Building 360 is currently used as an aircraft engine repair and testing facility. Machine shops, stripping and painting shops, and parts assembly areas are still in use. Plating activities have ceased at Site 4, and the plating shop will be dismantled in the future.

5.3 PREVIOUS INVESTIGATIONS

Two previous environmental studies have been conducted at Building 360. In 1981 and 1982, Environmental Research Group, Inc. (ERG) sampled the surface soil beneath the plating shop for chemical analysis. In 1989 Canonie drilled soil borings and installed monitoring wells around the perimeter of the building as part of the Phase 1 and 2A activities. Details of each investigation are presented below.

5.3.1 ERG Plating Shop Sampling

In 1982 and 1983, ERG conducted two rounds of surface soil sampling in the crawl space beneath the Building 360 plating shop. The exact sample locations for both rounds are not known but, based on sketch maps, the first round samples appear to be from near the waste lines in the southwestern corner of the shop. Analytical results are presented on Tables 5-1 and 5-2.

Ten soil samples were collected in the August 6, 1982, round of sampling. Eight were analyzed for pH and cyanide. The other two (samples B-1 and B-2) were analyzed for various elements, anions, and organic compounds. Cyanide was detected in three of the 10 samples with a maximum concentration of 5.2 milligrams per kilogram (mg/kg). The pH of the samples ranged from 9.2 to 9.7. Lead, nickel, and chromium were detected in the two samples analyzed for various elements, anions, and organic compounds. Methylchloroform was detected in sample B-1.

TABLE 5-1

SITE 4
BUILDING 360
ERG SOIL SAMPLE RESULTS - pH AND CYANIDE

Initial Samples

Sample	pH	Cyanide (mg/kg)
A-1-1	9.7	< 0.5
A-1-2	9.7	4.3
A-2-1	9.5	< 0.5
A-2-2	9.4	< 0.5
A-3-1	9.2	4.8
A-3-2	9.3	< 0.5
A-4-1	9.2	5.2
A-4-2	9.2	< 0.5

From September 17, 1982 report from ERG to PWC. Samples taken August 6, 1982

Follow-up Samples

Sample	pH	Cyanide (mg/kg)
2341-4	6.3	< 0.1
2341-5	7.1	24
2341-6	9.2	50
2341-7	8.5	118
2341-8	8.4	67
2341-9	9.2	< 0.1
2341-10	9.1	< 0.1
2341-11	8.9	23
2341-12	9.8	< 0.1

From August 23, 1983 report from ERG to PWC. Samples taken July 13, 1983

TABLE 5-2

SITE 4
BUILDING 360
ERG SOIL SAMPLE RESULTS FOR SAMPLES B-1 AND B-2

Parameter (mg/kg - wet)	Sample B-1	Sample B-2
Cyanide	< 0.5	< 0.5
Sodium	360	330
Potassium	1100	1100
Hexavalent Chromium	< 0.1	< 0.1
Total Chromium	41	62
Lead	18	24
Nickel	33	42
Boron	28	24
Methylchloroform	0.0013	< 0.001
Trichloroethene	< 0.001	< 0.001

Modified from ERG report dated September 17, 1982
Samples taken August 6, 1982

In a follow-up sampling event conducted on July 13, 1983, nine samples were collected and analyzed for pH and cyanide. As with the initial round of samples, the exact sample locations are unknown. Cyanide was detected in five of the nine surface soil samples with a maximum concentration of 118 mg/kg. The soil pH ranged from 6.3 to 9.8.

5.3.2 Canonie Environmental, 1990

Canonie investigated the perimeter of Building 360 by installing borings and four monitoring wells as part of the Phase 1 and 2A activities. The location of the monitoring wells are shown on Figure 5-1. A discussion and interpretation of the Canonie data will be presented in the future Phases 1 and 2A data summary report.

5.4 REMEDIAL INVESTIGATION

The current investigation focused on the plating shop in Building 360. Twenty surface soil samples were collected by hand auger through holes cut in the plating shop floor. To allow groundwater sample collection, nine of the hand-auger holes were extended to approximately 1 foot below the water table with hand augers. Temporary monitoring wells were constructed in these nine holes by placing 2-inch diameter slotted polyvinyl chloride (PVC) casings into the holes. Figure 5-2 illustrates soil borings and temporary well locations. Sampling locations were selected to be as close as possible to the wet trenches and were approved by DTSC prior to the sampling. Two samples of surface dust and residue were collected from horizontal surfaces inside the plating shop. Field methods and borehole abandonment procedures are described in Appendix A.

5.4.1 Site Geology/Hydrogeology

Knowledge of detailed site geology is limited by the shallow nature of the investigation. Hand augered borings do not lend themselves to accurate logging and only a single lithologic unit was observed in the shallow holes. Because they were not permanent, the temporary wells were not surveyed. Boring logs from Canonie's monitoring wells and borings at the site were not available for review for this data summary report.

Fine-grained fill material was present to the total depth investigated by the hand auger borings (approximately 6 feet below grade). The fill consists primarily of silty sands. The silty sands were estimated to have high hydraulic conductivity in the field.

Groundwater was encountered between 5 and 6 feet below grade. Groundwater elevations could not be determined from the temporary wells because the wells were not surveyed. Therefore, a flow direction and gradient could not be determined for shallow groundwater underneath the plating shop.

5.4.2 Analytical Results - Surface Soil Samples

Twenty soil samples and one duplicate sample were collected for chemical analysis at Site 4. The samples were collected from surface soils beneath the raised floor with a hand auger and were analyzed for semivolatile organic compounds, metals, and total cyanide. Laboratory methods are discussed in Section 4.0.

All chemical data tables, except for general chemical parameters in soil, are found at the end of this section. Because analytical results for general chemical parameters are not discussed in this report, results for these parameters are included in Appendix D. The concentrations of organic compounds detected in the soil samples are presented in Table 5-3. The concentrations of metals detected in the soil samples collected from Site 4 are presented in Table 5-4. Note that Tables 5-3 and 5-4 include results for only those parameters that were identified in site samples. A complete list of the analytes potentially detected by each analysis is presented in Section 4.0.

5.4.2.1 Semivolatile Organic Compounds. Two SVOCs classified as PAH (fluoranthene and chrysene) were detected in surface samples at boreholes B04-09 and B04-08. Fluoranthene was detected at a concentration of 1,900 micrograms per kilogram (µg/kg) in borehole B04-09. Chrysene was detected in the surface sample in borehole B04-08 at a concentration of 560 µg/kg. The source for these polycyclic aromatic hydrocarbons is unknown. Section 16.0 discusses the occurrence of these compounds at other sites included in this investigation.

Bis(2-ethylhexyl)phthalate was detected in surface samples from borings B04-05, B04-09, B04-14, and B04-16 at concentrations ranging from 140 to 690 µg/kg. Di-n-octyl-phthalate was identified in B-04-09 at a concentration of 370 µg/kg. Although, bis(2-ethylhexyl)phthalate is a common laboratory contaminant, it did not appear in any of the method blanks from sample batches for this site. Therefore, the reported concentrations must be considered valid detections. The source of the bis(2-ethylhexyl)phthalate and the di-n-octyl-phthalate detected in the soil at Site 4 is unknown.

5.4.2.2 Metals. As discussed in Section 3.0 of this report, background data for metals in soils at NAS Alameda have not been collected. Background data for metals in soil will be collected at a later date. An evaluation of the location and extent of possible metals contamination will be performed

after the collection of background soil samples. Data generated in this investigation are presented below. As discussed in Section 3.0, the metals beryllium, chromium, copper, lead, mercury, and nickel have been tentatively identified as metals of concern. Analytical results for these metals are presented below. Results for all metals analyzed for are presented in Table 5-4. Soil samples were analyzed for metals plus hexavalent chromium, using methods discussed in Section 4.0.

Beryllium was detected in 10 surface soil samples at concentrations ranging from 0.424 mg/kg to 0.165 mg/kg. The highest concentration was identified in boring B04-04, located in the northeastern corner of the plating shop.

Total chromium was detected in all 20 samples at concentrations ranging from 24.0 mg/kg to 1060 mg/kg. The highest concentrations were identified in borings B04-10, B04-11, and B04-01, located along the northeastern side of the plating shop.

Copper was detected in all 20 surface samples at concentrations ranging from 99.6 mg/kg to 9.38 mg/kg. The highest concentration was identified in boring B04-10, located along the northeastern side of the plating shop.

Lead was detected in all 20 surface samples at concentrations ranging from 68.5 mg/kg to 2.15 mg/kg. The highest concentration was detected in boring B04-01, located along the northeastern side of the plating shop.

Mercury was identified in only the surface sample from B04-16, at a concentration of 0.111 mg/kg. Boring B04-16 is located near the central portion of the plating shop, between a wet trench for the cyanide process line and a wet trench for one of the chromium process lines.

Nickel was identified in all 20 surface samples at concentrations ranging from 692 to 25.6 mg/kg. The highest concentration was identified in boring B04-05, located in the south-central portion of the plating shop. Relatively elevated concentrations were also detected in borings B04-01, B04-02, and B04-10, located in the southeastern and eastern portion of the plating shop.

5.4.2.3 Cyanide. The concentrations of cyanide detected in the surface soil samples are presented in Table 5-5. Cyanide was detected in eight of the surface samples. The maximum concentrations were 16 and 19 mg/kg in borings B04-09 and B04-16, respectively.

5.4.3 Analytical Results - Scrape Samples

One sample of surface dust and one sample of material scraped from the floor of Building 360 were collected inside the plating shop. The scrape sample (W04-01) was collected from a stained area of the floor near boring B04-01. The dust sample (W04-02) was a composite collected from along the length of the walkway where borings B04-15 to B04-19 are located. Both samples were analyzed for metals and the results are presented in Table 5-6. Sample results indicate that metals used in the plating and stripping processes can be found on surfaces within the shop.

No beryllium was detected in the interior samples. Total chromium was detected at a concentration of 83,900 mg/kg in the scrape sample and at a concentration of 2,110 mg/kg in the dust sample. Due to the high concentrations of total chromium present in the scrape and dust samples, the Navy has closed the plating shop to personnel working in Building 360 pending further characterization of the plating shop interior.

5.4.4 Analytical Results - Groundwater Samples

Nine groundwater samples and one duplicate sample were collected from temporary monitoring wells installed in the hand-augered borings. Groundwater samples were analyzed for VOCs, SVOCs, TRPH, metals, and total cyanide. Laboratory methods are described in Section 4.0. Analytical results for VOCs and SVOCs are summarized in Table 5-7. Analytical results for metals and general chemical parameters are presented in Tables 5-8 and 5-9, respectively. Note that Tables 5-7 and 5-9 summarize laboratory results for only those constituents detected in the groundwater samples. A complete list of the analytes detectable by the various laboratory methods is presented in Section 4.0.

***5.4.4.1* Volatile Organic Compounds.** Analytical results for VOCs detected in groundwater samples are summarized in Table 5-7. The common industrial solvents 1,1,1-trichloroethane (1,1,1-TCA), 1,1-dichloroethane (1,1-DCA), 1,1-dichloroethene (1,1-DCE), 1,2-dichloroethene (1,2-DCE), and trichloroethene (TCE) were found in groundwater samples. 1,1,1-TCA was detected in five samples at concentrations ranging from 1,200 µg/L to 4.9 µg/L. 1,1-DCA was identified in eight samples at concentrations ranging from 65 to 1.1 µg/L. 1,1-DCE was detected in seven samples at concentrations ranging from 2.3 to 180 µg/L. 1,2-DCE was detected in four samples at concentrations ranging from 7.7 to 1.4 µg/L. The highest concentrations of these constituents were identified in samples G04-03 and G04-01, located in the northeast portion of the plating shop. TCE was detected in five samples at concentrations ranging from 1.3 to 13 µg/L. The highest concentration was identified in sample G04-05, also located in the northeast portion of the plating shop.

5.4.4.2 Semivolatile Organic Compounds. Analytical results for SVOCs detected in groundwater samples are summarized in Table 5-7. Bis(2-ethylhexyl)phthalate was detected in eight of the ten samples. However, after QC review (see Section 3.0) all of the bis(2-ethylhexyl)phthalate detections were qualifies non-detected due to method blank contamination. Fluoranthene and phenol were detected in the grab groundwater sample from boring B04-09 (groundwater sample (G04-09) at 1.8 and 13 µg/L, respectively. After QC review (see Section 3.0) both values are qualified as estimates.

5.4.4.3 Metals. Analytical results for metals in groundwater are summarized in Table 5-8. In general, the highest levels of metals were detected in sample G04-09. No data are available for background levels of metals in groundwater. Determination of whether levels of metals are elevated will be made at a later date, when background data are available. Due to matrix interferences, the reported hexavalent chromium concentration often exceeds the total chromium concentration. In these cases, the hexavalent chromium concentration is considered a positively biased estimate.

5.4.4.4 General Chemicals. The concentrations of various physical parameters, pH, total organic carbon, and various anions are summarized in Table 5-9. The conductivity ranged from 150 to 800 micromhos per centimeter. TDS concentrations ranged from 141 to 884 mg/L. Thus, groundwater at the site is classified as fresh based on the concentrations of both TDS and conductivity (Table 2-1; Freeze and Cherry, 1979).

TABLE 5-3
NAS ALAMEDA - SITE 4
SURFACE SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	B04-01	B04-02	B04-03	B04-04	B04-05	B04-06	B04-07	B04-08	B04-09
Date Sampled	09/05/91	09/05/91	09/05/91	09/05/91	09/05/91	09/05/91	09/05/91	09/05/91	09/05/91
Depth of Sample	0.0 ft	0.0 ft	0.0 ft	0.0 ft	0.0 ft	0.0 ft	0.0 ft	0.0 ft	0.0 ft
PARAMETER REPORTED									
SEMIVOLATILE ORGANICS (µg/kg-dry)									
BIS(2-ETHYLHEXYL) PHTHALATE	< 110UJ	< 110UJ	< 540UJ	< 540R	170J	< 540UJ	< 530UJ	< 530UJ	370J
CHRYSENE	< 110UJ	< 110UJ	< 540UJ	< 540R	< 110UJ	< 540UJ	< 530UJ	560J	< 110UJ
DI-N-OCTYL PHTHALATE	< 150UJ	< 150UJ	< 760UJ	< 750R	< 150UJ	< 760	< 750UJ	< 750UJ	370J
FLUORANTHENE	< 86UJ	< 88UJ	< 430UJ	< 430R	< 87UJ	< 430UJ	< 430UJ	< 430UJ	1900J

Notes: NA = Not analyzed
J = Qualified, estimated value
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
Shaded areas highlight detections above the detection limit.
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 5-3
NAS ALAMEDA - SITE 4
SURFACE SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

			Duplicate						
Sample Number	**B04-10**	**B04-11**	**B04-11**	**B04-12**	**B04-13**	**B04-14**	**B04-15**	**B04-16**	**B04-17**
Date Sampled	**09/05/91**	**09/05/91**	**09/05/91**	**09/05/91**	**09/05/91**	**09/05/91**	**09/05/91**	**09/05/91**	**09/05/91**
Depth of Sample	**0.0 ft**	**0.0 ft**	**0.0 ft**	**0.0 ft**	**0.0 ft**	**0.0 ft**	**0.0 ft**	**0.0 ft**	**0.0 ft**
PARAMETER REPORTED									
SEMIVOLATILE ORGANICS (µg/kg-dry)									
BIS(2-ETHYLHEXYL) PHTHALATE	< 550UJ	< 550UJ	< 530UJ	< 120UJ	< 550UJ	140J	< 570UJ	690J	< 110UJ
CHRYSENE	< 550UJ	< 550UJ	< 530UJ	< 120UJ	< 550UJ	< 110UJ	< 570UJ	< 560UJ	< 110UJ
DI-N-OCTYL PHTHALATE	< 770UJ	< 760UJ	< 750UJ	< 160UJ	< 770UJ	< 160UJ	< 790UJ	< 780UJ	< 150UJ
FLUORANTHENE	< 440UJ	< 440UJ	< 430UJ	< 92UJ	< 440UJ	< 92UJ	< 450UJ	< 450UJ	< 88UJ

Notes: NA = Not analyzed
J = Qualified, estimated value
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
Shaded areas highlight detections above the detection limit.
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 5-3
NAS ALAMEDA - SITE 4
SURFACE SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	**B04-18**	**B04-19**	**B04-20**
Date Sampled	**09/05/91**	**09/05/91**	**09/05/91**
Depth of Sample	**0.0 ft**	**0.0 ft**	**0.0 ft**
PARAMETER REPORTED			
SEMIVOLATILE ORGANICS (µg/kg-dry)			
BIS(2-ETHYLHEXYL) PHTHALATE	< 110UJ	< 570UJ	< 540
CHRYSENE	< 110UJ	< 570UJ	< 540
DI-N-OCTYL PHTHALATE	< 160UJ	< 800UJ	< 750
FLUORANTHENE	< 90UJ	< 460UJ	< 430

Notes: NA = Not analyzed
J = Qualified, estimated value
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
Shaded areas highlight detections above the detection limit.
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 5-4
NAS ALAMEDA - SITE 4
SURFACE SOIL ANALYTICAL RESULTS FOR METALS

Sample Number	B04-01	B04-02	B04-03	B04-04	B04-05	B04-06	B04-07	B04-08	B04-09	B04-10	B04-11
Date Sampled	09/05/91	09/05/91	09/05/91	09/05/91	09/05/91	09/05/91	09/05/91	09/05/91	09/05/91	09/05/91	09/05/91
Depth of Sample	0.0 ft	0.0 ft	0.0 ft	0.0 ft	0.0 ft	0.0 ft	0.0 ft	0.0 ft	0.0 ft	0.0 ft	0.0 ft
PARAMETER REPORTED											
METALS (mg/kg-dry)											
ALUMINUM	4430J	4910J	4800J	3930J	5670J	4420J	4150J	4150J	4510J	5220J	3090J
ANTIMONY	< 2.6	< 2.7	3.4	2.9	4.6	2.7	2.6	< 2.6	2.8	< 2.7	< 2.6
ARSENIC	1.41	1.29	1.32	1.43	1.91	1.52	1.38	1.42	2.51	2.01	1.66
BARIUM	40.4J	55.5J	47.0J	35.9J	59.7J	37.8J	65.9J	52.1J	136J	38.3J	42.3J
BERYLLIUM	0.361	0.189	0.253	0.424	0.354	0.252	< 0.129	0.195	0.380	< 0.139	< 0.135
CADMIUM	6.89	0.446	0.987	0.949	4.91	1.55	2.30	< 0.306	38.1	2.29	0.867
CALCIUM	1840J	4730J	2860J	11900J	3580J	3850J	5790J	3320J	2280J	2790J	3200J
CHROMIUM, TOTAL	333J	45.6J	44.8J	161J	194J	53.6J	34.0J	31.2J	192J	1060J	936J
CHROMIUM, (+6)	2.29	0.667	0.194	0.117	0.361	0.341	0.189	0.210	0.085	0.981	0.861
COBALT	10.6	5.63	4.47	4.75	6.03	4.82	4.61	4.68	5.89	9.51	6.10
COPPER	54.3	11.5	19.1	17.3	13.2	8.28	9.38	5.42	29.6	99.6	33.2
IRON	9270J	8570J	7830J	8460J	9330J	7780J	7120J	7340J	9730J	8410J	6420J
LEAD	68.5	6.81J	3.38J	46.7	5.46J	3.48J	4.74J	4.12J	33.4	28.0	15.3J
MAGNESIUM	2220J	2170J	2310J	2000J	3160J	2180J	2200J	2260J	2700J	2320J	1840J
MANGANESE	138J	245J	117J	105J	151J	108J	99.4J	102J	138J	109J	143J
MERCURY	< 0.091	< 0.089	< 0.100	< 0.096	< 0.096	< 0.095	< 0.103	< 0.097	< 0.106	< 0.098	< 0.100
NICKEL	144	158	41.8	53.6	692	62.4	55.4	25.6	107	102	47.4
POTASSIUM	635	661	645	575	828	617	659	651	662	564	712
SELENIUM	< 0.213UJ	< 0.219UJ	< 0.221UJ	< 0.224UJ	< 0.225UJ	< 0.216UJ	< 0.223UJ	< 0.223UJ	< 0.222UJ	< 0.225UJ	< 0.225UJ
SILVER	2.12	1.79	9.76	1.57	2.79	2.69	1.01	0.795	10.3	1.62	1.44
SODIUM	232	269	248	310	276	268	255	368	231	237	311
THALLIUM	< 0.274	< 0.282	< 0.284	< 0.288	< 0.290	< 0.278	< 0.286	< 0.287	< 0.285	< 0.289	< 0.289
VANADIUM	21.0	20.2	18.8	19.2	22.6	19.9	19.0	19.6	20.0	18.6	15.8
ZINC	35.2J	27.2J	27.1J	20.7J	36.7J	22.7J	25.6J	22.1J	48.9J	29.0J	31.5J

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR

TABLE 5-4
NAS ALAMEDA - SITE 4
SURFACE SOIL ANALYTICAL RESULTS FOR METALS

Sample Number	Duplicate B04-11	B04-12	B04-13	B04-14	B04-15	B04-16	B04-17	B04-18	B04-19	B04-20
Date Sampled	09/05/91	09/05/91	09/05/91	09/05/91	09/05/91	09/05/91	09/05/91	09/05/91	09/05/91	09/05/91
Depth of Sample	0.0 ft	0.0 ft	0.0 ft	0.0 ft	0.0 ft	0.0 ft	0.0 ft	0.0 ft	0.0 ft	0.0 ft
PARAMETER REPORTED										
METALS (mg/kg-dry)										
ALUMINUM	4170J	4190J	4260J	4150J	4730J	4520J	4580J	3720J	4170J	5340J
ANTIMONY	< 2.6	< 2.7	< 2.5	< 2.5	< 2.6	< 2.3	< 2.6	< 2.8	< 2.7	< 2.5
ARSENIC	1.46	0.942	1.52	1.32	1.49	2.84	1.76	1.51	1.05	2.25
BARIUM	42.4J	64.3J	47.1J	37.6J	61.4J	44.4J	59.2J	38.3J	49.8J	57.0J
BERYLLIUM	< 0.134	< 0.138	< 0.130	< 0.130	0.165	< 0.122	< 0.136	< 0.146	< 0.140	0.396
CADMIUM	1.02	< 0.319	< 0.299	0.774	< 0.314	5.67	< 0.314	1.79	11.4	0.369
CALCIUM	4230J	3010J	3070J	2600J	5020J	7020J	16100J	2110J	9760J	6600J
CHROMIUM, TOTAL	1250J	51.4J	64.9J	31.5J	32.4J	24.8J	24.0J	27.1J	57.8J	33.5J
CHROMIUM, (+6)	28.6	7.81	0.949	0.657	0.390	0.107	1.45	0.501	2.64	2.22
COBALT	6.06	5.07	5.75	4.95	6.57	9.87	6.91	5.31	6.12	6.08
COPPER	33.0	28.3	18.8	22.3	10.00	13.0	33.8	34.7	21.1	14.3
IRON	7330J	7880J	7840J	7240J	10100J	10400J	7660J	7240J	7180J	10500J
LEAD	12.4J	10.2J	5.06J	2.15J	6.27J	8.76J	2.28J	6.82J	28.2	4.12J
MAGNESIUM	2120J	2360J	2270J	2420J	2690J	2400J	2750J	2300J	2370J	2720J
MANGANESE	121J	131J	142J	110J	128J	189J	194J	120J	101J	151J
MERCURY	< 0.104	< 0.100	< 0.104	< 0.096	< 0.111	0.111	< 0.101	< 0.097	< 0.107	< 0.093
NICKEL	52.5	37.1	28.9	42.6	30.9	87.3	40.2	159	50.1	29.1
POTASSIUM	872	680	628	673	787	908	1120	737	683	704
SELENIUM	< 0.221UJ	< 0.238UJ	< 0.228UJ	< 0.233UJ	< 0.233UJ	< 0.235UJ	< 0.229UJ	< 0.232UJ	< 0.230UJ	< 0.223UJ
SILVER	1.58	7.31	7.86	3.84	1.33	70.5	2.12	1.68	15.0	1.88
SODIUM	407	325	594	237	835	601	1060	1190	1530	366
THALLIUM	< 0.284	< 0.306	< 0.293	< 0.300	< 0.299	< 0.302	< 0.295	< 0.299	< 0.296	< 0.287
VANADIUM	18.0	16.6	19.3	17.4	20.4	19.7	17.6	17.9	16.6	23.1
ZINC	34.0J	28.4J	24.5J	20.5J	32.6J	146J	24.7J	76.3J	25.6J	33.7J

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR

TABLE 5-5
NAS ALAMEDA - SITE 4
SURFACE SOIL RESULTS FOR CYANIDE

Sample Number	Cyanide (mg/kg-dry)
B04-01	1J
B04-02	< 0.5
B04-03	< 0.5
B04-05	< 0.5
B04-06	< 0.5
B04-07	< 0.5
B04-08	< 0.5
B04-09	16J
B04-10	< 0.5
B04-11	< 0.5
B04-11 (Dup)	< 0.5
B04-12	< 0.5
B04-13	< 0.5
B04-14	1J
B04-15	1J
B04-16	19J
B04-17	2J
B04-18	1J
B04-19	3J

Notes: < = Analyte reported below detection limit
J = Qualified, estimated value
Shaded areas highlight detections above the detection limit.
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 5-6
NAS ALAMEDA - SITE 4
SURFACE DUST ANALYTICAL RESULTS FOR METALS

Sample Number	W04-01	W04-02
Date Sampled	09/06/91	09/06/91
Depth of Sample	0.0 ft	0.0 ft
PARAMETER REPORTED		
METALS (mg/kg-dry)		
ALUMINUM	2280J	20100J
ANTIMONY	360	200
ARSENIC	6.24	42.2
BARIUM	63.3J	468J
BERYLLIUM	< 0.140	< 0.122
CADMIUM	155	1060
CALCIUM	8740J	49800J
CHROMIUM, TOTAL	83900J	2110J
CHROMIUM(+6),SED	29000	< 0.0427
COBALT	24.8	144
COPPER	948	21400
IRON	5040J	37400J
LEAD	13200	1640
MAGNESIUM	694J	2190J
MANGANESE	54.9J	244J
MERCURY	0.242	2.54
NICKEL	4920	97200
POTASSIUM	1520	6760
SELENIUM	< 0.677UJ	9.88J
SILVER	28.8	288
SODIUM	20300	6070
THALLIUM	< 0.290	< 0.278
VANADIUM	16.7	51.1
ZINC	574J	41500J

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR

TABLE 5-7
NAS ALAMEDA - SITE 4
GROUNDWATER ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	G04-01	G04-02	Duplicate G04-02	G04-03	G04-04	G04-05	G04-06	G04-07	G04-08	G04-09
Date Sampled	**09/09/91**	**09/09/91**	**09/09/91**	**09/09/91**	**09/06/91**	**09/09/91**	**09/09/91**	**09/10/91**	**09/10/91**	**09/09/91**
PARAMETER REPORTED										
VOLATILE ORGANICS (µg/L)										
1,1,1-TRICHLOROETHANE	660	< 1.0UJ	7.4J	1200	< 1.0	15	4.9J	< 1.0UJ	< 1.0UJ	< 1.0UJ
1,1-DICHLOROETHANE	64	2.2J	7.5J	23	5.7	65	4.0J	< 1.0UJ	< 1.0UJ	1.1J
1,1-DICHLOROETHYLENE	180	10.0J	38J	120	4.2	9.5	2.3J	< 1.0UJ	< 1.0UJ	< 1.0UJ
1,2-DICHLOROETHENE, TOTAL	7.7	< 1.0UJ	2.1J	< 5.0	< 1.0	< 5.0	1.4J	2.0J	< 1.0UJ	< 1.0UJ
ACETONE	< 10.0	< 2.0UJ	< 2.0UJ	< 10.0	< 2.0	< 10.0	< 2.0UJ	2.2J	< 2.0UJ	< 2.0UJ
CHLOROFORM	< 5.0	< 1.0UJ	< 1.0UJ	< 5.0	< 1.0	< 5.0	< 1.0UJ	< 1.0UJ	1.3J	< 1.0UJ
TRICHLOROETHENE	< 5.0	< 1.0UJ	3.0J	< 5.0	< 1.0	13	1.7J	5.2J	1.3J	< 1.0UJ
SEMIVOLATILE ORGANICS (µg/L)										
BIS(2-ETHYLHEXYL) PHTHALATE	7.6UJ	4.5UJ	< 2.0	4.4UJ	10.0UJ	7.7UJ	5.2UJ	24UJ	33UJ	< 2.0
FLUORANTHENE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.8J
PHENOL	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	13J
TOTAL PETRO. HYDROCARBONS (mg/L)										
HYDROCARBONS,PETRO	< 0.2	< 0.2	< 0.2	< 0.2	0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2

Notes: UJ = Qualified, estimated not detected
J = Qualified, estimated value
< = Analyte reported below detection limit
Shaded areas highlight detections above the detection limit.
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 5-8
NAS ALAMEDA - SITE 4
GROUNDWATER ANALYTICAL RESULTS FOR METALS

Sample Number	G04-01	G04-02	Duplicate G04-02	G04-03	G04-04	G04-05	G04-06	G04-07	G04-08	G04-09
Date Sampled	09/09/91	09/09/91	09/09/91	09/09/91	09/06/91	09/09/91	09/09/91	09/10/91	09/10/91	09/09/91
PARAMETER REPORTED										
METALS (µg/L)										
ALUMINUM	71.2	94.0	43.4	90.7	40.4	777	57.0	106	40.9	9220
ANTIMONY	< 25.1	< 25.1	< 25.1	< 25.1	< 25.1	< 25.1	< 25.1	< 25.1	< 25.1	< 25.1
ARSENIC	5.7	< 2.6	< 2.6	3.5	10.7	10.0J	7.3	< 2.6	< 2.6	8.9J
BARIUM	61.5	31.4	21.9	65.6	39.1	16.1	19.6	30.5	43.2	272
BERYLLIUM	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
CADMIUM	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	4.3	< 3.0	183
CALCIUM	30400J	15300J	13000J	56200J	33400J	4680J	11100J	16900J	24200J	41800J
CHROMIUM,TOTAL	< 5.7	70	65	< 5.7	< 5.7	28.5	768	< 5.7	33.7	131
CHROMIUM, (+6)	< 100.0UJ	1020J	82.5J	< 200UJ	48.5J	< 200UJ	493J	< 400UJ	660J	147J
COBALT	< 6.1	< 6.1	< 6.1	< 6.1	< 6.1	< 6.1	< 6.1	< 6.1	< 6.1	40.7
COPPER	2.5	3.2	2.7	4.5	5.5	12.4	12.3	3.9	4.4	144
IRON	121J	51.5J	25.3UJ	34.7UJ	158J	581J	50.6J	120J	30.9UJ	41400J
LEAD	< 2.0UJ	< 2.0UJ	< 2.0	< 2.0UJ	2.5UJ	2.2	< 2.0	< 2.0	< 2.0	30.7
MAGNESIUM	12200	5150	4540J	14800	12400	2370J	3990J	5940J	5540J	11300J
MANGANESE	1820	169	131J	1270	723	85.6J	31.5J	216J	190J	2900J
MERCURY	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
NICKEL	< 13.2	< 13.2	< 13.2	< 13.2	34.2	38.5	< 13.2	20.2	37.8	192
POTASSIUM	18000	9690	8180	13900	17300	7930	11000	11700	10800	12600
SELENIUM	< 2.1UJ	< 2.1UJ	< 2.1	< 2.1UJ	< 2.1UJ	< 2.1UJ	< 2.1	< 2.1	< 2.1	< 8.4UJ
SILVER	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9
SODIUM	115000J	10800J	8870	74700J	88900J	124000	85300	19000	17700	25800
THALLIUM	< 2.7UJ	< 2.7UJ	< 2.7	< 2.7UJ	< 2.7UJ	< 2.7	< 2.7	< 2.7	< 2.7	< 2.7
VANADIUM	4.3	9.2	10.8	9.4	12.6	34.5	17.6	16.4	22.4	156
ZINC	8.2UJ	7.3UJ	< 2.3	5.2UJ	9.7UJ	5.4	4.1	5.9	5.5	91.6

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 5-9
NAS ALAMEDA - SITE 4
GROUNDWATER ANALYTICAL RESULTS FOR GENERAL CHEMICALS

Sample Number Date Sampled	G04-01 09/09/91	G04-02 09/09/91	G04-02DUP 09/09/91	G04-03 09/09/91	G04-04 09/06/91	G04-05 09/09/91	G04-06 09/09/91	G04-07 09/10/91	G04-08 09/10/91	G04-09 09/09/91
PARAMETER REPORTED										
PHYSICAL PARAMETERS-LAB										
ACIDITY, TOTAL (mg/L-CaC03)	39.0J	7.3J	6.1J	32.3J	20.1J	11.6J	8.2J	7.7J	11.6J	9.2J
ALKALINITY, BICA (mg/L-CaC03)	335	75.0	90.0	280	108	270	215	170	145	120
ALKALINITY, CARB (mg/L-CaC03)	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
ALKALINITY, NC/OH (mg/L-CaCO3)	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
ALKALINITY, PHENOLPH (mg/L)	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
ALKALINITY, T. (mg/L-CaCO3)	335J	75.0J	90.0J	280J	108J	270J	215J	170J	145J	120J
HARDNESS (mg/L-CaCO3)	140	64.0	80.0	188	148	48.0	64.0	80.0	96.0	250
TOTAL DISSOLVED SOLIDS (mg/L)	499J	186J	141J	470J	448J	884J	370J	223J	228J	257J
PHYSICAL PARAMETERS-FIELD										
pH, FIELD (Std. Units)	6.00	7.00	7.00	7.00	7.00	7.00	7.00	5.00	5.00	6.50
SP. COND., FIELD @25C (µmhos/cm)	800	150	150	800	710	700	390	190	250	240
WATER TEMP (C)	20.0	19.9	19.9	20.1	20.0	19.0	20.0	19.0	19.0	19.0
TOTAL ORGANIC CARBON (mg/L)										
CARBON, TOC	38.6J	16.6J	15.9J	92.1J	31.8J	44.1J	19.5J	21.8J	68.5J	34.3J
ANIONS (mg/L)										
CHLORIDE	11.36J	1.898J	2.068J	12.75J	7.515J	51.17J	10.30J	5.924J	6.981J	7.652J
FLUORIDE	14.2	4.11	4.61	36.1	9.31	1.63	0.92	1.32	1.98	3.53
NITROG, NO2 + NO3	< 0.010	< 0.010	0.028	0.928	0.052	< 0.010	2.73	1.19	0.348	0.572
SULFATE	26.00J	5.327J	4.746J	31.45J	3.090J	93.18J	20.50J	12.48J	10.71J	14.13J

Notes: < = Analyte reported below detection limit
Shaded areas highlight detections above the detection limit.
J = Qualified, estimated value
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

6.0 SITE 5
BUILDING 5
AIRCRAFT REWORK FACILITY

6.1 SITE DESCRIPTION AND BACKGROUND

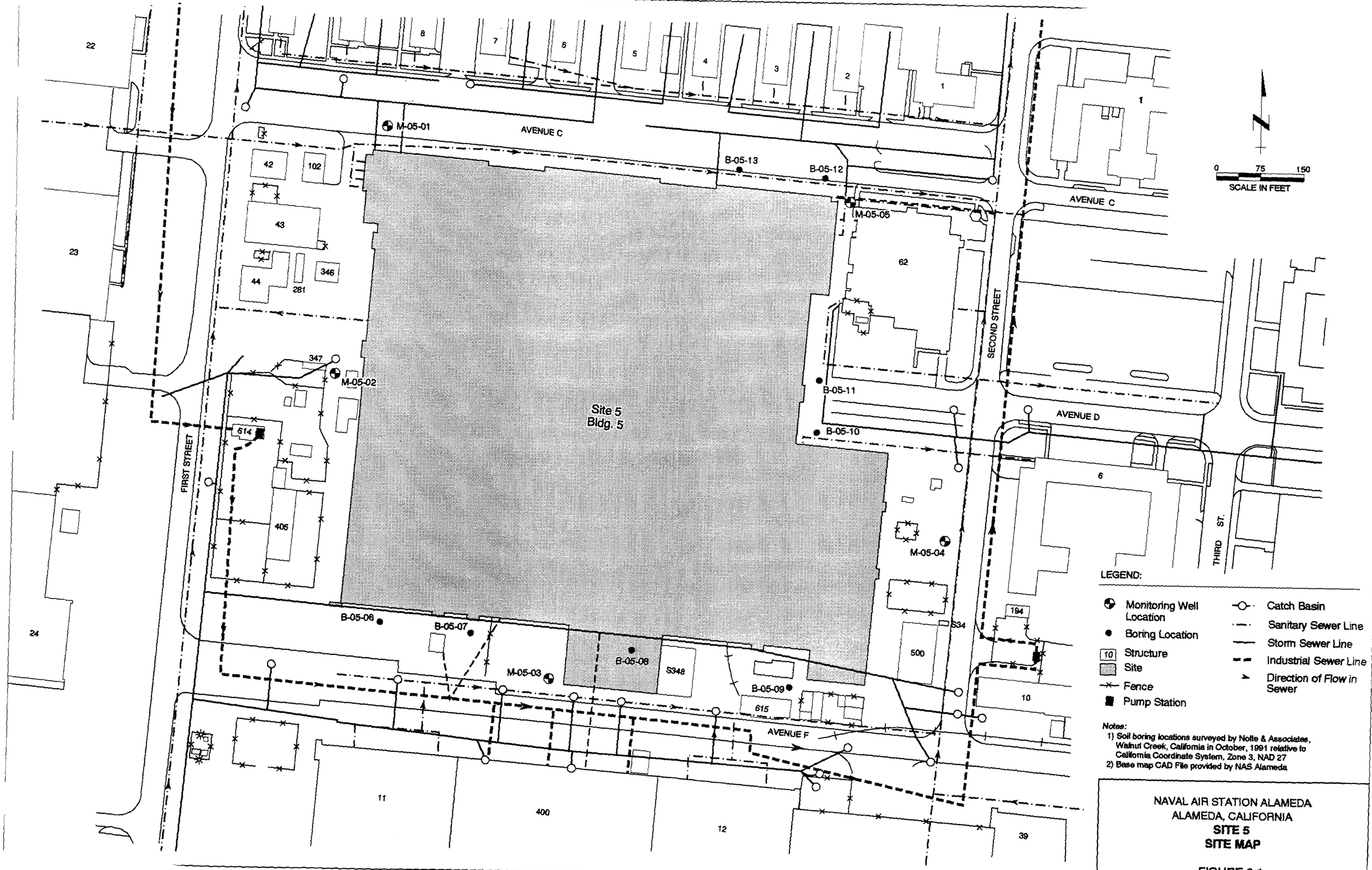
Site 5 consists of Building 5 and is located between First and Second Streets, and Avenues C and F (Figure 6-1). The building is the largest on base and covers approximately 18.5 acres. The building has been in operation since 1942 and houses shops used for cleaning, reworking, and manufacturing metal parts, tool maintenance, plating, and painting operations (Canonie, 1990a). Processes in the plating shop include degreasing, caustic and acid etching, metal stripping and cleaning, and chrome, nickel, silver, cadmium, and copper plating. The paint shop contains two paint bays and several smaller paint spray booths.

Prior to 1972, the wastewater from operations in Building 5 was discharged without pretreatment to the San Francisco Bay, via the industrial sewers, the bulk of which emptied into the Sea Plane Lagoon. From 1972 until 1991, the wastewater from the plating shop was split into two waste streams, one from the alkaline tanks and one from the cyanide tanks. The wastewater streams were kept separate until the cyanide stream was treated in a cyanide destruction unit. The two waste streams were then routed together to a treatment plant.

Three industrial waste sewer lines leave Building 5; there are two on the south side that join the main line running under Avenue F, and one line on the northeast corner that joins the main line running under Second Street. Two sanitary sewer lines exit from the west side of the building and join the main under First Street. Two additional sanitary sewer lines exit from the east side of the building and join the main lines in Avenue C. Storm sewer lines connect the building downspouts to mains under Avenues C and F. Figure 6-1 shows the site layout and the configuration of the storm, sanitary, and industrial sewer lines.

6.2 CURRENT USE

Site 5 is still used for manufacturing, cleaning, and reworking metal parts, and painting operations. The plating shop was taken out of service in early 1991.


AVENUE C
M-05-01
B-05-13
B-05-12
M-05-05
AVENUE C
SECOND STREET
AVENUE D
B-05-11
B-05-10
Site 5
Bldg. 5
FIRST STREET
M-05-02
M-05-04
THIRD ST.
B-05-06
B-05-07
B-05-08
M-05-03
B-05-09
AVENUE F
22
23
24
42
102
43
44
346
281
347
614
405
8
7
6
5
4
3
2
1
62
615
S348
S34
500
194
10
6
11
400
12
39
0 75 150
SCALE IN FEET
LEGEND:
Monitoring Well Location
Boring Location
10 Structure
Site
Fence
Pump Station
Catch Basin
Sanitary Sewer Line
Storm Sewer Line
Industrial Sewer Line
Direction of Flow in Sewer
Notes:
1) Soil boring locations surveyed by Nolte & Associates, Walnut Creek, California in October, 1991 relative to California Coordinate System, Zone 3, NAD 27
2) Base map CAD File provided by NAS Alameda
NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA
SITE 5
SITE MAP
FIGURE 6-1

6.3 PREVIOUS INVESTIGATIONS

In 1983, Ecology & Environment (E&E) prepared an initial assessment study (IAS) of NAS Alameda. The report identifies high levels of chemical oxygen demand, chromium, iron, phenol, and zinc in paint bay process waters. In the paint stripping operations, wastewaters contained chromium, methylene chloride, oil and grease, and phenol. In the conversion coating operations, wastewater contained high pH, and aluminum, chromium, and iron. No subsurface soil or groundwater data were collected.

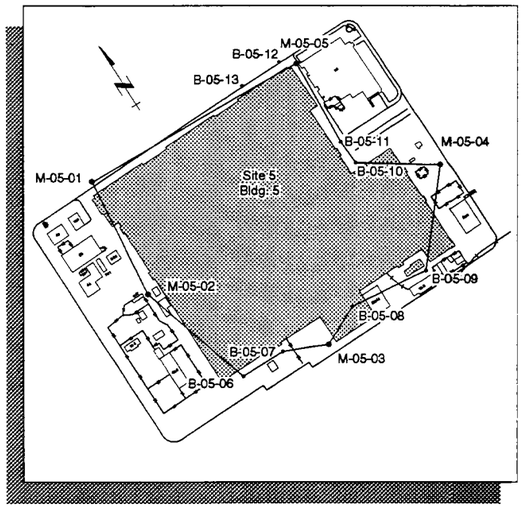
6.4 REMEDIAL INVESTIGATION

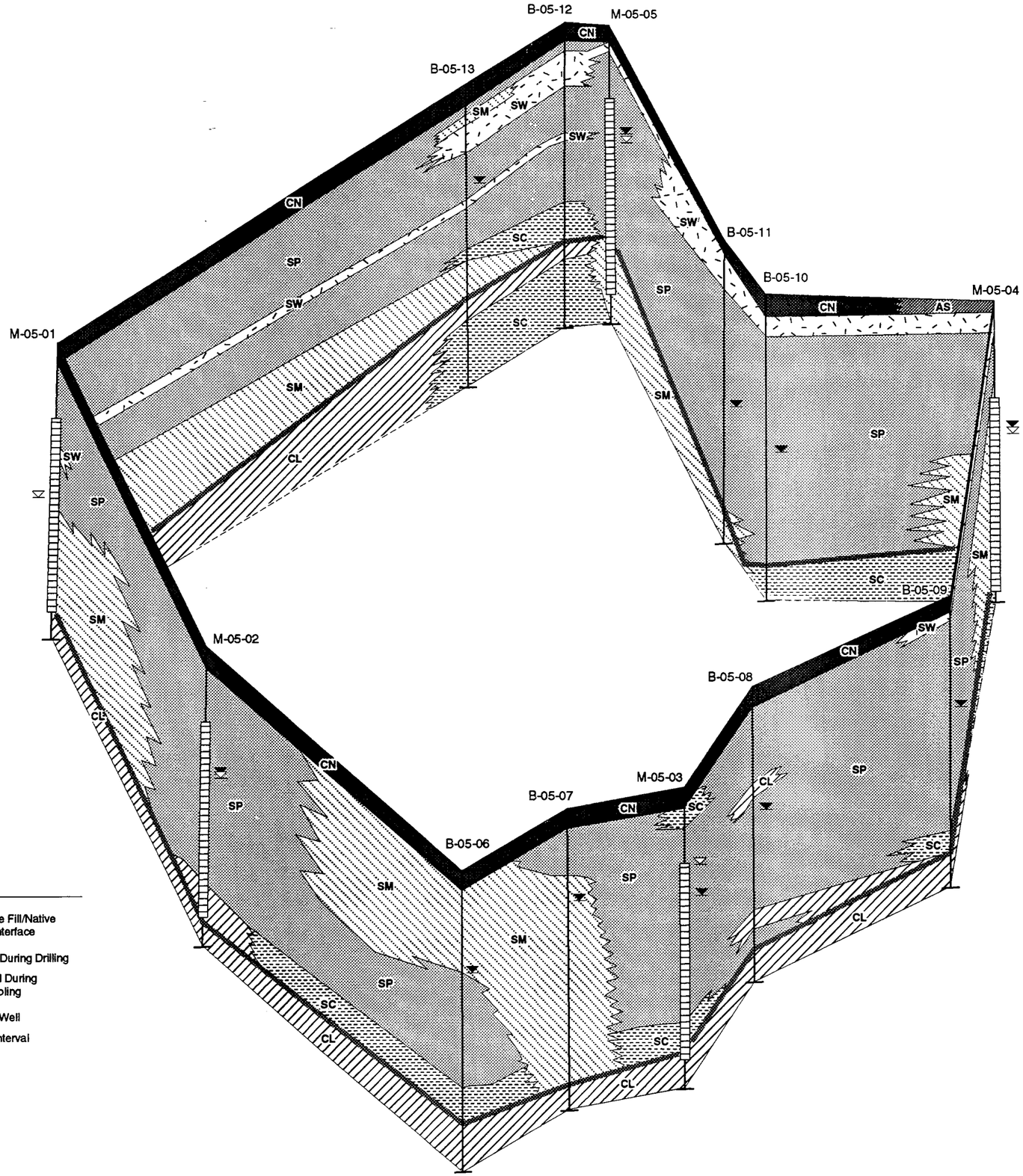
The current field investigation focused on industrial sewers as a possible conduit for contaminant migration. Rational for boring/well locations and sampling depths are presented in the Canonie Work Plan (Canonie, 1990a). The field investigation at Site 5 included surface geophysics, drilling of soil borings, soil sampling, installation and sampling of monitoring wells, in-situ permeability testing, and water level measuring. Field methods are described in Appendix A. The borings were drilled around the perimeter of Site 5 as shown on Figure 6-1. Monitoring wells were installed in five of the 13 borings. Boring logs and well construction details are presented in Appendix C. The wells were constructed with 10 feet of screen, with four of the five wells screened from 4 to 14 feet below ground surface. The fifth well (on the east side of Site 5) was screened from 5 feet to 15 feet below ground surface.

6.4.1 Site Geology/Hydrogeology

Material underlying Site 5 can be divided into two groups: fill material and native sediments. Lithologic logs for the borings are presented in Appendix C. The ground surface is covered by asphalt or concrete, from 1/2- to 1-foot thick. Fill material underlies the site from below the asphalt or concrete to approximately 12 to 13 feet below ground surface. The fill material at Site 5 consists of interbedded fine sands (well sorted), silty sands (moderately well sorted), and gravelly sand. The native sediment consists of silty clay to sandy clay, which is interpreted to be part of the holocene bay mud deposits described in Section 1 of this report. A fence diagram illustrating the lateral and vertical relationships of the materials encountered at the site is presented in Figure 6-2. Geotechnical analytical data are listed in Table 6-1, and the laboratory data sheets are in Appendix D.

In-situ permeability (slug) tests were conducted in the monitoring wells at Site 5. The hydraulic conductivities, as determined by the Bouwer and Rice method for rising-head tests (Bouwer and Rice, 1976; Bouwer, 1989), ranged from 1.7E-03 cm/sec to 2.6E-04 cm/sec (E-03 = 10^{-3}). The in-situ permeability test data are presented in Appendix E.





0'
6'

0' 150'
SCALE IN FEET

LEGEND:

- SW Gravelly Sand
- SP Sand
- SC Clayey Sand
- CL Clay
- SM Silty Sand
- CN Concrete
- AS Asphalt
- Approximate Fill/Native Sediment Interface
- First Water During Drilling
- Water Level During Water Sampling
- Monitoring Well
- Screened Interval

NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA
SITE 5
FENCE DIAGRAM

FIGURE 6-2

TABLE 6-1

SITE 5
BUILDING 5
GEOTECHNICAL SAMPLE LABORATORY TEST RESULTS

Sample No.	Depth (ft)	Soil Classification Labotatory	Soil Classification Field	Moisture Content (%)	Dry Density (pcf)	Specific Gravity	CEC (meq/100g)	TOC (%w/w)	Permeability Effective Stresses (psi)	Permeability Hydraulic Conductivity (cm/s)
B-05-02	8-8.5	SP	SM	14.0	109.0	NA	NA	< 0.1	5	5.73E-04
B-05-02	8.5-9	NA	SP	18.0	111.0	2.73	NA	NA	NA	NA
B-05-02	13-14	CL	SC	NA	NA	NA	31.2	NA	NA	NA
B-05-03	8.5-9	NA	SP	18.5	110.0	2.72	NA	< 0.1	5	2.06E-04
B-05-04	10-10.5	NA	SM	18.0	112.5	2.68	NA	NA	NA	NA
B-05-04	13.5-14	NA	SC	71.0	57.5	NA	NA	NA	6	3.81E-08
B-05-05	10.5-11	SP/SM	SP	NA	NA	NA	17.4	NA	NA	NA
B-05-05	13-13.5	NA	SM	17.5	116.0	NA	NA	NA	NA	NA
B-05-06	3.5-4	SP	SP	8.0	94.5	NA	NA	< 0.1	3	7.81E-04
B-05-06	8.5-9	NA	SP	17.5	110.5	NA	NA	NA	NA	NA
B-05-06	13.5-14	NA	CL	79.0	52.5	NA	NA	0.6	6	3.22E-08
B-05-08	4-4.5	NA	SP	NA	NA	NA	9.8	< 0.1	NA	NA
B-05-09	8.5-9	SP	SM	22.5	104.0	NA	NA	NA	NA	NA
B-05-09	14.5-15	NA	CL	NA	NA	NA	NA	NA	NA	NA
B-05-12	13-13.5	SC	SC	NA	NA	NA	NA	NA	NA	NA
B-05-12	13.5-14	NA	CL/SC	24.0	99.5	NA	NA	< 0.1	8	3.90E-05

NA - Not Analyzed
Parameters not detectect are reported as less than method detection limit.

Laboratory Methods (Units):
Soil Classification - Unified Soil Classification System (USCS) - ASTM D2488
Moisture Content - ASTM D2216 (percent)
Dry Density - ASTM D2937 (pounds per cubic foot)
Specific Gravity - ASTM D854 -
Cation Exchange Capacity (CEC) - EPA 9080 (milliequivalents per 100 grams)
Total Organic Carbon (TOC) - Walkey and Black (percent of wet weight)
Effective Stress - EPA 9100 (pounds per square inch)
Hydraulic Conductivity - EPA 9100 (centimeters per second)

Groundwater levels were periodically monitored for four months (Table 6-2). Water level data were collected during different phases of the moon and at different times within a diurnal tidal cycle to determine whether tidal fluctuations were affecting groundwater elevations. As shown in Table 6-2, groundwater elevations vary only slightly regardless of the timing of the measurement. Depth to groundwater ranged from 5 to 8.5 feet below ground surface and was typically shallower in the southwest. Therefore, it appears that tidal influences are not significant at the site. Groundwater flow was measured to the northeast at a gradient of approximately 0.003 ft/ft on November 22, 1991, and December 5, 1991 (Figures 6-3, and 6-4).

6.4.2 Analytical Results - Soil Samples

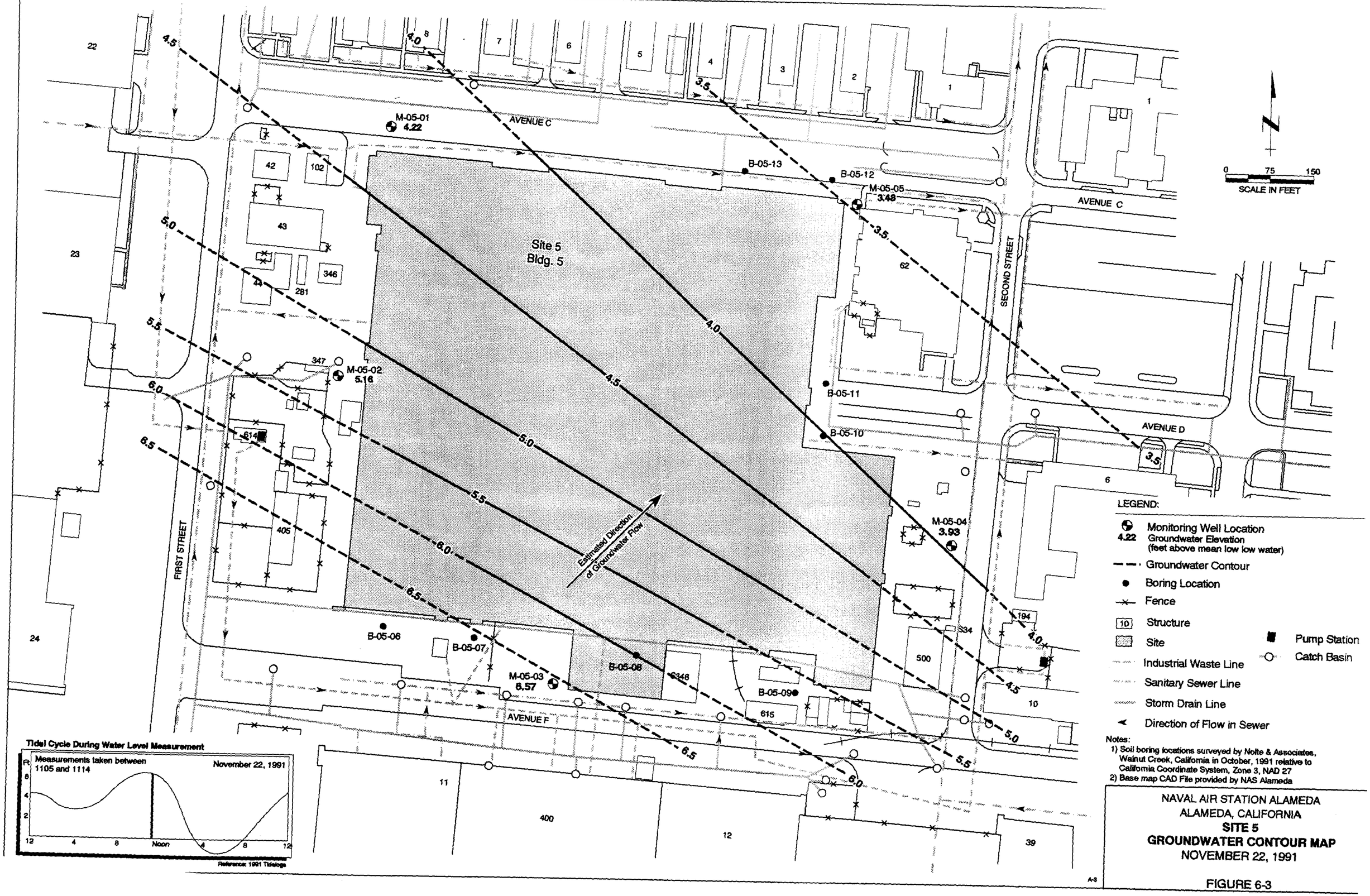
A total of 58 soil samples were collected from Site 5, five of which were duplicates. One duplicate was from a surface soil sample and four were from subsurface samples. Surface soil samples were analyzed for SVOCs and metals. Subsurface soil samples were analyzed for these constituents plus VOCs. Analytical results are summarized in Tables 6-3 and 6-4 at the end of this section. Laboratory quality assurance/quality control (QA/QC) data are summarized in the QCSR, submitted under separate cover.

Selected samples were also analyzed for total organic carbon content (TOC) and soil pH (Section 4.0). Although TOC and soil pH data will be used in the feasibility study, they will not be discussed in this report. Analytical results for these parameters are summarized in Appendix B.

6.4.2.1 Volatile Organic Compounds. Low concentrations of VOCs were detected in soil samples at several of the boring locations. Acetone was detected in 13 soil samples from various depths, ranging from 2 to 15 feet below ground surface in all of the borings except borings B-5-04 and B-05-13. The concentrations ranged from 12 to 110 micrograms per kilogram (µg/kg) and there was no apparent pattern of distribution. After data qualification, four acetone results were considered not detected due to trip blank contamination (see Section 3.0). Qualified data are identified in Table 6-3 and criteria are described in Section 3.0.

Carbon disulfide was detected at concentrations ranging from 6.4 to 9.8 µg/kg in three soil samples from 14 or 15 feet below ground surface in three borings. The soil borings are on the east and south sides of Site 5.

1,1,1-Trichloroethane (TCA) was detected in three soil samples from borings B-05-10 and B-05-11, on the east side of Site 5, at depths ranging from 3 to 14 feet, and at concentrations ranging from 8 to 39,000 µg/kg. 1,1-Dichloroethane (DCA) was detected in two soil samples from borings B-05-08 and B-


Site 5
Bldg. 5
AVENUE C
AVENUE D
AVENUE F
FIRST STREET
SECOND STREET
M-05-01
4.22
M-05-02
5.16
M-05-03
6.57
M-05-04
3.93
M-05-05
3.48
B-05-06
B-05-07
B-05-08
B-05-09
B-05-10
B-05-11
B-05-12
B-05-13
Estimated Direction of Groundwater Flow
4.0
4.5
5.0
5.5
6.0
6.5
3.5
0
75
150
SCALE IN FEET
LEGEND:
Monitoring Well Location
4.22 Groundwater Elevation (feet above mean low low water)
Groundwater Contour
Boring Location
Fence
Structure
Site
Industrial Waste Line
Sanitary Sewer Line
Storm Drain Line
Direction of Flow in Sewer
Pump Station
Catch Basin
Notes:
1) Soil boring locations surveyed by Nolte & Associates, Walnut Creek, California in October, 1991 relative to California Coordinate System, Zone 3, NAD 27
2) Base map CAD File provided by NAS Alameda
Tidal Cycle During Water Level Measurement
Measurements taken between 1105 and 1114
November 22, 1991
Reference: 1991 Tidelogs
NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA
SITE 5
GROUNDWATER CONTOUR MAP
NOVEMBER 22, 1991
FIGURE 6-3

AVENUE C

M-05-01
4.18

B-05-13

B-05-12

M-05-05
3.43

AVENUE C

SECOND STREET

AVENUE D

B-05-11

B-05-10

M-05-04
3.95

Site 5
Bldg. 5

M-05-02
5.18

M-05-03
6.72

B-05-06

B-05-07

B-05-08

B-05-09

FIRST STREET

AVENUE F

Estimated Direction of Groundwater Flow

4.0

4.5

5.0

5.5

6.0

6.5

3.5

22

23

24

42

102

43

44

346

281

347

614

405

62

8348

615

194

500

10

6

11

400

12

39

1

2

3

4

5

6

7

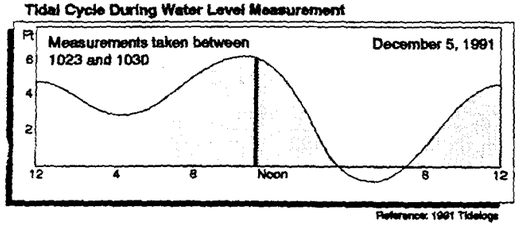
0 75 150
SCALE IN FEET

LEGEND:

- Monitoring Well Location
- 4.22 Groundwater Elevation (feet above mean low low water)
- Groundwater Contour
- Boring Location
- Fence
- 10 Structure
- Site
- Industrial Waste Line
- Sanitary Sewer Line
- Storm Drain Line
- Direction of Flow in Sewer
- Pump Station
- Catch Basin

Notes:
1) Soil boring locations surveyed by Nolte & Associates, Walnut Creek, California in October, 1991 relative to California Coordinate System, Zone 3, NAD 27
2) Base map CAD File provided by NAS Alameda

Tidal Cycle During Water Level Measurement



Reference: 1991 Tidelogs

NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA
SITE 5
GROUNDWATER CONTOUR MAP
DECEMBER 5, 1991

FIGURE 6-4

A-3

TABLE 6-2

SITE 5
WATER LEVEL DATA

		Date	Time	Water Level in feet	Water Elevation in feet
M05-01		8/28/91	845	7.60	4.43
ToC	*12.03*	11/6/91	1351	7.78	4.25
		11/22/91	928	7.84	4.19
		11/22/91	1109	7.81	4.22
		11/22/91	1225	7.78	4.25
		12/5/91	1031	7.85	4.18
		12/5/91	1117	7.85	4.18
M05-02		8/28/91	952	6.61	5.19
ToC	*11.80*	11/6/91	1344	6.59	5.21
		11/22/91	923	6.63	5.17
		11/22/91	1111	6.64	5.16
		11/22/91	1229	6.65	5.15
		12/5/91	1030	6.62	5.18
		12/5/91	1119	6.62	5.18
M05-03		8/28/91	939	5.03	6.09
ToC	*11.12*	11/6/91	1402	4.85	6.27
		11/22/91	920	4.56	6.56
		11/22/91	1114	4.55	6.57
		11/22/91	1233	4.55	6.57
		12/5/91	1027	4.40	6.72
		12/5/91	1121	4.40	6.72
M05-04		8/28/91	930	7.73	4.10
ToC	*11.83*	11/6/91	1317	7.82	4.01
		11/22/91	933	7.92	3.91
		11/22/91	1114	7.90	3.93
		11/22/91	1235	7.89	3.94
		12/5/91	1023	7.88	3.95
		12/5/91	1130	7.88	3.95
M05-05		8/28/91	902	7.92	3.06
ToC	*10.98*	11/6/91	1336	7.43	3.55
		11/22/91	931	7.50	3.48
		11/22/91	1105	7.50	3.48
		11/22/91	1220	7.54	3.44
		12/5/91	1034	7.55	3.43
		12/5/91	1140	7.58	3.40

ToC - Top of Casing
Elevation datum - USGS Mean Low Low Water

05-10, on the south and east sides of Site 5, respectively, at depths ranging from 3 to 14 feet, at concentrations ranging from 11 to 31 µg/kg. Chloroethane was detected at a concentration of 23 µg/kg in only one soil sample, from boring B-05-08, at a depth of 14 feet .

Tetrachloroethene (PCE) was detected in one soil sample from 3 feet below ground surface in boring B-05-10, on the east side of Site 5, at a concentration of 11 µg/kg. Trichloroethene (TCE) was detected in two soil samples ranging from 3 to 14 feet below ground surface in borings B-05-10 and B-05-11, on the east side of Site 5, at concentrations ranging from 53 to 2,200 µg/kg. Vinyl chloride was detected in one soil sample from 15 feet below ground surface in boring B-05-02, on the west side of Site 5, at a concentration of 80 µg/kg.

Methyl ethyl ketone (MEK) was detected in one soil sample from 2 feet below ground surface in boring B-05-08, on the south side of Site 5, at a concentration of 16 µg/kg. Methylene chloride was detected in one soil sample from 14 feet below ground surface in boring B-05-12 at a concentration of 7.5 µg/kg.

Toluene was detected in three soil samples from depths ranging from 2 to 14 feet below ground surface in borings B-05-03 and B-05-08 at concentrations ranging from 5.4 of 840 µg/kg. Ethylbenzene was detected in one soil sample from 3.5 feet below ground surface in boring B-05-03 at a concentration of 2,100 µg/kg. Xylenes were detected in three soil samples ranging from 2 to 14 feet below ground surface in borings B-05-03 and B-05-08 at concentrations ranging from 20 to 20,000 µg/kg. These fuel components are detected in the vicinity of the hangar on the south side of Site 5.

6.4.2.2 Semivolatile Organic Compounds. SVOCs were detected in soil samples from all of the borings at Site 5 except borings B-05-06 and B-05-13. SVOCs classified as polycyclic aromatic hydrocarbons (PAH) were generally detected at the highest concentrations in the deepest soil sample collected from each of the borings. The distribution of these SVOCs is presented in the following discussion. Analytical results for SVOCs are listed in Table 6-3.

PAH were detected at low concentrations in the fill material. Naphthalene at concentrations of 4,200 and 7,200 µg/kg was detected in the soil samples from 2 and 3.5 feet below ground surface from borings B-05-08 and B-05-03, respectively. PAH in the fill material were detected in soil samples from borings on the south side of Site 5.

PAH were detected at elevated concentrations in soil samples from the native material around Site 5. PAH were detected in up to 12 soil samples, concentrations ranged from 100 to 19,000 µg/kg.

The surface soil sample from borings B-05-03 and B-05-08 had concentrations of bis (2-ethylhexyl) phthalate at concentrations of 340 to 370 µg/kg, respectively. Bis (2-ethylhexyl) phthalate was detected in three method blank samples, but these blanks were not associated with the samples from Site 5 in which bis (2-ethylhexyl) phthalate was detected. Thus, the data must be considered valid detections.

6.4.2.3 Metals. As discussed in Section 3.0 of this report, background data for metals in soils at NAS Alameda have not been collected. Background data for metals in soil will be collected at a later date. An evaluation of the location and extent of possible metals contamination will be performed after the collection of background soil samples. Data generated in this investigation are presented below. As discussed in Section 3.0, the metals beryllium, chromium, copper, lead, mercury, and nickel have been tentatively identified as metals of concern. Analytical results for these metals are presented below. Analytical results for metals are listed in Table 6-4.

Beryllium was detected in 50 samples; concentrations ranged from 0.14 to 1.98 mg/kg. Chromium was detected in 57 soil samples; concentrations ranged from 4.43 to 105 mg/kg. Copper was detected in 57 soil samples; concentrations ranged from 3.52 to 30.7 mg/kg. Lead was detected in 57 soil samples; concentrations ranged from 1.17 to 78.8 mg/kg. Mercury was detected in six soil samples; concentrations ranged from 0.122 to 0.204 mg/kg. Nickel was detected in 57 soil samples; concentrations ranged from 4.34 to 70 mg/kg.

6.4.2.4 Asbestos. Fifty-seven soil samples were analyzed for asbestos. No fibrous asbestos was detected in any of the samples.

6.4.3 Analytical Results - Groundwater Samples

Groundwater samples were collected on August 28 and 29, 1991. Groundwater samples were analyzed for VOCs, SVOCs, pesticides/PCBs, and metals. Duplicate samples were collected from wells M-05-03 and M-05-04. Groundwater analytical results are summarized in Tables 6-5 and 6-6 at the end of this section. Laboratory QC data are summarized in the QCSR, submitted under separate cover.

6.4.3.1 Volatile Organic Compounds. VOCs were detected in groundwater samples collected from all monitoring wells at Site 5 except M-05-01. Well M-05-01 is located in the northwestern corner of the site.

Acetone was detected only in the duplicate groundwater sample from well M-05-03, at a concentration of 26 micrograms per liter (µg/L). However, acetone was also present in the method blank associated with this sample and, thus, the acetone result was qualified as not detected (Section 3.0). Qualified data are identified in Table 6-5 and criteria are described in Section 3.0.

TCA was only detected in the groundwater sample from well M-05-04, at a concentration of 36 µg/L. DCA was detected in three groundwater samples and two duplicate sample from wells M-05-03, M-05-04, and M-05-05 at concentrations ranging from 14 to 810 µg/L. 1,1-Dichloroethylene was detected in one groundwater sample from well M-05-04 and a duplicate sample at concentrations ranging from 350 to 570 µg/L. 1,2-Dichloroethene was detected in three groundwater samples and one duplicate sample from wells M-05-02, M-05-04, and M-05-05 at concentrations ranging from 71 to 640 µg/L. TCE was detected in two groundwater samples and one duplicate from wells M-05-02 and M-05-04 at concentrations ranging from 8.8 to 920 µg/L. Vinyl chloride was detected in three groundwater samples from wells M-05-02, M-05-04, and M-05-05 at concentrations ranging from 47 to 200 µg/L. The groundwater samples from well M-05-04 had the highest concentrations of the compounds mentioned in this paragraph. Well M-05-04 is located on the east side of Site 5.

Chloroethane and the fuel constituents ethylbenzene, toluene, and xylenes were only detected in the groundwater sample and duplicate sample from well M-05-03. Chloroethane was detected at concentrations ranging from 67 to 130 µg/L. Ethylbenzene was detected at concentrations ranging from 23 to 28 µg/L. Toluene was detected at concentrations ranging from 12 to 13 µg/L. Xylenes were detected at concentrations ranging from 250 to 260 µg/L. Well M-05-03 is located on the south side of Site 5.

6.4.3.2 Semivolatile Organic Compounds. SVOCs were detected in groundwater samples from wells M-05-03 and M-05-05. Analytical results for SVOCs are listed in Table 6-5.

The suite of SVOCs present in the groundwater samples from well M-05-03 is made up of PAH, a phenol, an ether, and a phthalate. The PAH detected range in concentrations from 4.2 to 96 µg/L. 2,4-dimethyphenol was detected at a concentration of 12 µg/L. Bis(2-chloroethyl) ether was detected and ranged in concentrations from 29 to 40 µg/L. Bis(2-ethylhexyl) phthalate was detected and ranged in concentrations from 2.6 to 3.4 µg/L.

Bis (2-chloroisopropyl) ether was only detected in the groundwater sample from well M-05-05 at a concentration of 2.9 µg/L, and was the only SVOC detected in the sample.

6.4.3.3 Metals. Analytical results for metals in groundwater are summarized in Table 6-6. Presently, there are no base-specific background metals data for comparison purposes. Background data will be collected at a later date and an evaluation of metals data will be included in the Phase 7 comprehensive RI report.

6.4.3.4 General Chemicals. Analytical results for general chemicals, pH, and TOC in groundwater are summarized in Table 6-7. Groundwater conductivity was measured during sampling of the wells and ranged from 2,900 to 9,200 micro-ohms per centimeter. Based on this conductivity range, the groundwater is classified as brackish (Driscoll, 1987). Groundwater pH values are neutral to slightly alkaline. With the exception of the samples from wells M-05-03 and M-05-04, TOC values are comparable to those identified in wells installed at other sites during this investigation.

TABLE 6-3
NAS ALAMEDA - SITE 5
SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	B05-01-000	B05-01-003	Redrill B05-01-003	B05-01-010	Duplicate B05-01-010	B05-01-014	B05-02-000	B05-02-000	B05-02-015
Date Sampled	07/16/91	07/16/91	10/15/91	07/16/91	07/16/91	07/16/91	07/16/91	07/16/91	07/16/91
Depth of Sample	0.0 ft	3.0 ft	3.0 ft	10.0 ft	10.0 ft	14.0 ft	0.0 ft	0.0 ft	15.0 ft
PARAMETER REPORTED									
VOLATILE ORGANICS (µg/kg-dry)									
1,1,1-TRICHLOROETHANE	NA	< 5.2	NA	< 6.4	< 6.3	< 7.2	NA	NA	< 7.5
1,1-DICHLOROETHANE	NA	< 5.2	NA	< 6.4	< 6.3	< 7.2	NA	NA	< 7.5
ACETONE	NA	< 10.0	NA	< 13	< 13	110	NA	NA	54
CARBON DISULFIDE	NA	< 5.2	NA	< 6.4	< 6.3	< 7.2	NA	NA	9.8
CHLOROETHANE	NA	< 5.2	NA	< 6.4	< 6.3	< 7.2	NA	NA	< 7.5
ETHYLBENZENE	NA	< 5.2	NA	< 6.4	< 6.3	< 7.2	NA	NA	< 7.5
METHYL ETHYL KETONE	NA	< 10.0	NA	< 13	< 13	< 14	NA	NA	< 15
METHYLENE CHLORIDE	NA	< 5.2	NA	< 6.4	< 6.3	< 7.2	NA	NA	< 7.5
TETRACHLOROETHENE	NA	< 5.2	NA	< 6.4	< 6.3	< 7.2	NA	NA	< 7.5
TOLUENE	NA	< 5.2	NA	< 6.4	< 6.3	< 7.2	NA	NA	< 7.5
TRICHLOROETHENE	NA	< 5.2	NA	< 6.4	< 6.3	< 7.2	NA	NA	< 7.5
VINYL CHLORIDE	NA	< 5.2	NA	< 6.4	< 6.3	< 7.2	NA	NA	80
XYLENES	NA	< 5.2	NA	< 6.4	< 6.3	< 7.2	NA	NA	< 7.5
SEMIVOLATILE ORGANICS (µg/kg-dry)									
2-METHYLNAPHTHALENE	< 110	< 100	< 110	< 130	< 130	< 140	< 110	< 110	< 150
ACENAPHTHENE	< 74	< 73	< 85	< 100	< 88	300	< 85	< 74	130
ACENAPHTHYLENE	< 74	< 73	< 85	< 100	< 88	< 100	< 85	< 74	110
ANTHRACENE	< 74	< 73	< 85	< 100	< 88	280	< 85	< 74	230
BENZO(A)ANTHRACENE	< 110	< 100	< 110	< 130	< 130	1600	< 110	< 110	2100
BENZO(A)PYRENE	< 150	< 150	< 150	< 180	< 180	5200	< 150	< 150	9100
BENZO(B)FLUORANTHENE	< 110	< 100	< 110	< 130	< 130	4300	< 110	< 110	7700
BENZO(GHI)PERYLENE	< 170	< 170	< 170	< 200	< 200	5800	< 170	< 170	9100
BENZO(K)FLUORANTHENE	< 110	< 100	< 110	< 130	< 130	880	< 110	< 110	1700
BIS(2-CHLOROETHYL)ETHER	< 74	< 73	< 85	< 100	< 88	< 100	< 85	< 74	< 110
BIS(2-ETHYLHEXYL)PHTHALATE	< 110	< 100	140	< 130	< 130	< 140	< 110	< 110	< 150
CHRYSENE	< 110	< 100	< 110	< 130	< 130	2000	< 110	< 110	2800
DIBENZO(A,H)ANTHRACENE	< 170	< 170	< 170	< 200	< 200	320	< 170	< 170	< 240
FLUORANTHENE	< 74	< 73	< 85	< 100	< 88	< 100	< 85	< 74	6100
INDENO(1,2,3-CD)PYRENE	< 170	< 170	< 170	< 200	< 200	5300	< 170	< 170	9100
NAPHTHALENE	< 74	< 73	< 85	< 100	< 88	220	< 85	< 74	410
PHENANTHRENE	< 74	< 73	< 85	< 100	< 88	1500	< 85	< 74	1300
PYRENE	< 74	< 73	< 85	< 100	< 88	9800	< 85	< 74	19000

Notes: NA = Not analyzed
UJ = Qualifed, estimated not detected
J = Qualified, estimated value
< = Analyte reported below detection limit
Shaded areas highlight detections above the detection limit.
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 6-3
NAS ALAMEDA - SITE 5
SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	B05-03-000	B05-03-004	B05-03-010	B05-03-014	B05-04-000	B05-04-002	B05-04-008	B05-04-014	Duplicate B05-04-014
Date Sampled	07/24/91	07/24/91	07/24/91	07/24/91	07/23/91	07/23/91	07/23/91	07/23/91	07/23/91
Depth of Sample	0.0 ft	3.5 ft	9.5 ft	14.0 ft	2.3 ft	2.0 ft	8.0 ft	14.0 ft	14.0 ft
PARAMETER REPORTED									
VOLATILE ORGANICS (µg/kg-dry)									
1,1,1-TRICHLOROETHANE	NA	< 670	< 6.1	< 7.4	NA	< 5.3	< 6.1	< 6.2	< 7.4
1,1-DICHLOROETHANE	NA	< 670	< 6.1	< 7.4	NA	< 5.3	< 6.1	< 6.2	< 7.4
ACETONE	NA	< 1300	18	< 15	NA	< 11	< 12	< 12	< 15
CARBON DISULFIDE	NA	< 670	< 6.1	< 7.4	NA	< 5.3	< 6.1	< 6.2	< 7.4
CHLOROETHANE	NA	< 1300	< 6.1	< 7.4	NA	< 5.3	< 6.1	< 6.2	< 7.4
ETHYLBENZENE	NA	2100	< 6.1	< 7.4	NA	< 5.3	< 6.1	< 6.2	< 7.4
METHYL ETHYL KETONE	NA	< 1300	< 12	< 15	NA	< 11	< 12	< 12	< 15
METHYLENE CHLORIDE	NA	< 670	< 6.1	< 7.4	NA	< 5.3	< 6.1	< 6.2	< 7.4
TETRACHLOROETHENE	NA	< 670	< 6.1	< 7.4	NA	< 5.3	< 6.1	< 6.2	< 7.4
TOLUENE	NA	840	< 6.1	< 7.4	NA	< 5.3	< 6.1	< 6.2	< 7.4
TRICHLOROETHENE	NA	< 670	< 6.1	< 7.4	NA	< 5.3	< 6.1	< 6.2	< 7.4
VINYL CHLORIDE	NA	< 670	< 6.1	< 7.4	NA	< 5.3	< 6.1	< 6.2	< 7.4
XYLENES	NA	20000	< 6.1	20	NA	< 5.3	< 6.1	< 6.2	< 7.4
SEMIVOLATILE ORGANICS (µg/kg-dry)									
2-METHYLNAPHTHALENE	< 110	< 2700	< 120	< 150	< 1000	< 110	< 120	< 120	< 150
ACENAPHTHENE	< 87	< 2100	< 98	< 120	< 830	< 84	< 97	< 100	< 120
ACENAPHTHYLENE	< 87	< 2100	< 98	< 120	< 830	< 84	< 97	< 100	< 120
ANTHRACENE	< 87	< 2100	< 98	< 120	< 830	< 84	< 97	< 100	< 120
BENZO(A)ANTHRACENE	< 110	< 2700	< 120	810J	< 1000	< 110	< 120	< 120	< 150
BENZO(A)PYRENE	< 150	< 3700	< 170	2500J	< 1400	< 150	< 170	210	< 210
BENZO(B)FLUORANTHENE	< 110	< 2700	< 120	2100J	< 1000	< 110	< 120	< 120	< 150
BENZO(GHI)PERYLENE	< 170	< 4300	< 200	4200J	< 1700	< 170	< 190	< 200	< 240
BENZO(K)FLUORANTHENE	< 110	< 2700	< 120	590J	< 1000	< 110	< 120	< 120	< 150
BIS(2-CHLOROETHYL)ETHER	< 87	< 2100	< 98	400J	< 830	< 84	< 97	< 100	< 120
BIS(2-ETHYLHEXYL)PHTHALATE	340J	< 2700	< 120	< 150	< 1000	< 110	< 120	< 120	< 150
CHRYSENE	< 110	< 2700	< 120	790J	< 1000	< 110	< 120	< 120	< 150
DIBENZO(A,H)ANTHRACENE	< 170	< 4300	< 200	< 240	< 1700	< 170	< 190	< 200	< 240
FLUORANTHENE	< 87	< 2100	< 98	1800J	< 830	< 84	< 97	240	< 120
INDENO(1,2,3-CD)PYRENE	< 170	< 4300	< 200	2700J	< 1700	< 170	< 190	< 200	< 240
NAPHTHALENE	< 87	7200J	< 98	130J	< 830	< 84	< 97	< 100	< 120
PHENANTHRENE	< 87	< 2100	< 98	430J	< 830	< 84	< 97	100	< 120
PYRENE	< 87	< 2100	< 98	7100J	< 830	< 84	< 97	750	120

Notes: NA = Not analyzed
UJ = Qualifed, estimated not detected
J = Qualified, estimated value
< = Analyte reported below detection limit
Shaded areas highlight detections above the detection limit.
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 6-3
NAS ALAMEDA - SITE 5
SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	B05-05-000	B05-05-003	B05-05-008	B05-05-014	B05-06-000	B05-06-002	B05-06-010	Duplicate B05-06-010	B05-06-014
Date Sampled	07/17/91	07/17/91	07/17/91	07/17/91	07/12/91	07/12/91	07/12/91	07/12/91	07/12/91
Depth of Sample	0.0 ft	3.0 ft	8.0 ft	14.0 ft	0.0 ft	2.0 ft	9.5 ft	9.5 ft	14.0 ft
PARAMETER REPORTED									
VOLATILE ORGANICS (µg/kg-dry)									
1,1,1-TRICHLOROETHANE	NA	< 5.4	< 6.0	< 6.5	NA	< 5.4	< 6.0	< 6.1	< 6.5
1,1-DICHLOROETHANE	NA	< 5.4	< 6.0	< 6.5	NA	< 5.4	< 6.0	< 6.1	< 6.5
ACETONE	NA	14	< 12	22	NA	< 11	12UJ	14UJ	< 13
CARBON DISULFIDE	NA	< 5.4	< 6.0	< 6.5	NA	< 5.4	< 6.0	< 6.1	< 6.5
CHLOROETHANE	NA	< 5.4	< 6.0	< 6.5	NA	< 5.4	< 6.0	< 6.1	< 6.5
ETHYLBENZENE	NA	< 5.4	< 6.0	< 6.5	NA	< 5.4	< 6.0	< 6.1	< 6.5
METHYL ETHYL KETONE	NA	< 11	< 12	< 13	NA	< 11	< 12	< 12	< 13
METHYLENE CHLORIDE	NA	< 5.4	< 6.0	< 6.5	NA	< 5.4	< 6.0	< 6.1	< 6.5
TETRACHLOROETHENE	NA	< 5.4	< 6.0	< 6.5	NA	< 5.4	< 6.0	< 6.1	< 6.5
TOLUENE	NA	< 5.4	< 6.0	< 6.5	NA	< 5.4	< 6.0	< 6.1	< 6.5
TRICHLOROETHENE	NA	< 5.4	< 6.0	< 6.5	NA	< 5.4	< 6.0	< 6.1	< 6.5
VINYL CHLORIDE	NA	< 5.4	< 6.0	< 6.5	NA	< 5.4	< 6.0	< 6.1	< 6.5
XYLENES	NA	< 5.4	< 6.0	< 6.5	NA	< 5.4	< 6.0	< 6.1	< 6.5
SEMIVOLATILE ORGANICS (µg/kg-dry)									
2-METHYLNAPHTHALENE	< 110	< 110	< 120	< 130	< 110	< 110	< 120	< 120	< 130
ACENAPHTHENE	< 88	< 87	< 96	< 100	< 85	< 86	< 96	< 98	< 100
ACENAPHTHYLENE	< 88	< 87	< 96	110J	< 85	< 86	< 96	< 98	< 100
ANTHRACENE	< 88	< 87	< 96	290J	< 85	< 86	< 96	< 98	< 100
BENZO(A)ANTHRACENE	< 110	< 110	< 120	1400J	< 110	< 110	< 120	< 120	< 130
BENZO(A)PYRENE	< 150	< 150	< 170	2800J	< 150	< 150	< 170	< 170	< 180
BENZO(B)FLUORANTHENE	< 110	< 110	< 120	2400J	< 110	< 110	< 120	< 120	< 130
BENZO(GHI)PERYLENE	< 180	< 170	< 190	4200J	< 170	< 170	< 190	< 200	< 210
BENZO(K)FLUORANTHENE	< 110	< 110	< 120	620J	< 110	< 110	< 120	< 120	< 130
BIS(2-CHLOROETHYL)ETHER	< 88	< 87	< 96	< 100	< 85	< 86	< 96	< 98	< 100
BIS(2-ETHYLHEXYL)PHTHALATE	< 110	< 110	< 120	< 130	< 110	< 110	< 120	< 120	< 130
CHRYSENE	< 110	< 110	< 120	1200J	< 110	< 110	< 120	< 120	< 130
DIBENZO(A,H)ANTHRACENE	< 180	< 170	< 190	380J	< 170	< 170	< 190	< 200	< 210
FLUORANTHENE	< 88	< 87	< 96	3300J	< 85	< 86	< 96	< 98	< 100
INDENO(1,2,3-CD)PYRENE	< 180	< 170	< 190	2800J	< 170	< 170	< 190	< 200	< 210
NAPHTHALENE	< 88	< 87	< 96	110J	< 85	< 86	< 96	< 98	< 100
PHENANTHRENE	< 88	< 87	< 96	840J	< 85	< 86	< 96	< 98	< 100
PYRENE	< 88	< 87	< 96	7400J	< 85	< 86	< 96	< 98	< 100

Notes: NA = Not analyzed
UJ = Qualifed, estimated not detected
J = Qualified, estimated value
< = Analyte reported below detection limit
Shaded areas highlight detections above the detection limit.
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 6-3
NAS ALAMEDA - SITE 5
SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	B05-07-000	B05-07-002	B05-07-010	B05-07-014	B05-08-000	B05-08-002	B05-08-008	B05-08-014	B05-09-000
Date Sampled	07/12/91	07/12/91	07/12/91	07/12/91	08/08/91	08/08/91	08/08/91	08/08/91	07/12/91
Depth of Sample	0.0 ft	2.0 ft	9.5 ft	14.0 ft	0.0 ft	2.0 ft	8.0 ft	14.0 ft	0.0 ft
PARAMETER REPORTED									
VOLATILE ORGANICS (µg/kg-dry)									
1,1,1-TRICHLOROETHANE	NA	< 5.4	< 6.1	< 6.2	NA	< 5.4	< 6.0	< 7.7	NA
1,1-DICHLOROETHANE	NA	< 5.4	< 6.1	< 6.2	NA	< 5.4	< 6.0	31	NA
ACETONE	NA	< 11	< 12	24	NA	43	19UJ	29UJ	NA
CARBON DISULFIDE	NA	< 5.4	< 6.1	< 6.2	NA	< 5.4	< 6.0	8.5	NA
CHLOROETHANE	NA	< 5.4	< 6.1	< 6.2	NA	< 11	< 6.0	23	NA
ETHYLBENZENE	NA	< 5.4	< 6.1	< 6.2	NA	< 5.4	< 6.0	< 7.7	NA
METHYL ETHYL KETONE	NA	< 11	< 12	< 12	NA	16	< 12	< 15	NA
METHYLENE CHLORIDE	NA	< 5.4	< 6.1	< 6.2	NA	< 5.4	< 6.0	< 7.7	NA
TETRACHLOROETHENE	NA	< 5.4	< 6.1	< 6.2	NA	< 5.4	< 6.0	< 7.7	NA
TOLUENE	NA	< 5.4	< 6.1	< 6.2	NA	5.4	< 6.0	7.9	NA
TRICHLOROETHENE	NA	< 5.4	< 6.1	< 6.2	NA	< 5.4	< 6.0	< 7.7	NA
VINYL CHLORIDE	NA	< 5.4	< 6.1	< 6.2	NA	< 11	< 6.0	< 7.7	NA
XYLENES	NA	< 5.4	< 6.1	< 6.2	NA	44	< 6.0	< 7.7	NA
SEMIVOLATILE ORGANICS (µg/kg-dry)									
2-METHYLNAPHTHALENE	< 110	< 110	< 120	< 120	< 110	580	< 120	< 150	< 110
ACENAPHTHENE	< 88	< 87	< 97	< 100	< 87	< 430	< 97	< 120	< 89
ACENAPHTHYLENE	< 88	< 87	< 97	< 100	< 87	< 430	< 97	< 120	< 89
ANTHRACENE	< 88	< 87	< 97	< 100	< 87	< 430	< 97	< 120	< 89
BENZO(A)ANTHRACENE	< 110	< 110	< 120	< 120	< 110	< 540	< 120	170	< 110
BENZO(A)PYRENE	< 150	< 150	< 170	< 170	< 150	< 760	< 170	420	< 160
BENZO(B)FLUORANTHENE	< 110	< 110	< 120	140J	< 110	< 540	< 120	370	< 110
BENZO(GHI)PERYLENE	< 180	< 170	< 190	< 200	< 170	< 870	< 190	< 250	< 180
BENZO(K)FLUORANTHENE	< 110	< 110	< 120	< 120	< 110	< 540	< 120	< 150	< 110
BIS(2-CHLOROETHYL)ETHER	< 88	< 87	< 97	< 100	< 87	< 430	< 97	< 120	< 89
BIS(2-ETHYLHEXYL)PHTHALATE	260J	< 110	320J	< 120	370	< 540	< 120	200	< 110
CHRYSENE	< 110	< 110	< 120	< 120	< 110	< 540	< 120	180	< 110
DIBENZO(A,H)ANTHRACENE	< 180	< 170	< 190	< 200	< 170	< 870	< 190	< 250	< 180
FLUORANTHENE	170J	< 87	< 97	160J	< 87	< 430	< 97	380	< 89
INDENO(1,2,3-CD)PYRENE	< 180	< 170	< 190	< 200	< 170	< 870	< 190	< 250	< 180
NAPHTHALENE	< 88	< 87	< 97	< 100	300	4200	< 97	< 120	< 89
PHENANTHRENE	130J	< 87	< 97	< 100	< 87	< 430	< 97	220	< 89
PYRENE	150J	< 87	< 97	220J	< 87	< 430	< 97	620	< 89

Notes: NA = Not analyzed
UJ = Qualifed, estimated not detected
J = Qualified, estimated value
< = Analyte reported below detection limit
Shaded areas highlight detections above the detection limit.
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 6-3
NAS ALAMEDA - SITE 5
SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	B05-09-002	B05-09-010	B05-09-014	B05-10-000	B05-10-003	B05-10-007	B05-10-008	B05-10-014	B05-11-000
Date Sampled	07/12/91	07/12/91	07/12/91	07/16/91	07/16/91	07/16/91	07/16/91	07/16/91	07/17/91
Depth of Sample	2.0 ft	9.5 ft	14.0 ft	0.0 ft	3.0 ft	7.0 ft	8.0 ft	14.0 ft	0.0 ft
PARAMETER REPORTED									
VOLATILE ORGANICS (µg/kg-dry)									
1,1,1-TRICHLOROETHANE	< 5.3	< 6.1	< 6.3	NA	130	< 5.6	< 5.9UJ	< 6.2	NA
1,1-DICHLOROETHANE	< 5.3	< 6.1	< 6.3	NA	11	< 5.6	< 5.9UJ	< 6.2	NA
ACETONE	< 11	< 12	25	NA	13	< 11	20J	18	NA
CARBON DISULFIDE	< 5.3	< 6.1	6.4	NA	< 5.4	< 5.6	< 5.9UJ	< 6.2	NA
CHLOROETHANE	< 5.3	< 6.1	< 6.3	NA	< 5.4	< 5.6	< 5.9UJ	< 6.2	NA
ETHYLBENZENE	< 5.3	< 6.1	< 6.3	NA	< 5.4	< 5.6	< 5.9UJ	< 6.2	NA
METHYL ETHYL KETONE	< 11	< 12	< 13	NA	< 11	< 11	< 12UJ	< 12	NA
METHYLENE CHLORIDE	< 5.3	< 6.1	< 6.3	NA	< 5.4	< 5.6	< 5.9UJ	< 6.2	NA
TETRACHLOROETHENE	< 5.3	< 6.1	< 6.3	NA	11	< 5.6	< 5.9UJ	< 6.2	NA
TOLUENE	< 5.3	< 6.1	< 6.3	NA	< 5.4	< 5.6	< 5.9UJ	< 6.2	NA
TRICHLOROETHENE	< 5.3	< 6.1	< 6.3	NA	53	< 5.6	< 5.9UJ	< 6.2	NA
VINYL CHLORIDE	< 5.3	< 6.1	< 6.3	NA	< 5.4	< 5.6	< 5.9UJ	< 6.2	NA
XYLENES	< 5.3	< 6.1	< 6.3	NA	< 5.4	< 5.6	< 5.9UJ	< 6.2	NA
SEMIVOLATILE ORGANICS (µg/kg-dry)									
2-METHYLNAPHTHALENE	< 110	< 120	< 130	< 110	< 110	< 110	< 2400	< 120	< 110
ACENAPHTHENE	< 75	< 85	< 100	< 88	< 86	< 89	< 1900	< 99	< 88
ACENAPHTHYLENE	< 75	< 85	< 100	< 88	< 86	< 89	< 1900	< 99	< 88
ANTHRACENE	< 75	< 85	< 100	< 88	< 86	< 89	< 1900	< 99	< 88
BENZO(A)ANTHRACENE	< 110	< 120	< 130	< 110	< 110	< 110	< 2400	300J	< 110
BENZO(A)PYRENE	< 150	< 170	200J	< 150	< 150	< 160	< 3300	1200J	< 150
BENZO(B)FLUORANTHENE	< 110	< 120	180J	< 110	< 110	< 110	< 2400	1300J	< 110
BENZO(GHI)PERYLENE	< 170	< 190	< 200	< 180	< 170	< 180	< 3800	1200J	< 180
BENZO(K)FLUORANTHENE	< 110	< 120	< 130	< 110	< 110	< 110	< 2400	240J	< 110
BIS(2-CHLOROETHYL)ETHER	< 75	< 85	< 100	< 88	< 86	< 89	< 1900	< 99	< 88
BIS(2-ETHYLHEXYL)PHTHALATE	< 110	< 120	< 130	< 110	< 110	< 110	< 2400	< 120	< 110
CHRYSENE	< 110	< 120	< 130	< 110	< 110	< 110	< 2400	350J	< 110
DIBENZO(A,H)ANTHRACENE	< 170	< 190	< 200	< 180	< 170	< 180	< 3800	< 200	< 180
FLUORANTHENE	< 75	< 85	120J	< 88	< 86	< 89	< 1900	1100J	< 88
INDENO(1,2,3-CD)PYRENE	< 170	< 190	< 200	< 180	< 170	< 180	< 3800	670J	< 180
NAPHTHALENE	< 75	< 85	< 100	< 88	< 86	< 89	< 1900	< 99	< 88
PHENANTHRENE	< 75	< 85	< 100	< 88	< 86	< 89	< 1900	230J	< 88
PYRENE	< 75	< 85	390J	< 88	< 86	< 89	< 1900	3800J	< 88

Notes: NA = Not analyzed
UJ = Qualifed, estimated not detected
J = Qualified, estimated value
< = Analyte reported below detection limit
Shaded areas highlight detections above the detection limit.
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 6-3
NAS ALAMEDA - SITE 5
SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	B05-11-004	B05-11-008	B05-11-014	B05-12-000	B05-12-002	B05-12-008	B05-12-014	B05-13-000	B05-13-002
Date Sampled	07/17/91	07/17/91	07/17/91	07/11/91	07/11/91	07/11/91	07/11/91	07/11/91	07/11/91
Depth of Sample	4.0 ft	8.0 ft	14.0 ft	0.0 ft	2.0 ft	8.0 ft	14.0 ft	0.0 ft	2.0 ft
PARAMETER REPORTED									
VOLATILE ORGANICS (µg/kg-dry)									
1,1,1-TRICHLOROETHANE	8.0	< 5.7	39000	NA	< 5.4	< 6.3	< 6.4	NA	< 5.3
1,1-DICHLOROETHANE	< 5.4	< 5.7	< 1500	NA	< 5.4	< 6.3	< 6.4	NA	< 5.3
ACETONE	< 11	18	< 3000	NA	< 11	< 13	53	NA	< 11
CARBON DISULFIDE	< 5.4	< 5.7	< 1500	NA	< 5.4	< 6.3	< 6.4	NA	< 5.3
CHLOROETHANE	< 5.4	< 5.7	< 3000	NA	< 5.4	< 6.3	< 6.4	NA	< 5.3
ETHYLBENZENE	< 5.4	< 5.7	< 1500	NA	< 5.4	< 6.3	< 6.4	NA	< 5.3
METHYL ETHYL KETONE	< 11	< 11	< 3000	NA	< 11	< 13	< 13	NA	< 11
METHYLENE CHLORIDE	< 5.4	< 5.7	< 1500	NA	< 5.4	< 6.3	7.5	NA	< 5.3
TETRACHLOROETHENE	< 5.4	< 5.7	< 1500	NA	< 5.4	< 6.3	< 6.4	NA	< 5.3
TOLUENE	< 5.4	< 5.7	< 1500	NA	< 5.4	< 6.3	< 6.4	NA	< 5.3
TRICHLOROETHENE	< 5.4	< 5.7	2200	NA	< 5.4	< 6.3	< 6.4	NA	< 5.3
VINYL CHLORIDE	< 5.4	< 5.7	< 1500	NA	< 5.4	< 6.3	< 6.4	NA	< 5.3
XYLENES	< 5.4	< 5.7	< 1500	NA	< 5.4	< 6.3	< 6.4	NA	< 5.3
SEMIVOLATILE ORGANICS (µg/kg-dry)									
2-METHYLNAPHTHALENE	< 110	< 110	< 120UJ	< 110	< 110	< 130	< 130	< 110	< 110
ACENAPHTHENE	< 87	< 92	< 84UJ	< 88	< 87	< 100	< 100	< 89	< 85
ACENAPHTHYLENE	< 87	< 92	< 84UJ	< 88	< 87	< 100	< 100	< 89	< 85
ANTHRACENE	< 87	< 92	< 84UJ	< 88	< 87	< 100	< 100	< 89	< 85
BENZO(A)ANTHRACENE	< 110	< 110	< 120UJ	< 110	< 110	< 130	230J	< 110	< 110
BENZO(A)PYRENE	< 150	< 160	< 170UJ	< 150	< 150	< 180	860J	< 160	< 150
BENZO(B)FLUORANTHENE	< 110	< 110	< 120UJ	< 110	< 110	< 130	900J	< 110	< 110
BENZO(GHI)PERYLENE	< 170	< 180	< 190UJ	< 180	< 170	< 200	710J	< 180	< 170
BENZO(K)FLUORANTHENE	< 110	< 110	< 120UJ	< 110	< 110	< 130	240J	< 110	< 110
BIS(2-CHLOROETHYL)ETHER	< 87	< 92	< 84UJ	< 88	< 87	< 100	< 100	< 89	< 85
BIS(2-ETHYLHEXYL)PHTHALATE	120J	< 110	< 120UJ	< 110	< 110	< 130	< 130	< 110	< 110
CHRYSENE	< 110	< 110	< 120UJ	< 110	< 110	< 130	280J	< 110	< 110
DIBENZO(A,H)ANTHRACENE	< 170	< 180	< 190UJ	< 180	< 170	< 200	< 200	< 180	< 170
FLUORANTHENE	< 87	< 92	< 84UJ	< 88	< 87	< 100	770J	< 89	< 85
INDENO(1,2,3-CD)PYRENE	< 170	< 180	< 190UJ	< 180	< 170	< 200	< 200	< 180	< 170
NAPHTHALENE	< 87	< 92	< 84UJ	< 88	< 87	< 100	< 100	< 89	< 85
PHENANTHRENE	< 87	< 92	< 84UJ	< 88	< 87	< 100	120J	< 89	< 85
PYRENE	< 87	< 92	< 84UJ	< 88	< 87	< 100	2300J	< 89	< 85

Notes: NA = Not analyzed
UJ = Qualifed, estimated not detected
J = Qualified, estimated value
< = Analyte reported below detection limit
Shaded areas highlight detections above the detection limit.
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 6-3
NAS ALAMEDA - SITE 5
SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	B05-13-008	B05-13-014
Date Sampled	07/11/91	07/11/91
Depth of Sample	8.0 ft	14.0 ft
PARAMETER REPORTED		
VOLATILE ORGANICS (µg/kg-dry)		
1,1,1-TRICHLOROETHANE	< 6.1	< 6.6
1,1-DICHLOROETHANE	< 6.1	< 6.6
ACETONE	< 12	< 13
CARBON DISULFIDE	< 6.1	< 6.6
CHLOROETHANE	< 6.1	< 6.6
ETHYLBENZENE	< 6.1	< 6.6
METHYL ETHYL KETONE	< 12	< 13
METHYLENE CHLORIDE	< 6.1	< 6.6
TETRACHLOROETHENE	< 6.1	< 6.6
TOLUENE	< 6.1	< 6.6
TRICHLOROETHENE	< 6.1	< 6.6
VINYL CHLORIDE	< 6.1	< 6.6
XYLENES	< 6.1	< 6.6
SEMIVOLATILE ORGANICS (µg/kg-dry)		
2-METHYLNAPHTHALENE	< 120	< 130
ACENAPHTHENE	< 97	< 110
ACENAPHTHYLENE	< 97	< 110
ANTHRACENE	< 97	< 110
BENZO(A)ANTHRACENE	< 120	< 130
BENZO(A)PYRENE	< 170	< 180
BENZO(B)FLUORANTHENE	< 120	< 130
BENZO(GHI)PERYLENE	< 190	< 210
BENZO(K)FLUORANTHENE	< 120	< 130
BIS(2-CHLOROETHYL)ETHER	< 97	< 110
BIS(2-ETHYLHEXYL)PHTHALATE	< 120	< 130
CHRYSENE	< 120	< 130
DIBENZO(A,H)ANTHRACENE	< 190	< 210
FLUORANTHENE	< 97	< 110
INDENO(1,2,3-CD)PYRENE	< 190	< 210
NAPHTHALENE	< 97	< 110
PHENANTHRENE	< 97	< 110
PYRENE	< 97	< 110

Notes: NA = Not analyzed
UJ = Qualifed, estimated not detected
J = Qualified, estimated value
< = Analyte reported below detection limit
Shaded areas highlight detections above the detection limit.
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 6-4
NAS ALAMEDA - SITE 5
SOIL ANALYTICAL RESULTS FOR METALS

Sample Number	B05-01-000	B05-01-003	B05-01-010	Duplicate B05-01-010	B05-01-014	B05-02-000	Duplicate B05-02-000
Date Sampled	07/16/91	07/16/91	07/16/91	07/16/91	07/16/91	07/16/91	07/16/91
Depth of Sample	0.0 ft	3.0 ft	10.0 ft	10.0 ft	14.0 ft	0.0 ft	0.0 ft
PARAMETER REPORTED							
METALS (mg/kg-dry)							
ALUMINUM	4160J	3420J	4410J	4880J	9800J	4410J	4560J
ANTIMONY	< 2.6UJ	< 2.4UJ	< 3.0UJ	< 3.0UJ	< 3.4UJ	< 2.6UJ	< 2.4UJ
ARSENIC	1.85J	1.42J	2.57J	2.62J	6.26J	0.543J	1.96J
BARIUM	23.0J	127J	22.8J	38.0J	56.5J	35.9J	35.8J
BERYLLIUM	0.436	0.283	0.269	0.292	0.789	0.799	0.374
CADMIUM	< 0.311	< 0.286	< 0.355	< 0.362	< 0.411	< 0.313	0.297
CALCIUM	3380J	1550J	1950J	1900J	2930J	3040J	3620J
CHROMIUM, TOTAL	25.3J	21.6J	23.1J	25.3J	46.3J	25.7J	26.1J
COBALT	7.57	3.80	6.14	6.34	11.7	17.9	34.2
COPPER	6.06	4.30	4.23	4.55	20.1	7.21	7.55
IRON	7860J	6780J	7510J	8210J	18100J	8490J	8700J
LEAD	7.08J	1.37J	2.63J	1.99J	18.3J	3.35J	11.9J
MAGNESIUM	2250	1930	2480	2850	5920	2480	2520
MANGANESE	103	92.3	77.7	88.1	271	111	111
MERCURY	< 0.096	< 0.100	< 0.113	< 0.116	0.204	< 0.098	< 0.101
NICKEL	23.3	17.2	23.6	24.9	48.5	26.0	30.0
POTASSIUM	602	428	877	1000	1720	652	728
SELENIUM	< 0.209UJ	< 0.211UJ	< 0.239UJ	< 0.223UJ	< 0.296UJ	< 0.215UJ	< 0.204UJ
SILVER	< 0.508	< 0.468	< 0.579	< 0.590	< 0.671	< 0.512	< 0.460
SODIUM	369	393	955	1160	3690	320	328
THALLIUM	< 0.269	< 0.271	< 0.308	< 0.286	< 0.380	< 0.276	< 0.263
VANADIUM	18.8	16.9	16.6	17.9	38.0	19.8	20.7
ZINC	17.7J	12.4J	17.8J	19.2J	56.0J	27.1J	27.9J

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 6-4
NAS ALAMEDA - SITE 5
SOIL ANALYTICAL RESULTS FOR METALS

Sample Number	B05-02-003	B05-02-010	B05-02-015	B05-03-000	B05-03-004	B05-03-010	B05-03-014	B05-04-000
Date Sampled	07/16/91	07/16/91	07/16/91	07/24/91	07/24/91	07/24/91	07/24/91	07/23/91
Depth of Sample	3.0 ft	10.0 ft	15.0 ft	0.0 ft	3.5 ft	9.5 ft	14.0 ft	2.3 ft
PARAMETER REPORTED								
METALS (mg/kg-dry)								
ALUMINUM	3350J	3850J	15400J	9500J	4300J	4920J	17000J	9110J
ANTIMONY	< 2.4UJ	< 2.7UJ	< 3.6UJ	4.2	3.6	4.3	9.6	2.8
ARSENIC	1.45J	1.74J	5.96J	1.03	1.57	1.46	2.96	3.03
BARIUM	58.5J	30.7J	44.1J	27.0J	41.4J	29.5J	146J	62.8
BERYLLIUM	0.276	0.259	0.953	0.761J	0.539J	0.859J	1.98J	0.218
CADMIUM	< 0.282	< 0.320	< 0.431	< 0.292	< 0.309	< 0.323	< 0.420	< 0.299
CALCIUM	1540J	1600J	2940J	3520J	2260J	2260J	5330J	2940J
CHROMIUM, TOTAL	24.0J	27.3J	64.2J	21.2J	105J	29.8J	75.9J	43.9
COBALT	3.85	4.56	12.1	16.2	5.43	5.49	13.6	42.5
COPPER	4.39	5.26	24.5	6.34	4.97	5.31	30.7	17.2
IRON	6180J	7260J	25200J	20100J	7650J	8520J	25700J	17400J
LEAD	1.91J	2.01J	11.0J	2.09	2.01	2.24	35.0	7.97
MAGNESIUM	1680	2110	8310	5020J	1960J	2460J	7350J	7370
MANGANESE	80.4	83.4	291	324J	90.5J	95.2J	279J	370J
MERCURY	< 0.102	< 0.118	< 0.149	< 0.052	< 0.052	< 0.058	0.169	< 0.097
NICKEL	18.4	24.2	60.4	18.0	70.0	26.3	64.6	45.9
POTASSIUM	503	659	2880	845	661	862	3200	796J
SELENIUM	< 0.185UJ	< 0.229UJ	< 0.306UJ	< 0.221	< 0.204	< 0.238	< 0.262	< 0.206UJ
SILVER	< 0.460	< 0.522	< 0.704	< 0.477UJ	0.552J	0.725J	0.819J	2.89
SODIUM	202	764	6660	1040J	404J	450J	3030J	776J
THALLIUM	< 0.238	< 0.294	< 0.393	< 0.284UJ	< 0.262UJ	< 0.306UJ	< 0.337UJ	< 0.265
VANADIUM	15.2	16.8	56.8	56.3J	21.5J	21.8J	64.8J	25.7
ZINC	12.3J	16.2J	60.1J	19.1	15.9	19.4	76.2	32.3

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 6-4
NAS ALAMEDA - SITE 5
SOIL ANALYTICAL RESULTS FOR METALS

Sample Number	B05-04-002	B05-04-008	B05-04-014	Duplicate B05-04-014	B05-05-000	B05-05-003	B05-05-008	B05-05-014
Date Sampled	**07/23/91**	**07/23/91**	**07/23/91**	**07/23/91**	**07/17/91**	**07/17/91**	**07/17/91**	**07/17/91**
Depth of Sample	**2.0 ft**	**8.0 ft**	**14.0 ft**	**14.0 ft**	**0.0 ft**	**3.0 ft**	**8.0 ft**	**14.0 ft**
PARAMETER REPORTED								
METALS (mg/kg-dry)								
ALUMINUM	4210J	3830J	2190J	4690J	4850J	4720J	4120J	4990J
ANTIMONY	< 2.6	< 3.0	< 3.1	< 3.6	< 2.7UJ	< 2.6UJ	< 2.8UJ	< 3.1UJ
ARSENIC	1.81	1.77	3.49	5.59	1.61J	2.09J	1.69J	5.31J
BARIUM	33.3	34.0	7.69	22.8	39.1J	38.5J	32.8J	41.9J
BERYLLIUM	0.156	< 0.154	0.276	0.239	0.651	0.583	0.322	0.552
CADMIUM	< 0.306	< 0.355	< 0.367	< 0.429	< 0.318	< 0.307	< 0.335	< 0.368
CALCIUM	1540J	1390J	2990J	2890J	6430J	5050J	1980J	2140J
CHROMIUM, TOTAL	27.4	25.0	12.2	21.5	24.8J	27.4J	25.8J	32.4J
COBALT	4.53	4.86	3.18	6.51	8.43	5.18	4.60	6.03
COPPER	5.47	5.38	4.42	9.71	7.76	6.55	4.82	11.1
IRON	7810J	7360J	4190J	10900J	8800J	8680J	7390J	9140J
LEAD	2.68	8.41	3.94	6.84	73.5	22.8J	1.93J	23.1J
MAGNESIUM	2540	2380	1390	3420	2650	2450	2230	3140
MANGANESE	91.0J	86.1J	49.1J	117J	126	107	140	107
MERCURY	< 0.097	< 0.112	< 0.123	< 0.137	< 0.108	< 0.102	< 0.120	0.171
NICKEL	27.8	27.1	10.8	24.9	22.0	25.1	24.3	32.3
POTASSIUM	638J	670J	635J	1260J	693	670	654	867
SELENIUM	< 0.212UJ	< 0.251UJ	< 0.250UJ	< 0.300UJ	< 0.220UJ	< 0.226UJ	< 0.244UJ	< 0.263UJ
SILVER	< 0.500	< 0.580	< 0.599	0.717	< 0.520	< 0.501	< 0.548	< 0.601
SODIUM	422J	1850J	1850	3300	342	405	323	1340
THALLIUM	< 0.273	< 0.323	< 0.321	< 0.385	< 0.283	< 0.291	< 0.314	< 0.338
VANADIUM	17.5	17.2	10.1	22.0	21.5	19.9	17.6	20.8
ZINC	18.4	18.1	11.2	26.1	28.6J	18.9J	15.7J	25.4J

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 6-4
NAS ALAMEDA - SITE 5
SOIL ANALYTICAL RESULTS FOR METALS

Sample Number	B05-06-000	B05-06-002	B05-06-010	B05-06-010 Duplicate	B05-06-014	B05-07-000	B05-07-002	B05-07-010
Date Sampled	07/12/91	07/12/91	07/12/91	07/12/91	07/12/91	07/12/91	07/12/91	07/12/91
Depth of Sample	0.0 ft	2.0 ft	9.5 ft	9.5 ft	14.0 ft	0.0 ft	2.0 ft	9.5 ft
PARAMETER REPORTED								
METALS (mg/kg-dry)								
ALUMINUM	3580	3320	2730	3250	3530	5270	3770	3290
ANTIMONY	< 2.6	< 2.6	< 3.0	< 3.0	< 3.0	2.9	< 2.7	< 3.0
ARSENIC	1.40	1.69	1.64	1.43	2.58	1.93	1.76	1.51
BARIUM	29.0J	30.0J	23.9J	23.0J	36.4J	45.9J	33.1J	24.5J
BERYLLIUM	< 0.137	0.141	< 0.154	0.263	< 0.156	< 0.142	0.158	0.248
CADMIUM	< 0.315	< 0.316	< 0.355	< 0.358	< 0.361	0.592	< 0.320	< 0.356
CALCIUM	4610J	1510J	1340J	1680J	1440J	10400J	1670J	1420J
CHROMIUM, TOTAL	20.2	21.5	19.7	22.0	21.3	15.6	25.9	23.2
COBALT	18.7	4.06	3.39	3.82	4.64	77.6	4.10	3.59
COPPER	5.70	4.84	3.52	3.69	5.51	13.3	5.16	4.05
IRON	6850J	6510J	5620J	6290J	7130J	10500J	7080J	6310J
LEAD	2.08	2.59	1.95	1.66	4.73	9.28	4.42	1.93
MAGNESIUM	2410J	2150J	1740J	1850J	2300J	3540J	2170J	1980J
MANGANESE	93.7J	84.8J	63.8J	69.7J	89.0J	225J	85.3J	72.7J
MERCURY	< 0.100	< 0.106	< 0.114	< 0.112	< 0.125	< 0.101	< 0.101	< 0.107
NICKEL	22.2	23.7	19.4	21.1	25.7	23.8	25.2	23.3
POTASSIUM	651	558	500	553	719	698	583	565
SELENIUM	< 0.202UJ	< 0.220UJ	< 0.220UJ	< 0.234UJ	< 0.236UJ	< 0.210UJ	< 0.209UJ	< 0.220UJ
SILVER	< 0.515	< 0.516	< 0.580	< 0.585	< 0.590	0.862	< 0.522	< 0.581
SODIUM	550J	212J	404J	356J	1320J	180J	82.4J	426J
THALLIUM	< 0.259	< 0.283	< 0.282	< 0.301	< 0.303	< 0.270	< 0.269	< 0.283
VANADIUM	14.8	14.5	13.0	15.6	15.0	19.0	16.0	14.2
ZINC	16.0J	16.2J	12.9J	13.7J	19.6J	32.9J	16.2J	14.4J

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 6-4
NAS ALAMEDA - SITE 5
SOIL ANALYTICAL RESULTS FOR METALS

Sample Number	B05-07-014	B05-08-000	B05-08-002	B05-08-008	B05-08-014	B05-09-000	B05-09-002	B05-09-010
Date Sampled	07/12/91	08/08/91	08/08/91	08/08/91	08/08/91	07/12/91	07/12/91	07/12/91
Depth of Sample	14.0 ft	0.0 ft	2.0 ft	8.0 ft	14.0 ft	0.0 ft	2.0 ft	9.5 ft
PARAMETER REPORTED								
METALS (mg/kg-dry)								
ALUMINUM	5420	4440J	5040J	4040J	13800J	15100	3780	3400
ANTIMONY	< 3.1	< 2.2UJ	< 2.7UJ	< 2.6UJ	< 3.4UJ	5.2	< 2.7	< 2.9
ARSENIC	4.84	2.14J	1.52J	1.20J	7.18J	5.01	1.54	1.40
BARIUM	81.9J	24.5J	38.1J	35.3J	45.0J	50.6J	30.9J	28.0J
BERYLLIUM	0.596	0.561	0.585	0.469	0.910	0.437	0.173	0.204
CADMIUM	< 0.375	0.543	2.27	< 0.306	< 0.403	1.39	< 0.318	< 0.352
CALCIUM	2430J	3130J	1870J	1700J	18800J	9660J	1550J	1680J
CHROMIUM, TOTAL	34.1	44.2J	34.2J	26.6J	50.3J	18.3	24.3	25.1
COBALT	7.06	9.24J	5.66J	4.47J	10.3J	16.5	4.16	3.65
COPPER	9.14	6.26J	6.39J	4.94J	23.0J	27.0	5.01	4.16
IRON	11000J	8320J	8640J	7560J	22200J	20800J	6950J	6430J
LEAD	13.5	7.55J	2.09J	1.79J	25.2J	21.0	1.84	1.89
MAGNESIUM	3640J	2530J	2620J	2090J	7060J	6230J	2200J	1940J
MANGANESE	133J	122J	85.4J	77.5J	242J	469J	85.8J	80.1J
MERCURY	< 0.123	< 0.104	< 0.105	0.127	< 0.149	< 0.105	< 0.101	< 0.113
NICKEL	42.8	25.5	29.4	24.4	50.5	11.9	25.5	22.8
POTASSIUM	1070	941J	1240J	610J	2330J	512	552	512
SELENIUM	< 0.237UJ	< 0.221UJ	< 0.223UJ	< 0.252UJ	< 0.322UJ	< 0.223UJ	< 0.222UJ	< 0.214UJ
SILVER	< 0.612	0.480	0.604	0.504	0.822	< 0.548	< 0.519	< 0.575
SODIUM	2040J	268J	230J	220J	3260J	330J	96.6J	130J
THALLIUM	< 0.305	< 0.285	< 0.287	< 0.324	< 0.414	< 0.286	< 0.285	< 0.275
VANADIUM	22.2	19.0J	21.0J	17.9J	42.6J	41.1	15.9	14.7
ZINC	32.9J	25.4J	23.2J	20.6J	64.4J	74.1J	15.8J	14.6J

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 6-4
NAS ALAMEDA - SITE 5
SOIL ANALYTICAL RESULTS FOR METALS

Sample Number	B05-09-014	B05-10-000	B05-10-003	B05-10-007	B05-10-008	B05-10-014	B05-11-000	B05-11-004
Date Sampled	07/12/91	07/16/91	07/16/91	07/16/91	07/16/91	07/16/91	07/17/91	07/17/91
Depth of Sample	14.0 ft	0.0 ft	3.0 ft	7.0 ft	8.0 ft	14.0 ft	0.0 ft	4.0 ft
PARAMETER REPORTED								
METALS (mg/kg-dry)								
ALUMINUM	4790	5800J	4500J	3360J	4140J	7050J	7070J	7490J
ANTIMONY	3.0	< 2.7UJ	< 2.6UJ	< 2.5UJ	< 2.8UJ	< 2.5UJ	< 2.5UJ	< 2.6UJ
ARSENIC	4.60	1.74J	1.79J	1.62J	1.14J	1.74J	1.73J	1.05J
BARIUM	39.8J	31.4J	32.6J	25.2J	23.8J	55.0J	37.5J	28.9J
BERYLLIUM	0.404	0.333	0.611	0.216	0.311	0.590	0.522	0.362
CADMIUM	< 0.356	< 0.319	< 0.316	< 0.299	< 0.336	< 0.295	0.605	< 0.311
CALCIUM	1980J	4440J	3330J	2210J	2100J	2180J	8640J	3970J
CHROMIUM, TOTAL	28.1	28.8J	26.2J	21.9J	25.6J	37.3J	28.2J	17.4J
COBALT	4.65	8.50	4.82	4.35	4.80	6.20	47.8	6.92
COPPER	7.89	9.26	5.93	5.97	5.12	11.0	21.5	8.78
IRON	8710J	10800J	8900J	6910J	7450J	11300J	12500J	14800J
LEAD	30.5	57.9	6.91J	14.3J	5.41	3.95J	78.8	36.5
MAGNESIUM	2460J	3060	2690	2530	2110	3510	3440	5340
MANGANESE	114J	167	134	72.0	69.5	118	184	292
MERCURY	< 0.113	< 0.105	< 0.099	< 0.110	< 0.100	< 0.104	0.122	< 0.106
NICKEL	27.8	22.3	24.2	24.1	22.8	34.0	23.6	16.6
POTASSIUM	760	667	604	537	626	1160	795	491
SELENIUM	< 0.247UJ	< 0.212UJ	< 0.221UJ	< 0.209UJ	< 0.242UJ	< 0.254UJ	< 0.201UJ	< 0.193UJ
SILVER	< 0.582	< 0.521	< 0.516	< 0.489	< 0.549	< 0.482	1.00	< 0.507
SODIUM	576J	313	315	459	345	1810	377	264
THALLIUM	< 0.317	< 0.273	< 0.284	< 0.268	< 0.312	< 0.327	< 0.258	< 0.248
VANADIUM	19.0	27.8	19.8	16.1	18.6	26.4	28.3	32.3
ZINC	21.0J	23.4J	17.7J	17.8J	16.8J	33.5J	29.1J	23.4J

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 6-4
NAS ALAMEDA - SITE 5
SOIL ANALYTICAL RESULTS FOR METALS

Sample Number	B05-11-008	B05-11-014	B05-12-000	B05-12-002	B05-12-008	B05-12-014	B05-13-000	B05-13-002
Date Sampled	07/17/91	07/17/91	07/11/91	07/11/91	07/11/91	07/11/91	07/11/91	07/11/91
Depth of Sample	8.0 ft	14.0 ft	0.0 ft	2.0 ft	8.0 ft	14.0 ft	0.0 ft	2.0 ft
PARAMETER REPORTED								
METALS (mg/kg-dry)								
ALUMINUM	4050J	5420J	4830	7000	3030	10400	4670	7270
ANTIMONY	< 2.4UJ	< 3.0UJ	< 2.7	3.1	< 3.1	4.6	< 2.7	4.6
ARSENIC	1.97J	1.66J	1.89	1.33	1.79	3.60	1.50	0.704
BARIUM	33.9J	45.0J	32.2J	25.9J	22.7J	54.2J	27.3J	21.1J
BERYLLIUM	0.444	0.517	< 0.142	0.344	< 0.159	0.587	0.320	0.456
CADMIUM	< 0.290	< 0.355	< 0.327	< 0.322	< 0.368	< 0.330	< 0.319	< 0.314
CALCIUM	3850J	2610J	8410J	3430J	1760J	2660J	6510J	1940J
CHROMIUM, TOTAL	27.7J	30.1J	22.4	17.9	19.9	49.8	26.0	4.43
COBALT	4.27	5.53	5.56	6.78	4.15	9.82	14.8	7.93
COPPER	3.99	5.38	7.34	10.5	3.56	15.9	6.89	5.91
IRON	7150J	8890J	8020J	12500J	5940J	17500J	8530J	17100J
LEAD	2.68J	2.16J	57.2	22.9	2.08	15.0	18.9	1.17
MAGNESIUM	1730	2640	2610J	4800J	1860J	5100J	2560J	5640J
MANGANESE	78.0	99.8	124J	228J	62.7J	180J	123J	355J
MERCURY	< 0.097	< 0.114	< 0.099	< 0.107	< 0.122	0.127	< 0.100	< 0.105
NICKEL	20.7	28.4	23.5	18.1	18.7	51.4	26.5	4.34
POTASSIUM	557	948	635	426	583	1730	616	247
SELENIUM	< 0.220UJ	< 0.244UJ	< 0.210UJ	< 0.218UJ	< 0.244UJ	< 0.242UJ	< 0.225UJ	< 0.217UJ
SILVER	< 0.473	< 0.580	< 0.534	< 0.527	< 0.601	< 0.540	< 0.521	< 0.513
SODIUM	227	1180	172J	407J	219J	2250J	232J	931J
THALLIUM	< 0.282	< 0.314	< 0.271	< 0.280	< 0.313	< 0.312	< 0.289	< 0.279
VANADIUM	18.7	23.3	19.1	22.4	13.3	36.1	21.0	28.9
ZINC	13.6J	18.3J	23.4J	20.1J	13.3J	45.5J	20.9J	13.2J

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 6-4
NAS ALAMEDA - SITE 5
SOIL ANALYTICAL RESULTS FOR METALS

Sample Number	B05-13-008	B05-13-014
Date Sampled	07/11/91	07/11/91
Depth of Sample	8.0 ft	14.0 ft
PARAMETER REPORTED		
METALS (mg/kg-dry)		
ALUMINUM	2910	4400
ANTIMONY	< 2.8	< 3.2
ARSENIC	1.86	1.57
BARIUM	31.0J	32.3J
BERYLLIUM	0.155	0.202
CADMIUM	< 0.332	< 0.379
CALCIUM	3490J	2780J
CHROMIUM, TOTAL	19.6	26.0
COBALT	4.21	4.97
COPPER	3.53	6.15
IRON	5660J	8330J
LEAD	2.06	1.91
MAGNESIUM	1710J	2680J
MANGANESE	59.0J	84.1J
MERCURY	< 0.107	< 0.119
NICKEL	16.9	28.8
POTASSIUM	602	900
SELENIUM	< 0.227UJ	< 0.253UJ
SILVER	< 0.543	< 0.620
SODIUM	783J	1320J
THALLIUM	< 0.292	< 0.326
VANADIUM	13.2	19.1
ZINC	12.1J	18.9J

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 6-5
NAS ALAMEDA - SITE 5
GROUNDWATER ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	M05-01	M05-02	M05-03	Duplicate M05-03	M05-04	Duplicate M05-04	M05-05
Date Sampled	**08/28/91**	**08/28/91**	**08/28/91**	**08/28/91**	**08/29/91**	**08/29/91**	**08/28/91**
PARAMETER REPORTED							
VOLATILE ORGANICS (µg/L)							
1,1,1-TRICHLOROETHANE	< 1.0	< 5.0	< 10.0	< 10.0	36	< 50	< 10.0
1,1-DICHLOROETHANE	< 1.0	< 5.0	22J	29	760	810	14
1,1-DICHLOROETHYLENE	< 1.0	< 5.0	< 10.0	< 10.0	350	570	< 10.0
1,2-DICHLOROETHENE	< 1.0	71	< 10.0	< 10.0	580	640	190
ACETONE	< 2.0	< 10.0	< 20	26UJ	< 50	< 100	< 20
CHLOROETHANE	< 1.0	< 5.0	67J	130	< 25	< 50	< 10.0
ETHYLBENZENE	< 1.0	< 5.0	28J	23	< 25	< 50	< 10.0
TOLUENE	< 1.0	< 5.0	12J	13	< 25	< 50	< 10.0
TRICHLOROETHENE	< 1.0	8.8	< 10.0	< 10.0	590	920	< 10.0
VINYL CHLORIDE	< 1.0	95	< 10.0	< 10.0	190	200	47
XYLENES	< 1.0	< 5.0	250J	260	< 25	< 50	< 10.0
SEMIVOLATILE ORGANICS (µg/L)							
1,2-DICHLOROBENZENE	< 1.0	< 1.0	91J	96J	< 1.0	< 1.0	< 1.0
1,3,DICHLOROBENZENE	< 1.0	< 1.0	4.2J	4.6J	< 1.0	< 1.0	< 1.0
1,4-DICHLOROBENZENE	< 1.0	< 1.0	11J	12J	< 1.0	< 1.0	< 1.0
2,4-DIMETHYLPHENOL	< 2.0	< 2.0	12J	< 2.0	< 2.0	< 2.0	< 2.0
2-METHYLNAPHTHALENE	< 1.0	< 1.0	7.3J	4.2J	< 1.0	< 1.0	< 1.0
BIS(2-CHLOROISOPROPYL) ETHER	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	2.9J
BIS(2-CHLOROETHYL) ETHER	< 1.5	< 1.5	29J	40J	< 1.5	< 1.5	< 1.5
BIS(2-ETHYLHEXYL) PHTHALATE	< 2.0	< 2.0	2.6J	3.4J	< 2.0	< 2.0	< 2.0
NAPHTHALENE	< 1.0	< 1.0	56J	39J	< 1.0	< 1.0	< 1.0

Notes: UJ = Qualifed, estimated not detected
J = Qualified, estimated value
< = Analyte reported below detection limit
Shaded areas highlight detections above the detection limit.
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 6-6
NAS ALAMEDA - SITE 5
GROUNDWATER ANALYTICAL RESULTS FOR METALS

Sample Number	M05-01	M05-02	M05-03	Duplicate M05-03	M05-04	Duplicate M05-04	M05-05
Date Sampled	**08/28/91**	**08/28/91**	**08/28/91**	**08/28/91**	**08/29/91**	**08/29/91**	**08/28/91**
PARAMETER REPORTED							
METALS (µg/L)							
ALUMINUM	276	60.0	543	421	75.5	99.2	125
ANTIMONY	< 25.1	< 25.1	< 25.1	< 25.1	< 25.1	< 25.1	< 25.1
ARSENIC	4.6	5.1	27.8	27.9	8.0	7.3	16.6
BARIUM	113	365	166	221	339	308	253
BERYLLIUM	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
CADMIUM	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
CALCIUM	85500J	96700J	66000J	68600J	49500J	45100	71400
CHROMIUM,TOTAL	< 5.7	< 5.7	< 5.7	< 5.7	< 5.7	< 5.7	< 5.7
COBALT	< 6.1	< 6.1	< 6.1	< 6.1	< 6.1	< 6.1	< 6.1
COPPER	< 2.1	< 2.1	3.0	6.3	< 2.1	< 2.1	3.6
IRON	406J	486J	2100J	2120J	106J	120	317
LEAD	2.9J	4.2J	< 2.0UJ	< 2.0UJ	3.1J	< 2.0	2.2
MAGNESIUM	129000	234000	46900	46900	80700	71500	60100
MANGANESE	591	1370	1790	1840	785	704	870
MERCURY	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
NICKEL	< 13.2	< 13.2	214	222	< 13.2	< 13.2	< 13.2
POTASSIUM	50300	81600	28000	32200	45500	45200	35300
SELENIUM	< 2.1UJ	< 2.1UJ	< 2.1UJ	< 2.1UJ	< 2.1UJ	< 2.1UJ	< 2.1UJ
SILVER	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9
SODIUM	1390000J	2760000J	507000J	517000J	1440000J	1350000	896000
THALLIUM	< 2.7UJ	< 2.7UJ	< 2.7UJ	< 2.7UJ	< 2.7UJ	< 2.7UJ	< 2.7UJ
VANADIUM	18.3	18.1	7.8	7.8	10.5	10.3	5.8
ZINC	3.2UJ	< 2.3	6.6UJ	19.5UJ	3.7UJ	5.7UJ	24.9UJ

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR

TABLE 6-7
NAS ALAMEDA - SITE 5
GROUNDWATER ANALYTICAL RESULTS FOR GENERAL CHEMICALS

Sample Number	M05-01	M05-02	M05-03	Duplicate M05-03	M05-04	Duplicate M05-04	M05-05
Date Sampled	**08/28/91**	**08/28/91**	**08/28/91**	**08/28/91**	**08/29/91**	**08/29/91**	**08/28/91**
PARAMETER REPORTED							
PHYSICAL PARAMETERS-LAB							
ACIDITY, TOTAL (mg/L-CaC03)	29.0J	73.1J	125J	94.7J	44.3J	45.2J	22.0J
ALKALINITY, BICA (mg/L-CaC03)	107	138	211	173	181	179	96.0
ALKALINITY, CARB (mg/L-CaC03)	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
ALKALINITY, NC/OH (mg/L-CaCO3)	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
ALKALINITY, PHENOLPH (mg/L)	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
ALKALINITY, T. (mg/L-CaCO3)	107J	138J	211J	173J	181J	179J	96.0J
HARDNESS (mg/L-CaCO3)	812	1330	392	396	480	460	400
TOTAL DISSOLVED SOLIDS (mg/L)	4530J	8340J	1770J	1740J	3920	3890	2430J
PHYSICAL PARAMETERS-FIELD							
pH, FIELD (Std. Units)	8.42	8.42	6.80	6.80	8.32	8.32	7.30
SP. COND., FIELD @25C (µmhos/cm)	9200	7500	2900	2900	9000	9000	3100
WATER TEMP (C)	21.0	NA	NA	NA	24.0	24.0	NA
TOTAL ORGANIC CARBON (mg/L)							
CARBON, TOC	8.4J	7.2J	33.7J	29.5J	20.5J	14.4J	5.7J
ANIONS (mg/L)							
CHLORIDE	2459J	2983J	565.8J	480.4J	1798J	4580J	1036J
FLUORIDE	0.36J	0.31J	0.42J	0.41J	0.87J	0.85J	0.48J
NITRATE/NITRITE, NO2 + NO3	0.055	0.085	< 0.010	< 0.010	0.047	0.044	1.22
SULFATE (mg/L)	163.0J	73.00J	9.218J	8.310J	66.76J	66.21J	79.26J
CYANIDE (µg/L)	< 10.0	< 10.0	13.8J	12.3J	< 10.0	< 10.0	< 10.0

Note: NA = Not analyzed
J = Qualified, estimated value
< = Analyte reported below detection limit

Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.
Shaded areas highlight detections greater than the detection limit.

7.0 SITE 6
BUILDING 41
AIRCRAFT INTERMEDIATE MAINTENANCE FACILITY

7.1 SITE DESCRIPTION AND BACKGROUND

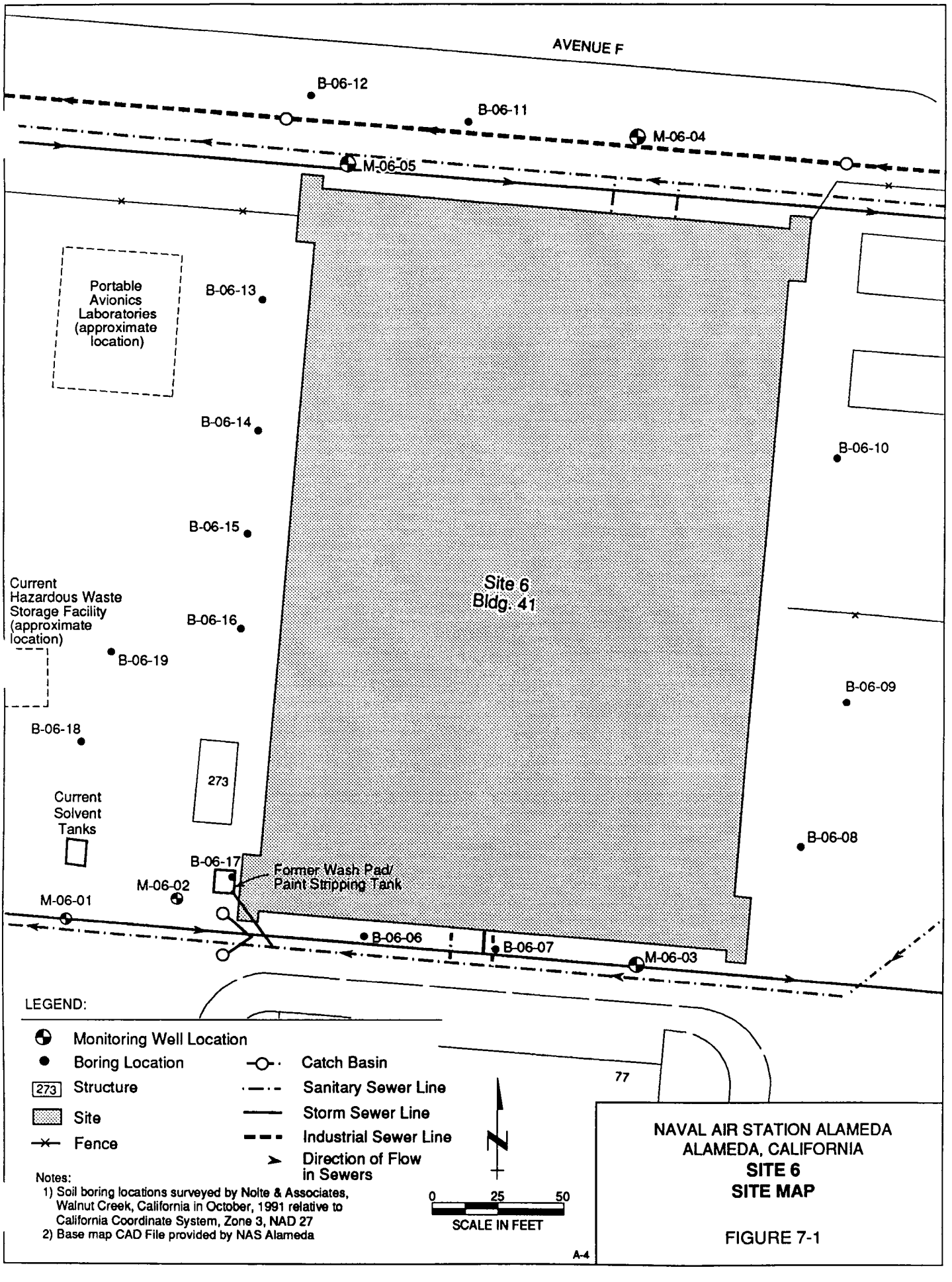
Site 6 consists of Building 41 on the northeast corner of Avenue F and Fifth Street, approximately 600 feet north of the Sea Plane Lagoon (Figure 7-1). Building 41 is the easternmost hangar along the northern border of the lagoon and was formerly used as a hangar for seaplanes. The Navy has used Building 41 as a waste storage area and it has been reported that more than 100 55-gallon drums were stored on the concrete paved area to the west of the building. Wastes stored in the drums included PD680 dry cleaner, trichlorofluoroethane, 6083 oil, trichloroethane, paint wastes and stripper, and used hydraulic fluids. During Canonie's 1988 site visit, approximately 30 drums were located directly west of the building. No indication of the condition of the drums at the time of the site visit was included in Canonie's report.

A paint stripping tank was once located on the outer west side of the building, as shown on Figure 7-1. The tank was present at the time of the Canonie's 1988 site visit (Canonie, 1990a). No information on the time the tank was removed is available. Rinse waters from the tanks flowed into a sewer manhole that discharged to the EBMUD system (Canonie, 1990a). The former location of the paint stripping tank was also used as an equipment wash pad. The drain in the center of the pad discharged to an oil water separator and then to the EBMUD sanitary sewer system. The pad does not appear to be currently used. No previous environmental investigations have been performed at this site. The NAS Alameda Environmental Office could not locate any information regarding the existence of the former paint stripping tank (NAS Alameda, 1992).

7.2 CURRENT USE

Currently, Building 41 houses the Aircraft Intermediate Maintenance Department (AIMD). AIMD repairs aircraft components from transient and tenant aircraft. Items repaired include hydraulics, brakes, avionics, engines, electrical wiring, and instrumentation. AIMD maintains an above ground solvent tank, a small hazardous waste storage area, and several portable avionics laboratories on the paved area west of the building.

The above ground solvent tank is located within a roped-off section of the paved area. It is approximately 50 feet west of the former paint stripping tank and is not near any storm sewer drains or


AVENUE F
B-06-12
B-06-11
M-06-04
M-06-05
Portable Avionics Laboratories (approximate location)
B-06-13
B-06-14
B-06-15
Current Hazardous Waste Storage Facility (approximate location)
B-06-16
B-06-19
B-06-18
Current Solvent Tanks
273
Site 6 Bldg. 41
B-06-10
B-06-09
B-06-08
B-06-17
Former Wash Pad/ Paint Stripping Tank
M-06-02
M-06-01
B-06-06
B-06-07
M-06-03
77
LEGEND:
Monitoring Well Location
Boring Location
Structure
Site
Fence
Catch Basin
Sanitary Sewer Line
Storm Sewer Line
Industrial Sewer Line
Direction of Flow in Sewers
Notes:
1) Soil boring locations surveyed by Nolte & Associates, Walnut Creek, California in October, 1991 relative to California Coordinate System, Zone 3, NAD 27
2) Base map CAD File provided by NAS Alameda
0
25
50
SCALE IN FEET
A-4
NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA
SITE 6
SITE MAP
FIGURE 7-1

manholes. The solvent used in the solvent tank contains aromic 150, methyl pyronolidice, dipropylene glycol, methyl ethyl ether, monoethanolamine, and oleic acid (NAS Alameda, 1992).

The hazardous waste storage area is located northwest of the solvent tank. The hazardous waste storage area is surrounded by a chain link fence and contains 55-gallon drums. The following wastes are stored in the area: waste oil, solvents, waste paints, and hydraulic fluid (NAS Alameda, 1992). There is no evidence of surface spills related to the area and there are no drains or manholes nearby.

The portable avionics laboratories are located on the northern section of the paved area. The NAS Alameda air terminal stores pallets and equipment to be shipped by air in the area west of Building 41.

Building 273 is a small quonset hut located outside the southwest corner of Building 41. It houses non-destructive inspection equipment that uses X-rays and low-level radiation to inspect metal parts.

Sanitary sewer lines and storm sewer lines leave the north and south sides of Building 41 and connect with main lines located under Avenue F and Parking Apron 4. The sanitary sewer mains flow west and the storm sewer mains flow east. The drain in the wash pad located just west of Building 41 is connected with the sanitary sewer. There is no drain near the current solvent dip tanks or hazardous waste storage area. The industrial sewer is located under Avenue F just north of Building 41. The building is not tied directly to the industrial waste sewer system. Figure 7-1 shows the configuration of the site and the layout of the sanitary, storm, and industrial sewer lines. This investigation focused on the past storage and cleaning activities and the sewer systems around the building.

7.3 REMEDIAL INVESTIGATION

Nineteen soil borings were drilled around the perimeter of Building 41 and groundwater monitoring wells were constructed in five of the borings. As described earlier, the investigation at Site 6 focused on the past storage and cleaning activities and the sewer systems. The rationale for placement of borings and monitoring wells is described in Canonie's work plan (Canonie, 1990a). Methods used in the performance of field activities are described in Appendix A. Boring logs and well construction diagrams are included in Appendix C. The locations of soil borings and monitoring wells were surveyed and are shown on Figure 7-1.

7.3.1 Site Geology/Hydrogeology

The sediments underlying Site 6 can be divided into two groups: fill material and native sediments. Geotechnical samples taken from the fill material indicate that the sediments consist of sands (SP) and silty sands (SM) with 7 to 16 percent fines (Table 7-1). Geotechnical laboratory reports are presented in Appendix D. Field descriptions describe the fill material as clean, fine-grained, well-sorted sand and silty sand with high estimated hydraulic conductivity. The fill material was found to a depth of approximately 8.5 to 9.5 feet (Figure 7-2). In a few borings along Avenue F, a 2- to 3-foot layer of sandy gravel and gravelly sand was identified in the sandy fill unit. This gravelly fill is shown on Figure 7-2 and is interpreted to be fill material used during road construction activities.

Native sediments at Site 6 consist of clay and clayey sand units. The clay unit is 2- to 4-feet thick and appears to be continuous under Site 6. The clay is found at an average depth of 9.5 feet in the south/southwest and at an average depth of 8.5 feet in the north/northeast (Figure 7-3). This indicates that the pre-fill surface was dipping slightly toward the south. This clay unit is medium stiff, moist, and is estimated to have a low hydraulic conductivity. The average thickness of the clay is 3.5 feet and in most cases it is found in close association with clayey sand as shown on Figure 7-3. In some cases the clay is gradational with the underlying clayey sand, and in other cases the clay is interbedded with the clayey sand. Geotechnical results indicate that the clayey sand contains approximately 30 percent fines. The clayey sand was present to the total depth of the borings; therefore, the total thickness of the unit was not determined.

In-situ permeability tests (slug tests) were conducted in the wells at Site 6. The hydraulic conductivities as determined by the rising-head method of Bouwer and Rice ranged from 1.9E-03 cm/sec to 9.1E-04 cm/sec (Bouwer and Rice, 1976; Bouwer, 1989). The in-situ permeability test data are presented in Appendix E.

During drilling, groundwater was encountered at an average depth of 5 feet within the sandy fill material. Groundwater monitoring wells were constructed with screened intervals from 4 to 10 feet, across the saturated portions of the sandy fill unit and the upper portions of the native sediments. Groundwater levels were periodically monitored for three months (Table 7-2). Water level data were collected during different phases of the moon and at different times within a diurnal tidal cycle to determine whether tidal fluctuations were affecting groundwater elevations. As shown in Table 7-2, groundwater elevations vary only slightly regardless of the timing of the measurement. Therefore, it appears that tidal influences are not significant at the site.

TABLE 7-1

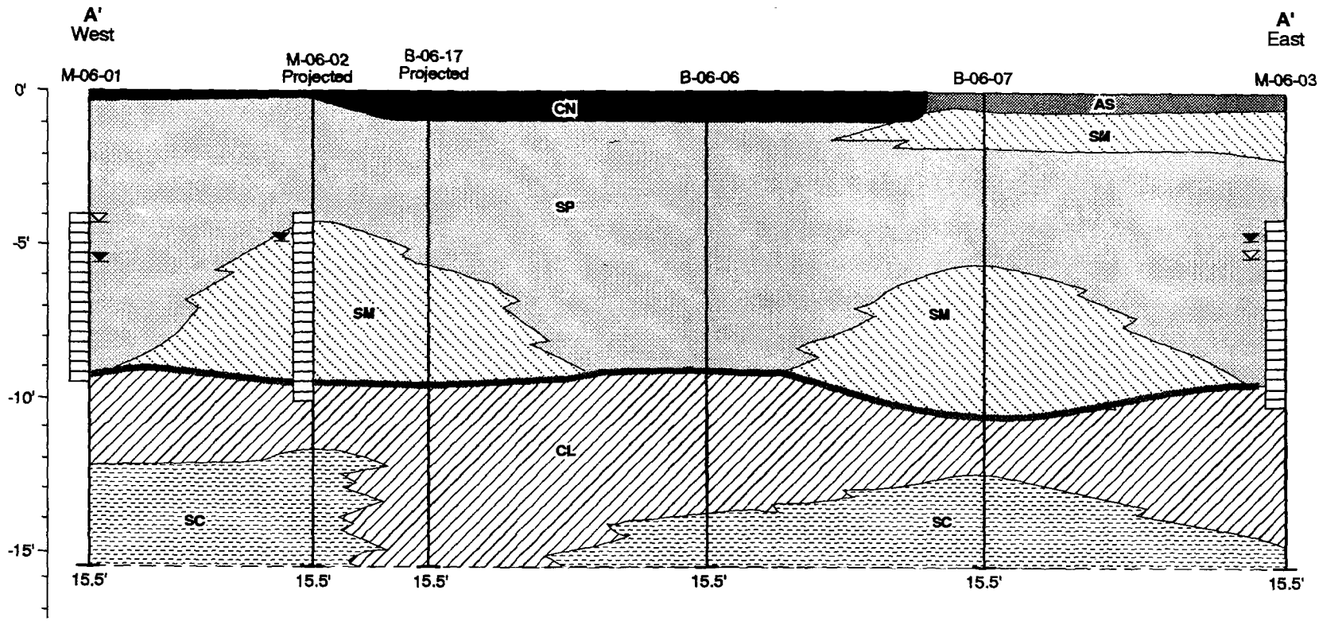
SITE 6
BUILDING 41
AIRCRAFT INTERMEDIATE MAINTENANCE FACILITY
GEOTECHNICAL SAMPLE LABORATORY TEST RESULTS

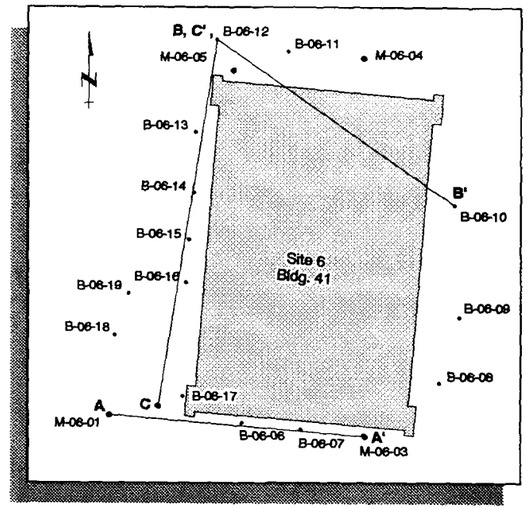
Sample No.	Depth (ft)	Soil Classification Laboratory	Soil Classification Field	Moisture Content (%)	Dry Density (pcf)	Specific Gravity	CEC (meq/100g)	TOC (%w/w)	Permeability Effective Stresses (psi)	Permeability Hydraulic Conductivity (cm/s)
B-06-01	13.5-14	SC	SC	NA	NA	NA	0.4	NA	NA	NA
B-06-02	4.5-5	NA	SM	20.5	100.5	NA	3.6	NA	NA	NA
B-06-04	4-4.5	SP/SM	SP	NA	NA	NA	NA	NA	NA	NA
B-06-05	3.5-4	NA	SP	8.0	96.0	NA	NA	NA	3	6.19E-04
B-06-05	6.5-7	NA	SP	17.0	111.0	2.73	4.8	NA	NA	
B-06-08	4.5-5	SM	SP	21.0	100.5	NA	5.1	NA	NA	NA
B-06-12	10.5-11	NA	CL	86.0	50.0	NA	NA	NA	5	4.95E-08
B-06-14	2.5-3	NA	SP	NA	NA	NA	NA	< 0.1	NA	NA
B-06-14	7-7.5	NA	SP	25.0	99.0	NA	NA	NA	4	9.88E-05
B-06-18	8.5-9	NA	SM	NA	NA	NA	NA	< 0.1	NA	NA

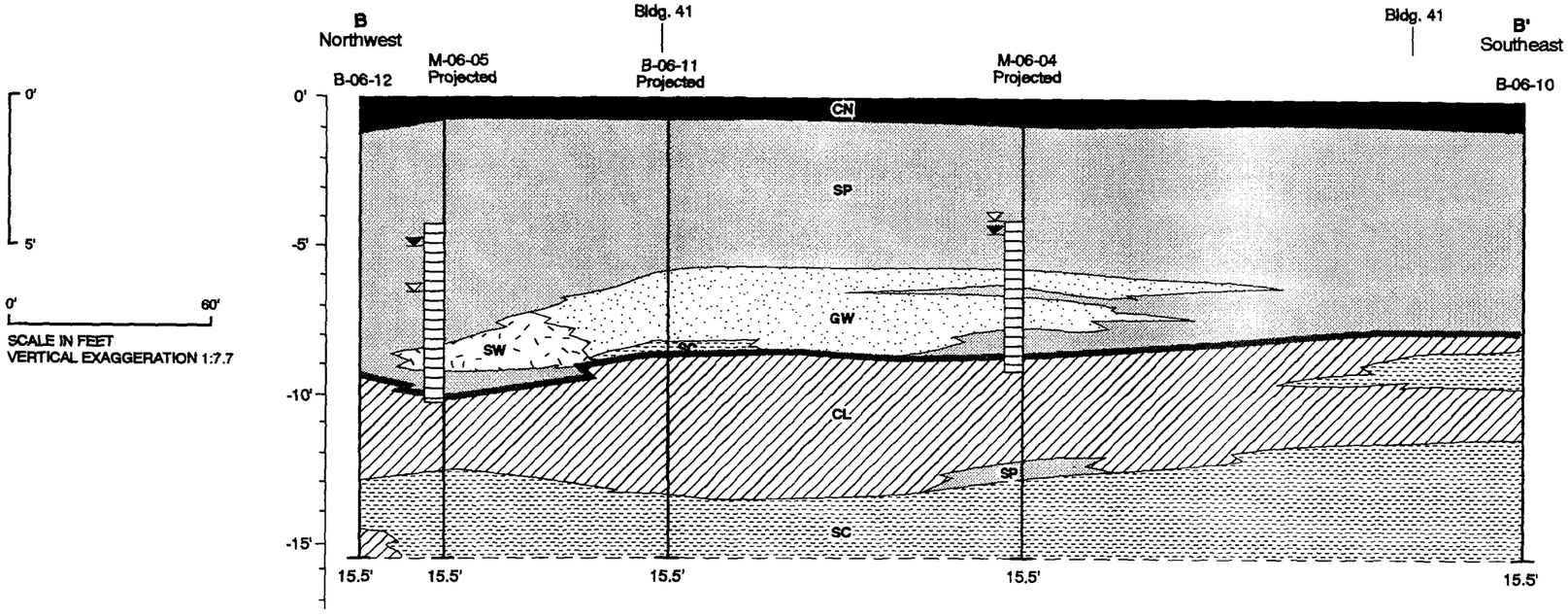
NA - Not Analyzed
Parameters not detectect are reported as less than method detection limit.

Laboratory Methods (Units):

Soil Classification - Unified Soil Classification System (USCS) - ASTM D2488
Moisture Content - ASTM D2216 (percent)
Dry Density - ASTM D2937 (pounds per cubic foot)
Specific Gravity - ASTM D854
Cation Exchange Capacity (CEC) - EPA 9080 (milliequivalents per 100 grams)
Total Organic Carbon (TOC) - Walkey and Black (percent of wet weight)
Effective Stress - EPA 9100 (pounds per square inch)
Hydraulic Conductivity - EPA 9100 (centimeters per second)





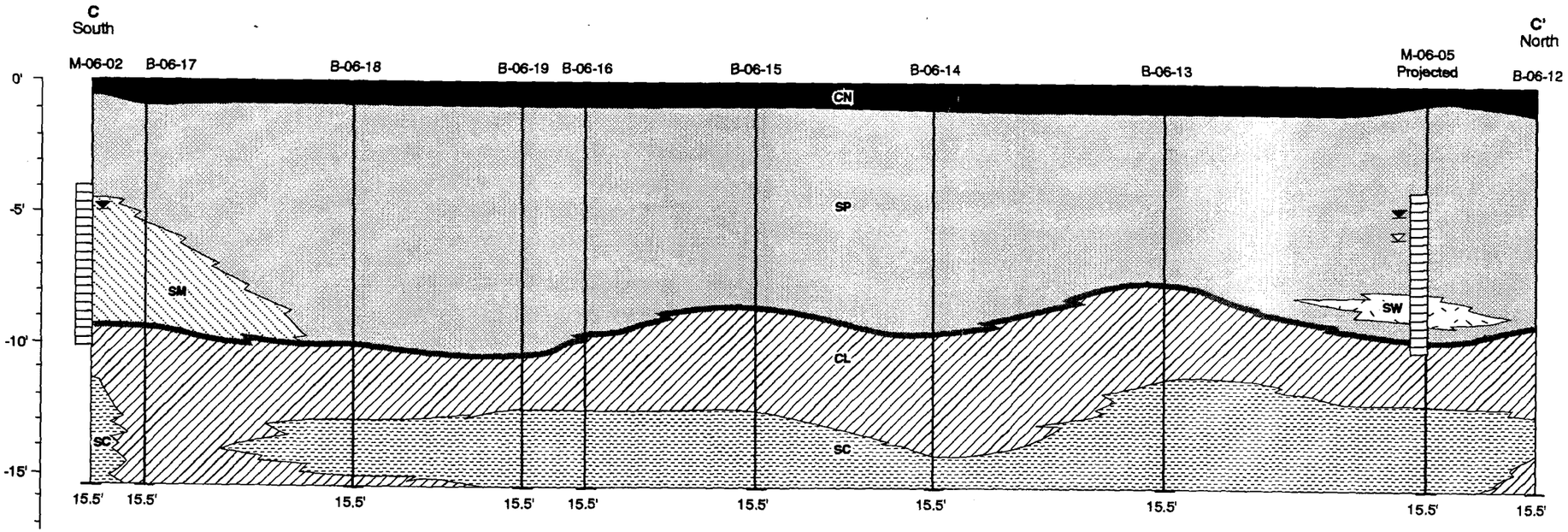


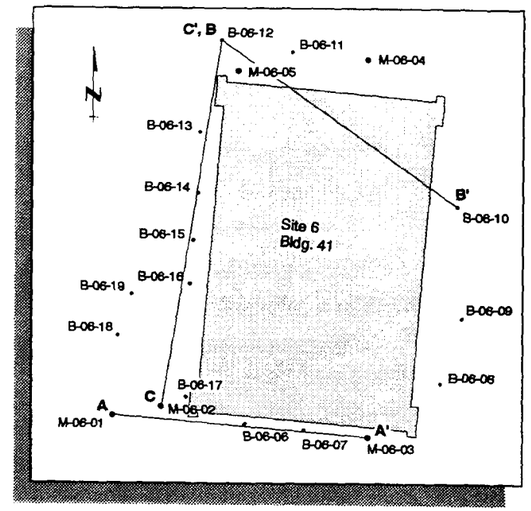
LEGEND:

- SW Gravelly Sand
- SP Sand
- SC Clayey Sand
- SM Silty Sand
- CL Clay
- CN Concrete
- AS Asphalt
- Approximate Fill/Native Sediment Interface
- First Water During Drilling
- Water Level During Water Sampling
- Monitoring Well Screened Interval

NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA
SITE 6
GEOLOGIC CROSS SECTION A-A', B-B'

FIGURE 7-2





LEGEND:

- SW Gravelly Sand
- SP Sand
- SC Clayey Sand
- SM Silty Sand
- CL Clay
- CN Concrete
- Approximate Fill/Native Sediment Interface
- First Water During Drilling
- Water Level During Water Sampling
- Monitoring Well
- Screened Interval

NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA
SITE 6
GEOLOGIC CROSS SECTION C-C'

FIGURE 7-3

TABLE 7-2

SITE 6
BUILDING 41
WATER LEVEL DATA
(Sheet 1 of 2)

		Date	Time	Water Level in feet	Water Elevation in feet
M06-01					
ToC	*10.60*	8/23/91	927	4.28	6.32
		11/6/91	1443	4.35	6.25
		11/12/91	1137	4.46	6.14
		11/12/91	1437	4.45	6.15
		11/12/91	1637	4.45	6.15
		11/22/91	840	4.51	6.09
		11/22/91	1035	4.44	6.16
		11/22/91	1155	4.36	6.24
		12/5/91	1025	4.46	6.14
		12/5/91	1117	4.45	6.15
M06-02					
ToC	*10.88*	8/23/91	915	4.63	6.25
		11/6/91	1443	4.66	6.22
		11/12/91	1138	4.78	6.10
		11/12/91	1438	4.78	6.10
		11/12/91	1642	4.77	6.11
		11/22/91	842	4.83	6.05
		11/22/91	1037	4.77	6.11
		11/22/91	1158	4.71	6.17
		12/5/91	1026	4.82	6.06
		12/5/91	1115	4.78	6.10
M06-03					
ToC	*11.38*	8/23/91	910	5.29	6.09
		11/6/91	1506	5.21	6.17
		11/12/91	1109	5.32	6.06
		11/12/91	1455	5.30	6.08
		11/12/91	1659	5.31	6.07
		11/22/91	846	5.35	6.03
		11/22/91	1042	5.28	6.10
		11/22/91	1202	5.19	6.19
		12/5/91	1032	5.30	6.08
		12/5/91	1120	5.25	6.13

TABLE 7-2

SITE 6
BUILDING 41
WATER LEVEL DATA
(Sheet 2 of 2)

		Date	Time	Water Level in feet	Water Elevation in feet
M06-04					
ToC	*10.77*	8/23/91	904	4.04	6.73
		11/6/91	1429	4.08	6.69
		11/12/91	1125	4.07	6.70
		11/12/91	1448	4.06	6.71
		11/12/91	1654	4.07	6.70
		11/22/91	854	4.09	6.68
		11/22/91	1045	4.09	6.68
		11/22/91	1205	4.08	6.69
		12/5/91	1026	4.09	6.68
		12/5/91	1116	4.08	6.69
M06-05					
ToC	*11.09*	8/23/91	901	4.97	6.12
		11/6/91	1416	5.16	5.93
		11/12/91	1121	5.23	5.86
		11/12/91	1446	5.21	5.88
		11/12/91	1651	5.22	5.87
		11/22/91	853	5.25	5.84
		11/22/91	1052	5.21	5.88
		11/22/91	1209	5.18	5.91
		12/5/91	1025	5.22	5.87
		12/5/91	1115	5.20	5.89

ToC - Top of Casing
Elevation datum - USGS Mean Low Low Water

Groundwater elevation contour maps for November 12 and November 22, 1991, are illustrated on Figures 7-4 and 7-5. A depression in the groundwater surface trending from the northwest to the southeast is evident on both maps. This apparent trough may be related to the presence of coarse-grained utility trench backfill in the vicinity of well M06-05.

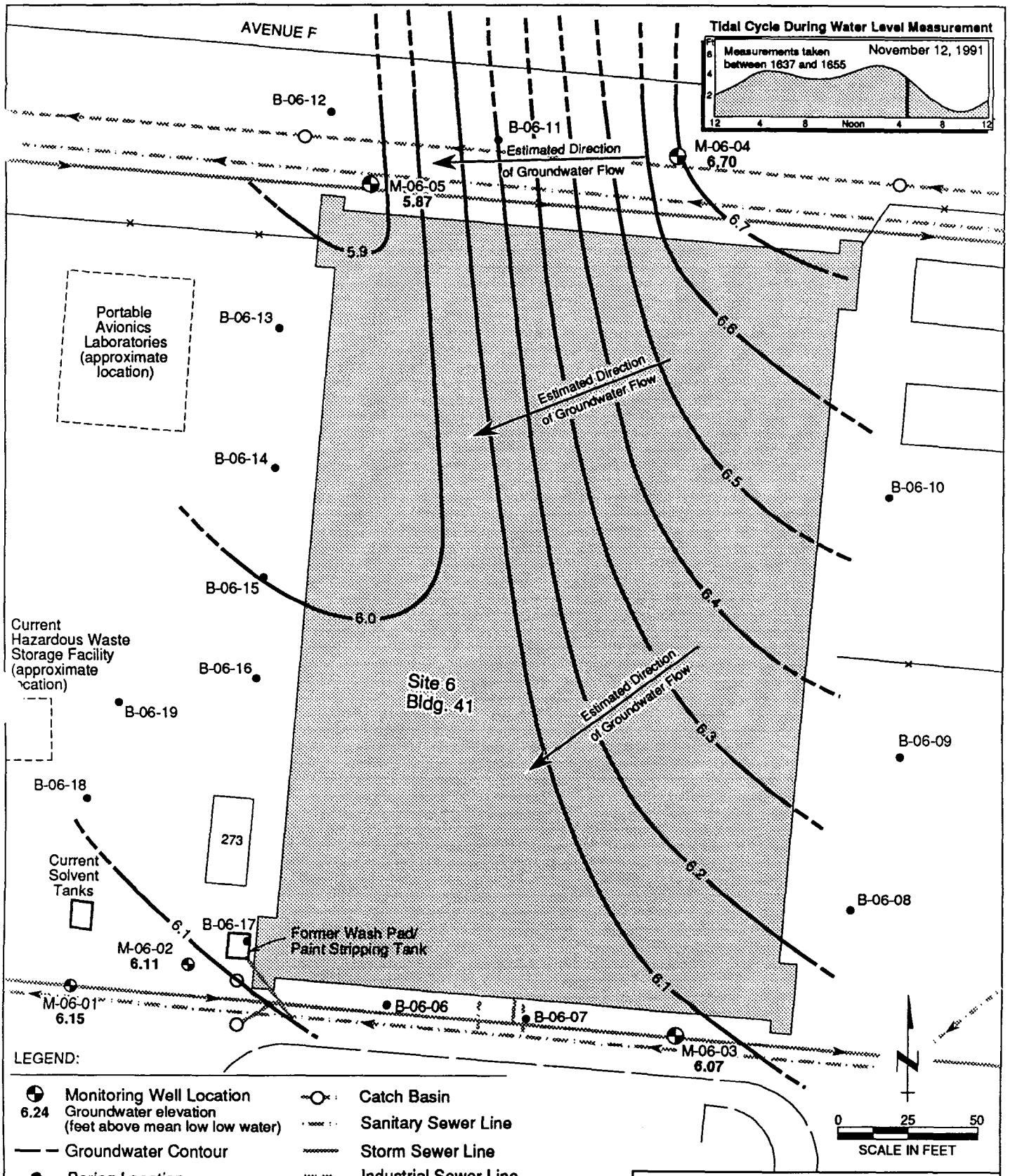
7.3.2 Analytical Results - Soil Samples

Surface soil samples were analyzed for SVOCs, pesticides/PCBs, and metals. Subsurface soil samples were analyzed for the above-mentioned constituents plus VOCs. Laboratory methods are discussed in Section 4.0 of this report. Laboratory QC data are summarized in the QCSR submitted under separate cover. All chemical data tables are found at the end of this section. The concentrations of organic compounds detected in the soil samples are presented in Table 7-3. The concentrations of metals detected in the soil samples collected from Site 6 are presented in Table 7-4. Note that Table 7-3 includes results for only those parameters that were identified in site samples. A complete list of the analytes potentially detected by each analysis is presented in Section 4.0.

Selected soil samples were also analyzed for TOC and pH. This information will be used in the feasibility study portion of the project and is not discussed here. Laboratory results for these parameters are summarized in Appendix B.

7.3.2.1 Volatile Organic Compounds. Acetone was detected at various depths in all borings except B-06-02 and B-06-08. The concentrations ranged from 12 to 180 µg/kg and there was no apparent pattern of distribution. Because acetone was also detected in method blanks, acetone results were qualified as not detected (Section 3.0). Carbon disulfide was encountered in the native sediments of several borings at concentrations ranging from 8.1 to 25 µg/kg. Chloroform and xylene were found in only one boring each (in the native sediments at 14 feet) and are viewed as isolated occurrences. Methylene chloride was found mainly in borings along the southern side of Building 41; however, isolated occurrences were also present along the eastern and western sides of the building. Methylene chloride concentrations ranged from 5.9 to 12 µg/kg and were detected in the intermediate (8 and 11 feet) and deep (14 feet) samples from native materials.

7.3.2.2 Semivolatile Organic Compounds. A suite of polycyclic aromatic hydrocarbons (PAH) was detected in both the fill material and native sediments at Site 6. PAH were detected at concentrations ranging from 91 µg/kg to 2,200 µg/kg in 10 samples collected from fill material. PAH were detected at concentrations ranging from 90 µg/kg to 13,000 µg/kg in 11 samples collected from native soils. In general, concentrations of PAH were higher in samples collected from native soils.

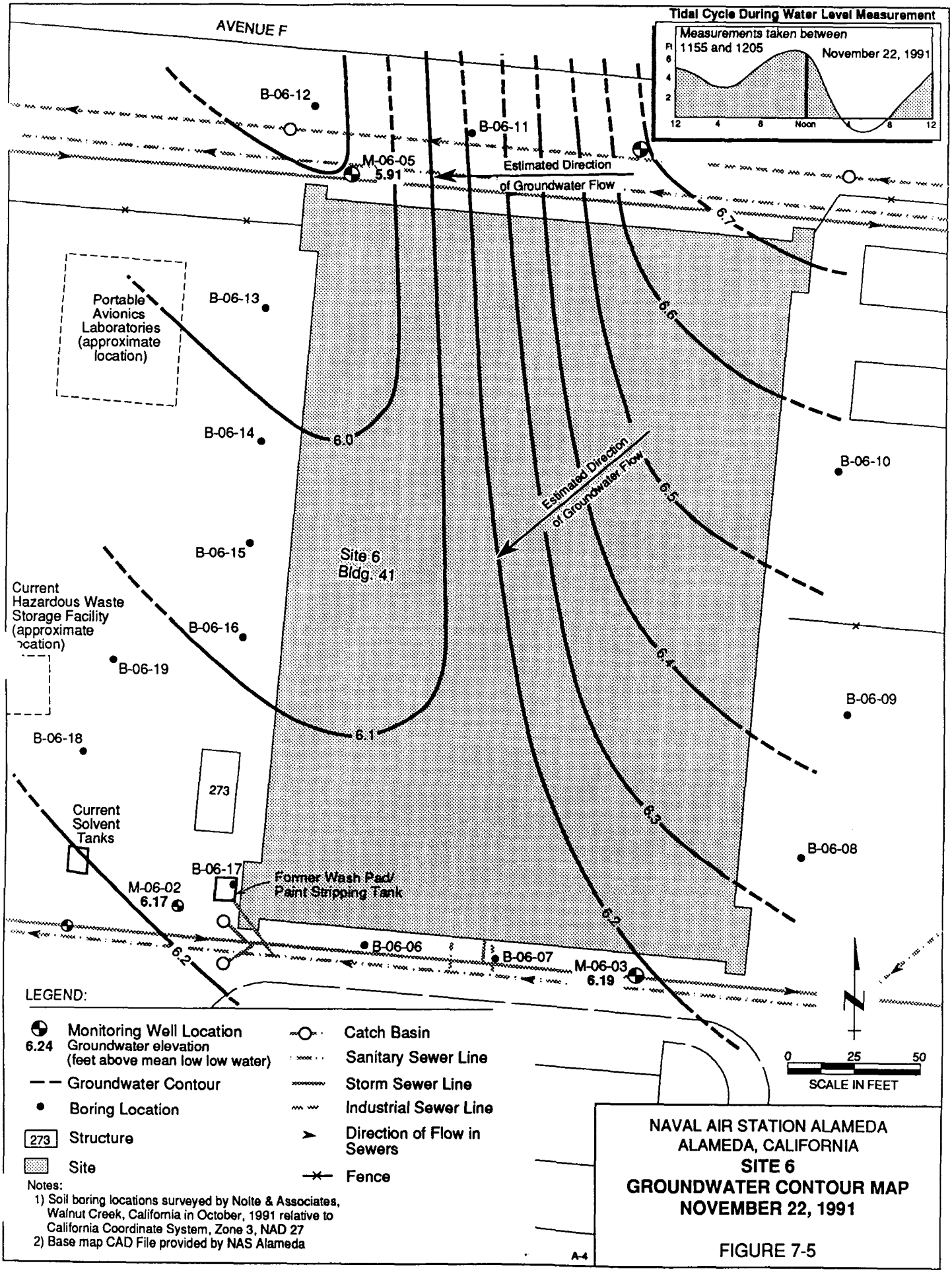


Notes:
1) Soil boring locations surveyed by Nolte & Associates, Walnut Creek, California in October, 1991 relative to California Coordinate System, Zone 3, NAD 27
2) Base map CAD File provided by NAS Alameda

A-4

NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA
SITE 6
GROUNDWATER CONTOUR MAP
NOVEMBER 12, 1991

FIGURE 7-4


AVENUE F
Tidal Cycle During Water Level Measurement
Measurements taken between 1155 and 1205
November 22, 1991
Ft
6
4
2
12
4
8
Noon
4
8
12
B-06-12
B-06-11
M-06-05
5.91
Estimated Direction of Groundwater Flow
6.7
6.6
Portable Avionics Laboratories (approximate location)
B-06-13
B-06-14
6.0
B-06-10
Estimated Direction of Groundwater Flow
6.5
B-06-15
Site 6
Bldg. 41
Current Hazardous Waste Storage Facility (approximate location)
B-06-16
B-06-19
6.4
B-06-09
B-06-18
6.1
273
Current Solvent Tanks
6.3
B-06-08
B-06-17
Former Wash Pad/ Paint Stripping Tank
M-06-02
6.17
6.2
B-06-06
B-06-07
M-06-03
6.19
6.3
LEGEND:
Monitoring Well Location
6.24 Groundwater elevation (feet above mean low low water)
Groundwater Contour
Boring Location
273 Structure
Site
Catch Basin
Sanitary Sewer Line
Storm Sewer Line
Industrial Sewer Line
Direction of Flow in Sewers
Fence
0
25
50
SCALE IN FEET
Notes:
1) Soil boring locations surveyed by Nolte & Associates, Walnut Creek, California in October, 1991 relative to California Coordinate System, Zone 3, NAD 27
2) Base map CAD File provided by NAS Alameda
A-4
NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA
SITE 6
GROUNDWATER CONTOUR MAP
NOVEMBER 22, 1991
FIGURE 7-5

7.3.2.3 Metals. As discussed in Section 3.0 of this report, background data for metals in soils at NAS Alameda have not been collected. Background data for metals in soil will be collected at a later date. An evaluation of the location and extent of possible metals contamination will be performed after the collection of background soil samples. Data generated in this investigation are presented below. As discussed in Section 3.0, the metals beryllium, chromium, copper, lead, mercury, and nickel have been tentatively identified as metals of concern. Analytical results for these metals are presented below. Results for all metals analyzed for are presented in Table 7-4.

Beryllium was detected in 82 soil samples at concentrations ranging from 0.201 mg/kg to 3.97 mg/kg. The highest concentration was identified at a depth of 14 feet in boring B06-02, located in the southwestern portion of the site.

Total chromium was detected in 84 soil samples at concentrations ranging from 18.3 mg/kg to 111 mg/kg. The highest concentration was identified at a depth of 8 feet in boring B06-13, located near the northwestern corner of Building 41.

Copper was detected in all 84 samples at concentrations ranging from 4.13 mg/kg to 63.5 mg/kg. The highest concentration was identified at a depth of 8 feet in boring B06-13, located near the northwestern corner of Building 41.

Lead was detected in 84 samples at concentrations ranging from 0.474 mg/kg to 53.4 mg/kg. The highest concentration was detected at a depth of 8 feet in boring B06-10, located along the northeastern side of the site.

Mercury was identified in only eight samples at concentrations ranging from 0.057 mg/kg to 1.14 mg/kg. The highest concentration was detected at a depth of 11 feet in boring B06-05. Boring B06-05 is located at the northwest corner of Building 41, adjacent to a storm and a sanitary sewer line.

Nickel was identified in 84 samples at concentrations ranging from 11.5 to 109 mg/kg. The highest concentration was identified at a depth of 8 feet in boring B06-13, located near the northwestern corner of Building 41.

7.3.2.4 Pesticides/PCBs. No pesticides or PCBs were detected in soil samples collected at Site 6.

7.3.3 Analytical Results - Groundwater Samples

Groundwater samples were collected from five wells installed at Site 6 using methods described in Appendix A. All groundwater samples were analyzed for VOCs, SVOCs, pesticides/PCBs, TRPH, oil and grease, and metals. Laboratory methods are discussed in Section 4.0. The concentrations of organic compounds detected in groundwater samples from Site 6 are presented in Table 7-5, and the concentrations of metals detected in groundwater samples are presented in Table 7-6. The concentrations of various physical parameters, pH, total organic carbon, and various anions are found in Table 7-7. The data tables for all of the groundwater samples are presented at the end of this section. Note that Table 7-5 contains results for only those compounds detected in Site 6 samples. A list of all analytes potentially detected by each analytical method is included in Section 4.0.

7.3.3.1 Volatile Organic Compounds. Tetrachloroethene (PCE), TCE, vinyl chloride, 1,1-DCA and 1,2-DCE were identified in Site 6 groundwater samples. 1,1-DCA was detected only in well M06-02 at a concentration of 3.1 µg/L. PCE was detected only in well M06-01 at a concentration of 4.9 µg/L. 1,2-DCE was detected in wells M06-01 and M06-02 at concentrations of 66 µg/L and 19 µg/L, respectively. TCE was detected in wells M06-01 and M06-02 at concentrations of 22 µg/L and 7.9 µg/L, respectively. Vinyl chloride was detected in wells M06-01 and M06-02 at concentrations of 7.0 µg/L and 4.8 µg/L, respectively. Wells M06-01 and M06-02 are located near the southwestern corner of Building 41, west of the former wash pad and paint stripping tank.

Acetone was identified in monitoring wells M-06-02, -03, -04, and -05 at concentrations ranging from 2.3 to 7.3 µg/L. However, because acetone was also identified in the method blanks associated with these samples, all reported acetone concentrations were qualified as not detected (Section 3.0). Chloroform was detected only in well M06-04 at a concentration of 10.0 µg/L.

7.3.3.2 Metals. Analytical results for metals in groundwater are summarized in Table 7-6. In general, the highest levels of metals were detected in well M06-01. No background data are available for background levels of metals in groundwater. Determination of whether levels of metals are elevated will be made at a later date, when background data are available.

7.3.3.3 General Chemicals. Groundwater conductivity measured in the field ranged from 280 to 4,100 micromhos per centimeter, classifying the groundwater at the site as fresh to brackish (Table 2-1; Driscoll, 1987). The pH of groundwater at the site ranges from 6.0 to 8.5.

TABLE 7-3
NAS ALAMEDA - SITE 6
SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	B06-01-000	B06-01-002	B06-01-008	B06-01-014	B06-02-000	B06-02-002	B06-02-007
Date Sampled	07/01/91	07/01/91	07/01/91	07/01/91	07/01/91	07/01/91	07/01/91
Depth of Sample	0.0 ft	2.0 ft	8.0 ft	14.0 ft	0.0 ft	2.0 ft	6.5 ft
PARAMETER REPORTED							
VOLATILE ORGANICS (µg/kg-dry)							
ACETONE	NA	14UJ	< 12	36UJ	NA	< 11	< 12
CARBON DISULFIDE	NA	< 5.4	< 6.2	14	NA	< 5.4	< 5.9
CHLOROFORM	NA	< 5.4	< 6.2	< 6.9	NA	< 5.4	< 5.9
METHYLENE CHLORIDE	NA	< 5.4	< 6.2	< 6.9	NA	< 5.4	< 5.9
XYLENE	NA	< 5.4	< 6.2	< 6.9	NA	< 5.4	< 5.9
SEMIVOLATILE ORGANICS (µg/kg-dry)							
ACENAPHTHENE	< 75	< 76	< 87	< 96	< 93	< 76	< 83
ACENAPHTHYLENE	< 75	< 76	< 87	< 96	< 93	< 76	< 83
ANTHRACENE	< 75	< 76	< 87	< 96	< 93	< 76	< 83
BENZO(A)ANTHRACENE	< 110	460	130	< 140	< 130	< 110	< 120
BENZO(A)PYRENE	< 150	550	200	< 190	< 190	< 150	< 170
BENZO(B)FLUORANTHENE	< 110	540	< 120	< 140	140	< 110	< 120
BENZO(GHI)PERYLENE	< 170	430	< 200	< 220	< 210	< 170	< 190
BENZO(K)FLUORANTHENE	< 110	< 110	< 120	< 140	< 130	< 110	< 120
BIS(2-ETHYLHEXYL)PHTHALATE	< 110	< 110	< 120	< 140	< 130	< 110	< 120
CHRYSENE	< 110	510	150	< 140	< 130	< 110	< 120
FLUORANTHENE	< 75	980	320	< 96	110	< 76	< 83
FLUORENE	< 75	< 76	< 87	< 96	< 93	< 76	< 83
INDENO(1,2,3-CD)PYRENE	< 170	370	< 200	< 220	< 210	< 170	< 190
NAPHTHALENE	< 75	< 76	< 87	< 96	< 93	< 76	< 83
PHENANTHRENE	< 75	< 76	150	< 96	< 93	< 76	< 83
PYRENE	< 75	1400	440	< 96	180	< 76	< 83
PESTICIDES/PCBS (µg/kg-dry)	ND	ND	ND	ND	ND	ND	ND

Notes: NA = Not analyzed, ND = Not detected
UJ = Qualifed, estimated not detected
J = Qualified, estimated value
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.
< = Analyte reported below detection limit
Shaded areas highlight detections above the detection limit.

TABLE 7-3
NAS ALAMEDA - SITE 6
SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS ·

Sample Number	B06-02-014	B06-03-000	B06-03-002	B06-03-008	B06-03-014	B06-04-000	B06-04-002
Date Sampled	07/01/91	07/09/91	07/09/91	07/09/91	07/09/91	07/02/91	07/02/91
Depth of Sample	14.0 ft	0.0 ft	2.0 ft	8.0 ft	14.0 ft	0.0 ft	2.0 ft
PARAMETER REPORTED							
VOLATILE ORGANICS (µg/kg-dry)							
ACETONE	< 20	NA	< 11	25	31	NA	< 11
CARBON DISULFIDE	< 9.8	NA	< 5.3	< 6.1	< 6.5	NA	< 5.5
CHLOROFORM	< 9.8	NA	< 5.3	< 6.1	< 6.5	NA	< 5.5
METHYLENE CHLORIDE	< 9.8	NA	< 5.3	6.2	< 6.5	NA	< 5.5
XYLENE	< 9.8	NA	< 5.3	< 6.1	< 6.5	NA	< 5.5
SEMIVOLATILE ORGANICS (µg/kg-dry)							
ACENAPHTHENE	< 140	< 86	< 84	< 97	< 100	< 75	< 77
ACENAPHTHYLENE	< 140	< 86	< 84	< 97	< 100	< 75	< 77
ANTHRACENE	< 140	< 86	< 84	< 97	< 100	< 75	< 77
BENZO(A)ANTHRACENE	< 200	< 110	< 110	< 120	< 130	< 110	< 110
BENZO(A)PYRENE	< 280	< 150	< 150	< 170	< 180	< 150	< 150
BENZO(B)FLUORANTHENE	< 200	< 110	< 110	< 120	< 130	< 110	< 110
BENZO(GHI)PERYLENE	< 310	< 170	< 170	< 190	< 210	< 170	< 180
BENZO(K)FLUORANTHENE	< 200	< 110	< 110	< 120	< 130	< 110	< 110
BIS(2-ETHYLHEXYL)PHTHALATE	< 200	180J	< 110	< 120	< 130	< 110	< 110
CHRYSENE	< 200	< 110	< 110	< 120	< 130	< 110	< 110
FLUORANTHENE	< 140	< 86	< 84	< 97	< 100	< 75	< 77
FLUORENE	< 140	< 86	< 84	< 97	< 100	< 75	< 77
INDENO(1,2,3-CD)PYRENE	< 310	< 170	< 170	< 190	< 210	< 170	< 180
NAPHTHALENE	< 140	< 86	< 84	< 97	< 100	< 75	< 77
PHENANTHRENE	< 140	< 86	< 84	< 97	< 100	< 75	< 77
PYRENE	< 140	< 86	< 84	< 97	< 100	< 75	< 77
PESTICIDES/PCBS (µg/kg-dry)	ND	ND	ND	ND	ND	ND	ND

Notes: NA = Not analyzed, ND = Not detected
UJ = Qualifed, estimated not detected
J = Qualified, estimated value
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.
< = Analyte reported below detection limit
Shaded areas highlight detections above the detection limit.

TABLE 7-3
NAS ALAMEDA - SITE 6
SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	B06-04-007	B06-04-014	B06-05-000	Duplicate B06-05-000	B06-05-002	B06-05-005	B06-05-011
Date Sampled	07/02/91	07/02/91	07/02/91	07/02/91	07/02/91	07/02/91	07/02/91
Depth of Sample	6.5 ft	14.0 ft	0.0 ft	0.0 ft	2.0 ft	5.0 ft	11.0 ft
PARAMETER REPORTED							
VOLATILE ORGANICS (µg/kg-dry)							
ACETONE	13	22	NA	NA	< 11	14	47
CARBON DISULFIDE	< 5.6	8.1	NA	NA	< 5.4	< 6.1	17
CHLOROFORM	< 5.6	7.5	NA	NA	< 5.4	< 6.1	< 8.4
METHYLENE CHLORIDE	< 5.6	< 6.2	NA	NA	< 5.4	< 6.1	< 8.4
XYLENE	< 5.6	< 6.2	NA	NA	< 5.4	< 6.1	< 8.4
SEMIVOLATILE ORGANICS (µg/kg-dry)							
ACENAPHTHENE	< 78	< 87	< 76	< 76	< 76	< 86	< 120
ACENAPHTHYLENE	< 78	< 87	< 76	< 76	< 76	< 86	< 120
ANTHRACENE	< 78	< 87	< 76	< 76	< 76	< 86	< 120
BENZO(A)ANTHRACENE	< 110	290J	< 110	< 110	< 110	< 120	< 170
BENZO(A)PYRENE	< 160	830J	< 150	< 150	< 150	< 170	< 240
BENZO(B)FLUORANTHENE	< 110	800J	< 110	< 110	< 110	< 120	< 170
BENZO(GHI)PERYLENE	< 180	890J	< 170	< 170	< 170	< 200	< 270
BENZO(K)FLUORANTHENE	< 110	170J	< 110	< 110	< 110	< 120	< 170
BIS(2-ETHYLHEXYL)PHTHALATE	< 110	< 120	< 110	< 110	< 110	< 120	< 170
CHRYSENE	< 110	340J	< 110	< 110	< 110	< 120	< 170
FLUORANTHENE	< 78	730J	< 76	< 76	< 76	< 86	< 120
FLUORENE	< 78	< 87	< 76	< 76	< 76	< 86	< 120
INDENO(1,2,3-CD)PYRENE	< 180	420J	< 170	< 170	< 170	< 200	< 270
NAPHTHALENE	< 78	< 87	< 76	< 76	< 76	< 86	< 120
PHENANTHRENE	< 78	170J	< 76	< 76	< 76	< 86	< 120
PYRENE	< 78	2200J	< 76	< 76	< 76	< 86	< 120
PESTICIDES/PCBS (µg/kg-dry)	ND	ND	ND	ND	ND	ND	ND

Notes: NA = Not analyzed, ND = Not detected
UJ = Qualifed, estimated not detected
J = Qualified, estimated value
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.
< = Analyte reported below detection limit
Shaded areas highlight detections above the detection limit.

TABLE 7-3
NAS ALAMEDA - SITE 6
SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	B06-06-000	Duplicate B06-06-000	B06-06-005	B06-06-011	B06-06-014	B06-07-000	B06-07-002
Date Sampled	08/05/91	08/05/91	08/05/91	08/05/91	08/05/91	07/09/91	07/09/91
Depth of Sample	0.0 ft	0.0 ft	5.0 ft	11.0 ft	14.0 ft	0.0 ft	2.0 ft
PARAMETER REPORTED							
VOLATILE ORGANICS (µg/kg-dry)							
ACETONE	NA	NA	16	75	15	NA	< 11
CARBON DISULFIDE	NA	NA	< 6.0	15	< 6.5	NA	< 5.3
CHLOROFORM	NA	NA	< 6.0	< 8.3	< 6.5	NA	< 5.3
METHYLENE CHLORIDE	NA	NA	6.6	11	6.6	NA	< 5.3
XYLENE	NA	NA	< 6.0	< 8.3	< 6.5	NA	< 5.3
SEMIVOLATILE ORGANICS (µg/kg-dry)							
ACENAPHTHENE	< 84	< 84	< 96	< 130	< 100	< 85	< 85
ACENAPHTHYLENE	< 84	< 84	< 96	< 130	< 100	< 85	< 85
ANTHRACENE	< 84	< 84	< 96	< 130	< 100	< 85	< 85
BENZO(A)ANTHRACENE	< 100	< 100	< 120	630J	< 130	< 110	< 110
BENZO(A)PYRENE	< 150	< 150	< 170	2300J	< 180	< 150	< 150
BENZO(B)FLUORANTHENE	< 100	< 100	< 120	1800J	< 130	< 110	< 110
BENZO(GHI)PERYLENE	< 170	< 170	< 190	2000J	< 210	< 170	< 170
BENZO(K)FLUORANTHENE	< 100	< 100	< 120	910J	< 130	< 110	< 110
BIS(2-ETHYLHEXYL)PHTHALATE	190UJ	< 100	410UJ	580UJ	270	< 110	< 110
CHRYSENE	< 100	< 100	< 120	770J	< 130	< 110	< 110
FLUORANTHENE	< 84	< 84	< 96	1000J	< 100	< 85	< 85
FLUORENE	< 84	< 84	< 96	< 130	< 100	< 85	< 85
INDENO(1,2,3-CD)PYRENE	< 170	< 170	< 190	1600J	< 210	< 170	< 170
NAPHTHALENE	< 84	< 84	< 96	150J	< 100	< 85	< 85
PHENANTHRENE	< 84	< 84	< 96	250J	< 100	< 85	< 85
PYRENE	< 84	< 84	120J	4900J	< 100	< 85	< 85
PESTICIDES/PCBS (µg/kg-dry)	ND	ND	ND	ND	ND	ND	ND

Notes: NA = Not analyzed, ND = Not detected
UJ = Qualifed, estimated not detected
J = Qualified, estimated value
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< = Analyte reported below detection limit
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TABLE 7-3
NAS ALAMEDA - SITE 6
SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	B06-07-008	B06-07-014	B06-08-000	B06-08-002	B06-08-007	B06-08-014	B06-09-000
Date Sampled	07/09/91	07/09/91	07/08/91	07/08/91	07/08/91	07/08/91	07/08/91
Depth of Sample	8.0 ft	14.0 ft	0.0 ft	2.0 ft	6.5 ft	14.0 ft	0.0 ft
PARAMETER REPORTED							
VOLATILE ORGANICS (µg/kg-dry)							
ACETONE	26	32	NA	< 11	< 13	< 14	NA
CARBON DISULFIDE	< 6.2	< 6.3	NA	< 5.5	< 6.3	< 7.1	NA
CHLOROFORM	< 6.2	< 6.3	NA	< 5.5	< 6.3	< 7.1	NA
METHYLENE CHLORIDE	< 6.2	6.7	NA	< 5.5	< 6.3	7.3	NA
XYLENE	< 6.2	< 6.3	NA	< 5.5	< 6.3	< 7.1	NA
SEMIVOLATILE ORGANICS (µg/kg-dry)							
ACENAPHTHENE	< 87UJ	< 88UJ	< 87	< 87	< 100	< 110	< 89
ACENAPHTHYLENE	< 87UJ	< 88UJ	< 87	< 87	< 100	< 110	< 89
ANTHRACENE	< 87UJ	< 88UJ	< 87	< 87	< 100	< 110	< 89
BENZO(A)ANTHRACENE	< 120UJ	< 130UJ	< 110	< 110	< 130	< 140	< 110
BENZO(A)PYRENE	< 170UJ	< 180UJ	< 150	< 150	< 180	< 200	< 160
BENZO(B)FLUORANTHENE	< 120UJ	< 130UJ	< 110	< 110	< 130	< 140	< 110
BENZO(GHI)PERYLENE	< 200UJ	< 200UJ	< 170	< 170	< 200	< 230	< 180
BENZO(K)FLUORANTHENE	< 120UJ	< 130UJ	< 110	< 110	< 130	< 140	< 110
BIS(2-ETHYLHEXYL)PHTHALATE	< 120UJ	< 130UJ	< 110	< 110	< 130	< 140	< 110
CHRYSENE	< 120UJ	< 130UJ	< 110	< 110	< 130	< 140	< 110
FLUORANTHENE	< 87UJ	< 88UJ	< 87	< 87	< 100	160J	91J
FLUORENE	< 87UJ	< 88UJ	< 87	< 87	< 100	< 110	< 89
INDENO(1,2,3-CD)PYRENE	< 200UJ	< 200UJ	< 170	< 170	< 200	< 230	< 180
NAPHTHALENE	< 87UJ	< 88UJ	< 87	< 87	< 100	< 110	< 89
PHENANTHRENE	< 87UJ	< 88UJ	< 87	< 87	< 100	< 110	< 89
PYRENE	< 87UJ	90J	< 87	< 87	< 100	380J	130J
PESTICIDES/PCBS (µg/kg-dry)	ND	ND	ND	ND	ND	ND	ND

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< = Analyte reported below detection limit
Shaded areas highlight detections above the detection limit.

TABLE 7-3
NAS ALAMEDA - SITE 6
SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	B06-09-002	B06-09-008	B06-09-014	B06-10-000	B06-10-002	B06-10-008	Duplicate B06-10-008
Date Sampled	07/08/91	07/08/91	07/08/91	07/08/91	07/08/91	07/08/91	07/08/91
Depth of Sample	2.0 ft	8.0 ft	14.0 ft	0.0 ft	2.0 ft	8.0 ft	8.0 ft
PARAMETER REPORTED							
VOLATILE ORGANICS (µg/kg-dry)							
ACETONE	< 11	180	25UJ	NA	15	25	28
CARBON DISULFIDE	< 5.4	25	11	NA	< 6.2	< 7.4	< 8.2
CHLOROFORM	< 5.4	< 9.0	< 8.1	NA	< 6.2	< 7.4	< 8.2
METHYLENE CHLORIDE	< 5.4	12	< 8.1	NA	< 6.2	< 7.4	< 8.2
XYLENE	< 5.4	< 9.0	< 8.1	NA	< 6.2	< 7.4	< 8.2
SEMIVOLATILE ORGANICS (µg/kg-dry)							
ACENAPHTHENE	< 86	< 140	2100J	< 85	< 99	< 120	< 130
ACENAPHTHYLENE	< 86	< 140	240J	< 85	< 99	< 120	< 130
ANTHRACENE	< 86	150J	1100J	< 85	< 99	< 120	< 130
BENZO(A)ANTHRACENE	< 110	1100J	1300J	< 110	< 120	< 150	< 160
BENZO(A)PYRENE	< 150	4100J	1800J	< 150	< 170	570J	430J
BENZO(B)FLUORANTHENE	< 110	3100J	1300J	< 110	< 120	420J	340J
BENZO(GHI)PERYLENE	< 170	3300J	1000J	< 170	< 200	500J	390J
BENZO(K)FLUORANTHENE	< 110	540J	420J	< 110	< 120	< 150	< 160
BIS(2-ETHYLHEXYL)PHTHALATE	< 110	< 180	< 160	< 110	< 120	< 150	< 160
CHRYSENE	< 110	1200J	1400J	< 110	< 120	180J	< 160
FLUORANTHENE	< 86	1500J	4200J	< 85	< 99	350J	400J
FLUORENE	< 86	< 140	590J	< 85	< 99	< 120	< 130
INDENO(1,2,3-CD)PYRENE	< 170	3100J	1100J	< 170	< 200	410J	340J
NAPHTHALENE	< 86	< 140	1500J	< 85	< 99	< 120	< 130
PHENANTHRENE	< 86	450J	6200J	< 85	< 99	< 120	< 130
PYRENE	< 86	8000J	4800J	< 85	100J	1200J	760J
PESTICIDES/PCBS (µg/kg-dry)	ND	ND	ND	ND	ND	ND	ND

Notes: NA = Not analyzed, ND = Not detected
UJ = Qualifed, estimated not detected
J = Qualified, estimated value
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.
< = Analyte reported below detection limit
Shaded areas highlight detections above the detection limit.

TABLE 7-3
NAS ALAMEDA - SITE 6
SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	B06-10-014	B06-11-000	B06-11-002	B06-11-007	B06-11-014	Duplicate B06-11-014	B06-12-000
Date Sampled	07/08/91	07/02/91	07/02/91	07/02/91	07/02/91	07/02/91	07/10/91
Depth of Sample	14.0 ft	0.0 ft	2.0 ft	6.5 ft	14.0 ft	14.0 ft	0.0 ft
PARAMETER REPORTED							
VOLATILE ORGANICS (µg/kg-dry)							
ACETONE	18UJ	NA	< 11	12	15	< 13	NA
CARBON DISULFIDE	< 6.7	NA	< 5.4	< 5.3	< 6.4	< 6.4	NA
CHLOROFORM	< 6.7	NA	< 5.4	< 5.3	< 6.4	< 6.4	NA
METHYLENE CHLORIDE	< 6.7	NA	< 5.4	< 5.3	< 6.4	< 6.4	NA
XYLENE	< 6.7	NA	< 5.4	< 5.3	< 6.4	< 6.4	NA
SEMIVOLATILE ORGANICS (µg/kg-dry)							
ACENAPHTHENE	< 110	< 75	< 75	< 74	< 89	< 89	< 73UJ
ACENAPHTHYLENE	< 110	< 75	< 75	< 74	< 89	< 89	< 73UJ
ANTHRACENE	< 110	< 75	< 75	110J	< 89	< 89	< 73UJ
BENZO(A)ANTHRACENE	< 130	< 110	< 110	230J	< 130	< 130	< 100UJ
BENZO(A)PYRENE	< 190	< 150	< 150	560J	< 180	< 180	< 150UJ
BENZO(B)FLUORANTHENE	< 130	< 110	< 110	570J	< 130	< 130	< 100UJ
BENZO(GHI)PERYLENE	< 210	< 170	< 170	590J	< 200	< 200	< 170UJ
BENZO(K)FLUORANTHENE	< 130	< 110	< 110	120J	< 130	< 130	< 100UJ
BIS(2-ETHYLHEXYL)PHTHALATE	< 130	< 110	< 110	< 110	< 130	< 130	< 100UJ
CHRYSENE	< 130	< 110	< 110	270J	< 130	< 130	< 100UJ
FLUORANTHENE	< 110	< 75	< 75	760J	< 89	< 89	< 73UJ
FLUORENE	< 110	< 75	< 75	< 74	< 89	< 89	< 73UJ
INDENO(1,2,3-CD)PYRENE	< 210	< 170	< 170	480J	< 200	< 200	< 170UJ
NAPHTHALENE	< 110	< 75	< 75	100J	< 89	< 89	< 73UJ
PHENANTHRENE	< 110	< 75	< 75	650J	< 89	< 89	< 73UJ
PYRENE	< 110	< 75	< 75	2200J	< 89	170	< 73UJ
PESTICIDES/PCBS (µg/kg-dry)	ND	ND	ND	ND	ND	ND	ND

Notes: NA = Not analyzed, ND = Not detected
UJ = Qualifed, estimated not detected
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Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.
< = Analyte reported below detection limit
Shaded areas highlight detections above the detection limit.

TABLE 7-3
NAS ALAMEDA - SITE 6
SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	B06-12-002	B06-12-008	B06-12-014	Duplicate B06-12-014	B06-13-000	B06-13-002	B06-13-008
Date Sampled	07/10/91	07/10/91	07/10/91	07/10/91	06/28/91	06/28/91	06/28/91
Depth of Sample	2.0 ft	8.0 ft	14.0 ft	14.0 ft	0.0 ft	1.0 ft	8.0 ft
PARAMETER REPORTED							
VOLATILE ORGANICS (µg/kg-dry)							
ACETONE	< 11	21UJ	20UJ	< 14	NA	49UJ	88UJ
CARBON DISULFIDE	< 5.4	< 6.3	6.8	< 6.8	NA	< 5.3	22
CHLOROFORM	< 5.4	< 6.3	< 6.6	< 6.8	NA	< 5.3	< 9.3
METHYLENE CHLORIDE	< 5.4	< 6.3	< 6.6	< 6.8	NA	< 5.3	< 9.3
XYLENE	< 5.4	< 6.3	< 6.6	< 6.8	NA	< 5.3	< 9.3
SEMIVOLATILE ORGANICS (µg/kg-dry)							
ACENAPHTHENE	< 76UJ	< 88UJ	< 93UJ	< 110	< 4900	< 84	< 150
ACENAPHTHYLENE	< 76UJ	< 88UJ	< 93UJ	< 110	< 4900	< 84	< 150
ANTHRACENE	< 76UJ	< 88UJ	< 93UJ	< 110	< 4900	< 84	260
BENZO(A)ANTHRACENE	< 110UJ	< 130UJ	< 130UJ	< 140	< 6100	< 110	1400
BENZO(A)PYRENE	< 150UJ	< 180UJ	< 190UJ	< 190	< 8500	< 150	5600
BENZO(B)FLUORANTHENE	< 110UJ	160J	< 130UJ	< 140	< 6100	< 110	5000
BENZO(GHI)PERYLENE	< 170UJ	< 200UJ	< 210UJ	< 220	< 9700	< 170	5100
BENZO(K)FLUORANTHENE	< 110UJ	< 130UJ	< 130UJ	< 140	< 6100	< 110	1800
BIS(2-ETHYLHEXYL)PHTHALATE	< 110UJ	< 130UJ	< 130UJ	960	< 6100	< 110	< 190
CHRYSENE	< 110UJ	< 130UJ	< 130UJ	< 140	< 6100	< 110	2000
FLUORANTHENE	< 76UJ	140J	< 93UJ	< 110	< 4900	< 84	3500
FLUORENE	< 76UJ	< 88UJ	< 93UJ	< 110	< 4900	< 84	< 150
INDENO(1,2,3-CD) PYRENE	< 170UJ	< 200UJ	< 210UJ	< 220	< 9700	< 170	4400
NAPHTHALENE	< 76UJ	< 88UJ	< 93UJ	< 110	< 4900	< 84	280
PHENANTHRENE	< 76UJ	< 88UJ	< 93UJ	< 110	< 4900	< 84	840
PYRENE	< 76UJ	270J	< 93UJ	< 110	< 4900	< 84	13000
PESTICIDES/PCBS (µg/kg-dry)	ND	ND	ND	ND	ND	ND	ND

Notes: NA = Not analyzed, ND = Not detected
UJ = Qualifed, estimated not detected
J = Qualified, estimated value
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.
< = Analyte reported below detection limit
Shaded areas highlight detections above the detection limit.

TABLE 7-3
NAS ALAMEDA - SITE 6
SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	B06-13-014	B06-14-000	B06-14-004	B06-14-008	B06-14-014	B06-15-000	B06-15-002
Date Sampled	06/28/91	06/27/91	06/27/91	06/27/91	06/27/91	06/27/91	06/27/91
Depth of Sample	14.0 ft	0.0 ft	3.5 ft	8.0 ft	14.0 ft	0.0 ft	2.0 ft
PARAMETER REPORTED							
VOLATILE ORGANICS (µg/kg-dry)							
ACETONE	23UJ	NA	< 11	35	18	NA	< 11
CARBON DISULFIDE	< 7.8	NA	< 5.6	< 6.2	< 6.5	NA	< 5.3
CHLOROFORM	< 7.8	NA	< 5.6	< 6.2	< 6.5	NA	< 5.3
METHYLENE CHLORIDE	< 7.8	NA	< 5.6	< 6.2	< 6.5	NA	< 5.3
XYLENE	< 7.8	NA	< 5.6	< 6.2	< 6.5	NA	< 5.3
SEMIVOLATILE ORGANICS (µg/kg-dry)							
ACENAPHTHENE	< 120	< 86	< 90	< 99UJ	< 100	< 84	< 85
ACENAPHTHYLENE	< 120	< 86	< 90	< 99UJ	< 100	< 84	< 85
ANTHRACENE	< 120	< 86	< 90	< 99UJ	< 100	< 84	< 85
BENZO(A)ANTHRACENE	< 160	280	< 110	< 120UJ	< 130	< 110	< 110
BENZO(A)PYRENE	< 220	150	< 160	< 170UJ	< 180	< 150	< 150
BENZO(B)FLUORANTHENE	< 160	410	< 110	< 120UJ	< 130	< 110	< 110
BENZO(GHI)PERYLENE	< 250	< 170	< 180	< 200UJ	< 210	< 170	< 170
BENZO(K)FLUORANTHENE	< 160	130	< 110	< 120UJ	< 130	< 110	< 110
BIS(2-ETHYLHEXYL)PHTHALATE	< 160	< 110	< 110	< 120UJ	< 130	< 110	< 110
CHRYSENE	< 160	290	< 110	< 120UJ	< 130	< 110	< 110
FLUORANTHENE	< 120	220	< 90	< 99UJ	< 100	< 84	< 85
FLUORENE	< 120	< 86	< 90	< 99UJ	< 100	< 84	< 85
INDENO(1,2,3-CD)PYRENE	< 250	< 170	< 180	< 200UJ	< 210	< 170	< 170
NAPHTHALENE	< 120	< 86	< 90	< 99UJ	< 100	< 84	< 85
PHENANTHRENE	< 120	< 86	< 90	< 99UJ	< 100	< 84	< 85
PYRENE	< 120	420	< 90	< 99UJ	< 100	< 84	< 85
PESTICIDES/PCBS (µg/kg-dry)	ND	ND	ND	ND	ND	ND	ND

Notes: NA = Not analyzed, ND = Not detected
UJ = Qualifed, estimated not detected
J = Qualified, estimated value
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.
< = Analyte reported below detection limit
Shaded areas highlight detections above the detection limit.

TABLE 7-3
NAS ALAMEDA - SITE 6
SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	B06-15-005	B06-15-014	B06-16-000	B06-16-004	B06-16-008	Duplicate B06-16-008	B06-16-014
Date Sampled	06/27/91	06/27/91	06/27/91	06/27/91	06/27/91	06/27/91	06/27/91
Depth of Sample	5.0 ft	14.0 ft	0.0 ft	3.5 ft	8.0 ft	8.0 ft	14.0 ft
PARAMETER REPORTED							
VOLATILE ORGANICS (µg/kg-dry)							
ACETONE	< 12	22UJ	NA	< 11	17UJ	< 12	14UJ
CARBON DISULFIDE	< 6.1	9.5	NA	< 5.3	< 6.0	< 6.2	7.0
CHLOROFORM	< 6.1	< 6.7	NA	< 5.3	< 6.0	< 6.2	< 6.8
METHYLENE CHLORIDE	< 6.1	7.7UJ	NA	< 5.3	< 6.0	< 6.2	< 6.8
XYLENE	< 6.1	34	NA	< 5.3	< 6.0	< 6.2	< 6.8
SEMIVOLATILE ORGANICS (µg/kg-dry)							
ACENAPHTHENE	< 97	< 110	< 87	< 85	< 96	< 100	< 110
ACENAPHTHYLENE	< 97	< 110	< 87	< 85	< 96	< 100	< 110
ANTHRACENE	< 97	< 110	< 87	< 85	< 96	< 100	< 110
BENZO(A)ANTHRACENE	< 120	< 130	< 110	< 110	< 120	< 120	< 140
BENZO(A)PYRENE	< 170	< 190	< 150	< 150	< 170	< 170	< 190
BENZO(B)FLUORANTHENE	< 120	< 130	< 110	< 110	< 120	< 120	< 140
BENZO(GHI)PERYLENE	< 190	< 210	< 170	< 170	< 190	< 200	< 220
BENZO(K)FLUORANTHENE	< 120	< 130	< 110	< 110	< 120	< 120	< 140
BIS(2-ETHYLHEXYL)PHTHALATE	< 120	< 130	< 110	< 110	< 120	< 120	< 140
CHRYSENE	< 120	< 130	< 110	< 110	< 120	< 120	< 140
FLUORANTHENE	< 97	< 110	< 87	< 85	< 96	< 100	< 110
FLUORENE	< 97	< 110	< 87	< 85	< 96	< 100	< 110
INDENO(1,2,3-CD)PYRENE	< 190	< 210	< 170	< 170	< 190	< 200	< 220
NAPHTHALENE	< 97	< 110	< 87	< 85	< 96	< 100	< 110
PHENANTHRENE	< 97	< 110	< 87	< 85	< 96	< 100	< 110
PYRENE	< 97	< 110	< 87	< 85	< 96	< 100	< 110
PESTICIDES/PCBS (µg/kg-dry)	ND	ND	ND	ND	ND	ND	ND

Notes: NA = Not analyzed, ND = Not detected
UJ = Qualifed, estimated not detected
J = Qualified, estimated value
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.
< = Analyte reported below detection limit
Shaded areas highlight detections above the detection limit.

TABLE 7-3
NAS ALAMEDA - SITE 6
SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	B06-17-000	B06-17-002	Duplicate B06-17-002	B06-17-008	B06-17-014	B06-18-000	B06-18-002
Date Sampled	07/09/91	07/09/91	07/09/91	07/09/91	07/09/91	07/01/91	07/01/91
Depth of Sample	0.0 ft	2.0 ft	2.0 ft	8.0 ft	14.0 ft	0.0 ft	2.0 ft
PARAMETER REPORTED							
VOLATILE ORGANICS (µg/kg-dry)							
ACETONE	NA	< 11	< 11	< 12	44UJ	NA	< 10.0
CARBON DISULFIDE	NA	< 5.4	< 5.4	9.2	< 6.9	NA	< 5.2
CHLOROFORM	NA	< 5.4	< 5.4	< 6.1	< 6.9	NA	< 5.2
METHYLENE CHLORIDE	NA	< 5.4	5.9	7.8	< 6.9	NA	< 5.2
XYLENE	NA	< 5.4	< 5.4	< 6.1	< 6.9	NA	< 5.2
SEMIVOLATILE ORGANICS (µg/kg-dry)							
ACENAPHTHENE	< 78UJ	<75UJ	< 87	< 86UJ	< 97UJ	< 76	< 73
ACENAPHTHYLENE	< 78UJ	<75UJ	< 87	< 86UJ	< 97UJ	< 76	< 73
ANTHRACENE	< 78UJ	<75UJ	< 87	< 86UJ	< 97UJ	< 76	< 73
BENZO(A)ANTHRACENE	< 110UJ	<110UJ	< 110	< 120UJ	< 140UJ	< 110	< 100
BENZO(A)PYRENE	180J	<150UJ	< 150	< 170UJ	< 190UJ	< 150	< 150
BENZO(B)FLUORANTHENE	210J	<110UJ	< 110	< 120UJ	< 140UJ	< 110	< 100
BENZO(GHI)PERYLENE	290J	<170UJ	< 170	< 200UJ	< 220UJ	< 170	< 170
BENZO(K)FLUORANTHENE	< 110UJ	<110UJ	< 110	< 120UJ	< 140UJ	< 110	< 100
BIS(2-ETHYLHEXYL)PHTHALATE	< 110UJ	<110UJ	< 110	< 120UJ	< 140UJ	< 110	< 100
CHRYSENE	130J	110J	< 110	< 120UJ	< 140UJ	< 110	< 100
FLUORANTHENE	190J	210J	< 87	< 86UJ	< 97UJ	< 76	< 73
FLUORENE	< 78UJ	<75UJ	< 87	< 86UJ	< 97UJ	< 76	< 73
INDENO(1,2,3-CD)PYRENE	< 180UJ	<170UJ	< 170	< 200UJ	< 220UJ	< 170	< 170
NAPHTHALENE	< 78UJ	<75UJ	< 87	< 86UJ	< 97UJ	< 76	< 73
PHENANTHRENE	< 78UJ	340J	< 87	< 86UJ	< 97UJ	< 76	< 73
PYRENE	250J	280J	< 87	< 86UJ	< 97UJ	< 76	< 73
PESTICIDES/PCBS (µg/kg-dry)	ND	ND	ND	ND	ND	ND	ND

Notes: NA = Not analyzed, ND = Not detected
UJ = Qualifed, estimated not detected
J = Qualified, estimated value
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.
< = Analyte reported below detection limit
Shaded areas highlight detections above the detection limit.

TABLE 7-3
NAS ALAMEDA - SITE 6
SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	B06-18-007	B06-18-014	B06-19-000	B06-19-002	B06-19-007	Duplicate B06-19-007	B06-19-014
Date Sampled	07/01/91	07/01/91	06/28/91	06/28/91	06/28/91	06/28/91	06/28/91
Depth of Sample	6.5 ft	14.0 ft	0.0 ft	1.0 ft	6.5 ft	6.5 ft	14.0 ft
PARAMETER REPORTED							
VOLATILE ORGANICS (µg/kg-dry)							
ACETONE	13	< 12	NA	< 11	19UJ	< 12	26UJ
CARBON DISULFIDE	< 6.1	8.7	NA	< 5.3	< 6.2	< 6.2	8.2
CHLOROFORM	< 6.1	< 6.1	NA	< 5.3	< 6.2	< 6.2	< 6.5
METHYLENE CHLORIDE	< 6.1	< 6.1	NA	< 5.3	< 6.2	< 6.2	< 6.5
XYLENE	< 6.1	< 6.1	NA	< 5.3	< 6.2	< 6.2	< 6.5
SEMIVOLATILE ORGANICS (µg/kg-dry)							
ACENAPHTHENE	< 85	< 85	< 88	< 85	< 87	< 98	< 91
ACENAPHTHYLENE	< 85	< 85	< 88	< 85	< 87	< 98	< 91
ANTHRACENE	< 85	< 85	< 88	< 85	< 87	< 98	< 91
BENZO(A)ANTHRACENE	< 120	< 120	< 110	< 110	< 120	< 120	< 130
BENZO(A)PYRENE	< 170	< 170	< 150	< 150	< 170	< 170	< 180
BENZO(B)FLUORANTHENE	< 120	< 120	< 110	< 110	< 120	< 120	< 130
BENZO(GHI)PERYLENE	< 190	< 200	< 180	< 170	< 200	< 200	< 210
BENZO(K)FLUORANTHENE	< 120	< 120	< 110	< 110	< 120	< 120	< 130
BIS(2-ETHYLHEXYL)PHTHALATE	< 120	< 120	< 110	< 110	< 120	< 120	< 130
CHRYSENE	< 120	< 120	< 110	< 110	< 120	< 120	< 130
FLUORANTHENE	< 85	< 85	< 88	< 85	< 87	< 98	< 91
FLUORENE	< 85	< 85	< 88	< 85	< 87	< 98	< 91
INDENO(1,2,3-CD)PYRENE	< 190	< 200	< 180	< 170	< 200	< 200	< 210
NAPHTHALENE	< 85	< 85	< 88	< 85	< 87	< 98	< 91
PHENANTHRENE	< 85	< 85	< 88	< 85	< 87	< 98	< 91
PYRENE	< 85	< 85	< 88	< 85	< 87	< 98	< 91
PESTICIDES/PCBS (µg/kg-dry)	ND	ND	ND	ND	ND	ND	ND

Notes: NA = Not analyzed, ND = Not detected
UJ = Qualifed, estimated not detected
J = Qualified, estimated value
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.
< = Analyte reported below detection limit
Shaded areas highlight detections above the detection limit.

TABLE 7-4
NAS ALAMEDA - SITE 6
SOIL ANALYTICAL RESULTS FOR METALS

Sample Number	B06-01-000	B06-01-002	B06-01-008	B06-01-014	B06-02-000	B06-02-002	B06-02-007	B06-02-014
Date Sampled	07/01/91	07/01/91	07/01/91	07/01/91	07/01/91	07/01/91	07/01/91	07/01/91
Depth of Sample	0.0 ft	2.0 ft	8.0 ft	14.0 ft	0.0 ft	2.0 ft	6.5 ft	14.0 ft
PARAMETER REPORTED								
METALS (mg/kg-dry)								
ALUMINUM	6620J	5500J	7160J	14500J	7340J	5360J	5630J	30500J
ANTIMONY	< 2.6	< 2.6	< 3.0	3.7	< 3.1	< 2.7	< 2.9	6.1
ARSENIC	1.61J	1.56J	1.39J	4.67J	2.59J	1.53J	1.64J	4.01J
BARIUM	49.3J	34.7J	74.5J	30.7J	41.6J	34.6J	37.6J	41.3J
BERYLLIUM	1.24	0.650	1.08	2.81	1.31	0.619	0.537	3.97
CADMIUM	< 0.310	< 0.314	< 0.361	< 0.412	3.22	< 0.325	< 0.352	0.630
CALCIUM	3840J	3280J	2990J	2640J	3400J	2150J	3170J	3540J
CHROMIUM, TOTAL	34.7	28.8	34.1	49.4	38.9	28.4	30.6	92.3
COBALT	7.21	4.96	6.79	10.3	8.21	5.48	5.23	18.0
COPPER	7.14	4.75	7.53	16.4	10.5	5.83	5.24	28.9
IRON	10000J	8460J	10800J	29100J	12800J	9060J	8720J	43300J
LEAD	5.39J	2.26J	2.21J	4.80J	8.20J	2.31J	2.53J	8.53J
MAGNESIUM	2540J	2240J	3200J	6390J	3130J	2440J	2460J	12700J
MANGANESE	126J	93.5J	126J	336J	164J	98.6J	99.1J	471J
MERCURY	< 0.090UJ	< 0.085UJ	< 0.097UJ	< 0.112UJ	< 0.103UJ	< 0.075UJ	< 0.097UJ	< 0.154UJ
NICKEL	26.6J	25.0J	33.6J	44.2J	36.5J	28.3J	25.8J	87.2J
POTASSIUM	907	805	1200	2750	1060	840	995	5350
SELENIUM	< 0.222	< 0.225	< 0.254	< 0.281UJ	< 0.277	< 0.222	< 0.242	< 0.397UJ
SILVER	< 0.507	0.514	< 0.590	< 0.673	0.628	< 0.531	< 0.575	< 0.919
SODIUM	323J	235J	1410J	5090J	319J	256J	309J	6010J
THALLIUM	< 0.286	< 0.289	< 0.327	< 0.361	< 0.357	< 0.285	< 0.312	< 0.511
VANADIUM	27.5	22.6	27.1	44.8	31.0	22.3	22.8	88.2
ZINC	20.8J	16.9J	26.1J	45.7J	29.5J	18.7J	18.3J	89.5J

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 7-4
NAS ALAMEDA - SITE 6
SOIL ANALYTICAL RESULTS FOR METALS

Sample Number	B06-03-000	B06-03-002	B06-03-008	B06-03-014	B06-04-000	B06-04-002	B06-04-007	B06-04-014
Date Sampled	07/09/91	07/09/91	07/09/91	07/09/91	07/02/91	07/02/91	07/02/91	07/02/91
Depth of Sample	0.0 ft	2.0 ft	8.0 ft	14.0 ft	0.0 ft	2.0 ft	6.5 ft	14.0 ft
PARAMETER REPORTED								
METALS (mg/kg-dry)								
ALUMINUM	25200	3500	3810	5430	3810	4620	3800	5420
ANTIMONY	8.4	2.8	< 3.0	< 3.2	< 2.4	2.9	3.7	< 2.7
ARSENIC	1.25	1.73	2.08	3.57	1.31J	1.39J	1.42J	3.21J
BARIUM	15.0J	24.2J	32.9J	15.5J	39.7J	35.4J	38.2J	28.8J
BERYLLIUM	0.577	0.242	0.208	0.829	0.665	0.548	0.292	0.365
CADMIUM	< 0.319	< 0.314	< 0.364	< 0.387	< 0.290	< 0.295	< 0.264	< 0.322
CALCIUM	24400J	1500J	2350J	1780J	1910J	2080J	1440J	6400J
CHROMIUM, TOTAL	27.7	20.9	21.5	27.3	25.4	29.5	18.9	25.6
COBALT	14.7	3.94	4.48	5.71	4.88	5.12	5.70	6.26
COPPER	45.4	5.47	5.06	6.70	6.12	5.34	7.30	10.9
IRON	24600J	7100J	7300J	10400J	7610J	8350J	8380J	10200J
LEAD	4.79J	3.04J	2.27J	2.53J	7.59J	2.82J	3.98J	9.85J
MAGNESIUM	8020J	2190J	2280J	3370J	2090J	2300J	4730J	3960J
MANGANESE	457J	93.5J	91.7J	127J	87.6	90.8	194	123
MERCURY	< 0.054	< 0.053	< 0.053	< 0.061	< 0.104	< 0.103	< 0.098	< 0.112
NICKEL	20.5	21.7	22.7	22.7	25.3	27.4	43.1	26.0
POTASSIUM	267	648	732	1260	575	719	563	1200
SELENIUM	< 0.221UJ	< 0.219UJ	< 0.252UJ	< 0.264UJ	< 0.206UJ	< 0.223UJ	< 0.227UJ	< 0.257UJ
SILVER	0.844	< 0.513	< 0.595	< 0.632	< 0.473	0.605	0.437	< 0.525
SODIUM	1150J	123J	1010J	2950J	216	227	317	2900
THALLIUM	< 0.284	< 0.281	< 0.324	< 0.339	< 0.265UJ	< 0.287UJ	< 0.291UJ	< 0.330UJ
VANADIUM	57.3	15.4	15.2	22.3	17.2J	20.8J	12.7J	22.6J
ZINC	41.1J	17.0J	16.6J	21.2J	20.1	18.0	18.3	32.6

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 7-4
NAS ALAMEDA - SITE 6
SOIL ANALYTICAL RESULTS FOR METALS

Sample Number	B06-05-000	Duplicate B06-05-000	B06-05-002	B06-05-005	B06-05-011	B06-06-000	Duplicate B06-06-000	B06-06-005
Date Sampled	07/02/91	07/02/91	07/02/91	07/02/91	07/02/91	08/05/91	08/05/91	08/05/91
Depth of Sample	0.0 ft	0.0 ft	2.0 ft	5.0 ft	11.0 ft	0.0 ft	0.0 ft	5.0 ft
PARAMETER REPORTED								
METALS (mg/kg-dry)								
ALUMINUM	7570	10500	3730	4920	16400	7950J	5110J	6460J
ANTIMONY	< 2.6	4.9	< 2.5	3.3	7.3	< 2.6UJ	< 2.6UJ	< 3.0UJ
ARSENIC	1.89J	1.55J	1.45J	1.17J	5.84J	2.13	1.74	1.82
BARIUM	24.3J	25.4J	29J	46.7J	110J	25.2J	25.3J	33.1J
BERYLLIUM	0.497	0.406	0.648	0.662	1.77	0.777	0.507	1.01
CADMIUM	< 0.306	< 0.279	< 0.296	< 0.355	0.689	< 0.313	< 0.313	< 0.359
CALCIUM	10700J	8860J	1760J	1720J	4420J	8490J	5450J	2460J
CHROMIUM, TOTAL	21.8	26.0	24.6	33.7	69.0	21.8J	26.5J	23.8J
COBALT	12.0	7.87	5.00	6.36	15.3	7.81	5.45	5.67
COPPER	11.4	11.5	5.62	6.92	56.3	20.2	8.75	6.08
IRON	11700J	11300J	7390J	9400J	27900J	12300J	8250J	11500J
LEAD	3.39J	4.12J	2.96J	2.51J	36.1J	40.2	39.3	2.82
MAGNESIUM	3330J	3900J	2150J	2610J	10800J	3680	2410	3920
MANGANESE	260	284	92.0	112	358	195	116	153
MERCURY	< 0.099	< 0.106	< 0.097	< 0.107	1.14	0.114	< 0.093	< 0.113
NICKEL	19.2	24.2	24.3	32.8	84.4	21.7	23.9	23.2
POTASSIUM	470	586	616	854	3740	669	686	793
SELENIUM	< 0.192UJ	< 1.06UJ	< 0.197UJ	< 0.226UJ	< 0.311UJ	< 1.09UJ	< 0.219UJ	< 0.251UJ
SILVER	< 0.500	0.653	0.488	0.624	1.27	0.539	< 0.511	< 0.586
SODIUM	566	572	280	492	7320	248J	162J	162J
THALLIUM	< 0.246UJ	< 0.274UJ	< 0.253UJ	< 0.290UJ	< 0.400UJ	< 0.280	< 0.282	< 0.323
VANADIUM	26.0J	26.0J	17.6J	20.8J	61.9J	27.2	20.9	22.9
ZINC	22.7	23.1	18.1	22.1	135	35.6J	49.6J	21.8J

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 7-4
NAS ALAMEDA - SITE 6
SOIL ANALYTICAL RESULTS FOR METALS

Sample Number	B06-06-011	B06-06-014	B06-07-000	B06-07-002	B06-07-008	B06-07-014	B06-08-000	B06-08-002
Date Sampled	08/05/91	08/05/91	07/09/91	07/09/91	07/09/91	07/09/91	07/08/91	07/08/91
Depth of Sample	11.0 ft	14.0 ft	0.0 ft	2.0 ft	8.0 ft	14.0 ft	0.0 ft	2.0 ft
PARAMETER REPORTED								
METALS (mg/kg-dry)								
ALUMINUM	17700J	9250J	22600	6990	4010	6620	6440	3940
ANTIMONY	< 4.2UJ	< 2.8UJ	8.6	4.3	3.4	5.2	3.6	3.6
ARSENIC	11.0	4.89J	1.88	1.50	1.75	4.08	3.6J	3.6J
BARIUM	117J	25.7J	6.91J	21.4J	33.0J	15.8J	28.0	30.9
BERYLLIUM	2.18	0.413	0.568	0.341	< 0.162	0.522	0.316	0.603
CADMIUM	< 0.496	< 0.334	< 0.317	< 0.316	< 0.373	< 0.375	< 0.325	< 0.290
CALCIUM	4390J	3730J	18800J	5360J	1840J	3100J	3890J	1820J
CHROMIUM, TOTAL	70.9J	39.9	18.3	20.5	20.9	31.4	23.7	24.3
COBALT	14.2	8.26	11.4	6.84	4.80	6.20	6.50	5.27
COPPER	47.4	15.9	37.4	9.79	5.62	8.29	11.4	6.90
IRON	28200J	15400J	21100J	11100J	7540J	13300J	10500J	7910J
LEAD	14.8	3.89J	0.474J	7.15J	4.20J	3.07J	2.56J	5.00J
MAGNESIUM	9460	5220J	6070J	3860J	2430J	4020J	3080J	2310J
MANGANESE	350	178J	366J	224J	95.8J	180J	183	98.6
MERCURY	0.740	< 0.128	0.057	< 0.047	< 0.055	< 0.060	0.142	< 0.098
NICKEL	79.1	36.3J	11.5	22.9	25.0	28.3	23.7	26.8
POTASSIUM	3420	1670	209	511	771	1490	614	713
SELENIUM	< 0.339UJ	< 0.273UJ	< 1.08UJ	< 0.220UJ	< 0.255UJ	< 0.259UJ	< 0.208UJ	< 0.220UJ
SILVER	< 0.810	< 0.545	< 0.517	< 0.516	< 0.609	< 0.612	0.680	0.691
SODIUM	3520J	3370	1180J	199J	603J	3270J	317	239
THALLIUM	< 0.435	< 0.350	< 0.278	< 0.283	< 0.328	< 0.333	< 0.267UJ	< 0.283UJ
VANADIUM	59.1	32.1	55.3	24.3	16.6	26.7	25.3J	18.3J
ZINC	107J	34.7J	27.2J	25.0J	17.8J	26.5J	21.7	20.6

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 7-4
NAS ALAMEDA - SITE 6
SOIL ANALYTICAL RESULTS FOR METALS

Sample Number	B06-08-007	B06-08-014	B06-09-000	B06-09-002	B06-09-008	B06-09-014	B06-10-000	B06-10-002
Date Sampled	07/08/91	07/08/91	07/08/91	07/08/91	07/08/91	07/08/91	07/08/91	07/08/91
Depth of Sample	6.5 ft	14.0 ft	0.0 ft	2.0 ft	8.0 ft	14.0 ft	0.0 ft	2.0 ft
PARAMETER REPORTED								
METALS (mg/kg-dry)								
ALUMINUM	6830	9110	5600	3960	22200	14100	4260	4880
ANTIMONY	4.3	4.2	3.3	3.1	9.9	5.8	< 2.7	4.3
ARSENIC	4.3J	4.2J	3.3J	3.1J	9.9J	5.8J	< 2.7J	4.3J
BARIUM	98.4	16.7	50.8	25.8	92.2	31.1	31.6	31.8
BERYLLIUM	0.779	0.807	0.666	0.695	1.82	1.07	0.566	0.685
CADMIUM	< 0.350	< 0.359	< 0.310	< 0.288	< 0.517	< 0.423	< 0.319	< 0.346
CALCIUM	2050J	1950J	4730J	1920J	4840J	5510J	2510J	2050J
CHROMIUM, TOTAL	36.5	36.7	29.7	25.5	82.9	55.9	28.0	30.0
COBALT	7.87	7.04	6.50	4.40	16.9	10.7	5.05	5.55
COPPER	8.08	11.1	9.77	5.00	48.1	16.9	4.36	7.10
IRON	13000J	13900J	10500J	7410J	35100J	22500J	8030J	9600J
LEAD	2.77J	3.83J	8.24J	2.86J	45.1J	4.55J	2.75J	9.86J
MAGNESIUM	3950J	5910J	3080J	2150J	12500J	8400J	1940J	2600J
MANGANESE	130	143	129	84.8	440	259	102	121
MERCURY	< 0.116	< 0.141	< 0.109	< 0.095	0.720	< 0.128	< 0.093	< 0.121
NICKEL	44.3	36.1	29.3	24.4	97.9	50.5	29.8	28.6
POTASSIUM	1150	2410	925	690	4400	2880	615	883
SELENIUM	< 0.228UJ	< 0.270UJ	< 0.217UJ	< 0.204UJ	< 0.367UJ	< 0.286UJ	< 0.213UJ	< 0.251UJ
SILVER	< 0.572	< 0.587	0.776	0.681	1.39	0.866	0.686	0.839
SODIUM	1580	7020	313	225	7900	7360	210	240
THALLIUM	< 0.294UJ	< 0.348UJ	< 0.279UJ	< 0.262UJ	< 0.472UJ	< 0.368UJ	< 0.274UJ	< 0.323UJ
VANADIUM	27.4J	39.5J	25.9J	18.7J	72.6J	47.3J	20.7J	22.7J
ZINC	28.4	34.9	28.9	17.0	117	48.8	17.5	25.1

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 7-4
NAS ALAMEDA - SITE 6
SOIL ANALYTICAL RESULTS FOR METALS

Sample Number	B06-10-008	Duplicate B06-10-008	B06-10-014	B06-11-000	B06-11-002	B06-11-007	B06-11-014	Duplicate B06-11-014
Date Sampled	07/08/91	07/08/91	07/08/91	07/02/91	07/02/91	07/02/91	07/02/91	07/02/91
Depth of Sample	8.0 ft	8.0 ft	14.0 ft	0.0 ft	2.0 ft	6.5 ft	14.0 ft	14.0 ft
PARAMETER REPORTED								
METALS (mg/kg-dry)								
ALUMINUM	7110	5340	11000	5660	4290	5120	3970	3570
ANTIMONY	6.0	< 3.9	5.3	< 2.6	< 2.4	2.3	< 2.8	< 2.9
ARSENIC	6.0J	< 3.9J	5.3J	< 2.6J	< 2.4J	2.3J	< 2.8J	< 2.9J
BARIUM	76.3	61.9	24.1	42.5	30.2	49.2	15.7	14.6
BERYLLIUM	0.608	1.21	1.27	0.351	0.653	0.536	0.274	0.418
CADMIUM	< 0.376	< 0.468	< 0.379	< 0.305	< 0.289	< 0.270	< 0.340	< 0.345
CALCIUM	2470J	2000J	2170J	2900J	1980J	1660J	7120J	12800J
CHROMIUM, TOTAL	40.2	31.8	44.9	29.6	26.5	22.1	19.3	19.7
COBALT	9.56	9.13	9.59	7.07	4.87	5.48	4.79	4.95
COPPER	17.3	13.3	14.2	6.65	4.83	9.57	5.75	6.68
IRON	15000J	13400J	19400J	9620J	7660J	9820J	6490J	7160J
LEAD	53.4J	46.2J	4.12J	5.55J	2.51J	4.31J	5.67J	4.01J
MAGNESIUM	4480J	3470J	7050J	2490J	2100J	3850J	2270J	2640J
MANGANESE	327	391	192	110	83.1	289	73.1	84.3
MERCURY	0.451	< 0.159	< 0.107	< 0.101	< 0.101	< 0.104	< 0.127	< 0.117
NICKEL	53.2	48.4	44.1	27.6	24.2	32.9	16.2	18.6
POTASSIUM	1440	1180	2490	940	724	683	908	1000
SELENIUM	< 0.271UJ	< 0.343UJ	< 0.253UJ	< 0.193UJ	< 0.205UJ	< 0.209UJ	< 0.261UJ	< 0.255UJ
SILVER	0.980	< 0.765	0.821	< 0.498	< 0.473	< 0.440	< 0.556	0.703
SODIUM	2200	1950	6050	280	235	310	2380	2680
THALLIUM	< 0.349UJ	< 0.441UJ	< 0.325UJ	< 0.249UJ	< 0.263UJ	< 0.269UJ	< 0.336UJ	< 0.327UJ
VANADIUM	29.8J	24.8J	38.9J	23.4J	18.9J	18.1J	15.0J	15.9J
ZINC	69.8	43.8	43.8	22.6	16.6	22.5	16.8	18.3

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 7-4
NAS ALAMEDA - SITE 6
SOIL ANALYTICAL RESULTS FOR METALS

Sample Number	B06-12-000	B06-12-002	B06-12-008	B06-12-014	Duplicate B06-12-014	B06-13-000	B06-13-002	B06-13-008
Date Sampled	07/10/91	07/10/91	07/10/91	07/10/91	07/10/91	06/28/91	06/28/91	06/28/91
Depth of Sample	0.0 ft	2.0 ft	8.0 ft	14.0 ft	14.0 ft	0.0 ft	1.0 ft	8.0 ft
PARAMETER REPORTED								
METALS (mg/kg-dry)								
ALUMINUM	3220	3670	4620	6660	9080	5650J	5100J	34600J
ANTIMONY	2.9	< 2.7	< 3.1	5.7	5.3	< 2.9	< 2.5	< 4.2
ARSENIC	1.60	1.45	1.53	3.73	4.31	2.05J	1.51J	8.99J
BARIUM	35.9J	25.4J	53.9J	14.1J	21.5J	38.2J	26.0J	161J
BERYLLIUM	< 0.134	0.387	0.288	0.455	0.315	0.771	0.538	3.97
CADMIUM	< 0.310	< 0.325	< 0.376	< 0.390	< 0.396	< 0.352	< 0.302	0.531
CALCIUM	3870J	1530J	1550J	2160J	3070J	3590J	2420J	4770J
CHROMIUM, TOTAL	20.3	25.1	25.1	30.5	38.8	34.5	30.0	111
COBALT	12.1	4.27	4.80	7.79	8.48	7.38	4.99	20.1
COPPER	5.06	4.56	5.95	9.83	11.3	5.15	4.91	63.5
IRON	6030J	6730J	8510J	13600J	16500J	9280J	8610J	43000J
LEAD	2.42J	1.64J	1.91J	3.14J	3.38J	3.40J	2.08J	35.3J
MAGNESIUM	1950J	2140J	2840J	5040J	5750J	2280J	2300J	14100J
MANGANESE	87.6J	70.8J	84.2J	157J	171J	113J	89.2J	444J
MERCURY	< 0.046	< 0.050	< 0.062	< 0.062	< 0.062	< 0.088UJ	< 0.082UJ	1.01J
NICKEL	23.0	25.0	29.3	31.5	37.3	25.9J	26.1J	109J
POTASSIUM	505	615	906	1690	1890	857	790	5500
SELENIUM	< 0.214UJ	< 0.218UJ	< 0.244UJ	< 0.254UJ	< 0.277UJ	< 0.243	< 0.211	< 0.390UJ
SILVER	< 0.507	< 0.531	< 0.614	< 0.637	0.981	< 0.574	< 0.494	0.937
SODIUM	125J	89.9J	661J	3370J	3820J	387J	234J	7080J
THALLIUM	< 0.275	< 0.280	< 0.313	< 0.326	< 0.356	< 0.313	< 0.271	< 0.501
VANADIUM	15.4	15.5	18.4	26.6	32.5	28.4	23.1	96.2
ZINC	17.2J	15.9J	20.6J	30.3J	34.5J	19.2J	17.1J	172J

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 7-4
NAS ALAMEDA - SITE 6
SOIL ANALYTICAL RESULTS FOR METALS

Sample Number	B06-13-014	B06-14-000	B06-14-004	B06-14-008	B06-14-014	B06-15-000	B06-15-002	B06-15-005
Date Sampled	06/28/91	06/27/91	06/27/91	06/27/91	06/27/91	06/27/91	06/27/91	06/27/91
Depth of Sample	14.0 ft	0.0 ft	3.5 ft	8.0 ft	14.0 ft	0.0 ft	2.0 ft	5.0 ft
PARAMETER REPORTED								
METALS (mg/kg-dry)								
ALUMINUM	17100J	4630J	5390J	5350J	8450J	4730J	3810J	4200J
ANTIMONY	< 3.7	< 2.5	< 2.7	< 2.9	< 3.1	< 2.6	< 2.4	< 3.0
ARSENIC	5.42J	1.64J	2.55J	1.59J	5.53J	1.79J	1.65J	1.83J
BARIUM	35.6J	50.2J	42.1J	33.2J	21.3J	40.6J	23.4J	46.0J
BERYLLIUM	2.13	0.579	0.978	0.420	1.31	0.621	0.471	1.09
CADMIUM	< 0.444	< 0.299	< 0.325	< 0.346	< 0.372	< 0.315	< 0.292	< 0.353
CALCIUM	3760J	2700J	2610J	2050J	3400J	2700J	1750J	2290J
CHROMIUM, TOTAL	57.9	28.6	33.9	26.5	34.6	35.2	26.6	29.1
COBALT	11.5	8.42	6.24	5.03	6.98	9.93	4.35	4.89
COPPER	18.0	5.36	6.35	13.5	8.65	10.2	4.37	6.62
IRON	24700J	8290J	9690J	8250J	12900J	8650J	7120J	7740J
LEAD	5.56J	3.67J	4.91J	2.91J	4.56J	9.64J	2.05J	2.50J
MAGNESIUM	9480J	2140J	2830J	2480J	4270J	2790J	1900J	2080J
MANGANESE	309J	101J	125J	86.7J	140J	131J	82.6J	87.9J
MERCURY	< 0.146UJ	< 0.077UJ	< 0.096UJ	< 0.089UJ	< 0.094UJ	< 0.091UJ	< 0.095UJ	< 0.089UJ
NICKEL	55.0J	26.4J	34.3J	27.1J	30.0J	27.9J	23.2J	25.4J
POTASSIUM	3090	675	701	1010	1580	714	606	665
SELENIUM	< 0.310UJ	< 0.225	< 0.227UJ	< 0.249	< 0.251UJ	< 0.208	< 0.211	< 0.253
SILVER	< 0.725	< 0.489	< 0.531	< 0.566	< 0.607	< 0.514	< 0.478	< 0.576
SODIUM	6730J	230J	241J	920J	3430J	427J	293J	294J
THALLIUM	< 0.399	< 0.289	< 0.292	< 0.321	< 0.323	< 0.267	< 0.272	< 0.326
VANADIUM	48.7	22.2	22.7	21.1	29.7	21.6	17.8	19.1
ZINC	53.0J	17.8J	19.8J	17.9J	26.8J	22.7J	14.6J	16.0J

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 7-4
NAS ALAMEDA - SITE 6
SOIL ANALYTICAL RESULTS FOR METALS

Sample Number	B06-15-014	B06-16-000	B06-16-004	B06-16-008	Duplicate B06-16-008	B06-16-014	B06-17-000	B06-17-002
Date Sampled	06/27/91	06/27/91	06/27/91	06/27/91	06/27/91	06/27/91	07/09/91	07/09/91
Depth of Sample	14.0 ft	0.0 ft	3.5 ft	8.0 ft	8.0 ft	14.0 ft	0.0 ft	2.0 ft
PARAMETER REPORTED								
METALS (mg/kg-dry)								
ALUMINUM	10400J	4100J	4190J	5540J	8450J	17200J	5640	4560
ANTIMONY	< 3.1	< 2.7	< 2.5	< 2.9	< 3.1	< 3.4	4.1	4.2
ARSENIC	3.65J	1.66J	1.77J	1.47J	1.02J	4.26J	1.98	1.83
BARIUM	25.8J	42.5J	36.2J	41.2J	69.5J	39.2J	29.6J	28.3J
BERYLLIUM	1.64	0.525	0.466	0.483	0.953	2.53	0.524	0.586
CADMIUM	< 0.370	0.535	< 0.298	< 0.344	< 0.371	< 0.405	0.381	< 0.312
CALCIUM	2440J	1970J	2540J	1790J	2210J	5790J	4630J	2220J
CHROMIUM, TOTAL	41.8	28.6	27.3	26.3	33.5	71.2	26.3	28.1
COBALT	9.53	7.83	4.42	4.98	6.58	14.8	18.2	4.86
COPPER	11.3	6.61	4.70	5.69	7.25	18.5	11.4	6.60
IRON	16700J	7760J	7320J	8720J	11900J	26700J	9760J	8200J
LEAD	2.93J	17.0J	2.41J	1.72J	1.25J	16.9J	47.4	4.97J
MAGNESIUM	5820J	2280J	1850J	2690J	3310J	9210J	2760J	2410J
MANGANESE	176J	93.8J	78.1J	99.7J	127J	302J	167J	101J
MERCURY	< 0.107UJ	< 0.092UJ	< 0.096UJ	< 0.090UJ	< 0.101UJ	< 0.115UJ	< 0.051	< 0.048
NICKEL	37.8J	24.3J	22.1J	25.4J	31.8J	59.2J	25.6	26.2
POTASSIUM	2020	706	616	938	1300	3140	683	703
SELENIUM	< 0.265UJ	< 0.227	< 0.224	< 0.241	< 0.252	< 0.280UJ	< 0.226UJ	< 0.219UJ
SILVER	< 0.604	< 0.523	< 0.487	< 0.562	< 0.606	< 0.661	0.710	< 0.509
SODIUM	4300J	461J	284J	1280J	1320J	7920J	179J	99.5J
THALLIUM	< 0.341	< 0.292	< 0.288	< 0.310	< 0.324	< 0.360	< 0.290	< 0.282
VANADIUM	34.4	18.6	18.4	20.9	27.8	59.6	21.3	17.9
ZINC	35.4J	21.5J	15.6J	28.5J	28.8J	55.3J	29.2J	19.7J

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 7-4
NAS ALAMEDA - SITE 6
SOIL ANALYTICAL RESULTS FOR METALS

Sample Number	B06-17-002	B06-17-008	B06-17-014	B06-18-000	B06-18-002	B06-18-007	B06-18-014	B06-19-000
Date Sampled	07/09/91	07/09/91	07/09/91	07/01/91	07/01/91	07/01/91	07/01/91	06/28/91
Depth of Sample	2.0 ft	8.0 ft	14.0 ft	0.0 ft	2.0 ft	6.5 ft	14.0 ft	0.0 ft
PARAMETER REPORTED								
METALS (mg/kg-dry)								
ALUMINUM	7130	3650	6790	4730J	4520J	5380J	7720J	4520J
ANTIMONY	< 2.7	< 3.1	4.7	< 2.6	< 2.4	< 3.0	< 2.9	< 2.5
ARSENIC	1.50	1.81	5.03	1.85J	1.49J	1.63J	2.97J	1.52J
BARIUM	85.5J	29.7J	16.8J	37.1J	40.5J	35.9J	18.8J	34.4J
BERYLLIUM	0.678	0.201	0.649	0.676	0.593	0.999	1.37	0.576
CADMIUM	< 0.325	< 0.366	< 0.397	< 0.312	< 0.291	< 0.356	< 0.350	< 0.303
CALCIUM	3940J	2850J	1700J	2120J	2190J	2060J	2790J	2750J
CHROMIUM, TOTAL	21.8	19.3	33.9	27.8	29.9	27.4	34.5	23.6
COBALT	5.71	4.51	7.59	4.83	4.39	5.18	6.47	4.68
COPPER	11.3	4.19	9.86	5.56	5.39	4.13	6.39	5.67
IRON	10500J	6720J	13600J	8270J	7890J	8320J	11500J	8430J
LEAD	5.03J	2.14J	3.21J	3.92J	2.38J	2.11J	2.46J	4.59J
MAGNESIUM	3160J	2080J	4670J	2350J	2080J	2120J	3370J	2280J
MANGANESE	143J	80.3J	145J	96.1J	84.7J	88.8J	140J	105J
MERCURY	< 0.053	< 0.059	< 0.065	< 0.093UJ	< 0.103UJ	< 0.100UJ	< 0.117UJ	< 0.107UJ
NICKEL	22.9	21.6	32.6	25.6J	22.9J	22.4J	23.6J	21.8J
POTASSIUM	581	678	1620	762	657	858	1470	638
SELENIUM	< 0.228UJ	< 0.250UJ	< 0.274UJ	< 0.221	< 0.210	< 0.246	< 0.249	< 0.231
SILVER	< 0.530	< 0.597	< 0.648	< 0.509	< 0.475	< 0.582	< 0.572	< 0.494
SODIUM	227J	374J	2030J	431J	256J	887J	2790J	259J
THALLIUM	< 0.293	< 0.322	< 0.352	< 0.284	< 0.270	< 0.316	< 0.320	< 0.296
VANADIUM	20.5	14.6	28.0	20.2	20.9	22.0	28.4	20.7
ZINC	23.3J	14.8J	29.7J	17.4J	15.5J	15.8J	21.9J	16.1J

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 7-4
NAS ALAMEDA - SITE 6
SOIL ANALYTICAL RESULTS FOR METALS

Sample Number	B06-19-002	B06-19-007	Duplicate B06-19-007	B06-19-014
Date Sampled	06/28/91	06/28/91	06/28/91	06/28/91
Depth of Sample	1.0 ft	6.5 ft	6.5 ft	14.0 ft
PARAMETER REPORTED				
METALS (mg/kg-dry)				
ALUMINUM	4370J	5260J	5010J	8630J
ANTIMONY	< 2.6	< 3.0	< 3.0	< 3.2
ARSENIC	1.69J	1.56J	1.30J	3.88J
BARIUM	28.8J	42.3J	30.7J	22.5J
BERYLLIUM	0.452	0.639	0.490	1.37
CADMIUM	< 0.311	< 0.362	< 0.358	< 0.382
CALCIUM	2160J	2560J	2250J	2440J
CHROMIUM, TOTAL	28.9	31.0	28.2	35.3
COBALT	4.30	4.89	4.97	7.44
COPPER	4.58	5.30	4.76	8.16
IRON	7830J	8540J	8260J	13100J
LEAD	1.95J	2.67J	1.81J	3.38J
MAGNESIUM	2040J	2390J	2280J	4360J
MANGANESE	82.4J	90.7J	86.2J	167J
MERCURY	< 0.098UJ	< 0.102UJ	< 0.101UJ	< 0.122UJ
NICKEL	23.7J	26.9J	25.6J	29.6J
POTASSIUM	682	896	855	1710
SELENIUM	< 0.221	< 0.252	< 0.248	< 0.268
SILVER	< 0.509	< 0.592	< 0.585	< 0.624
SODIUM	235J	413J	543J	3420J
THALLIUM	< 0.284	< 0.324	< 0.319	< 0.344
VANADIUM	19.9	22.6	21.9	29.4
ZINC	15.5J	19.3J	17.7J	27.5J

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 7-5
NAS ALAMEDA - SITE 6
GROUNDWATER ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	M06-01	M06-02	Duplicate M06-02	M06-03	M06-04	M06-05
Date Sampled	**08/23/91**	**08/23/91**	**08/23/91**	**08/23/91**	**08/23/91**	**08/23/91**
PARAMETER REPORTED						
VOLATILE ORGANICS (µg/L)						
1,1-DICHLOROETHANE	< 2.0	3.1	3.1	< 1.0	< 1.0	< 1.0
1,2-DICHLOROETHENE, TOTAL	66	19	17	< 1.0	< 1.0	< 1.0
ACETONE	< 4.0	< 2.0	2.3UJ	3.7UJ	7.3	2.4UJ
CHLOROFORM	< 2.0	< 1.0	< 1.0	< 1.0	10.0	< 1.0
TETRACHLOROETHENE	4.9	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TRICHLOROETHENE	22	7.9	7.2	< 1.0	< 1.0	< 1.0
VINYL CHLORIDE	7.0	4.8	4.5	< 1.0	< 1.0	< 1.0
SEMIVOLATILE ORGANICS (µg/L)						
BIS(2-ETHYLHEXYL)PHTHALATE	1.7J	< 1.0	< 1.1	< 1.0	< 1.0	< 1.0
PESTICIDES/PCBS/HERBICIDES (µg/L)	ND	ND	ND	ND	ND	ND
TOTAL PETRO. HYDROCARBONS (mg/L)	ND	ND	ND	ND	ND	ND
OIL AND GREASE (mg/L)						
OIL&GR,IR	< 0.2	< 0.2	< 0.2	0.2	< 0.2	0.3

Notes: ND = Not detected
UJ = Qualifed, estimated not detected
J = Qualified, estimated value
< = Analyte reported below detection limit
TOTAL = Includes "trans" and "cis" isomers
Shaded areas highlight detections above the detection limit.
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 7-6
NAS ALAMEDA - SITE 6
GROUNDWATER ANALYTICAL RESULTS FOR METALS

Sample Number	M06-01	M06-02	Duplicate M06-02	M06-03	M06-04	M06-05
Date Sampled	**08/23/91**	**08/23/91**	**08/23/91**	**08/23/91**	**08/23/91**	**08/23/91**
PARAMETER REPORTED						
METALS (µg/L)						
ALUMINUM	40.3	< 31.0	< 31.0	< 31.0	65.5	117
ANTIMONY	< 25.1	< 25.1	< 25.1	< 25.1	< 25.1	< 25.1
ARSENIC	6.0	6.9	6.4	8.7	4.2	13.5
BARIUM	154	19.5	18.6	54.3	37.8	21.4
BERYLLIUM	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
CADMIUM	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
CALCIUM	62300J	16400J	15700J	39700J	11300J	5800J
CHROMIUM,TOTAL	< 5.7	< 5.7	< 5.7	< 5.7	< 5.7	< 5.7
COBALT	< 6.1	< 6.1	< 6.1	< 6.1	< 6.1	< 6.1
COPPER	16.2	2.6	15.4	< 2.1	< 2.1	< 2.1
IRON	32.2	19.6	< 6.2	7.2	42.1	94.6
LEAD	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
MAGNESIUM	52800J	8270J	8170J	18700J	5030J	6670J
MANGANESE	456	44.5	43.7	16.7	18.2	58.2
MERCURY	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
NICKEL	< 13.2	< 13.2	< 13.2	< 13.2	< 13.2	< 13.2
POTASSIUM	38500	18100	19800	29500	8330	12500
SELENIUM	< 2.1UJ	< 2.1UJ	< 2.1UJ	< 2.1UJ	< 2.1UJ	< 2.1UJ
SILVER	< 4.9UJ	< 4.9UJ	< 4.9UJ	< 4.9UJ	< 4.9UJ	< 4.9UJ
SODIUM	486000J	46900J	47800J	357000J	44900J	276000J
THALLIUM	< 2.7UJ	< 2.7	< 2.7	< 2.7	< 2.7	< 2.7
VANADIUM	9.7	11.1	11.9	6.7	5.8	< 4.2
ZINC	4.2UJ	5.1UJ	3.3UJ	3.7UJ	6.3UJ	2.8UJ

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 7-7
NAS ALAMEDA - SITE 6
GROUNDWATER ANALYTICAL RESULTS FOR GENERAL CHEMICALS

Sample Number	M06-01	M06-02	Duplicate M06-02	M06-03	M06-04	M06-05
Date Sampled	**08/23/91**	**08/23/91**	**08/23/91**	**08/23/91**	**08/23/91**	**08/23/91**
PARAMETER REPORTED						
PHYSICAL PARAMETERS-LAB						
ALKALINITY, BICA (mg/L-CaC03)	103	25.0	31.0	43.0	14.0	35.0
ALKALINITY, CARB (mg/L-CaC03)	< 5.0	< 5.0	< 5.0	16.0	< 5.0	< 5.0
ALKALINITY, NC/OH (mg/L-CaCO3)	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
ALKALINITY, PHENOLPH (mg/L)	< 5.0	< 5.0	< 5.0	8.0	< 5.0	< 5.0
ALKALINITY, T. (mg/L-CaCO3)	103J	25.0J	31.0J	59.0J	14.0J	35.0J
PHYSICAL PARAMETERS-FIELD						
pH, FIELD (Std. Units)	7.60	6.00	6.00	8.50	8.30	8.20
SP. COND., FIELD @25C (µmhos/cm)	41000	2500	2500	2000	280	1500
WATER TEMP (C)	20.2	20.5	20.5	20.8	NA	22.0
TOTAL ORGANIC CARBON (mg/L)						
CARBON, TOC	6.9J	7.5J	5.9J	9.7J	6.8J	27.5J
ANIONS (mg/L)						
CHLORIDE	913.7J	21.58J	20.60J	559.6J	69.24J	295.2J
FLUORIDE	0.39UJ	0.56J	0.54J	0.28UJ	0.49UJ	0.89J
NITRATE/NITRITE, NO2 + NO3	0.034	0.125	0.028	0.397	0.265	0.020
SULFATE	41.91J	34.32J	41.72J	53.58J	9.899J	22.07J

Notes: NA = Not analyzed
J = Qualified, estimated value, UJ = Qualified, not detected
< = Analyte reported below detection limit
Shaded areas highlight detections above the detection limit.
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

8.0 SITE 7A
BUILDING 459
NAVY EXCHANGE FUEL STATION

8.1 SITE DESCRIPTION AND BACKGROUND

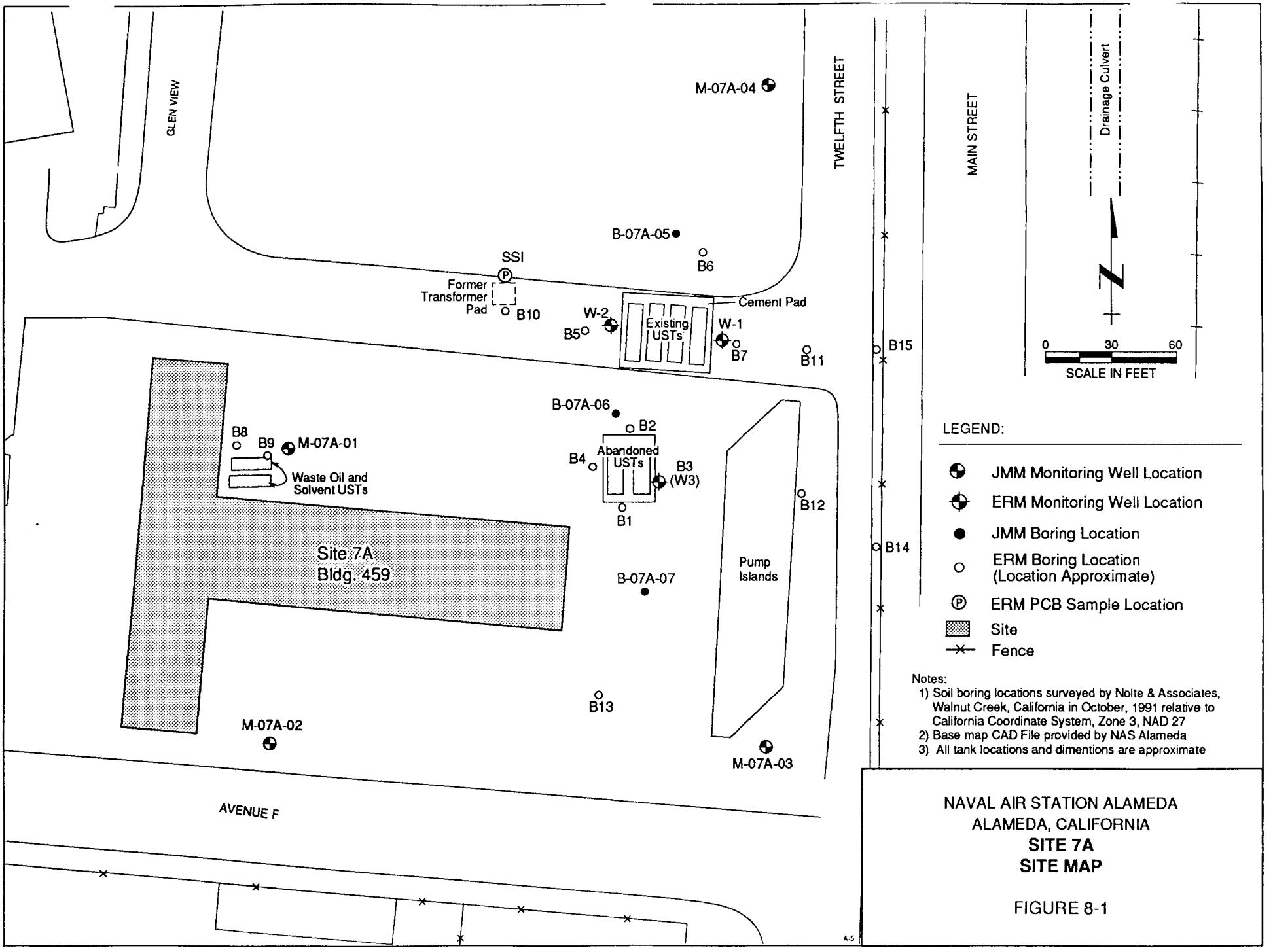
Site 7A consists of Building 459, which has served as the NAS Alameda fuel station since 1966. The fuel station is located at the corner of Main Street and Avenue F, near the East Gate (Figure 8-1). An auto repair shop and a small convenience store are also part of the station facilities. The site is bordered to the north by an unpaved vacant lot and to the south and west by base housing or light industrial naval facilities. A storm drainage culvert, which is influenced by changes in the tides, is located east of the site, adjacent to Main Street.

Two underground storage tanks (USTs) were abandoned in place at the site. Reportedly, these tanks were abandoned due to leakage (Canonie, 1990a). Both tanks contained gasoline. The capacities of the tanks were 10,000- and 8,000-gallons. The tanks are scheduled for removal in 1993 (NAS Alameda, 1992).

A former transformer pad is located at the northern boundary of the site (Figure 8-1). No information on the history of use of transformers at the site, or documentation of leaks, is available.

8.2 CURRENT USE

Currently, there are four 10,000-gallon USTs, one waste oil tank with a capacity of 500 gallons, and one underground solvent tank with a capacity of 500 gallons at the site (NAS Alameda, 1992). Three of the four 10,000-gallon USTs contain gasoline (two contain unleaded gasoline and one contains premium gasoline); the fourth was taken out of service due to a suspected leak. No information is available on the date the fourth UST was removed from service. The three tanks currently in use reportedly failed a tank precision tightness test in 1987 (Canonie, 1990a; ERM, 1987). No records on repairs made to the fuel tanks and/or piping, or on the construction of the fuel tanks (i.e., steel or fiberglass), are available. However, it is assumed that repairs were made because the three tanks reportedly passed leak tests in 1991 (NAS Alameda, 1992).


GLEN VIEW
M-07A-04
TWELFTH STREET
MAIN STREET
Drainage Culvert
B-07A-05
B6
SSI
Former Transformer Pad
B10
Cement Pad
W-2
B5
Existing USTs
W-1
B7
B11
B15
B-07A-06
B2
B8
B9
M-07A-01
Abandoned USTs
B4
B3 (W3)
Waste Oil and Solvent USTs
B12
Site 7A
Bldg. 459
B1
B14
Pump Islands
B-07A-07
B13
M-07A-02
M-07A-03
AVENUE F
0
30
60
SCALE IN FEET
LEGEND:
JMM Monitoring Well Location
ERM Monitoring Well Location
JMM Boring Location
ERM Boring Location (Location Approximate)
ERM PCB Sample Location
Site
Fence
Notes:
1) Soil boring locations surveyed by Nolte & Associates, Walnut Creek, California in October, 1991 relative to California Coordinate System, Zone 3, NAD 27
2) Base map CAD File provided by NAS Alameda
3) All tank locations and dimentions are approximate
NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA
SITE 7A
SITE MAP
FIGURE 8-1

The waste oil tank failed a vacuum tightness test on December 5, 1991 (Balch, 1992; NAS Alameda, 1992). After failing the leak test, the waste oil tank was taken out of service (NAS Alameda, 1992). However, it is still in place.

No information on the type(s) of solvent stored in the solvent tank is available. The solvent tank is currently out of service, empty, and in place (NAS Alameda, 1992). Figure 8-1 illustrates the known and/or suspected locations of all tanks currently or formerly used at the site.

8.3 PREVIOUS INVESTIGATION

In 1987, Environmental Resource Management-West (ERM) performed an investigation at the site at the request of WESTDIV. The investigation was initiated after petroleum product was detected in an excavation adjacent to the fuel station (ERM, 1987). ERM's investigation included the drilling of 17 borings and the construction of three monitoring wells within these borings (Figure 8-1).

Drilling identified sandy fill material overlying clays with a high organic matter content. Groundwater was encountered at depths of 2.5 to 4 feet below ground surface. Free product was present on groundwater seeping into ERM's borings B-2 and B-3, located adjacent to the abandoned UST location (Figure 8-1). The free product appeared to be present underneath the concrete slab that overlies the abandoned tanks and the maximum reported thickness was 2 inches (ERM-West, 1987).

Soil analytical results for the 1987 investigation are summarized in Table 8-1. As indicated in Table 8-1, total recoverable petroleum hydrocarbons (TRPH) and/or benzene, toluene, and xylenes (BTX) were identified in all of the borings. Generally, the concentrations of hydrocarbons were higher in shallow samples and decreased with depth. ERM indicated that the clay appeared to be attenuating the downward migration of hydrocarbons. The extent of hydrocarbons in soils was not defined in an eastern or northern direction.

PCBs were detected in two soil samples collected from north of the former transformer pad (SS1). Samples were collected from the surface and at a depth of 1.5 feet. The PCB Aroclor-1260 was detected at a concentration of 1.9 mg/kg at the surface and 0.020 mg/kg at a depth of 1.5 feet. The PCB Aroclor-1254 was detected at a concentration of 1.6 mg/kg at the surface and was not detected at a depth of 1.5 feet. The detection limit for the Aroclor-1254 sample was 1 mg/kg. ERM recommended that no further work be undertaken in the vicinity of the former transformer pad.

TABLE 8-1

SITE 7A
BUILDING 459
NAVY EXCHANGE FUEL STATION
SOIL ANALYTICAL RESULTS - ERM WEST 1987 INVESTIGATION

Borehole I.D.	Sample Depth	Concentration, mg/kg			
		TPH	Benzene	Toluene	Total Xylenes
B1	5.5-6.0	30	1.1	2.6	ND
	10.0-10.5	ND	NA	NA	NA
B2	7.0-7.5	ND	0.72	0.19	ND
B3*	6.0-6.5	ND	1.5	3.2	ND
B4	6.0-6.5	48	0.58	1.8	0.33
	12.0-12.5	ND	NA	NA	NA
B5	7.0-7.5	ND	0.60	0.19	ND
B6	7.0-7.5	ND	0.77	ND	ND
B7	7.0-7.5	ND	0.92	0.14	ND
B8	5.5-6.0	ND	1.2	ND	ND
B9	2.0-2.5	78	0.11	ND	ND
B10	4.0-4.5	76	0.10	ND	ND
B11	1.0-1.5	520	2.3	12	25
	4.0-4.5	2000	NA	NA	NA
B12	1.0-1.5	90	1.1	3.6	3.3
B13	2.0-2.5	82	ND	ND	ND
B14	3.0-3.5	42	0.34	2.2	1.4
B15	1.0-1.5	940	2.1	2.8	22
W1*	4.5-5.0	81	0.32	0.11	2.9
W2*	2.0-2.5	14,000	54	650	1200

NA - Not analyzed
ND - not detected
detection limit for TPH = 10 mg/kg
detection limit for BTX = 0.05 mg/kg
*Developed into wells (B3 becomes W3)

BTX were identified in the three groundwater samples collected in ERM's investigation (Table 8-2). According to ERM (1987), shallow groundwater flowed east under a gradient of 0.008 feet per foot (ft/ft). ERM also reported that the elevation of the water table at the site varied over time, presumably due to tidal influences (ERM, 1987). No free product was present in the wells installed by ERM. The downgradient extent of the plume of hydrocarbons in groundwater was not investigated in the 1987 study.

8.4 REMEDIAL INVESTIGATION

This investigation at Site 7A included a soil gas survey, borehole drilling and monitoring well construction, and groundwater sampling. The soil gas survey was performed using a grid with an approximately 25-foot spacing (Figure 8-2). A total of 72 points were sampled; nine of these were added in the field to attempt to delineate the downgradient extent of hydrocarbons detected in soil vapors. Seven soil borings were drilled in the locations shown on Figure 8-1. Groundwater monitoring wells were constructed in four of the borings. Borehole logs and well construction details are presented in Appendix C. Methods used in the performance of field activities are described in Appendix A.

8.4.1 Soil Gas Survey Results

The soil gas survey performed at Site 7A targeted the chlorinated hydrocarbons tetrachloroethene (PCE), trichloroethene (TCE), trans 1,2-Dichloroethene (trans 1,2-DCE), and 1,1-Dichloroethene (1,1-DCE), and the aromatic compounds benzene, ethylbenzene, toluene, and xylenes (BETX). No chlorinated compounds were detected by the soil gas survey. BETX compounds were identified in soil gas samples collected in the vicinity of the existing and abandoned tanks and the existing fuel islands.

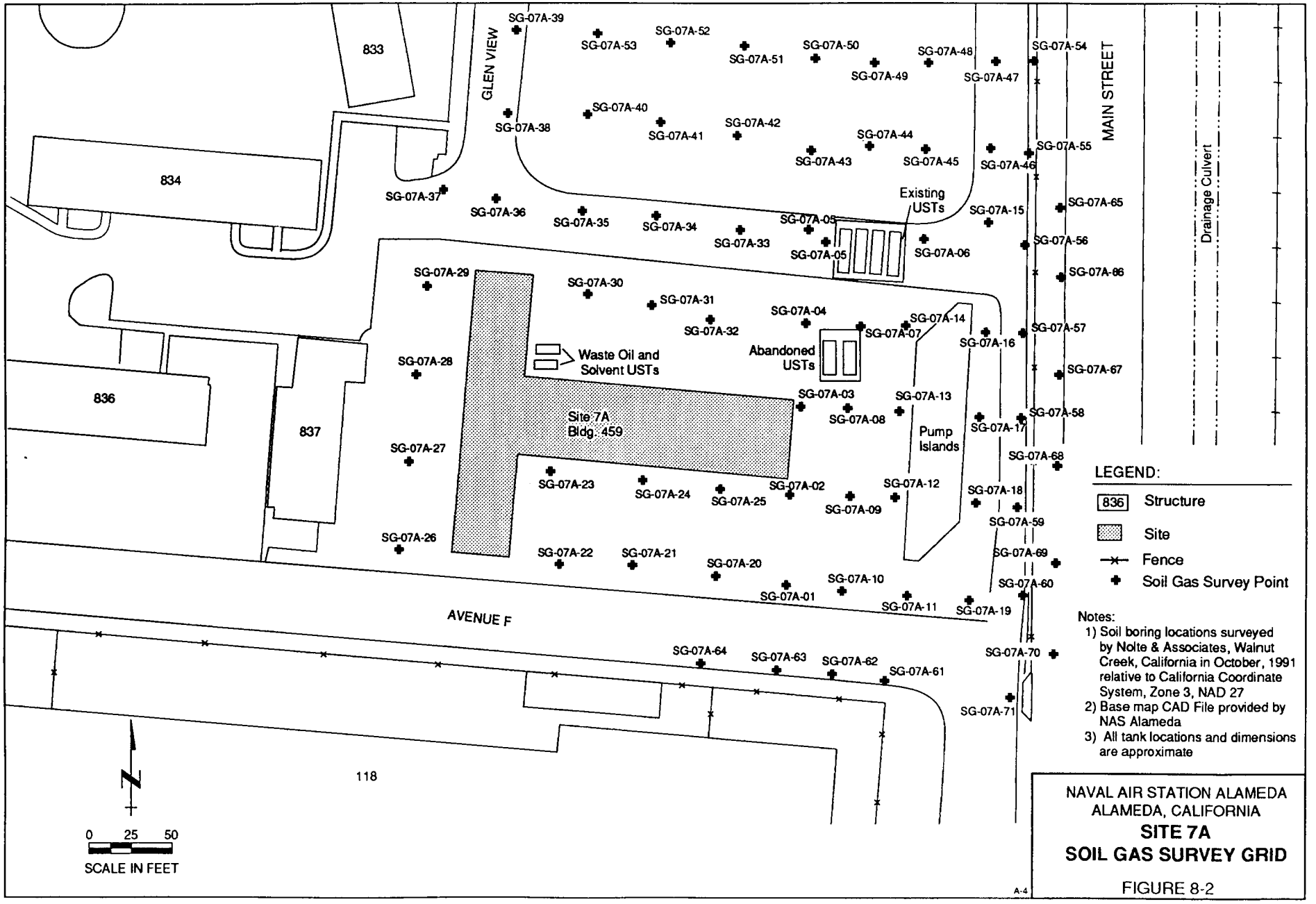
Figure 8-3 illustrates the distribution of benzene identified in the soil gas survey. Contour maps depicting the distribution of ethylbenzene, toluene, and xylenes are similar and are included in Appendix F. The highest concentrations of fuel constituents detected in the survey were at points located west of the central portion of the existing fuel islands, north of the fuel islands and just east of the in-use USTs, and east of the fuel islands, adjacent to the eastern property boundary. This distribution suggests that both the active and abandoned USTs, and the existing fuel island may be serving as sources of BETX compounds to the soil. In addition, vapor phase hydrocarbons are present along the western edge of Main Street, outside the fence marking the eastern boundary of NAS Alameda. The base Family Housing Annex is located across Main Street from the site.

TABLE 8-2

SITE 7A
BUILDING 459
NAVY EXCHANGE FUEL STATION
GROUNDWATER ANALYTICAL RESULTS,
1987 ERM WEST INVESTIGATION

Well I.D.	Concentration, µg/L		
	Benzene	Toluene	Total Xylenes
W1	14,000	22,000	8,700
W2	8,300	15,000	12,000
W3	31,000	8,200	5,000

µg/L - micrograms per liter
Samples taken February 4, 1987


833
834
836
837
118
GLEN VIEW
MAIN STREET
AVENUE F
Drainage Culvert
Existing USTs
Abandoned USTs
Waste Oil and Solvent USTs
Site 7A
Bldg. 459
Pump Islands
SG-07A-01
SG-07A-02
SG-07A-03
SG-07A-04
SG-07A-05
SG-07A-06
SG-07A-07
SG-07A-08
SG-07A-09
SG-07A-10
SG-07A-11
SG-07A-12
SG-07A-13
SG-07A-14
SG-07A-15
SG-07A-16
SG-07A-17
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SG-07A-24
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SG-07A-26
SG-07A-27
SG-07A-28
SG-07A-29
SG-07A-30
SG-07A-31
SG-07A-32
SG-07A-33
SG-07A-34
SG-07A-35
SG-07A-36
SG-07A-37
SG-07A-38
SG-07A-39
SG-07A-40
SG-07A-41
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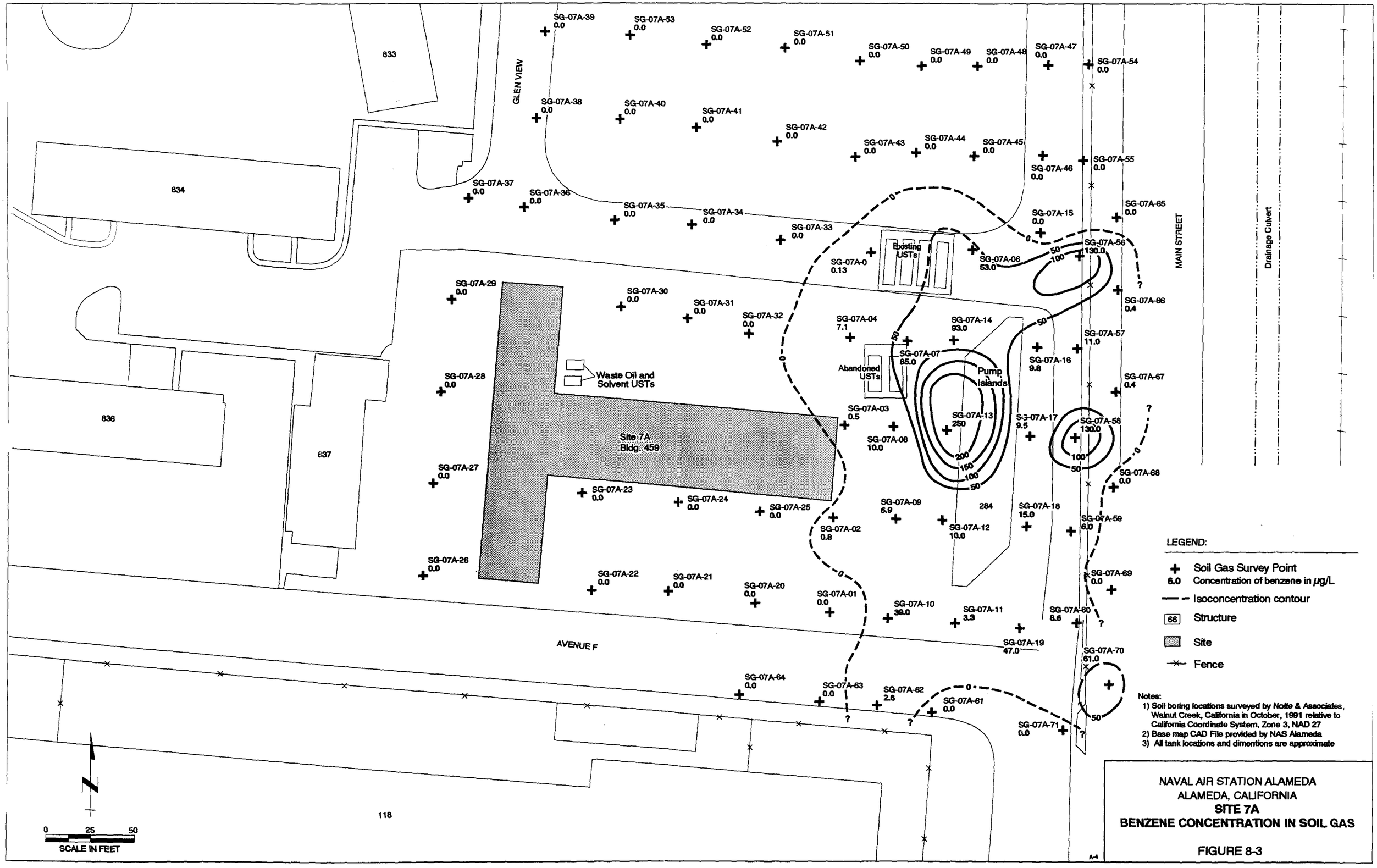
SG-07A-58
SG-07A-59
SG-07A-60
SG-07A-61
SG-07A-62
SG-07A-63
SG-07A-64
SG-07A-65
SG-07A-66
SG-07A-67
SG-07A-68
SG-07A-69
SG-07A-70
SG-07A-71
N
0 25 50
SCALE IN FEET
A-4
LEGEND:
836 Structure
Site
Fence
Soil Gas Survey Point
Notes:
1) Soil boring locations surveyed by Nolte & Associates, Walnut Creek, California in October, 1991 relative to California Coordinate System, Zone 3, NAD 27
2) Base map CAD File provided by NAS Alameda
3) All tank locations and dimensions are approximate
NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA
SITE 7A
SOIL GAS SURVEY GRID
FIGURE 8-2


SG-07A-39 0.0
SG-07A-53 0.0
SG-07A-52 0.0
SG-07A-51 0.0
SG-07A-50 0.0
SG-07A-49 0.0
SG-07A-48 0.0
SG-07A-47 0.0
SG-07A-54 0.0
GLEN VIEW
833
SG-07A-38 0.0
SG-07A-40 0.0
SG-07A-41 0.0
SG-07A-42 0.0
SG-07A-43 0.0
SG-07A-44 0.0
SG-07A-45 0.0
SG-07A-46 0.0
SG-07A-55 0.0
834
SG-07A-37 0.0
SG-07A-36 0.0
SG-07A-35 0.0
SG-07A-34 0.0
SG-07A-33 0.0
SG-07A-15 0.0
SG-07A-65 0.0
SG-07A-56 130.0
SG-07A-0 0.13
Existing USTs
SG-07A-06 53.0
MAIN STREET
Drainage Culvert
SG-07A-29 0.0
SG-07A-30 0.0
SG-07A-31 0.0
SG-07A-32 0.0
SG-07A-66 0.4
SG-07A-04 7.1
SG-07A-14 93.0
SG-07A-57 11.0
SG-07A-07 85.0
Abandoned USTs
Pump Islands
SG-07A-16 9.8
SG-07A-67 0.4
Waste Oil and Solvent USTs
SG-07A-28 0.0
836
SG-07A-03 0.5
SG-07A-13 250
SG-07A-17 9.5
SG-07A-58 130.0
SG-07A-08 10.0
Site 7A Bldg. 459
637
SG-07A-27 0.0
SG-07A-68 0.0
SG-07A-23 0.0
SG-07A-24 0.0
SG-07A-25 0.0
SG-07A-09 6.9
284
SG-07A-18 15.0
SG-07A-59 6.0
SG-07A-02 0.8
SG-07A-12 10.0
SG-07A-26 0.0
SG-07A-69 0.0
SG-07A-22 0.0
SG-07A-21 0.0
SG-07A-20 0.0
SG-07A-01 0.0
SG-07A-10 39.0
SG-07A-11 3.3
SG-07A-60 8.6
SG-07A-19 47.0
AVENUE F
SG-07A-70 61.0
SG-07A-64 0.0
SG-07A-63 0.0
SG-07A-62 2.6
SG-07A-61 0.0
SG-07A-71 0.0
118
0 25 50
SCALE IN FEET
LEGEND:
Soil Gas Survey Point
6.0 Concentration of benzene in µg/L
Isoconcentration contour
66 Structure
Site
Fence
Notes:
1) Soil boring locations surveyed by Nolte & Associates, Walnut Creek, California in October, 1991 relative to California Coordinate System, Zone 3, NAD 27
2) Base map CAD File provided by NAS Alameda
3) All tank locations and dimentions are approximate
NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA
SITE 7A
BENZENE CONCENTRATION IN SOIL GAS
FIGURE 8-3

8.4.2 Site Geology/Hydrogeology

Drilling at the site penetrated 1 to 2 feet of gravel and sand (road base) underneath the asphalt parking surface, which overlies sandy fill material. The sandy fill material varied from 1 to 4 feet thick and was thickest in the northeastern portion of the site, at the location of M07A-04. Sandy material, believed to be backfill material for the waste oil and solvent tanks, was present to a depth of 10 feet at M07A-01. The tank backfill material was similar in composition to the shallow fill material present throughout the site.

The sandy fill material was classified as poorly graded sand to silty sand. Geotechnical analyses on one fill sample collected at boring B07A-02 at a depth of 2 feet indicate the soil is a silty to clayey sand. Vertical permeability analyses indicate that the fill material at a depth of 4 feet in borings B07A-04 and B07A-06 is 4.01E-04 and 1.85E-04 centimeters per second (cm/s), respectively. Geotechnical results are summarized in Table 8-3.

The sandy fill material is underlain by a native silty clay to clay that contains abundant plant remains. The plant material was found in varying states of decay and was often associated with a strong hydrogen sulfide odor. Geotechnical results indicate the vertical permeability of the clay unit ranges from 3.79E-08 to 1.00E-07 cm/s (Table 8-3). The clay was present to the total depth of all borings (14.5 to 18.5 feet) and thus, the total thickness of the unit was not determined in this investigation. Figure 8-4 is a fence diagram illustrating the lateral and vertical relationships of materials encountered during drilling.

Groundwater was first encountered at depths ranging from 3.0 to 3.5 feet below ground surface. At the locations of M07A-01, M07A-04, and B07A-05, groundwater was present within the sandy fill material. At all other drilling locations, groundwater was first encountered immediately above the native clay unit. Well M07A-04 is screened within the sandy fill material overlying the clay; wells M07A-02 and M07A-03 are screened within the clay. Well M07A-01 is screened within the tank backfill material around the existing solvent and waste oil tanks. ERM wells W-1, W-2, and W-3 are presumably screened within tank backfill material around the abandoned tanks.

In-situ permeability (slug) tests were conducted in all of the wells installed for Phases 2B and 3. The hydraulic conductivities, as determined by the Bouwer and Rice rising-head method, ranged from 1.7E-04 cm/sec in M07A-04 to 8.1E-05 cm/sec in M07A-01 (Bouwer and Rice, 1976; Bouwer, 1989). The in-situ permeability test results for wells M-7A-02 and M-7A-03 were inconclusive. These two wells are screened entirely within clay that had a laboratory-measured vertical hydraulic conductivity of 3.97E-08.

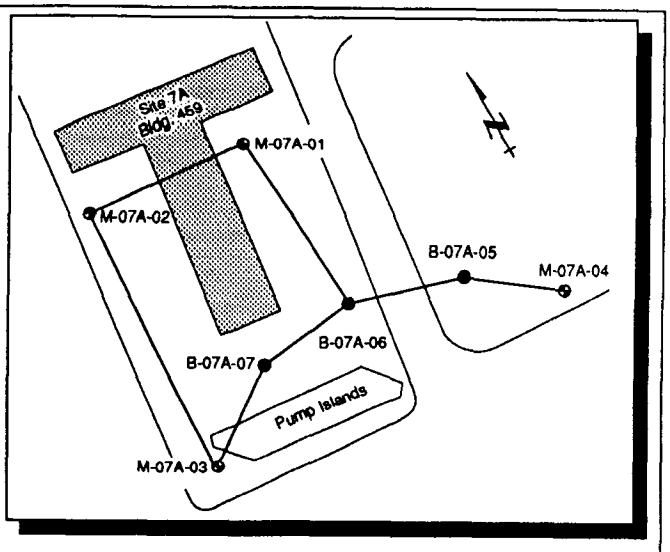
TABLE 8-3

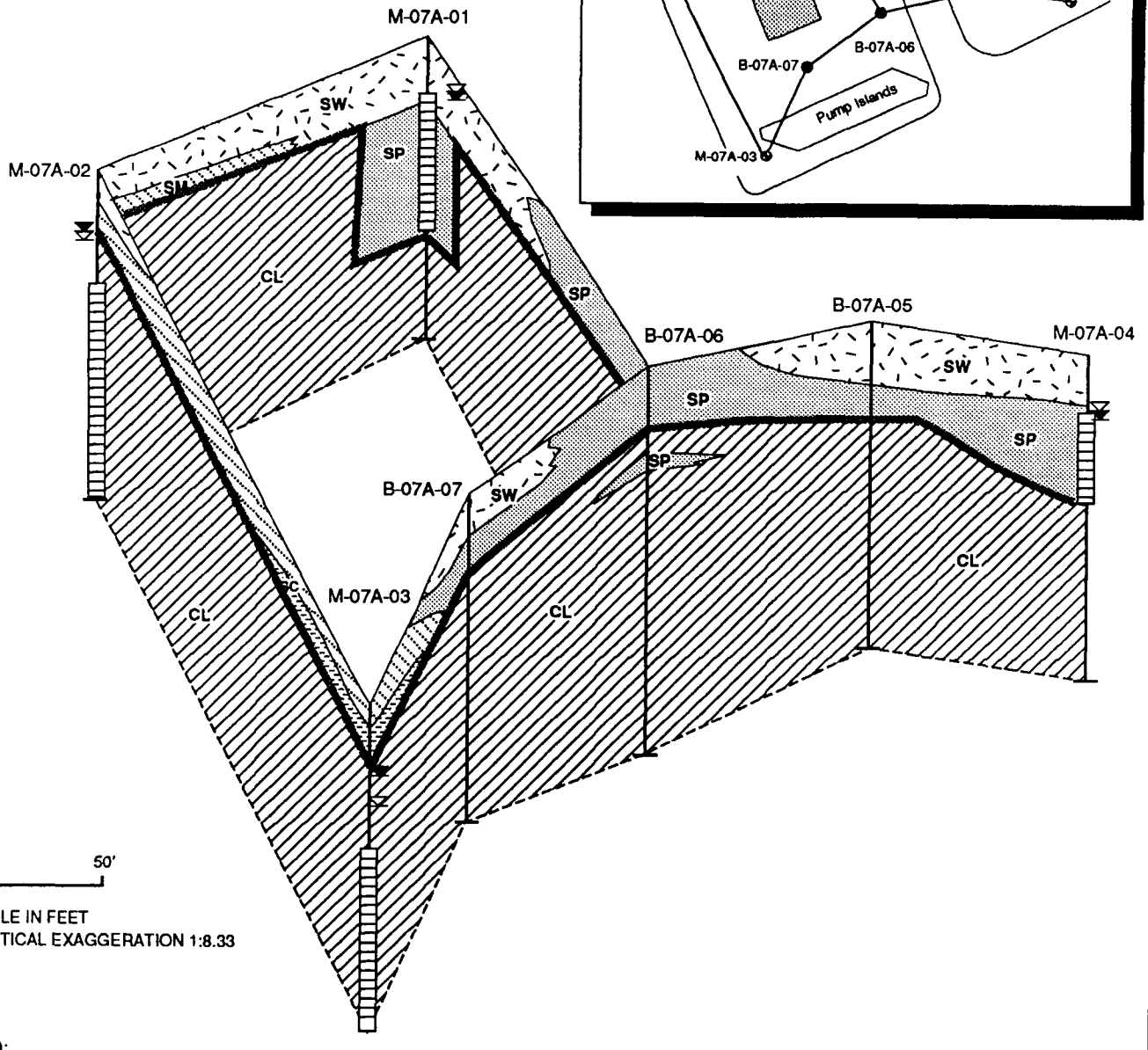
SITE 7A
BUILDING 459
NAVY EXCHANGE FUEL STATION
GEOTECHNICAL SAMPLE LABORATORY TEST RESULTS

Sample No.	Depth (ft)	Soil Classification Laboratory	Soil Classification Field	Moisture Content (%)	Dry Density (pcf)	Specific Gravity	CEC (meq/100g)	TOC (%w/w)	Permeability Effective Stresses (psi)	Permeability Hydraulic Conductivity (cm/s)
B-7A-02	1.5-2	SM	ML	NA	NA	NA	NA	NA	NA	NA
B-7A-02	6-6.5	NA	CL	61.5	58	2.68	NA	NA	NA	NA
B-7A-03	14.5-15	NA	CL	70.0	56.5	NA	15.3	0.8	7	3.79E-08
B-7A-04	4.5-5	SP/SM	SP	15.5	111.5	NA	NA	< 0.1	3	4.01E-04
B-7A-04	9-9.5	NA	CL	47.0	70.0	2.67	34.4	NA	5	1.00E-07
B-7A-06	4.5-5	NA	SP	14.0	111.0	NA	NA	< 0.1	3	1.85E-04
B-7A-06	8-8.5	CL	CL	54	61.5	NA	39.2	0.9	NA	NA
B-7A-06	16-16.5	NA	CL	76	55.5	NA	NA	1.1	NA	NA
B-7A-07	7-7.5	NA	CL	72.5	56.5	NA	NA	0.9	3	5.48E-08

NA - Not Analyzed
Parameters not detectect are reported as less than method detection limit.

Laboratory Methods (Units):
Soil Classification - Unified Soil Classification System (USCS) - ASTM D2488
Moisture Content - ASTM D2216 (percent)
Dry Density - ASTM D2937 (pounds per cubic foot)
Specific Gravity - ASTM D854
Cation Exchange Capacity (CEC) - EPA 9080 (milliequivalents per 100 grams)
Total Organic Carbon (TOC) - Walkey and Black (percent of wet weight)
Effective Stress - EPA 9100 (pounds per square inch)
Hydraulic Conductivity - EPA 9100 (centimeters per second)





LEGEND:

- SW Gravelly Sand
- SP Sand
- SC Clayey Sand
- CL Clay
- SM Silty Sand
- Approximate Fill/Native Sediment Interface
- First Water During Drilling
- Water Level During Water Sampling
- Monitoring Well Screened Interval

NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA
SITE 7A
FENCE DIAGRAM

FIGURE 8-4

The slow recharge of these two wells probably contributed to the inconclusive in-situ permeability test results. The in-situ permeability test data are presented in Appendix E.

Groundwater level measurements taken at the site are summarized in Table 8-4. Measurements were taken during varying phases of the moon and at different times during the daily diurnal tidal cycle. There appears to be significant tidal influence on the water level in well M07A-03 (up to 3 feet) and minor influence on the remaining wells at the site (0.22 to 0.58 feet). Groundwater potentiometric surface maps for the dates August 20 and September 17, 1991, are illustrated on Figures 8-5 and 8-6, respectively. Measurements taken on these dates indicate that the tidal influence on the water level in well M07A-03 is sufficient to reverse the gradient in that portion of the site. Wells constructed entirely in permeable tank backfill material surrounded by clay (M07A- 01, W1, W2, and W3) were not considered when constructing potentiometric contours. A tidal influence study planned for the site will aid in determining the full magnitude of tidal effects on the groundwater flow direction at the site.

8.4.3 Analytical Results - Soil Samples

Four soil samples (one surface and three subsurface) were analyzed from each of the seven boreholes drilled in this investigation. Surface samples were analyzed for semivolatile organic compounds (SVOCs), pesticides/PCBs, total recoverable petroleum hydrocarbons (TRPH), and metals. Subsurface soil samples were analyzed for these constituents plus volatile organic compounds (VOCs) and ethylene dibromide (EDB). Laboratory methods are discussed in Section 4.0. Laboratory QC results are summarized in the QCSR submitted under separate cover. Analytical results are summarized in tables located at the end of this section. Tables with VOC and SVOC results contain only those analytes detected in site soils. A complete list of analytes potentially detected by the laboratory methods is presented in Section 4.0.

Selected samples were also analyzed for total organic carbon content (TOC) and soil pH. TOC and soil pH data will be used in the feasibility study portion of the project and are not discussed here. Analytical results for TOC and soil pH are included in Appendix B.

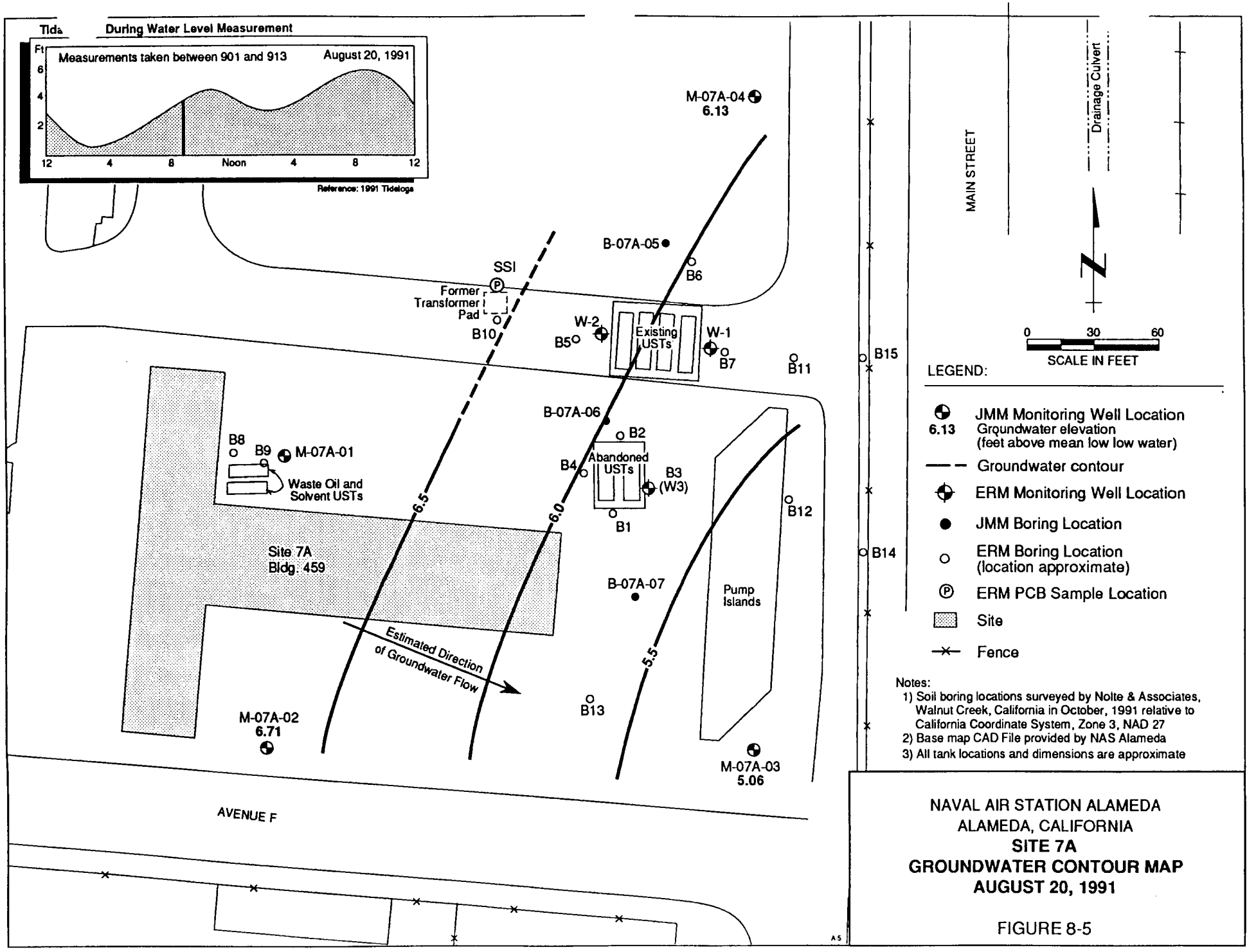
8.4.3.1 Volatile Organic Compounds. Analytical results for VOCs and SVOCs detected in Site 7A soils are summarized in Table 8-5. The VOC EDB, acetone, carbon disulfide, ethylbenzene, methyl ethyl ketone (MEK), methylene chloride, toluene, and xylenes were identified in Site 7A subsurface soils.

TABLE 8-4

SITE 7A
BUILDING 459
NAVY EXCHANGE FUEL STATION
WATER LEVEL DATA

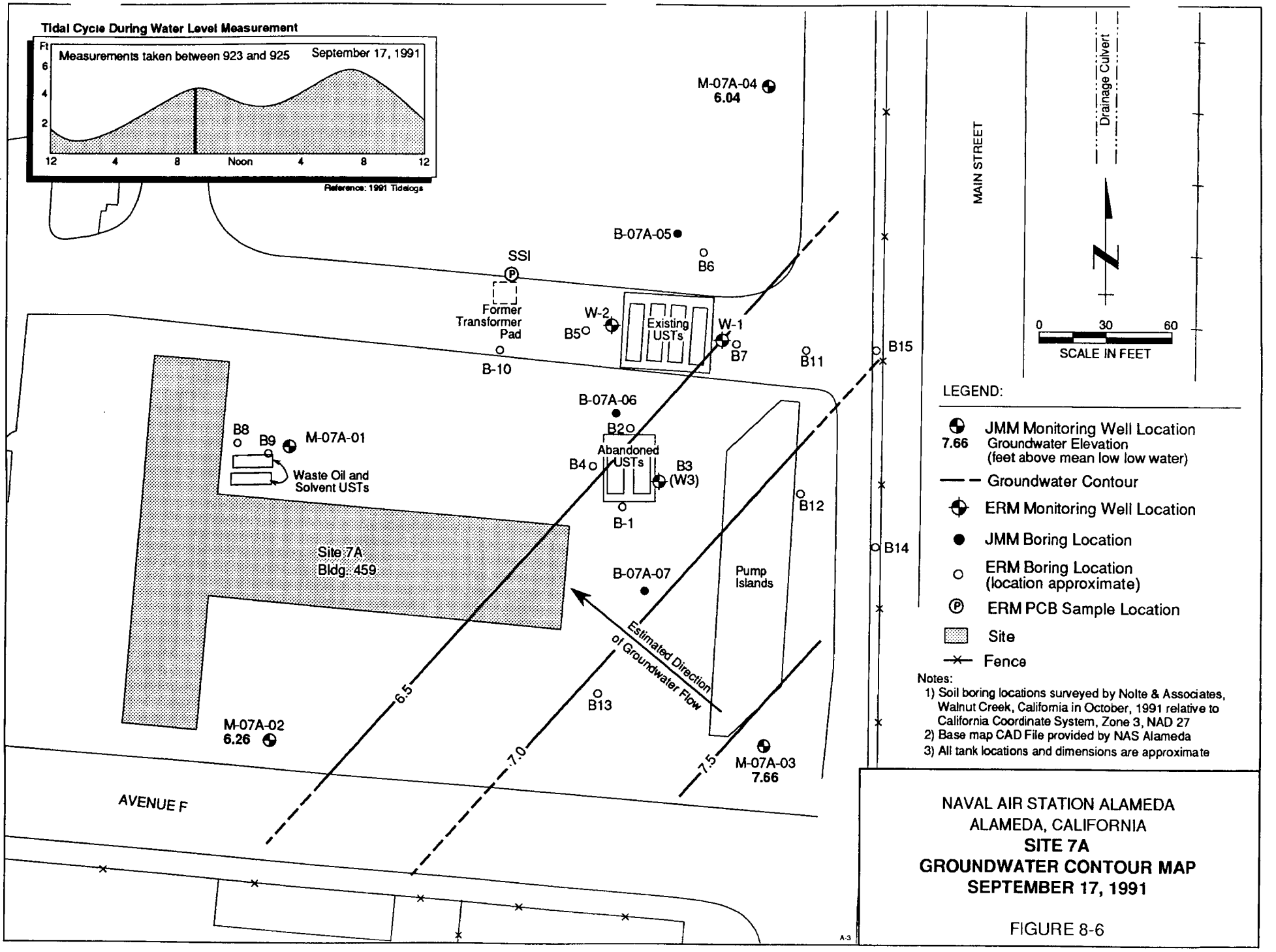
		Date	Time	Water Level in feet	Water Elevation in feet
M07A-01					
ToC	*10.49*	6/26/91	1208	3.20	7.29
		8/20/91	906	3.46	7.03
		9/17/91	933	3.57	6.92
		11/6/91	1708	3.70	-3.70
M07A-02					
ToC	*10.21*	6/26/91	1151	3.95	6.26
		8/20/91	913	3.50	6.71
		9/17/91	939	3.95	6.26
		11/6/91	1653	4.08	6.13
M07A-03					
ToC	*10.18*	6/26/91	1123	5.50	4.68
		8/20/91	910	5.12	5.06
		9/17/91	936	2.52	7.66
		11/6/91	1701	5.32	4.86
M07A-04					
ToC	*8.99*	6/26/91	1230	2.80	6.19
		8/20/91	901	2.86	6.13
		9/17/91	923	2.95	6.04
		11/6/91	1716	2.77	6.22
W-1					
ToC	*9.11*	8/20/91	851	2.38	6.73
		8/21/91	918	2.39	6.72
		9/17/91	927	2.57	6.54
W-2					
ToC	*9.29*	8/20/91	851	2.73	6.56
		9/17/91	929	2.96	6.33
W-3					
ToC	*9.28*	8/20/91	909	1.62	7.66
		8/21/91	913	1.59	7.69

ToC - Top of Casing
Elevation datum - USGS Mean Low Low Water



NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA
SITE 7A
GROUNDWATER CONTOUR MAP
AUGUST 20, 1991

FIGURE 8-5



NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA
SITE 7A
GROUNDWATER CONTOUR MAP
SEPTEMBER 17, 1991

FIGURE 8-6

Acetone was identified in 20 of the subsurface soil samples collected at Site 7A. Because acetone was present in some laboratory method blanks associated with these samples, the data were qualified using the EPA method described in Section 3.0. Using this method, four of these results are considered estimates and two are considered not detected. Qualified data are presented in Table 8-5. Acetone detected in the remaining samples may have been present as a contaminant in the isopropyl alcohol used to decontaminate sampling equipment during drilling. This was the only site where isopropyl alcohol was used for equipment decontamination during drilling activities. No known source of acetone has been identified at the site.

MEK was detected in one soil sample and methylene chloride was detected in two soil samples at low levels. These compounds were not detected in laboratory QC samples for Site 7A. No known source of these compounds has been identified at the site.

The fuel constituents ethylbenzene, toluene, and xylenes were identified in shallow soil samples from boreholes B07A-06 and B07A-07, located north and south, respectively, of the abandoned fuel tanks. Ethylbenzene, toluene, and xylenes were identified in the 2-foot sample from boring B07A-06 at concentrations of 43, 41, and 240 µg/kg, respectively. None of these fuel constituents were detected in the samples collected at depths of 10 and 17 feet. Ethylbenzene and xylenes were detected in the 1-foot sample from boring B07A-07 at concentrations of 4,300 and 51,000 µg/kg, respectively. The sample collected from a depth of 5 feet contained ethylbenzene at a concentration of 19 µg/kg and xylenes at a concentration of 100 µg/kg. Toluene was also identified in the 5-foot sample at a concentration of 31 µg/kg.

8.4.3.2 Semivolatile Organic Compounds. Several SVOCs were identified in soil samples collected at the site (Table 8-5). A suite of polycyclic aromatic hydrocarbons (PAH) was identified in all borings installed at the site. Concentrations of PAH detected ranged from 85 to 29,000 µg/kg. In each boring, the maximum concentrations of PAH were identified in either the 3-foot or 7-foot sample, within the native clay unit.

The SVOC bis-2-ethylhexyl phthalate was identified in seven samples. Because this compound was present in method blanks associated with these samples, these data were also qualified. After qualification, one result is considered an estimate and four are considered not detected. Qualified data are presented in Table 8-5. No known source of bis-2-ethylhexyl phthalate has been identified at the site.

8.4.3.3 Total Recoverable Petroleum Hydrocarbons. TRPH were identified in soil samples from every boring installed at this site (Table 8-5). TRPH were identified at concentrations

ranging from 38.0 to 1,490 µg/kg. The highest concentration detected was in the 13-foot sample from boring B07A-05.

8.4.3.4 Pesticides/PCBs. The pesticides 4,4'-DDD, -DDE, and -DDT were identified in shallow soils at borings B07A-03, B07A-04, and B07A-05. 4,4'-DDD was detected in only the 1-foot sample of boring B07A-03 at a concentration of 28.3 µg/kg. 4,4'-DDE, 4,4'-DDT, and methoxychlor were detected in the surface sample at boring B07A-04 at concentrations of 11.4, 18.5, and 37.6 µg/kg, respectively. 4,4'-DDT was also detected in the surface sample from boring B07A-05 at a concentration of 11.2 µg/kg. The presence of these compounds may be related to past pest and weed control practices. No PCBs were detected.

8.4.3.5 Metals. As discussed in Section 3.0 of this report, background data for metals in soils at NAS Alameda have not been collected. Background data for metals in soil will be collected at a later date. An evaluation of the location and extent of possible metals contamination will be performed after the collection of background soil samples. Data generated in this investigation are presented below. As discussed in Section 3.0, the metals beryllium, chromium, copper, lead, mercury, and nickel have been tentatively identified as metals of concern. Analytical results for these metals are presented below. Results for all metals analyzed for are presented in Table 8-6.

Beryllium was detected in all 31 soil samples collected at the site at concentrations ranging from 0.231 to 4.46 mg/kg. The highest concentration was detected in the sample collected at a depth of 7 feet in boring B07A-05, located north of the existing USTs.

Total chromium was detected in all 31 soil samples at concentrations ranging from 5.77 to 326 mg/kg. The highest concentration was detected in the 2-foot sample from boring B07A-02. Boring B07A-02 is located in the southwestern portion of the site.

Copper was detected in all soil samples analyzed at concentrations ranging from 5.53 to 3,920 mg/kg. The highest concentration detected was in the 2-foot sample from boring B07A-02, located in the southwestern portion of the site.

Lead was detected in all soil samples analyzed at concentrations ranging from 3.82 to 6,760 mg/kg. The highest concentration detected was in the 2-foot sample from boring B07A-02, located in the southwestern portion of the site.

Mercury was detected in 13 soil samples at concentrations ranging from 0.128 to 2.56 mg/kg. The highest concentration detected was in the surface sample at B07A-06, located north of the abandoned USTs.

Nickel was detected in all soil samples analyzed at concentrations ranging from 14.3 to 344 mg/kg. The highest concentration detected was in the 2-foot sample from boring B07A-02, located in the southwestern portion of the site.

8.4.4 Analytical Results - Groundwater Samples

Groundwater samples were collected on August 20 and August 21, 1991, using methods described in Appendix A. Samples were analyzed for VOCs, SVOCs, pesticides/PCBs, TRPH, and metals. Laboratory methods are discussed in Section 4.0. No pesticides/PCBs were detected in groundwater samples collected from Site 7A wells. Results for other analyses are discussed below.

8.4.4.1 Volatile Organic Compounds. VOC results are summarized in Table 8-7, located at the end of this section. Acetone was identified in two samples. As discussed above, no known source of acetone exists at the site.

No fuel constituents were identified in wells M07A-01, -02, and -04. Xylenes were identified in well M07A-03, located south of the existing fuel islands, at a concentration of 1.9 µg/L. Benzene was detected in ERM wells at concentrations ranging from 15 to 3,700 µg/L. The highest concentration of benzene was detected in well W-3, located in backfill material east of the abandoned fuel tanks. Ethylbenzene was detected in ERM wells at concentrations ranging from 95 to 290 µg/L. The highest concentration was identified in well W-1, located in backfill material east of the existing USTs. Toluene was identified in wells W-1 and W-2 at concentrations of 590 and 52 µg/L, respectively. Total xylenes were detected in wells W-1 and W-2 at concentrations of 1,200 ad 340 µg/L, respectively.

8.4.4.2 Semivolatile Organic Compounds. Laboratory results for SVOCs detected in groundwater are summarized in Table 8-7. Bis(2-ethylhexyl) phthalate was identified in the four wells installed in this investigation and in ERM well W-2. Because bis(2-ethylhexyl) phthalate was present in the laboratory method blanks, the data were qualified (Section 3.0). All of the results are considered not detected after data qualification. Qualified data are flagged in Table 8-7.

PAH were detected in groundwater samples from ERM wells W-1, W-2 and W-3. PAH concentrations ranged from 3.8 to 500 µg/L.

8.4.4.3 Total Recoverable Petroleum Hydrocarbons. TRPH was identified at concentrations ranging from 0.4 to 0.7 µg/L in the three wells previously installed by ERM in the backfill material of abandoned and active USTs at the site. No TRPH was identified in wells installed in native sediments and/or fill outside the tank backfill areas.

8.4.4.4 Metals. Results for metals in groundwater are summarized in Table 8-8. No data are available for background levels of metals in groundwater. Evaluation of analytical results will be performed at a later date, when background data are available.

8.4.4.5 General Chemicals. Analytical results for general chemicals, pH, and TOC are summarized in Table 8-9. Groundwater at the site is classified as brackish based on specific conductivity values, using the classification system of Driscoll (1987; Table 2-1). Groundwater pH values are neutral ranging from 6.60 to 7.00.

TABLE 8-5
NAS ALAMEDA - SITE 7A
SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	B07A-01-000	B07A-01-001	B07A-01-007	B07A-01-012	B07A-01-012 Duplicate	B07A-02-000	B07A-02-002
Date Sampled	06/19/91	06/19/91	06/19/91	06/19/91	06/19/91	06/21/91	06/21/91
Depth of Sample	0.0 ft	1.0 ft	6.5 ft	11.5 ft	11.5 ft	0.0 ft	2.0 ft
PARAMETER REPORTED							
VOLATILE ORGANICS (µg/kg-dry)							
1,2-DIBROMOETHANE(EDB)	NA	< 0.333	< 0.377	< 0.589	< 0.578	NA	< 0.416
ACETONE	NA	82	69	120	130	NA	120J
CARBON DISULFIDE	NA	< 5.5	< 6.3	11	17	NA	< 6.9
ETHYLBENZENE	NA	< 5.5	< 6.3	< 9.8	< 9.6	NA	< 6.9
METHYL ETHYL KETONE	NA	< 11	< 13	< 20	< 19	NA	< 14
METHYLENE CHLORIDE	NA	< 5.5	< 6.3	< 9.8	< 9.6	NA	8.4
TOLUENE	NA	< 5.5	< 6.3	< 9.8	< 9.6	NA	< 6.9
XYLENE	NA	< 5.5	< 6.3	< 9.8	< 9.6	NA	< 6.9
PESTICIDES/PCBS/HERBICIDES (µg/kg-dry)							
4,4'-DDD	< 7.14	< 7.39	< 8.39	< 13.1	< 12.8	< 7.03	< 9.23
4,4'-DDE	< 3.57	< 3.70	< 4.19	< 6.55	< 6.42	< 3.52	< 4.62
4,4'-DDT	< 7.14	< 7.39	< 8.39	< 13.1	< 12.8	< 7.03	< 9.23
METHOXYCHLOR	< 35.7	< 37.0	< 41.9	< 65.5	< 64.2	< 35.2	< 46.2
TOTAL PETRO. HYDROCARBONS (mg/kg-dry)							
HYDROCARBONS,PETROL	38.0	862	< 35.8	< 55.9	833	122	145

Notes: NA = Not analyzed
UJ = Qualifed, estimated not detected
J = Qualified, estimated value
R = Qualified, not usable
Shaded areas highlight detections above the detection limit.
< = Analyte reported below detection limit
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 8-5
NAS ALAMEDA - SITE 7A
SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	B07A-01-000	B07A-01-001	B07A-01-007	B07A-01-012	B07A-01-012 Duplicate	B07A-02-000	B07A-02-002
Date Sampled	06/19/91	06/19/91	06/19/91	06/19/91	06/19/91	06/21/91	06/21/91
Depth of Sample	0.0 ft	1.0 ft	6.5 ft	11.5 ft	11.5 ft	0.0 ft	2.0 ft
PARAMETER REPORTED							
SEMIVOLATILE ORGANICS (µg/kg-dry)							
1,2,4-TRICH'BENZENE	< 110	< 110	< 130	< 200	< 190	< 110	< 140
1,4-DICHLOROBENZENE	< 86	< 89	< 100	< 160	< 150	< 84	< 110
2,4-DINITROTOLUENE	< 150	< 160	< 180	< 280	< 270	< 150	< 190
2-CHLOROPHENOL	< 150	< 160	< 180	< 280	< 270	< 150	< 190
2-METHYLNAPHTHALENE	< 110	< 110	< 130	< 200	< 190	< 110	< 140
4-CHLORO-3-METHYLPHENOL	< 150	< 160	< 180	< 280	< 270	< 150	< 190
4-METHYLPHENOL	< 150	< 160	< 180	< 280	< 270	< 150	< 190
ACENAPHTHENE	< 86	< 89	< 100	< 160	< 150	< 84	< 110
ACENAPHTHYLENE	< 86	< 89	< 100	< 160	< 150	< 84	< 110
ANTHRACENE	< 86	< 89	< 100	< 160	< 150	< 84	< 110
BENZO(A)ANTHRACENE	< 110	< 110	< 130	< 200	< 190	< 110	< 140
BENZO(A)PYRENE	< 150	180J	< 180	< 280	< 270	< 150	< 190
BENZO(B)FLUORANTHENE	< 110	250J	< 130	< 200	< 190	< 110	< 140
BENZO(GHI)PERYLENE	< 170	< 180	< 200	< 310	< 310	< 170	< 220
BENZO(K)FLUORANTHENE	< 110	110J	< 130	< 200	< 190	< 110	< 140
BIS(2-ETHYLHEXYL)PHTHALATE	< 110	< 110	160UJ	< 200	< 190	< 110	< 140
CHRYSENE	< 110	140J	< 130	< 200	< 190	< 110	260
DIMETHYL PHTHALATE	< 86	< 89	< 100	< 160	< 150	< 84	< 110
FLUORANTHENE	< 86	170J	< 100	< 160	< 150	< 84	< 110
INDENO(1,2,3-CD)PYRENE	< 170	< 180	< 200	< 310	< 310	< 170	< 220
N-NITROSODI-N-PROPYLAMINE	< 110	< 110	< 130	< 200	< 190	< 110	< 140
NAPHTHALENE	< 86	< 89	< 100	< 160	< 150	< 84	< 110
PHENANTHRENE	< 86	< 89	< 100	< 160	< 150	< 84	< 110
PHENOL	< 150	< 160	< 180	< 280	< 270	< 150	< 190
PYRENE	< 86	160J	< 100	< 160	< 150	< 84	1100

Notes: NA = Not analyzed, < = Analyte reported below detection limit
UJ = Qualifed, estimated not detected, J = Qualified, estimated value, R = Qualified, not usable
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.
Shaded areas highlight detections above the detection limit.

TABLE 8-5
NAS ALAMEDA - SITE 7A
SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	B07A-02-007	B07A-02-013	B07A-03-000	B07A-03-001	B07A-03-003	B07A-03-012	B07A-04-000
Date Sampled	06/21/91	06/21/91	06/18/91	06/18/91	06/18/91	06/18/91	06/21/91
Depth of Sample	7.0 ft	13.0 ft	0.0 ft	0.5 ft	3.5 ft	12.0 ft	0.0 ft
PARAMETER REPORTED							
VOLATILE ORGANICS (µg/kg-dry)							
1,2-DIBROMOETHANE(EDB)	< 0.578	< 0.615	NA	< 0.348	< 0.525	< 0.636	NA
ACETONE	380J	1900J	NA	61	290	370	NA
CARBON DISULFIDE	16	54	NA	< 5.8	11	40	NA
ETHYLBENZENE	< 9.6	< 51	NA	< 5.8	< 8.8	< 11	NA
METHYL ETHYL KETONE	< 19	< 100	NA	< 12	18	< 21	NA
METHYLENE CHLORIDE	< 9.6	< 51	NA	< 5.8	< 8.8	< 11	NA
TOLUENE	< 9.6	< 51	NA	< 5.8	< 8.8	< 11	NA
XYLENE	< 9.6	< 51	NA	< 5.8	< 8.8	< 11	NA
PESTICIDES/PCBS/HERBICIDES (µg/kg-dry)							
4,4'-DDD	< 12.8	< 13.7	< 7.04	28.3	< 11.7	< 14.1	< 6.90
4,4'-DDE	< 6.42	< 6.83	< 3.52	< 3.86	< 5.84	< 7.06	11.4
4,4'-DDT	< 12.8	< 13.7	< 7.04	< 7.72	< 11.7	< 14.1	18.5
METHOXYCHLOR	< 64.2	< 68.3	< 35.2	< 38.6	< 58.4	< 70.6	37.6
TOTAL PETRO. HYDROCARBONS (mg/kg-dry)							
HYDROCARBONS,PETROL	< 54.9	< 58.4	91.4	217	872	206	344

Notes: NA = Not analyzed
UJ = Qualifed, estimated not detected
J = Qualified, estimated value
R = Qualified, not usable
Shaded areas highlight detections above the detection limit.
< = Analyte reported below detection limit
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 8-5
NAS ALAMEDA - SITE 7A
SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	B07A-02-007	B07A-02-013	B07A-03-000	B07A-03-001	B07A-03-003	B07A-03-012	B07A-04-000
Date Sampled	06/21/91	06/21/91	06/18/91	06/18/91	06/18/91	06/18/91	06/21/91
Depth of Sample	7.0 ft	13.0 ft	0.0 ft	0.5 ft	3.5 ft	12.0 ft	0.0 ft
PARAMETER REPORTED							
SEMIVOLATILE ORGANICS (µg/kg-dry)							
1,2,4-TRICH'BENZENE	< 390	< 200	< 110	< 120	< 180	< 210	< 2100
1,4-DICHLOROBENZENE	< 310	< 160	< 84	< 93	< 140	< 170	< 1700
2,4-DINITROTOLUENE	< 540	< 290	< 150	< 160	< 250	< 300	< 2900
2-CHLOROPHENOL	< 540	< 290	< 150	< 160	< 250	< 300	< 2900
2-METHYLNAPHTHALENE	< 390	< 200	< 110	< 120	< 180	< 210	< 2100
4-CHLORO-3-METHYLPHENOL	< 540	< 290	< 150	< 160	< 250	< 300	< 2900
4-METHYLPHENOL	< 540	490	< 150	< 160	< 250	< 300	< 2900
ACENAPHTHENE	< 310	< 160	< 84	< 93	< 140	< 170	< 1700
ACENAPHTHYLENE	< 310	< 160	< 84	< 93	< 140	< 170	< 1700
ANTHRACENE	630	< 160	< 84	< 93	< 140	< 170	1700
BENZO(A)ANTHRACENE	8000	< 200	< 110	120J	3400J	< 210	< 2100
BENZO(A)PYRENE	22000	< 290	< 150	< 160	3100J	< 300	< 2900
BENZO(B)FLUORANTHENE	11000	< 200	< 110	170J	4700J	< 210	< 2100
BENZO(GHI)PERYLENE	10000	< 330	< 170	< 190	5600J	< 340	< 3300
BENZO(K)FLUORANTHENE	9400	< 200	< 110	< 120	1400J	< 210	< 2100
BIS(2-ETHYLHEXYL)PHTHALATE	< 390	< 200	1200J	520UJ	< 180	< 210	< 2100
CHRYSENE	3900	< 200	< 110	140J	2700J	< 210	< 2100
DIMETHYL PHTHALATE	< 310	< 160	< 84	< 93	< 140	< 170	< 1700
FLUORANTHENE	29000	< 160	< 84	210J	5900J	< 170	< 1700
INDENO(1,2,3-CD)PYRENE	8100	< 330	< 170	< 190	4500J	< 340	< 3300
N-NITROSODI-N-PROPYLAMINE	< 390	< 200	< 110	< 120	< 180	< 210	< 2100
NAPHTHALENE	< 310	< 160	< 84	< 93	< 140	< 170	< 1700
PHENANTHRENE	1800	< 160	< 84	95J	< 140	< 170	< 1700
PHENOL	< 540	< 290	< 150	< 160	< 250	< 300	< 2900
PYRENE	25000	< 160	< 84	200J	11000J	< 170	< 1700

Notes: NA = Not analyzed, < = Analyte reported below detection limit
UJ = Qualifed, estimated not detected, J = Qualified, estimated value, R = Qualified, not usable
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.
Shaded areas highlight detections above the detection limit.

TABLE 8-5
NAS ALAMEDA - SITE 7A
SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	B07A-04-001	Duplicate B07A-04-001	B07A-04-005	B07A-04-013	B07A-05-000	B07A-05-002	B07A-05-007
Date Sampled	06/21/91	06/21/91	06/21/91	06/21/91	06/20/91	06/20/91	06/20/91
Depth of Sample	1.0 ft	1.0 ft	5.0 ft	13.0 ft	0.0 ft	2.0 ft	0.5 ft
PARAMETER REPORTED							
VOLATILE ORGANICS (µg/kg-dry)							
1,2-DIBROMOETHANE(EDB)	< 0.408	< 0.344	< 0.359	< 0.579	NA	< 0.344	< 0.566
ACETONE	< 14	< 11	44UJ	890J	NA	33	270
CARBON DISULFIDE	< 6.8	< 5.7	< 6.0	54	NA	< 5.7	69
ETHYLBENZENE	< 6.8	< 5.7	< 6.0	< 48	NA	< 5.7	< 9.4
METHYL ETHYL KETONE	< 14	< 11	< 12	< 97	NA	< 11	< 19
METHYLENE CHLORIDE	< 6.8	< 5.7	< 6.0	62	NA	< 5.7	< 9.4
TOLUENE	< 6.8	< 5.7	< 6.0	< 48	NA	< 5.7	< 9.4
XYLENE	< 6.8	< 5.7	< 6.0	< 48	NA	< 5.7	< 9.4
PESTICIDES/PCBS/HERBICIDES (µg/kg-dry)							
4,4'-DDD	< 9.06	< 7.65	< 7.98	< 12.9R	< 7.12	< 7.65	< 12.6
4,4'-DDE	< 4.53	< 3.82	< 3.99	< 6.44R	< 3.56	< 3.82	< 6.29
4,4'-DDT	< 9.06	< 7.65	< 7.98	< 12.9R	11.2	< 7.65	< 12.6
METHOXYCHLOR	< 45.3	< 38.2	< 39.9	< 64.4R	< 35.6	< 38.2	< 62.9
TOTAL PETRO. HYDROCARBONS (mg/kg-dry)							
HYDROCARBONS,PETROL	186	120	< 34.1	< 55.0	158	182	< 53.8

Notes: NA = Not analyzed
UJ = Qualifed, estimated not detected
J = Qualified, estimated value
R = Qualified, not usable
Shaded areas highlight detections above the detection limit.
< = Analyte reported below detection limit
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 8-5
NAS ALAMEDA - SITE 7A
SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	B07A-04-001	B07A-04-001D (Duplicate)	B07A-04-005	B07A-04-013	B07A-05-000	B07A-05-002	B07A-05-007
Date Sampled	06/21/91	06/21/91	06/21/91	06/21/91	06/20/91	06/20/91	06/20/91
Depth of Sample	1.0 ft	1.0 ft	5.0 ft	13.0 ft	0.0 ft	2.0 ft	0.5 ft
PARAMETER REPORTED							
SEMIVOLATILE ORGANICS (µg/kg-dry)							
1,2,4-TRICH'BENZENE	< 140	< 110	< 120	< 190	< 110	< 110	< 380
1,4-DICHLOROBENZENE	< 110	< 92	< 96	< 150	< 85	< 92	< 300
2,4-DINITROTOLUENE	< 190	< 160	< 170	< 270	< 150	< 160	< 530
2-CHLOROPHENOL	< 190	< 160	< 170	< 270	< 150	< 160	< 530
2-METHYLNAPHTHALENE	< 140	< 110	< 120	< 190	< 110	< 110	< 380
4-CHLORO-3-METHYLPHENOL	< 190	< 160	< 170	< 270	< 150	< 160	< 530
4-METHYLPHENOL	< 190	< 160	< 170	< 270	< 150	< 160	< 530
ACENAPHTHENE	< 110	< 92	< 96	< 150	< 85	< 92	< 300
ACENAPHTHYLENE	< 110	< 92	< 96	< 150	< 85	< 92	260
ANTHRACENE	< 110	< 92	< 96	< 150	410	< 92	380
BENZO(A)ANTHRACENE	< 140	< 110	< 120	< 190	1000	110J	5700
BENZO(A)PYRENE	< 190	< 160	< 170	< 270	750	170J	11000
BENZO(B)FLUORANTHENE	< 140	< 110	< 120	< 190	480	240J	8400
BENZO(GHI)PERYLENE	< 220	< 180	< 190	< 310	< 170	< 180	11000
BENZO(K)FLUORANTHENE	< 140	< 110	< 120	< 190	1500	< 110	5800
BIS(2-ETHYLHEXYL)PHTHALATE	< 140	< 110	< 120	< 190	< 110	< 110	< 380
CHRYSENE	< 140	< 110	< 120	< 190	820	200J	8100
DIMETHYL PHTHALATE	< 110	< 92	290	< 150	< 85	< 92	< 300
FLUORANTHENE	< 110	< 92	85	< 150	510	< 92	11000
INDENO(1,2,3-CD)PYRENE	< 220	< 180	< 190	< 310	< 170	< 180	8600
N-NITROSODI-N-PROPYLAMINE	< 140	< 110	< 120	< 190	< 110	< 110	< 380
NAPHTHALENE	< 110	< 92	< 96	< 150	< 85	< 92	460
PHENANTHRENE	< 110	< 92	< 96	< 150	250	< 92	920
PHENOL	< 190	< 160	< 170	< 270	< 150	< 160	< 530
PYRENE	< 110	< 92	260	< 150	810	290J	15000

Notes: NA = Not analyzed, < = Analyte reported below detection limit
UJ = Qualifed, estimated not detected, J = Qualified, estimated value, R = Qualified, not usable
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.
Shaded areas highlight detections above the detection limit.

TABLE 8-5
NAS ALAMEDA - SITE 7A
SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	B07A-05-013	B07A-06-000	Duplicate B07A-06-000	B07A-06-002	B07A-06-010	B07A-06-017	B07A-07-000
Date Sampled	06/20/91	06/19/91	06/19/91	06/19/91	06/19/91	06/19/91	06/19/91
Depth of Sample	12.5 ft	0.0 ft	0.0 ft	2.0 ft	9.5 ft	17.0 ft	0.0 ft
PARAMETER REPORTED							
VOLATILE ORGANICS (µg/kg-dry)							
1,2-DIBROMOETHANE(EDB)	< 0.591	NA	NA	< 0.344	< 0.626	< 0.531	NA
ACETONE	180	NA	NA	490	1100	3900EJJ	NA
CARBON DISULFIDE	150	NA	NA	< 29	220	< 1100	NA
ETHYLBENZENE	< 9.8	NA	NA	43	< 52	< 1100	NA
METHYL ETHYL KETONE	< 20	NA	NA	< 57	< 100	< 2200	NA
METHYLENE CHLORIDE	< 9.8	NA	NA	< 29	< 52	< 1100	NA
TOLUENE	< 9.8	NA	NA	41	< 52	< 1100	NA
XYLENE	< 9.8	NA	NA	240	< 52	< 1100	NA
PESTICIDES/PCBS/HERBICIDES (µg/kg-dry)							
4,4'-DDD	< 13.1	< 7.19	< 7.16	< 7.65	< 13.9	< 11.8	< 7.20
4,4'-DDE	< 6.56	< 3.60	< 3.58	< 3.82	< 6.96	< 5.90	< 3.60
4,4'-DDT	< 13.1	< 7.19	< 7.16	< 7.65	< 13.9	< 11.8	< 7.20
METHOXYCHLOR	< 65.6	< 36.0	< 35.8	< 38.2	< 69.6	< 59.0	< 36.0
TOTAL PETRO. HYDROCARBONS (mg/kg-dry)							
HYDROCARBONS,PETROL	1490	70.8	128	329	181	395	< 30.8

Notes: NA = Not analyzed
UJ = Qualifed, estimated not detected
J = Qualified, estimated value
R = Qualified, not usable
Shaded areas highlight detections above the detection limit.
< = Analyte reported below detection limit
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 8-5
NAS ALAMEDA - SITE 7A
SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	B07A-05-013	B07A-06-000	Duplicate B07A-06-000	B07A-06-002	B07A-06-010	B07A-06-017	B07A-07-000
Date Sampled	06/20/91	06/19/91	06/19/91	06/19/91	06/19/91	06/19/91	06/19/91
Depth of Sample	12.5 ft	0.0 ft	0.0 ft	2.0 ft	9.5 ft	17.0 ft	0.0 ft
PARAMETER REPORTED							
SEMIVOLATILE ORGANICS (µg/kg-dry)							
1,2,4-TRICH'BENZENE	< 200	< 110	420J	< 110	< 210	< 180	< 110
1,4-DICHLOROBENZENE	< 160	< 86	420J	< 92	< 170	< 140	< 86
2,4-DINITROTOLUENE	< 280	< 150	320J	< 160	< 290	< 250	< 150
2-CHLOROPHENOL	< 280	< 150	730J	< 160	< 290	< 250	< 150
2-METHYLNAPHTHALENE	< 200	< 110	< 110	1700J	< 210	< 180	4700J
4-CHLORO-3-METHYLPHENOL	< 280	< 150	800J	< 160	< 290	< 250	< 150
4-METHYLPHENOL	230	< 150	< 150	< 160	< 290	< 250	< 150
ACENAPHTHENE	< 160	< 86	340J	< 92	< 170	< 140	< 86
ACENAPHTHYLENE	< 160	< 86	< 86	< 92	< 170	< 140	< 86
ANTHRACENE	< 160	< 86	< 86	< 92	< 170	< 140	< 86
BENZO(A)ANTHRACENE	< 200	< 110	< 110	160J	< 210	< 180	< 110
BENZO(A)PYRENE	< 280	< 150	< 150	240J	< 290	< 250	< 150
BENZO(B)FLUORANTHENE	< 200	< 110	< 110	360J	< 210	< 180	< 110
BENZO(GHI)PERYLENE	< 310	< 170	< 170	400J	< 330	< 280	< 170
BENZO(K)FLUORANTHENE	< 200	< 110	< 110	< 110	< 210	< 180	< 110
BIS(2-ETHYLHEXYL)PHTHALATE	220	< 110	< 110	< 110	< 210	290UJ	< 110
CHRYSENE	< 200	< 110	< 110	240J	< 210	< 180	< 110
DIMETHYL PHTHALATE	< 160	< 86	< 86	< 92	< 170	< 140	< 86
FLUORANTHENE	< 160	< 86	< 86	250J	< 170	< 140	< 86
INDENO(1,2,3-CD)PYRENE	< 310	< 170	< 170	370J	< 330	< 280	< 170
N-NITROSODI-N-PROPYLAMINE	< 200	< 110	330J	< 110	< 210	< 180	< 110
NAPHTHALENE	< 160	290J	250J	3600J	< 170	< 140	2600J
PHENANTHRENE	< 160	< 86	< 86	< 92	< 170	< 140	< 86
PHENOL	< 280	< 150	1100J	< 160	< 290	< 250	< 150
PYRENE	< 160	< 86	380J	300J	< 170	< 140	< 86

Notes: NA = Not analyzed, < = Analyte reported below detection limit
UJ = Qualifed, estimated not detected, J = Qualified, estimated value, R = Qualified, not usable
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.
Shaded areas highlight detections above the detection limit.

TABLE 8-5
NAS ALAMEDA - SITE 7A
SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	B07A-07-001	B07A-07-005	B07A-07-013
Date Sampled	06/19/91	06/19/91	06/19/91
Depth of Sample	1.0 ft	5.0 ft	13.0 ft
PARAMETER REPORTED			
VOLATILE ORGANICS (µg/kg-dry)			
1,2-DIBROMOETHANE(EDB)	7.26	< 0.462	< 0.589
ACETONE	< 2700	81	84
CARBON DISULFIDE	< 1300	< 7.7	41
ETHYLBENZENE	4300	19	< 9.8
METHYL ETHYL KETONE	< 2700	< 15	< 20
METHYLENE CHLORIDE	< 1300	< 7.7	< 9.8
TOLUENE	< 1300	31	< 9.8
XYLENE	51000	100	< 9.8
PESTICIDES/PCBS/HERBICIDES (µg/kg-dry)			
4,4'-DDD	< 7.10	< 10.3	< 13.1
4,4'-DDE	< 3.55	< 5.14	< 6.55
4,4'-DDT	< 7.10	< 10.3	< 13.1
METHOXYCHLOR	< 35.5	< 51.4	< 65.5
TOTAL PETRO. HYDROCARBONS (mg/kg-dry)			
HYDROCARBONS,PETROL	37.8	133	< 56.0

Notes: NA = Not analyzed
UJ = Qualifed, estimated not detected
J = Qualified, estimated value
R = Qualified, not usable
Shaded areas highlight detections above the detection limit.
< = Analyte reported below detection limit
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 8-5
NAS ALAMEDA - SITE 7A
SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	B07A-07-001	B07A-07-005	B07A-07-013
Date Sampled	06/19/91	06/19/91	06/19/91
Depth of Sample	1.0 ft	5.0 ft	13.0 ft
PARAMETER REPORTED			
SEMIVOLATILE ORGANICS (µg/kg-dry)			
1,2,4-TRICH'BENZENE	< 110	< 150	< 200
1,4-DICHLOROBENZENE	< 85	< 120	< 160
2,4-DINITROTOLUENE	< 150	< 220	< 280
2-CHLOROPHENOL	< 150	< 220	< 280
2-METHYLNAPHTHALENE	5800J	530	< 200
4-CHLORO-3-METHYLPHENOL	< 150	< 220	< 280
4-METHYLPHENOL	< 150	< 220	< 280
ACENAPHTHENE	< 85	< 120	< 160
ACENAPHTHYLENE	< 85	< 120	< 160
ANTHRACENE	< 85	< 120	< 160
BENZO(A)ANTHRACENE	< 110	320	< 200
BENZO(A)PYRENE	< 150	380	< 280
BENZO(B)FLUORANTHENE	< 110	740	< 200
BENZO(GHI)PERYLENE	< 170	890	< 310
BENZO(K)FLUORANTHENE	< 110	420	< 200
BIS(2-ETHYLHEXYL)PHTHALATE	120UJ	190	< 200
CHRYSENE	< 110	600	< 200
DIMETHYL PHTHALATE	< 85	< 120	< 160
FLUORANTHENE	< 85	510	< 160
INDENO(1,2,3-CD)PYRENE	< 170	660	< 310
N-NITROSODI-N-PROPYLAMINE	< 110	< 150	< 200
NAPHTHALENE	4100J	480	< 160
PHENANTHRENE	140J	120	< 160
PHENOL	< 150	< 220	< 280
PYRENE	86J	880	< 160

Notes: NA = Not analyzed, < = Analyte reported below detection limit
UJ = Qualifed, estimated not detected, J = Qualified, estimated value, R = Qualified, not usable
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.
Shaded areas highlight detections above the detection limit.

TABLE 8-6
NAS ALAMEDA - SITE 7A
SOIL ANALYTICAL RESULTS FOR METALS

Sample Number	B07A-01-000	B07A-01-001	B07A-01-007	B07A-01-012	Duplicate B07A-01-012	B07A-02-000	B07A-02-002	B07A-02-007
Date Sampled	06/19/91	06/19/91	06/19/91	06/19/91	06/19/91	06/21/91	06/21/91	06/21/91
Depth of Sample	0.0 ft	1.0 ft	6.5 ft	11.5 ft	11.5 ft	0.0 ft	2.0 ft	7.0 ft
PARAMETER REPORTED								
METALS (mg/kg-dry)								
ALUMINUM	5170	6380	3820	14000	13600	8500J	40500J	37600J
ANTIMONY	< 2.7	2.7	< 3.0	< 4.9	< 4.8	2.6	58	13
ARSENIC	1.35J	3.54J	1.66J	3.73J	5.72J	1.74J	12.6J	17.4J
BARIUM	155	72.0	31.7	22.6	22.9	174	2520	85.2
BERYLLIUM	1.31	1.94	1.10	3.90	4.02	1.35	3.06	3.04
CADMIUM	< 0.318	0.410	< 0.355	< 0.581	< 0.577	< 0.304	82.0	1.03
CALCIUM	3050	3330	2200	2570	2640	5790J	15600J	5370J
CHROMIUM, TOTAL	8.74	28.8	20.9	55.1	55.6	13.8J	326J	125J
COBALT	11.2	7.32	5.32	11.1	11.4	36.3	24.5	37.8
COPPER	7.46	20.5	12.6	22.9	23.7	7.48	3520	75.6
IRON	9980	13800	9450	28000	28500	11900J	59900J	50500J
LEAD	6.91J	21.4	23.8	4.79J	10.2J	7.76J	6760	61.4
MAGNESIUM	2700	3820	2670	10800	10700	3010J	16000J	14200J
MANGANESE	266	263	124	334	320	296J	3500J	709J
MERCURY	0.375	< 0.110	< 0.121	< 0.177	< 0.185	0.356	0.559	1.37
NICKEL	16.2	30.2	19.4	61.8	59.9	21.4	344	182
POTASSIUM	1320	917	551	3720	3840	2030	1880	5310
SELENIUM	< 0.222UJ	< 0.197UJ	< 0.264UJ	< 0.390UJ	< 0.387UJ	< 0.219UJ	< 0.272UJ	< 0.373UJ
SILVER	< 0.519	< 0.517	< 0.579	< 0.948	< 0.942	0.672	48.8	2.35
SODIUM	404	420	661	14500	14300	457J	2820J	11700J
THALLIUM	< 0.285	< 0.253	< 0.339	< 0.502	< 0.498	< 0.282	< 0.350	< 0.480
VANADIUM	16.6	28.2	20.0	48.1	50.0	23.3J	35.4J	105J
ZINC	29.7	50.1	26.1	65.3	65.8	32.1	5610	217

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 8-6
NAS ALAMEDA - SITE 7A
SOIL ANALYTICAL RESULTS FOR METALS

Sample Number	B07A-02-013	B07A-03-000	B07A-03-001	B07A-03-003	B07A-03-012	B07A-04-000	B07A-04-001	Duplicate B07A-04-001
Date Sampled	06/21/91	06/18/91	06/18/91	06/18/91	06/18/91	06/21/91	06/21/91	06/21/91
Depth of Sample	13.0 ft	0.0 ft	0.5 ft	3.5 ft	12.0 ft	0.0 ft	1.0 ft	1.0 ft
PARAMETER REPORTED								
METALS (mg/kg-dry)								
ALUMINUM	31100J	6070	4040	18200	13300	9290J	7200J	5840J
ANTIMONY	12	< 2.5	< 2.9	7.5	< 5.0	5.3	4.1	< 2.8
ARSENIC	7.17J	3.62J	2.91J	7.04J	7.92J	9.60J	4.04J	2.05J
BARIUM	41.7	62.2	36.5	63.3	21.4	60.1	50.6	46.5
BERYLLIUM	3.14	1.88	0.944	4.44	4.22	0.896	1.22	1.32
CADMIUM	< 0.573	< 0.302	< 0.344	< 0.514	< 0.596	0.525	< 0.381	< 0.340
CALCIUM	4580J	2000	1880	4110	2800	8170J	2940J	2550J
CHROMIUM, TOTAL	95.2J	24.0	26.2	74.6	53.4	31.9J	45.5J	33.6J
COBALT	16.2	7.98	5.29	15.5	15.3	8.10	7.18	5.85
COPPER	27.8	15.0	7.75	36.3	21.6	22.2	8.67	7.45
IRON	39300J	13800	8930	35200	29200	17400J	13600J	11000J
LEAD	9.57J	3.82J	4.71J	14.0J	4.68	46.9J	10.6J	4.69J
MAGNESIUM	14900J	5590	2380	12000	10600	4660J	3300J	2570J
MANGANESE	320J	267	129	422	224	327J	133J	135J
MERCURY	< 0.491	< 0.101	< 0.107	0.579	< 0.175	< 0.246	< 0.320	< 0.255
NICKEL	84.2	39.2	26.8	79.5	67.1	31.0	39.6	29.3
POTASSIUM	5550	596	566	3420	3690	1080	1100	833
SELENIUM	< 0.408UJ	< 0.214UJ	< 0.230UJ	< 0.337UJ	< 0.388UJ	< 0.212UJ	< 0.277UJ	< 0.227UJ
SILVER	2.02	0.690	< 0.562	< 0.840	< 0.973	0.915	1.07	< 0.555
SODIUM	14800J	217	239	4340	15300	579J	595J	483J
THALLIUM	< 0.525UJ	< 0.276	< 0.295	< 0.433	< 0.499UJ	< 0.272	< 0.357	< 0.292
VANADIUM	79.5J	18.5	19.5	67.6	54.0	33.3J	33.0J	26.4J
ZINC	89.5	33.2	24.8	80.1	62.9	85.9	32.0	26.2

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 8-6
NAS ALAMEDA - SITE 7A
SOIL ANALYTICAL RESULTS FOR METALS

Sample Number	B07A-04-005	B07A-04-013	B07A-05-000	B07A-05-002	B07A-05-007	B07A-05-013	B07A-06-000	Duplicate B07A-06-000
Date Sampled	06/21/91	06/21/91	06/20/91	06/20/91	06/20/91	06/20/91	06/19/91	06/19/91
Depth of Sample	5.0 ft	13.0 ft	0.0 ft	2.0 ft	0.5 ft	12.5 ft	0.0 ft	0.0 ft
PARAMETER REPORTED								
METALS (mg/kg-dry)								
ALUMINUM	4190J	17500J	5290	5370	15000	15200	3350	3450
ANTIMONY	3.0	7.1	< 2.7	2.8	< 4.7	< 4.6	< 2.5	< 2.7
ARSENIC	2.38J	7.09J	16.0J	47.9J	7.79J	6.18J	2.24J	2.23J
BARIUM	28.6	24.5	43.9	66.3	53.0	24.0	141	116
BERYLLIUM	0.365	2.13	1.36	1.44	4.46	1.62	1.32	1.69
CADMIUM	< 0.345	< 0.551	0.436	< 0.337	< 0.563	0.966	0.665	0.621
CALCIUM	1740J	2890J	7290	2970	2550	2750	5840	9240
CHROMIUM, TOTAL	28.0J	68.1J	26.1	21.8	61.8	60.9	6.29	5.77
COBALT	4.81	14.9	6.09	6.71	13.0	13.8	8.63	12.2
COPPER	5.53	28.2	22.6	29.4	39.3	26.3	10.4	8.80
IRON	8390J	34200J	12100	12800	28000	28900	12800	11400
LEAD	6.01J	9.28J	42.4	14.7J	70.6	4.60J	12.2J	11.1J
MAGNESIUM	2140J	13200J	3440	3570	10700	12200	1830	2090
MANGANESE	97.3J	377J	226	273	261	272	264	332
MERCURY	< 0.276	< 0.441	0.236	< 0.111	0.289	< 0.174	2.56	2.29
NICKEL	23.9	73.1	29.5	28.4	71.8	67.1	16.3	14.3
POTASSIUM	699	4190	772	728	3910	4140	1260	1330
SELENIUM	< 0.250UJ	< 0.385UJ	< 0.211UJ	< 0.214UJ	< 0.748UJ	< 0.821UJ	< 0.225UJ	< 0.224UJ
SILVER	0.832	1.01	< 0.518	< 0.550	< 0.919	< 0.903	1.53	2.16
SODIUM	917J	16500J	592	836	14900	17800	297	274
THALLIUM	< 0.322	< 0.494	< 0.271	< 0.275	< 0.481UJ	< 0.528UJ	< 0.290	< 0.288UJ
VANADIUM	20.2J	59.8J	21.2	22.6	64.3	52.2	12.8	11.7
ZINC	18.9	78.9	69.7	65.7	82.6	69.7	37.5	35.0

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 8-6
NAS ALAMEDA - SITE 7A
SOIL ANALYTICAL RESULTS FOR METALS

Sample Number	B07A-06-002	B07A-06-010	B07A-06-017	B07A-07-000	B07A-07-001	B07A-07-005	B07A-07-013
Date Sampled	06/19/91	06/19/91	06/19/91	06/19/91	06/19/91	06/19/91	06/19/91
Depth of Sample	2.0 ft	9.5 ft	17.0 ft	0.0 ft	1.0 ft	5.0 ft	13.0 ft
PARAMETER REPORTED							
METALS (mg/kg-dry)							
ALUMINUM	4570	18000	13900	4900	8600	31000	30800
ANTIMONY	< 2.8	< 4.9	< 4.0	< 2.6	3.9	8.7	8.2
ARSENIC	5.95J	10.7J	6.73J	2.28J	23.5J	5.59J	6.06J
BARIUM	34.6	46.4	24.8	128	87.6	133	45.6
BERYLLIUM	0.231	2.07	1.84	0.537	0.709	1.64	1.27
CADMIUM	< 0.329	< 0.587	< 0.482	< 0.314	< 0.311	< 0.426	< 0.586
CALCIUM	12500	2950	4270	3370	4580	3000	4080
CHROMIUM, TOTAL	23.9	71.5	57.2	9.99	23.9	114	92.5
COBALT	6.02	14.2	13.6	5.86	8.01	14.5	15.6
COPPER	11.0	37.4	30.2	7.02	32.0	43.9	30.1
IRON	9450	33100	30100	8940	15700	43400	40000
LEAD	10.1J	15.9J	10.1J	36.8J	38.8	34.8	9.84J
MAGNESIUM	2740	12500	11400	2420	4350	11800	14300
MANGANESE	124	376	348	161	256	313	353
MERCURY	< 0.106	0.215	< 0.169	0.381	0.128	0.372	< 0.185
NICKEL	28.4	74.3	65.5	15.2	26.5	85.5	80.7
POTASSIUM	772	4500	3480	1220	1550	5240	5190
SELENIUM	< 0.239UJ	< 0.377UJ	< 0.320UJ	< 0.221UJ	< 0.218UJ	< 0.316UJ	< 0.391UJ
SILVER	< 0.538	< 0.958	< 0.788	< 0.513	< 0.508	0.752	< 0.958
SODIUM	592	13900	10700	385	438	8030	19400
THALLIUM	< 0.307	< 0.484UJ	< 0.411UJ	< 0.284	< 0.281UJ	< 0.407UJ	< 0.503UJ
VANADIUM	19.8	67.4	50.4	15.9	30.5	88.1	83.0
ZINC	28.9	79.2	68.5	27.8	121	103	78.4

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 8-7
NAS ALAMEDA - SITE 7A
GROUNDWATER ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number Date Sampled	M07A-01 08/20/91	M07A-02 08/20/91	M07A-03 08/20/91	M07A-04 08/20/91	W-1 08/21/91	W-2 08/20/91	W-3 08/21/91
PARAMETER REPORTED							
VOLATILE ORGANICS (µg/L)							
ACETONE	< 2.0	15	13	< 2.0	< 100	< 20	< 200
BENZENE	< 1.0	< 1.0	< 1.0	< 1.0	900	15	3700
ETHYLBENZENE	< 1.0	< 1.0	< 1.0	< 1.0	290	95	130
TOLUENE	< 1.0	< 1.0	< 1.0	< 1.0	590	52	< 100
XYLENES,TOTAL	< 1.0	< 1.0	1.9	< 1.0	1200	340	< 100
SEMIVOLATILE ORGANICS (µg/L)							
2-METHLYNAPHTHALENE	< 1.0	< 1.0	< 1.0	< 1.0	67.4J	105J	60.0J
2-METHYL PHENOL	< 2.0	< 2.0	< 2.0	< 2.0	< 20	3.2J	< 20
4-METHYL PHENOL	< 2.0	< 2.0	< 2.0	< 2.0	< 20	4.1J	< 20
ACENAPHTHENE	< 1.0	< 1.0	< 1.0	< 1.0	< 10.0	< 1.0R	20J
BENZOIC ACID	< 2.50	< 2.50	< 2.50	< 2.50	< 25.0	18.4J	< 25.0
BIS(2-ETHYLHEXYL)PHTHALATE	3.4UJ	5.3UJ	6.1UJ	4.0UJ	< 20	4.8UJ	< 20
FLUORANTHENE	< 1.0	< 1.0	< 1.0	< 1.0	< 10.0	3.3J	< 10.0
NAPHTHALENE	< 1.0	< 1.0	< 1.0	< 1.0	110J	100J	500J
PHENOL	< 2.0	< 2.0	< 2.0	< 2.0	< 20	< 2.0R	120J
PYRENE	< 1.0	< 1.0	< 1.0	< 1.0	< 10.0	3.1J	< 10.0
PESTICIDES/PCBS (µg/L)	ND	ND	ND	ND	ND	ND	ND
TOTAL PETRO. HYDROCARBONS (mg/L)							
HYDROCARBONS,PETRO	< 0.2	< 0.2	< 0.2	< 0.2	0.7	0.4	0.4

Notes: ND = Not detected, < = Analyte reported below detection limit
UJ = Qualifed, estimated not detected
J = Qualified, estimated value
R = Qualified, not usable
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.
TOTAL XYLENES = Includes "o", "p" and "m" xylenes
Shaded areas highlight detections above the detection limit.

TABLE 8-8
NAS ALAMEDA - SITE 7A
GROUNDWATER ANALYTICAL RESULTS FOR METALS

Sample Number Date Sampled	M07A-01 08/20/91	M07A-02 08/20/91	M07A-03 08/20/91	M07A-04 08/20/91	W-1 08/21/91	W-2 08/20/91	W-3 08/21/91
PARAMETER REPORTED							
METALS (µg/L)							
ALUMINUM	70.9	79.5	38.4	666	275	868	65.6
ANTIMONY	< 25.1	< 25.1	< 25.1	31.4	< 25.1	< 25.1	35.0
ARSENIC	4.3	10.0	21.0	6.5	52.9	27.6	146
BARIUM	320	202	148	375	110	158	1020
BERYLLIUM	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	2.0
CADMIUM	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
CALCIUM	339000J	350000J	303000J	283000J	110000J	165000J	210000J
CHROMIUM,TOTAL	< 5.7	< 5.7	< 5.7	< 5.7	< 5.7	< 5.7	< 5.7
COBALT	< 6.1	7.8	11.4	< 6.1	< 6.1	< 6.1	< 6.1
COPPER	77.1	85.3	54.9	36.1	36.4	41.9	22.0
IRON	723	261	131	2870	11400	18600	29400
LEAD	< 2.0UJ	< 8.0UJ	< 8.0UJ	< 2.0UJ	< 2.0	< 2.0	< 2.0UJ
MAGNESIUM	454000J	806000J	911000J	283000J	103000J	89800J	335000J
MANGANESE	2020	982	1320	3680	2770	6840	860
MERCURY	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
NICKEL	< 13.2	< 13.2	38.7	< 13.2	< 13.2	< 13.2	< 13.2
POTASSIUM	138000	251000	296000	104000	45700	39000	112000
SELENIUM	< 2.1UJ	< 10.5UJ	< 10.5UJ	< 2.1UJ	< 2.1UJ	< 2.1UJ	< 10.5UJ
SILVER	5.5J	< 4.9UJ	7.1J	< 4.9UJ	< 4.9UJ	< 4.9UJ	< 4.9UJ
SODIUM	4140000J	7380000J	9330000J	2640000J	1110000J	674000J	3530000J
THALLIUM	< 2.7UJ	< 13.5UJ	< 13.5UJ	< 2.7UJ	< 2.7UJ	< 2.7UJ	< 2.7UJ
VANADIUM	11.0	< 4.2	< 4.2	14.6	14.3	9.4	14.2
ZINC	< 2.3	< 2.3	< 2.3	< 2.3	13.6UJ	133J	3.3UJ

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 8-9
NAS ALAMEDA - SITE 7A
GROUNDWATER ANALYTICAL RESULTS FOR GENERAL CHEMICALS

Sample Number Date Sampled	M07A-01 08/20/91	M07A-02 08/20/91	M07A-03 08/20/91	M07A-04 08/20/91	W-1 08/21/91	W-2 08/20/91	W-3 08/21/91
PARAMETER REPORTED							
PHYSICAL PARAMETERS-LAB							
HARDNESS (mg/L-CaCO3)	4700	6000	6400	2800	1500	1200	2500
PHYSICAL PARAMETERS-FIELD							
pH, FIELD (Std. Units)	7.00	6.90	7.00	7.00	7.00	7.00	6.60
SP. COND., FIELD @25C (µmhos/cm)	23500	23000	40000	15000	14000	6000	22000
WATER TEMP (C)	23.9	22.0	19.1	19.2	NA	21.4	NA
TOTAL ORGANIC CARBON (mg/L)							
CARBON, TOC	39.2J	77.8J	69.8J	34.4J	40.2J	191J	41.3J

Notes: J = Qualified, estimated value
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.
NA = Not analyzed
Shaded areas highlight detections above the detection limit.

9.0 SITES 7B AND 11
BUILDING 162 AND BUILDING 14
SERVICE STATION AND ENGINE TEST CELL

9.1 SITE DESCRIPTION AND BACKGROUND

Sites 7B and 11 are located on the southwest corner of Atlantic Avenue and Eighth Street. Building 162 is found on Site 7B and Building 14 is found on Site 11. Because of their proximity to one another, the sites are discussed together. Both sites are within the Area 97 aviation gas (AVGAS) leak (initial assessment study Site-4) discussed in Section 9.3. Figure 9-1 shows the layout of both sites in relation to Area 97.

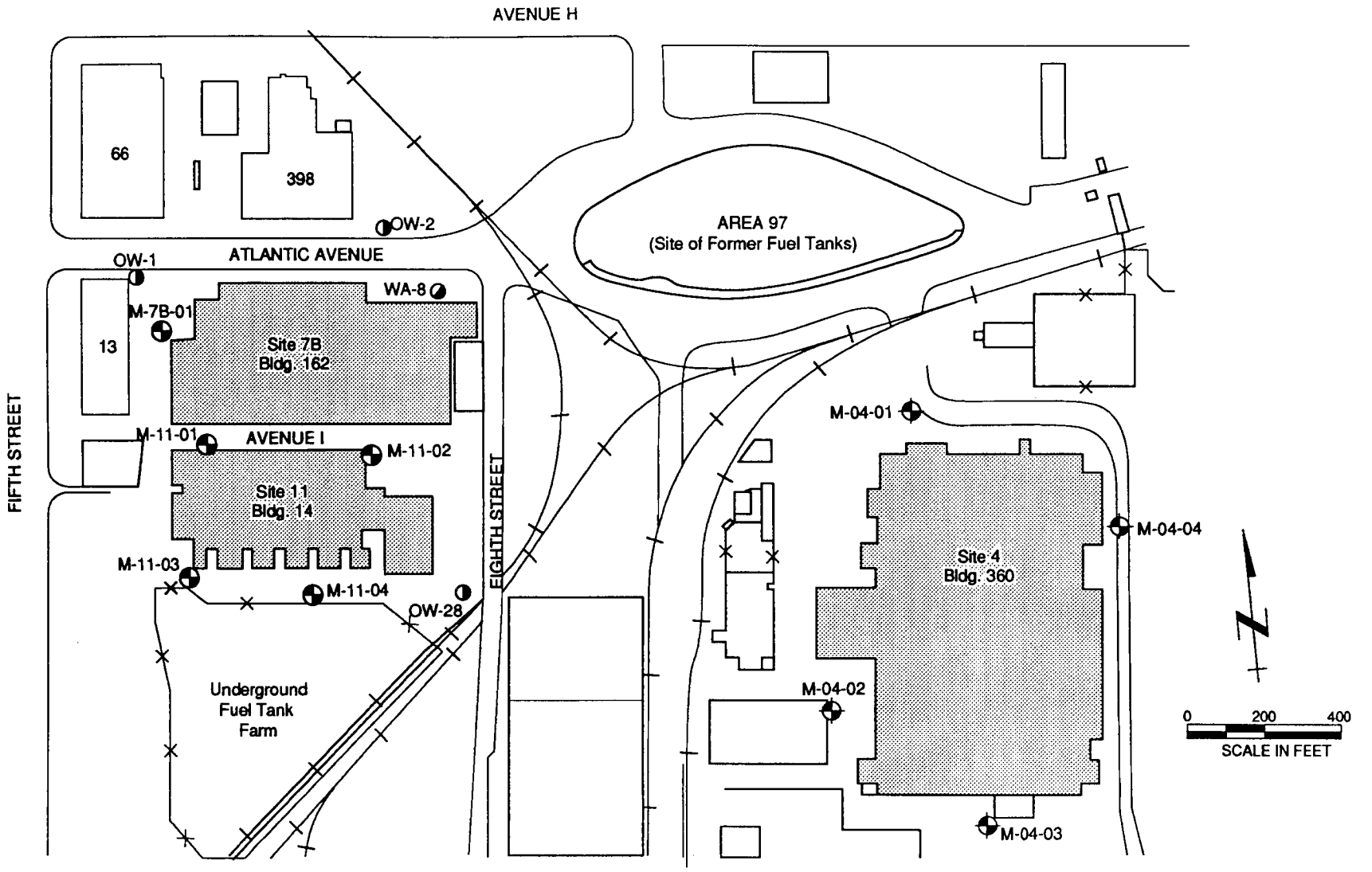
9.1.1 SITE 7B / BUILDING 162

Site 7B occupies an area reportedly formerly used by the Navy Exchange as a service station (Canonie, 1990). During a March, 1988, site visit, Canonie representatives were unable to locate information about the quantity, size, location, or disposition of any USTs associated with the former service station. Canonie also reports that Environmental Resource Management (ERM) did not test any tanks at Site 7B during its 1987 underground tank testing study at NAS Alameda. After finding no information regarding the former service station during its research, Canonie concluded that possibly only Navy Exchange administrative activities occurred at the site (Canonie, 1990a).

During Phase 2B and 3 activities, surface evidence suggesting the presence of potential USTs in the grass near the northeast corner of Building 162 was discovered. There are three 3-inch diameter pipes cut off flush with the ground surface and two 2-inch diameter lines running out of the ground and up the wall adjacent to the lawn area. The pipes running up the wall may be vent lines and the pipes flush to the grass may be fill lines. The lines flush with the ground are filled with concrete, indicating that if tanks were present, they may have been closed in place with sand or concrete. If abandoned tanks are present, they appear to be related to activities in Building 162 because the vent lines are attached to Building 162, indicating that the building would predate the tanks.

9.1.2 SITE 11 / BUILDING 14

Site 11 is located across a narrow alley (Avenue I) directly south of Site 7B. The building on Site 11, Building 14, was constructed in 1946 and served as the primary site for aircraft engine testing for many



LEGEND:

- Monitoring Well Location
- Canonie Monitoring Well Location
- Former Kennedy Monitoring Well Location (not found)
- Wahler Associates Monitoring Well Location
- Railroad
- Fence
- 66 Structure
- Site

Note:
Soil boring locations surveyed by Nolte & Associates, Walnut Creek, California in October, 1991 relative to California Coordinate System, Zone 3, NAD 27

A-5

NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA
SITES 7B AND 11
VICINITY MAP

FIGURE 9-1

years. Today, two of the test cells are still in use. Fuel types used during testing included AVGAS, JP-5, and JP-7. The fuel was supplied from the tank farm located due south of the site (Figure 9-1). Underground fuel lines connect the tank farm to the rooftop of Building 14 through risers located on the southern exterior wall of the building. The exact locations of the fuel lines are unknown. Canonie (1990a) reports that no hydraulic fluid was used during testing, but several solvents were used for cleanup, including PD-680 and BNB 3100.

During Phase 2B and 3 activities, evidence of potential abandoned USTs was discovered in a compound on the south side of the site. Surface features consisting of potential fill and vent lines were discovered in a compound located between the site and the fuel farm to the south. The existence of any tanks at Site 11 has not been confirmed.

Laboratories located on the second floor of Building 14 have reportedly contained mercury in various manometers and thermometers for many years. Minor spills, of up to several ounces, have occurred in the past. These spills may have been washed into the industrial waste collection system. Canonie's site inspection and interviews revealed that the mercury spills generally amounted to self-contained overflows within instrument measuring devices. Because there are indications that mercury may have been washed into the industrial waste collection system, the Department of Toxic Substance Control (DTSC) recommended that possible mercury leaks from the sewer system be investigated (Canonie, 1990a).

9.2 CURRENT USE

Site 7B is currently used as a maintenance shop for ship components. Testing of numerous small engines and pumps occurs in the alleys surrounding the site. The tests are conducted in water filled vats and minor spilling of fuel-contaminated water during the tests was observed during Phase 2B and 3 field activities. The tests were performed in Avenue I and along the western side of Building 162. No secondary containment or spill control was observed. Machine and maintenance shops are found inside the building.

The ground floor of Site 11 is still used as an engine test cell center. Use of one of the cells was discontinued in 1988; two of the cells are still active. The second floor of the building houses laboratories that use small quantities of mercury in manometers and thermometers. Canonie reported no visible signs of mercury contamination in or below the laboratories during its 1988 site visit (Canonie, 1990a).

Sanitary sewer lines leave the southern side of Building 162 and the northern side of Building 14 and enter the main located beneath Avenue I. The main runs eastward beneath Avenue I then turns to the north under the parking lot on the opposite side of Eighth Street. The industrial sewer line runs alongside

the sanitary sewer line until it reaches the parking lot on the opposite side of Eighth Street. There, it enters a small pump station and is pumped northward. The storm sewer system is more complicated. Mains run along the northern side of Building 162, under Avenue I between the two sites, and along the western side of Building 14. The storm sewer line under Avenue I runs due west to the Outfall "H" at the Sea Plane Lagoon. Figure 9-2 shows the configuration of the sites and the layout of the sanitary sewer, industrial sewer, and the storm drains around the buildings.

9.3 PREVIOUS INVESTIGATIONS

Both buildings are in the area investigated for a large AVGAS leak from a former tank farm designated as Area 97 (formerly IAS Site-4). Area 97 is located approximately 200 feet east of Site 7B, as shown on Figure 9-1. In 1975, the Navy discovered that three of the five 100,000-gallon, partially buried, concrete AVGAS tanks at Area 97 were leaking. After the leaks were discovered, these three tanks were drained, cleaned, and filled with water. In 1978, the Navy discovered that one of the two remaining tanks was leaking. At this time, both of the remaining two tanks were drained, cleaned, and filled with water. Based on inventory information, the Navy estimates that approximately 365,000 gallons of AVGAS was lost from the tanks during the late 1960s and early 1970s. The fuel has caused vapor problems in both sewer and electrical manholes in the area, with reported incidents of explosions and fires. The tanks were destroyed and buried in place before 1987 (Canonie, 1990a). Today, Area 97 is landscaped and contains a centrally mounted aircraft as an exhibit.

In July 1979, Kennedy Engineers (Kennedy) investigated the extent of the subsurface fuel contamination in the vicinity of Area 97. It installed 18 groundwater monitoring wells to investigate the spill. It found that an area of approximately 5.5 acres of subsoil was affected by the fuel contamination. Only three of the Kennedy wells are at Site 7B and 11. The reported locations of the wells are shown on Figure 9-2. All of the wells were sampled and analyzed for AVGAS using an unspecified method (Kennedy, 1980). The analytical results from the three Kennedy wells at Sites 7B and 11 are presented in Table 9-1.

In 1985, Wahler Associates conducted a follow-up study of the Area 97 spill. It re-sampled most of the wells installed by Kennedy and installed three new wells. Only one of the wells installed by Wahler Associates, WA-8, is located is located near Sites 7B and 11. The location of WA-8 is shown on Figure 9-2 (Wahler Associates, 1985). The analytical results from the wells at Sites 7B and 11 for the Wahler Associates study are presented in Table 9-1.

OW-2

OW-21

ATLANTIC AVENUE

B-7B-02

B-7B-03

WA-8

Suspected Underground Tanks

M-7B-01

113

Site 7B
Bldg. 162

349

FIFTH STREET

M-11-01

AVENUE I

M-11-02

265

B-11-07

EIGHTH STREET

Site 11
Bldg.14

B-11-05

M-11-03

B-11-06

M-11-04

Suspected Underground Tanks

0 30 60
SCALE IN FEET

LEGEND:

- JMM Monitoring Well Location
- Wahler Associates Monitoring Well Location
- Former Kennedy Monitoring Well Location (not found)
- Boring Location
- Structure
- Site
- Fence
- Storm Drain
- Catch Basin
- Industrial Sewer Line
- Sanitary Sewer Line
- Direction of Flow in Sewers
- Pump Station

Notes:
1) Soil boring locations surveyed by Nolte & Associates, Walnut Creek, California in October, 1991 relative to California Coordinate System, Zone 3, NAD 27
2) Base map CAD File provided by NAS Alameda

A-4

NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA
SITES 7B and 11
SITE MAP

FIGURE 9-2

TABLE 9-1

SITES 7B AND 11
BUILDINGS 162 AND 14
FORMER FUEL STATION AND ENGINE TEST CENTER
GROUNDWATER ANALYTICAL RESULTS,
PREVIOUS INVESTIGATIONS

Well I.D.	Date Sampled	AVGAS mg/L	Gasoline Hydrocarbons mg/L	Lead mg/L
Kennedy Investigation				
OW-2	9/19/79	4.0	NA	NA
OW-21	9/19/79	5.0	NA	NA
OW-28	9/19/79	11.0	NA	NA
Wahler Associates Investigation				
OW-2	1/4/85	NA	< 1	0.58
OW-21	1/8/85	NA	< 1	19
OW-28	1/3/85	NA	< 1	0.25
WA-8	3/15/85	NA	< 0.05	< 0.01

mg/L - milligrams per liter

Method used for AVGAS and Gasoline Hydrocarbon analysis were unspecified for both studies. Both used gas chromatography on a pentane extract.

EPA Method 239.2 was used for lead

9.4 REMEDIAL INVESTIGATION

Three soil borings were drilled at Site 7B during the Phases 2B and 3 investigation and a groundwater monitoring well was constructed in one of them. Seven soil borings were drilled at Site 11 and groundwater monitoring wells were installed in four of them. Field methods are described in Appendix A. Boring logs and well construction diagrams are included in Appendix E. In addition, the work plans included sampling three wells installed by others for the Area 97 investigation (OW-2, OW-21, and WA-8). However, only well WA-8 could be located. Figure 9-2 shows the locations of the borings and wells installed for the current investigation and the location of well WA-8 installed in a previous investigation.

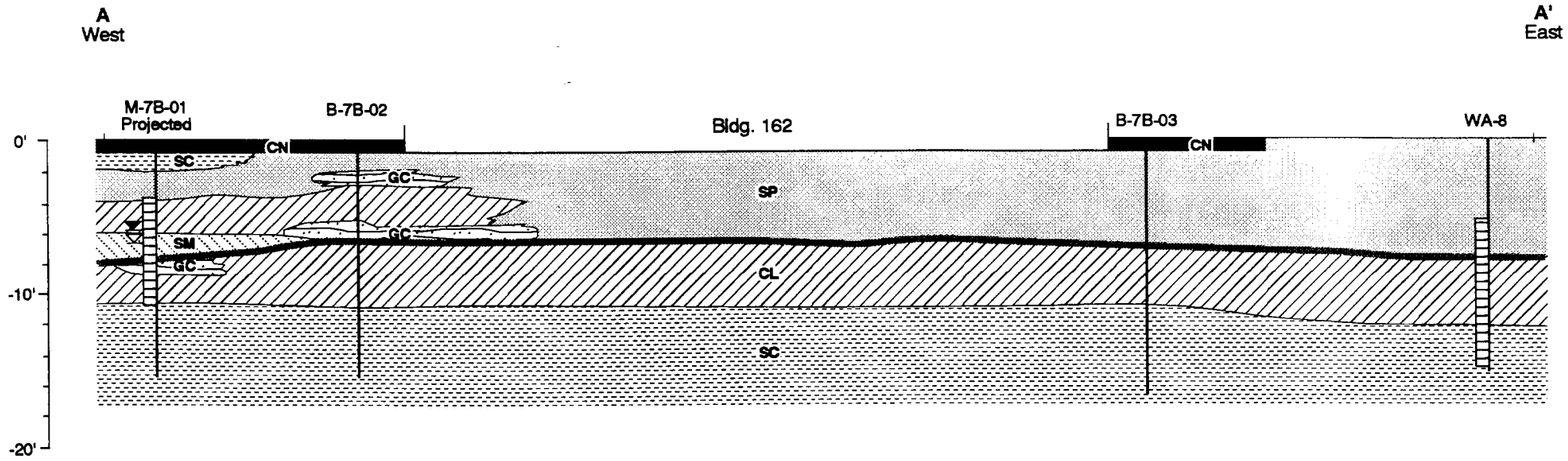
9.4.1 Site Geology/Hydrogeology

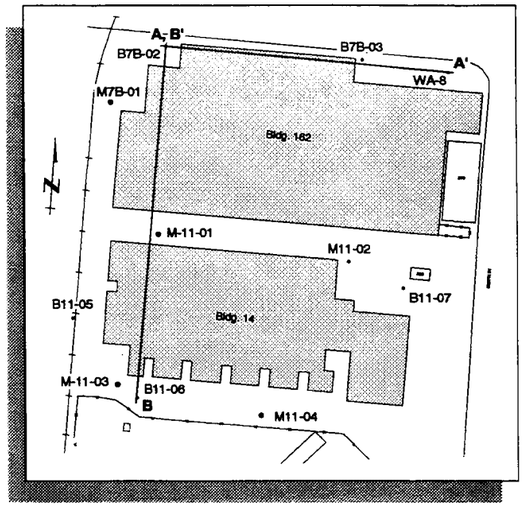
Figure 9-3 presents two cross sections for the sites. Geotechnical analytical data are listed in Table 9-2. The geotechnical laboratory reports are found in Appendix D.

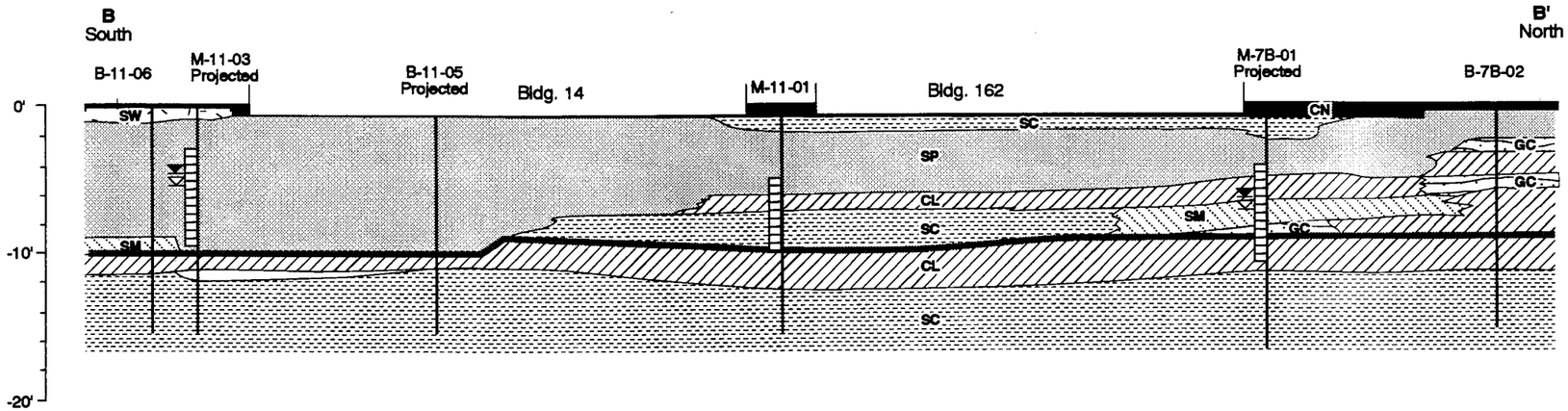
Sites 7B and 11 are underlain by 6 to 9 feet of fill. Over most of the site, the fill is composed of very fine to fine-grained sand containing trace amounts of shells and clay fragments. The fill consists of dredge spoils removed from nearby San Francisco Bay. In the northwest corner of Site 7B, the fill is finer grained than over the remainder of the site. It consists of clays, gravelly clays, sands, and silt of obvious marine origin. Because of the marine nature of the fill in this portion of Site 7B, determining the contact between fill and native material is difficult.

A 2- to 5-foot-thick native clay unit occurs beneath the fill. The unit is composed mostly of clay with minor amounts of fine-grained sands and silty sands. Many of the clays exhibit silty or sandy partings. The unit also contains numerous laterally discontinuous sandy and gravelly beds. The sand and gravel beds are typically 2 to 6 inches thick and are not correlative between boreholes. The gravel beds contain relatively high concentrations of shell fragments. The deposits are nearshore tidal flat deposits cut by numerous small channels as discussed in Section 2.0.

Throughout both sites, a distinctive clayey sand is found beneath the native clay unit. The upper foot of the clayey sand is black and contains abundant shell fragments. The rest of the sand is mottled brown and grey and contains abundant plant debris along horizontal bedding planes. The abundance of organic material indicates the mottled clayey sand was deposited in a marsh (Section 2.0). The black shelly sand may represent a transitional zone between the marsh deposits and the overlying tidal flat deposits.







LEGEND:

- GC Clayey Gravel
- SW Gravelly Sand
- SP Sand
- SC Clayey Sand
- SM Silty Sand
- CL Clay
- CN Concrete
- Approximate Fill/Native Sediment Interface
- First Water During Drilling
- Water Level During Water Sampling
- Monitoring Well Screened Interval

NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA
SITES 7B AND 11
GEOLOGIC CROSS SECTION A-A', B-B'

FIGURE 9-3

TABLE 9-2

SITES 7B AND 11
BUILDINGS 162 AND 14
FORMER FUEL STATION AND ENGINE TEST SHOP
GEOTECHNICAL SAMPLE LABORATORY TEST RESULTS

Sample No.	Depth (ft)	Soil Classification Laboratory	Soil Classification Field	Moisture Content (%)	Dry Density (pcf)	Specific Gravity	CEC (meq/100g)	TOC (% w/w)	Permeability Effective Stresses (psi)	Permeability Hydraulic Conductivity (cm/s)
B-7B-01	3 - 3.5	NA	SP	NA	NA	NA	NA	< 0.1	NA	NA
B-7B-01	7.5 - 8	NA	SM	15.0	111.5	2.71	3.6	< 0.1	5	1.05E-05
B-7B-01	13.5 - 14	NA	SC	NA	NA	NA	NA	< 0.1	NA	NA
B-7B-02	2.5 - 3	SP/SC	GC	11.0	93.5	NA	NA	< 0.1	3	6.48E-04
B-7B-02	10 - 10.5	CL	CL	63.5	60.5	NA	35.5	0.6	NA	NA
B-7B-03	15 - 15.5	SC	SC	18.5	109.0	NA	37.2	< 0.1	9	5.29E-07
B-11-01	4 - 4.5	SP	SP	NA	NA	NA	NA	< 0.1	NA	NA
B-11-02	8.5 - 9	SP/SC	CL	23.0	99.0	NA	14.6	< 0.1	5	9.91E-05
B-11-03	13 - 13.5	SC	SC	20.0	111.0	NA	29.1	< 0.1	8	2.84E-07
B-11-04	13.5 - 14	NA	SP	17.5	115.0	2.71	NA	< 0.1	9	9.19E-09
B-11-05	7 - 7.5	NA	SP	21.5	104.0	NA	2.2	NA	4	3.61E-06
B-11-06	7 - 7.5	NA	SP	19.0	105.0	NA	NA	NA	4	4.65E-04
B-11-07	9 - 9.5	NA	CL/GW	16.5	109.0	NA	NA	NA	NA	NA

NA - Not Analyzed
Parameters not detectect are reported as less than method detection limit.

Laboratory Methods (Units):
Soil Classification - Unified Soil Classification System (USCS) - ASTM D2488
Moisture Content - ASTM D2216 (percent)
Dry Density - ASTM D2937 (pounds per cubic foot)
Specific Gravity - ASTM D854
Cation Exchange Capacity (CEC) - EPA 9080 (milliequivalents per 100 grams)
Total Organic Carbon (TOC) - Walkey and Black (percent of wet weight)
Effective Stress - EPA 9100 (pounds per square inch)
Hydraulic Conductivity - EPA 9100 (centimeters per second)

In-situ permeability (slug) tests were conducted in the wells at Sites 7B and 11. The hydraulic conductivities as determined by the rising-head method of Bouwer and Rice ranged from 2.2E-03 cm/sec to 3.0E-04 cm/sec (Bouwer and Rice, 1976; Bouwer, 1989). The in-situ permeability test data are presented in Appendix E.

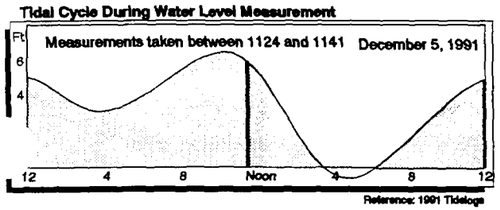
Groundwater occurs between 4 and 8 feet below grade. Groundwater elevations were measured periodically during November and December, 1991, at different times during the lunar cycle and at different times during a daily diurnal tidal cycle. Groundwater elevation data are presented in Table 9-3. Water levels varied over the course of a daily tidal cycle, presumably due to tidal influences. From preliminary data, the largest tidal influence occur in well M11-01. A tidal influence study is planned for the site. Results of the study will be incorporated in the draft final version of this report and will allow determination of the average flow direction and piezometric head for each well.

Notwithstanding the results of the planned tidal influence study, a groundwater potentiometric surface map generated from data collected on December 5, 1991, is shown on Figure 9-4. In the northwestern part of Site 7B, the computed gradient is 0.01 toward the southeast. Under the southeastern portion of Site 11 the computed gradient is 0.002 toward the northwest and the gradient is nearly flat in the eastern portion of the site. The low water elevation in M11-01 may be related to the nearby utility lines. Permeable backfill material present around these lines at depths below the groundwater surface may provide a path of preferential flow toward the Sea Plane Lagoon.

The native material found at depth at both sites is finer grained and less permeable than the fill. The permeabilities measured in geotechnical samples for the native clays and clayey sands are two to three orders of magnitude less than the permeabilities measured for the fill. Due to the permeability difference, groundwater may preferentially flow in the fill. Flow of shallow groundwater at the site appears to be complicated by differing fill characteristics (finer grained in the northwest corner of the site) and permeable utility trenches. The utility trenches may provide preferential pathways for groundwater flow.

9.4.2 Analytical Results - Soil Samples

Nine soil samples and one duplicate were collected for chemical analysis at Site 7B, and 21 soil samples and two duplicate samples were collected for chemical analysis at Site 11. Surface soil samples from both sites were analyzed for SVOCs, TRPH, and metals. Additionally, surface soil samples from Site 7B were analyzed for pesticides/PCBs. Subsurface samples were analyzed for the same constituents plus VOCs. Laboratory methods are discussed in Section 4.0. The rationale for selection of laboratory analyses and placement of boring locations is presented in Canonie's work plan (Canonie, 1990a).



ATLANTIC AVENUE

FIFTH STREET

EIGHTH STREET

AVENUE I

OW-2

OW-21

B-7B-02

B-7B-03

WA-6
5.37

Suspected
Underground
Tanks

M-7B-01
7.00

Site 7B
Bldg. 162

Estimated Direction of Groundwater Flow

7.0
6.75
6.5
6.25
6.0
5.75
5.5
5.25
5.0

349

M-11-01
4.80

4.75

M-11-02
5.14

265

B-11-07

Site 11
Bldg. 14

4.75
5.0
5.25

Estimated Direction of Groundwater Flow

B-11-05

M-11-03
5.02

B-11-06

M-11-04
5.32

Suspected
Underground
Tanks

12

113

0 30 60
SCALE IN FEET

LEGEND:

- JMM Monitor Well Location
- 5.14 Groundwater elevation (feet above mean low low water)
- Groundwater Contour
- Wahler Associates Monitor Well Location
- Kennedy Monitor Well Location (not found)
- Boring Location
- 12 Structure
- Site
- Fence
- Catch Basin
- Industrial Waste Line
- Sanitary Sewer Line
- Storm Drain Line
- Direction of Flow in Sewer
- Pump Station

Notes:
1) JMM Soil boring locations surveyed by Nolte & Associates, Walnut Creek, California in October, 1991 relative to California Coordinate System, Zone 3, NAD 27
2) Base map CAD file provided by NAS Alameda

NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA
SITES 7B and 11
GROUNDWATER CONTOUR MAP
DECEMBER 5, 1991
FIGURE 9-4

A-4

TABLE 9 - 3

SITES 7B AND 11
BUILDINGS 162 AND 14
WATER LEVEL DATA
(Sheet 1 of 2)

		Date	Time	Water Level	Water Elevation
M07B-01					
ToC	*11.45*	11/12/91	1031	4.62	6.83
		11/12/91	1216	4.61	6.84
		11/12/91	1411	4.62	6.83
		11/12/91	1721	4.62	6.83
		11/22/91	840	4.58	6.87
		11/22/91	1030	4.58	6.87
		11/22/91	1155	4.58	6.87
		12/5/91	1039	4.45	7.00
		12/5/91	1138	4.45	7.00
WA-8					
ToC	*12.99*	11/12/91	1059	7.67	5.32
		11/12/91	1220	7.66	5.33
		11/12/91	1414	7.63	5.36
		11/12/91	1718	7.63	5.36
		11/22/91	842	7.70	5.29
		11/22/91	1031	7.69	5.30
		11/22/91	1159	7.68	5.31
		12/5/91	1041	7.64	5.35
		12/5/91	1141	7.62	5.37
M11-01					
ToC	*12.35*	11/12/91	1033	7.92	4.43
		11/12/91	1226	7.93	4.42
		11/12/91	1408	7.86	4.49
		11/12/91	1724	7.74	4.61
		11/22/91	843	7.96	4.39
		11/22/91	1034	7.75	4.60
		11/22/91	1201	7.48	4.87
		12/5/91	1038	7.65	4.70
		12/5/91	1136	7.55	4.80

TABLE 9 - 3

SITES 7B AND 11
BUILDINGS 162 AND 14
WATER LEVEL DATA
(Sheet 2 of 2)

	Date	Time	Water Level in feet	Water Elevation in feet
M11-02				
ToC 12.03	11/12/91	1036	6.61	5.42
	11/12/91	1223	6.61	5.42
	11/12/91	1405	6.60	5.43
	11/12/91	1714	6.59	5.44
	11/22/91	847	6.82	5.21
	11/22/91	1036	6.80	5.23
	11/22/91	1203	6.79	5.24
	12/5/91	1036	6.90	5.13
	12/5/91	1130	6.89	5.14
M11-03				
ToC 11.41	11/12/91	1041	6.25	5.16
	11/12/91	1229	6.26	5.15
	11/12/91	1359	6.25	5.16
	11/12/91	1706	6.26	5.15
	11/22/91	841	6.33	5.08
	11/22/91	1032	6.33	5.08
	11/22/91	1158	6.32	5.09
	12/5/91	1032	6.40	5.01
	12/5/91	1124	6.39	5.02
M11-04				
ToC 11.97	11/12/91	1039	6.54	5.43
	11/12/91	1231	6.53	5.44
	11/12/91	1401	6.52	5.45
	11/12/91	1709	6.52	5.45
	11/22/91	840	6.61	5.36
	11/22/91	1030	6.58	5.39
	11/22/91	1155	6.55	5.42
	12/5/91	1034	6.65	5.32
	12/5/91	1127	6.65	5.32

ToC - Top of Casing
Elevation datum - USGS Mean Low Low Water

Laboratory analytical results are summarized in tables at the end of this section. Tables 9-4 and 9-5 present the concentration of organic compounds detected in soil samples at Sites 7B and 11 respectively. Note that these tables present only those analytes detected in soil samples. A list of the analytes potentially identified in these analyses is presented in Section 4.0. Tables 9-6 and 9-7 present the concentrations of metals detected in soil samples at Sites 7B and 11 respectively.

Selected soil samples were also analyzed for TOC and pH. These data will be used in the feasibility study portion of the project and are not discussed here. Laboratory analytical results for these parameters are summarized in Appendix B.

9.4.2.1 Total Recoverable Petroleum Hydrocarbons. TRPH were detected in 16 of the soil samples at the two sites.

TRPH were detected in only the surface sample in borings B07B-01, B07B-03, B11-01, B11-03, and B11-06. TRPH concentrations detected in these samples ranged from 34.5 to 508 mg/kg. No TRPH were detected in boring B11-02.

TRPH was detected in samples collected from the surface to 11 feet in B07B-02. The concentration at the surface is 320 mg/kg, which decreases to 55.3 mg/kg in the 4-foot sample. TRPH were not detected in the 11-foot sample, but a concentration of 60.7 mg/kg was reported for the 11-foot duplicate. The discrepancy between the sample and the duplicate may be related to the heterogeneity of the soil samples.

TRPH were detected from the surface to 4 feet in boring B11-04. The maximum measured concentration of TRPH in the boring is 28,700 mg/kg in the surface sample. No TRPH were detected in the 10 or 14 foot samples.

TRPH were detected from the surface to between 5 and 14 feet in boring B11-05. The maximum concentration measured in B11-05 is 29,200 mg/kg at 5 feet, immediately above the first water encountered during drilling..

9.4.2.2 Volatile Organic Compounds. The volatile organic compounds detected in soil samples at Sites 7B and 11 are acetone, carbon disulfide, methylene chloride, 1,2-DCE, and xylene. Acetone, methylene chloride, and 1,2-DCE are common industrial solvents or the breakdown products of solvents. Acetone was detected in all of the samples except one. Because acetone was also detected in the

laboratory method blanks for all of the sample batches for these sites except the batch containing sample B07B-03-011, the data were qualified. After qualification, all of the acetone results except B07B-03-011 are considered not detected (Section 3.0).

Methylene chloride was detected in 15 samples. As with acetone, methylene chloride was detected in laboratory method blanks. Nine methylene chloride results were qualified as not detected. The remaining six methylene chloride detections are considered valid.

Total 1,2-DCE and xylene were detected in one sample (B07B-01-008) at concentrations of 9.7 and 9.6 µg/kg, respectively. This boring was not near a sewer or storm drain line. The source of the compounds is unknown. Carbon disulfide was only found in native soils at concentrations ranging from 11 to 69 µg/kg.

9.4.2.3 Semivolatile Organic Compounds. A suite of PAH was detected in borings B07B-01, B07B-02, B11-02, B11-04, and B11-06. The PAH were only detected in the native soil at depths of 8 feet or greater. Concentrations of PAH ranged from 88 to 14,000 mg/kg. The highest concentrations were detected in the 10-foot sample from boring B11-02.

9.4.2.4 Metals. As discussed in Section 3.0 of this report, background data for metals in soils at NAS Alameda have not been collected. Background data for metals in soil will be collected at a later date. An evaluation of the location and extent of possible metals contamination will be performed after the collection of background soil samples. Data generated in this investigation are presented below. As discussed in Section 3.0, the metals beryllium, chromium, copper, lead, mercury, and nickel have been tentatively identified as metals of concern. Analytical results for these metals are presented below. Results for all metals analyzed for are presented in Tables 9-6 and 9-7.

Beryllium was detected in 13 samples from Site 7B at concentrations ranging from 0.68 to 2.2 mg/kg. Concentrations in 30 samples collected at Site 11 ranged from 0.206 to 2.34 mg/kg. The highest concentration at Site 7B was identified in the 8-foot sample from boring B07B-01. The 10-foot sample from B11-02 contained the highest concentration detected at Site 11.

Total chromium was detected in 13 samples from Site 7B; concentrations ranged from 16 to 74.3 mg/kg. Concentrations in 31 samples collected at Site 11 ranged from 8.03 to 73.5 mg/kg. The highest concentrations were identified in the 8-foot sample from B07B-01 and the 10-foot sample from B11-02.

Copper was detected in 13 samples from Site 7B at concentrations ranging from 6.33 to 49.1 mg/kg. Concentrations in 31 Site 11 samples ranged from 4.77 to 195 mg/kg. The highest concentrations were identified in the surface sample from B07B-02 and the duplicate surface sample from B11-04.

Lead concentrations detected in 13 samples at Site 7B ranged from 2.86 to 70.7 mg/kg. The highest concentration was identified in the surface sample from B07B-02. Lead concentrations detected in 31 samples from Site 11 ranged from 0.775 to 242 mg/kg. The highest concentration was identified in the surface sample from B11-03.

Mercury was identified in only the surface sample from B07B-02 at a concentration of 0.481 mg/kg. Seven Site 11 samples contained mercury at concentrations ranging from 0.122 to 1.34 mg/kg. The highest concentration was detected in the 10-foot sample from boring B11-02.

Nickel was identified in 13 samples from Site 7B at concentrations ranging from 19.7 to 98.1 mg/kg. The highest concentration was detected in 8-foot sample from B07B-01. Nickel concentrations in 31 Site 11 samples ranged from 6.75 to 89 mg/kg. The highest concentration was detected in 10-foot sample from boring B11-02.

9.4.3 Analytical Results - Groundwater Samples

Two groundwater samples plus one duplicate were collected at Site 7B and four groundwater samples were collected at Site 11 using methods described in Appendix A. All samples were analyzed for VOCs, SVOCs, TRPH, metals, and EDB. Additionally, the samples from Site 7B were analyzed for pesticides/PCBs. All samples were analyzed for TOC, pH, various anions, and various parameters. Laboratory methods are discussed in Section 4.0. All data tables for groundwater analytical results are found at the end of this section. Tables 9-8 and 9-9 present the concentration of organic compounds detected in groundwater samples at Sites 7B and 11, respectively. Note that these tables contain results for only those organic compounds detected in groundwater samples. For a complete list of the analytes potentially detected by the analyses, see Section 4.0. Tables 9-10 and 9-11 present the concentrations of metals detected in groundwater samples at Sites 7B and 11, respectively. Tables 9-12 and 9-13 present the values for various parameters and the concentrations of various anions and general chemicals for Sites 7B and 11, respectively.

9.4.3.1 Volatile Organic Compounds. Acetone was detected in all of the wells except M11-03 and M11-04. Acetone was also detected in laboratory method blanks. After data qualification, all reported acetone concentrations are considered not detected. Benzene was detected in well M07B-01 at a

concentration of 1.5 µg/l. Total 1,2-DCE and vinyl chloride were detected in well M07B-01 at concentrations of 8.3 and 1.8 µg/L, respectively.

Well M11-02 contained 1,1-DCA, 1,2-DCE, TCE, and vinyl chloride at concentrations of 4.8, 6.9, 2.4, 1.6, and 3.3 µg/L, respectively. Well M11-02 is located near the northeast corner of Site 11.

9.4.3.2 Semivolatile Organic Compounds. Bis(2-ethylhexyl) phthalate was detected in well M07B-01. Because this compound was also present in the method blank associated with this sample, the result was qualified as not detected. The PAH pyrene was detected in well WA-8 at a concentration of 1.1 µg/l.

9.4.3.3 Metals. Analytical results for metals in groundwater at Sites 7B and 11 are summarized in Tables 9-10 and 9-11, respectively. No data are available for background levels of metals in groundwater. Determination of whether levels of metals are elevated will be made at a later date, when background data are available.

9.4.3.4 General Chemicals. The conductivity of the groundwater ranges from 1,300 and 4,500 µmhos/cm. Using the classification system of Driscoll (1987; Table 2-1), the groundwater is classified as brackish. The pH of the groundwater ranged from 6.00 to 7.93.

TABLE 9-4
NAS ALAMEDA - SITE 7B
SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	B07B-01-000	B07B-01-004	B07B-01-008	B07B-01-014	B07B-02-000	B07B-02-004	B07B-02-011
Date Sampled	06/24/91	06/24/91	06/24/91	06/24/91	06/24/91	06/24/91	06/24/91
Depth of Sample	0.0 ft	4.0 ft	8.0 ft	14.0 ft	0.0 ft	4.0 ft	11.0 ft
PARAMETER REPORTED							
VOLATILE ORGANICS (µg/kg-dry)							
ACETONE	NA	16UJ	120J	18UJ	NA	14UJ	23UJ
CARBON DISULFIDE	NA	< 5.4	69	< 6.1	NA	< 5.8	< 7.0
METHYLENE CHLORIDE	NA	8.3	< 7.9	< 6.1	NA	< 5.8	< 7.0
1,2-DICHLOROETHENE	NA	< 5.4	9.7	< 6.1	NA	< 5.8	< 7.0
XYLENE	NA	< 5.4	9.6	< 6.1	NA	< 5.8	< 7.0
SEMIVOLATILE ORGANICS (µg/kg-dry)							
ANTHRACENE	< 89	< 86	< 130	< 97	< 75	< 93	< 110
BENZO(A)ANTHRACENE	< 110	< 110	< 160	< 120	< 110	< 120	350J
BENZO(A)PYRENE	< 160	< 150	< 220	< 170	< 150	< 160	840J
BENZO(B)FLUORANTHENE	< 110	< 110	< 160	< 120	< 110	< 120	630J
BENZO(GHI)PERYLENE	< 180	< 170	< 250	< 190	< 170	< 190	680J
BENZO(K)FLUORANTHENE	< 110	< 110	< 160	< 120	< 110	< 120	470J
BIS(2-ETHYLHEXYL)PHTHALATE	< 110	< 110	< 160	< 120	< 110	< 120	< 140
CHRYSENE	< 110	< 110	< 160	< 120	< 110	< 120	390J
FLUORANTHENE	< 89	< 86	140J	< 97	< 75	< 93	760J
INDENO(1,2,3-CD)PYRENE	< 180	< 170	< 250	< 190	< 170	< 190	480J
NAPHTHALENE	< 89	< 86	< 130	< 97	< 75	< 93	< 110
PHENANTHRENE	< 89	< 86	< 130	< 97	< 75	< 93	230J
PYRENE	< 89	< 86	450J	< 97	< 75	< 93	1900J
PESTICIDES/PCBS (µg/kg-dry)	ND	ND	ND	ND	ND	ND	ND
TOTAL PETRO. HYDROCARBONS (mg/kg-dry)							
HYDROCARBONS,PETROL	120	< 30.6	< 44.8	< 34.5	321	55.3	< 39.9

Notes: NA = Not analyzed, ND = Not detected
UJ = Qualifed, estimated not detected, J = Qualified, estimated value
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.
< = Analyte reported below detection limit
Shaded areas highlight detections above the detection limit.

TABLE 9-4
NAS ALAMEDA - SITE 7B
SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	Duplicate B07B-02-011	B07B-02-014	B07B-03-000	B07B-03-002	B07B-03-011	B07B-03-016
Date Sampled	06/24/91	06/24/91	06/21/91	06/21/91	06/21/91	06/21/91
Depth of Sample	11.0 ft	14.0 ft	0.0 ft	2.0 ft	11.0 ft	16.0 ft
PARAMETER REPORTED						
VOLATILE ORGANICS (µg/kg-dry)						
ACETONE	41UJ	< 12	NA	18UJ	68	87J
CARBON DISULFIDE	11	< 6.0	NA	< 5.2	< 5.8	< 6.0
METHYLENE CHLORIDE	14	< 6.0	NA	< 5.2	< 5.8	< 6.0
1,2-DICHLOROETHENE	< 8.1	< 6.0	NA	< 5.2	< 5.8	< 6.0
XYLENE	< 8.1	< 6.0	NA	< 5.2	< 5.8	< 6.0
SEMIVOLATILE ORGANICS (µg/kg-dry)						
ANTHRACENE	< 130	< 97	< 87	< 83	130	< 96
BENZO(A)ANTHRACENE	310J	< 120	< 110	< 100	740	< 120
BENZO(A)PYRENE	870J	< 170	< 150	< 150	1300	< 170
BENZO(B)FLUORANTHENE	600J	< 120	< 110	< 100	980	< 120
BENZO(GHI)PERYLENE	820J	< 190	< 170	< 170	970	< 190
BENZO(K)FLUORANTHENE	540J	< 120	< 110	< 100	600	< 120
BIS(2-ETHYLHEXYL)PHTHALATE	< 160	< 120	290	< 100	< 120	< 120
CHRYSENE	410J	< 120	< 110	< 100	750	< 120
FLUORANTHENE	660J	< 97	< 87	< 83	1400	< 96
INDENO(1,2,3-CD)PYRENE	560J	< 190	< 170	< 170	710	< 190
NAPHTHALENE	< 130	< 97	< 87	< 83	88	< 96
PHENANTHRENE	190J	< 97	< 87	< 83	500	< 96
PYRENE	2000J	110J	< 87	< 83	3300	< 96
PESTICIDES/PCBS (µg/kg-dry)	ND	ND	ND	ND	ND	ND
TOTAL PETRO. HYDROCARBONS (mg/kg-dry)						
HYDROCARBONS,PETROL	60.7	< 34.5	508	< 29.7	< 33.3	< 34.1

Notes: NA = Not analyzed, ND = Not detected
UJ = Qualifed, estimated not detected, J = Qualified, estimated value
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.
< = Analyte reported below detection limit
Shaded areas highlight detections above the detection limit.

TABLE 9-5
NAS ALAMEDA - SITE 11
SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	B11-01-000	B11-01-002	B11-01-005	B11-01-014	B11-02-000	B11-02-005	B11-02-010
Date Sampled	06/26/91	06/26/91	06/26/91	06/26/91	06/26/91	06/26/91	06/26/91
Depth of Sample	0.0 ft	2.0 ft	5.0 ft	14.0 ft	0.0 ft	5.0 ft	10.0 ft
PARAMETER REPORTED							
VOLATILE ORGANICS (µg/kg-dry)							
ACETONE	NA	67UJ	24UJ	17UJ	NA	18UJ	490J
CARBON DISULFIDE	NA	< 5.3	< 5.3	< 6.0	NA	< 6.0	24
METHYLENE CHLORIDE	NA	< 5.3	< 5.3	< 6.0	NA	< 6.0	< 8.8
SEMIVOLATILE ORGANICS (µg/kg-dry)							
2-METHYLNAPHTHALENE	< 110	< 110	< 110	< 120	< 110	< 120	< 180
ANTHRACENE	< 85	< 84	< 85	< 97	< 86	< 95	< 140
BENZO(A)ANTHRACENE	< 110	< 110	< 110	< 120	< 110	< 120	1200J
BENZO(A)PYRENE	< 150	< 150	< 150	< 170	< 150	< 170	4500J
BENZO(B)FLUORANTHENE	< 110	< 110	< 110	< 120	< 110	< 120	3600J
BENZO(G,H,I)PERYLENE	< 170	< 170	< 170	< 190	< 170	< 190	12000J
BENZO(K)FLUORANTHENE	< 110	< 110	< 110	< 120	< 110	< 120	630J
BIS(2-ETHYLHEXYL)PHTHALATE	< 110	< 110	< 110	< 120	< 110	< 120	< 180
CHRYSENE	< 110	< 110	< 110	< 120	< 110	< 120	1200J
DIBEN(A,H)ANTHRACENE	< 170	< 170	< 170	< 190	< 170	< 190	640J
FLUORANTHENE	< 85	< 84	< 85	< 97	< 86	< 95	2000J
INDENO(1,2,3-CD)PYRENE	< 170	< 170	< 170	< 190	< 170	< 190	8700J
NAPHTHALENE	< 85	< 84	< 85	< 97	< 86	< 95	240J
PHENANTHRENE	< 85	< 84	< 85	< 97	< 86	< 95	360J
PYRENE	< 85	< 84	< 85	< 97	< 86	< 95	14000J
TOTAL PETRO. HYDROCARBONS (mg/kg-dry)							
HYDROCARBONS,PETROL	34.5	< 29.8	< 30.1	< 34.0	< 30.2	< 33.6	< 49.5

Notes: NA = Not analyzed
UJ = Qualifed, estimated not detected
J = Qualified, estimated value
R = Qualified, not usable
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.
< = Analyte reported below detection limit
Shaded areas highlight detections above the detection limit.

TABLE 9-5
NAS ALAMEDA - SITE 11
SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	B11-02-014	B11-03-000	B11-03-004	B11-03-008	B11-03-014	B11-04-000	Duplicate B11-04-000
Date Sampled	06/26/91	06/25/91	06/25/91	06/25/91	06/25/91	06/25/91	06/25/91
Depth of Sample	14.0 ft	0.0 ft	3.5 ft	8.0 ft	14.0 ft	0.0 ft	0.0 ft
PARAMETER REPORTED							
VOLATILE ORGANICS (µg/kg-dry)							
ACETONE	160J	NA	22UJ	80UJ	20UJ	NA	NA
CARBON DISULFIDE	< 31	NA	< 5.2	< 6.0	< 5.8	NA	NA
METHYLENE CHLORIDE	< 31	NA	10.0UJ	7.3UJ	< 5.8	NA	NA
SEMIVOLATILE ORGANICS (µg/kg-dry)							
2-METHYLNAPHTHALENE	< 120	< 110	< 100	< 120	< 120	< 100	< 100
ANTHRACENE	< 98	< 85	< 84	< 96	< 93	< 83	< 83
BENZO(A)ANTHRACENE	< 120	< 110	< 100	< 120	< 120	< 100	< 100
BENZO(A)PYRENE	< 170	< 150	< 150	< 170	< 160	< 150	< 150
BENZO(B)FLUORANTHENE	< 120	< 110	< 100	< 120	< 120	< 100	< 100
BENZO(G,H,I)PERYLENE	< 200	< 170	< 170	< 190	< 190	< 170	< 170
BENZO(K)FLUORANTHENE	< 120	< 110	< 100	< 120	< 120	< 100	< 100
BIS(2-ETHYLHEXYL)PHTHALATE	< 120	< 110	< 100	160J	< 120	270J	270J
CHRYSENE	< 120	< 110	< 100	< 120	< 120	< 100	< 100
DIBEN(A,H)ANTHRACENE	< 200	< 170	< 170	< 190	< 190	< 170	< 170
FLUORANTHENE	< 98	< 85	< 84	< 96	< 93	< 83	< 83
INDENO(1,2,3-CD)PYRENE	< 200	< 170	< 170	< 190	< 190	< 170	< 170
NAPHTHALENE	< 98	< 85	< 84	< 96	< 93	< 83	< 83
PHENANTHRENE	< 98	< 85	< 84	< 96	< 93	< 83	< 83
PYRENE	< 98	190J	< 84	< 96	< 93	< 83	160
TOTAL PETRO. HYDROCARBONS (mg/kg-dry)							
HYDROCARBONS,PETROL	< 34.6	102	< 29.9	< 33.9	< 32.9	28700	26200

Notes: NA = Not analyzed
UJ = Qualifed, estimated not detected
J = Qualified, estimated value
R = Qualified, not usable
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.
< = Analyte reported below detection limit
Shaded areas highlight detections above the detection limit.

TABLE 9-5
NAS ALAMEDA - SITE 11
SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	B11-04-004	B11-04-010	B11-04-014	B11-05-000	B11-05-004	Duplicate B11-05-004	B11-05-005
Date Sampled	06/25/91	06/25/91	06/25/91	06/26/91	06/26/91	06/26/91	06/26/91
Depth of Sample	3.5 ft	9.5 ft	14.0 ft	0.0 ft	3.5 ft	3.5 ft	5.0 ft
PARAMETER REPORTED							
VOLATILE ORGANICS (µg/kg-dry)							
ACETONE	25	100	130	NA	< 11	16	45UJ
CARBON DISULFIDE	< 5.3	< 6.5	< 5.9	NA	< 5.3	< 5.2	< 5.8
METHYLENE CHLORIDE	11	13	11	NA	< 5.3	12	< 5.8
SEMIVOLATILE ORGANICS (µg/kg-dry)							
2-METHYLNAPHTHALENE	< 110R	< 130	< 120	< 110	< 110	< 100	< 1200
ANTHRACENE	< 85R	100J	< 94	< 86	< 84	< 84	< 810
BENZO(A)ANTHRACENE	< 110R	830J	< 120	< 110	< 110	< 100	< 1200
BENZO(A)PYRENE	< 150R	3600J	< 160	< 150	< 150	< 150	< 1600
BENZO(B)FLUORANTHENE	< 110R	2800J	< 120	< 110	< 110	< 100	< 1200
BENZO(G,H,I)PERYLENE	< 170R	4700J	< 190	< 170	< 170	< 170	< 1900
BENZO(K)FLUORANTHENE	< 110R	620J	< 120	< 110	< 110	< 100	< 1200
BIS(2-ETHYLHEXYL)PHTHALATE	< 110R	< 130	13000J	150J	< 110	< 100	< 1200
CHRYSENE	< 110R	900J	< 120	< 110	< 110	< 100	< 1200
DIBEN(A,H)ANTHRACENE	< 170R	230J	< 190	< 170	< 170	< 170	< 1900
FLUORANTHENE	< 85R	1500J	< 94	< 86	< 84	< 84	< 810
INDENO(1,2,3-CD)PYRENE	< 170R	3500J	< 190	< 170	< 170	< 170	< 1900
NAPHTHALENE	< 85R	180J	< 94	< 86	< 84	< 84	< 810
PHENANTHRENE	< 85R	240J	< 94	< 86	< 84	< 84	< 810
PYRENE	< 85R	7700J	< 94	< 86	< 84	< 84	< 810
TOTAL PETRO. HYDROCARBONS (mg/kg-dry)							
HYDROCARBONS,PETROL	104	< 37.3	< 33.5	721	1200	750	29200

Notes: NA = Not analyzed
UJ = Qualifed, estimated not detected
J = Qualified, estimated value
R = Qualified, not usable
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.
< = Analyte reported below detection limit
Shaded areas highlight detections above the detection limit.

TABLE 9-5
NAS ALAMEDA - SITE 11
SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	B11-05-014	B11-06-000	B11-06-004	B11-06-008	Duplicate B11-06-008	B11-06-014	B11-07-000
Date Sampled	06/26/91	06/25/91	06/25/91	06/25/91	06/25/91	06/25/91	06/24/91
Depth of Sample	14.0 ft	0.0 ft	3.5 ft	8.0 ft	8.0 ft	14.0 ft	0.0 ft
PARAMETER REPORTED							
VOLATILE ORGANICS (µg/kg-dry)							
ACETONE	20UJ	NA	23UJ	280J	210J	13UJ	NA
CARBON DISULFIDE	< 5.8	NA	< 5.4	12	17	< 5.9	NA
METHYLENE CHLORIDE	< 5.8	NA	8.7UJ	15UJ	16UJ	9.9	NA
SEMIVOLATILE ORGANICS (µg/kg-dry)							
2-METHYLNAPHTHALENE	< 120	< 110	< 110	< 150	< 130	< 120	< 110
ANTHRACENE	< 81	< 84	< 86	< 120	< 110	< 95	< 85
BENZO(A)ANTHRACENE	< 120	< 110	< 110	< 150	< 130	270J	< 110
BENZO(A)PYRENE	< 160	< 150	< 150	< 210	< 190	470J	< 150
BENZO(B)FLUORANTHENE	< 120	< 110	< 110	< 150	< 130	270J	< 110
BENZO(G,H,I)PERYLENE	< 190	< 170	< 170	< 240	< 220	350J	< 170
BENZO(K)FLUORANTHENE	< 120	< 110	< 110	< 150	< 130	310J	< 110
BIS(2-ETHYLHEXYL)PHTHALATE	< 120	< 110	180J	< 150	770J	< 120	< 110
CHRYSENE	< 120	< 110	< 110	< 150	< 130	280J	< 110
DIBEN(A,H)ANTHRACENE	< 190	< 170	< 170	< 240	< 220	< 190	< 170
FLUORANTHENE	< 81	< 84	< 86	< 120	< 110	570J	< 85
INDENO(1,2,3-CD)PYRENE	< 190	< 170	< 170	< 240	< 220	250J	< 170
NAPHTHALENE	< 81	< 84	< 86	< 120	< 110	< 95	< 85
PHENANTHRENE	< 81	< 84	< 86	< 120	< 110	< 95	< 85
PYRENE	< 81	< 84	< 86	< 120	180J	1400J	< 85
TOTAL PETRO. HYDROCARBONS (mg/kg-dry)							
HYDROCARBONS,PETROL	36.8	119	< 30.5	< 42.5	< 38.4	< 33.8	160

Notes: NA = Not analyzed
UJ = Qualifed, estimated not detected
J = Qualified, estimated value
R = Qualified, not usable
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.
< = Analyte reported below detection limit
Shaded areas highlight detections above the detection limit.

TABLE 9-5
NAS ALAMEDA - SITE 11
SOIL ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number	B11-07-001	B11-07-008	B11-07-014
Date Sampled	06/24/91	06/24/91	06/24/91
Depth of Sample	1.0 ft	8.0 ft	14.0 ft
PARAMETER REPORTED			
VOLATILE ORGANICS (µg/kg-dry)			
ACETONE	21UJ	56UJ	54UJ
CARBON DISULFIDE	< 5.5	< 6.2	< 6.0
METHYLENE CHLORIDE	8.2	11	8.7
SEMIVOLATILE ORGANICS (µg/kg-dry)			
2-METHYLNAPHTHALENE	330J	< 120	< 120
ANTHRACENE	< 88	< 99	< 96
BENZO(A)ANTHRACENE	< 110	< 120	< 120
BENZO(A)PYRENE	< 150	< 170	< 170
BENZO(B)FLUORANTHENE	< 110	< 120	< 120
BENZO(G,H,I)PERYLENE	< 180	< 200	< 190
BENZO(K)FLUORANTHENE	< 110	< 120	< 120
BIS(2-ETHYLHEXYL)PHTHALATE	180J	< 120	< 120
CHRYSENE	< 110	< 120	< 120
DIBEN(A,H)ANTHRACENE	< 180	< 200	< 190
FLUORANTHENE	< 88	< 99	< 96
INDENO(1,2,3-CD)PYRENE	< 180	< 200	< 190
NAPHTHALENE	640J	< 99	< 96
PHENANTHRENE	< 88	< 99	< 96
PYRENE	< 88	< 99	< 96
TOTAL PETRO. HYDROCARBONS (mg/kg-dry)			
HYDROCARBONS,PETROL	878	< 35.4	< 34.2

Notes: NA = Not analyzed
UJ = Qualifed, estimated not detected
J = Qualified, estimated value
R = Qualified, not usable
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.
< = Analyte reported below detection limit
Shaded areas highlight detections above the detection limit.

TABLE 9-6
NAS ALAMEDA - SITE 7B
SOIL ANALYTICAL RESULTS FOR METALS

Sample Number	B07B-01-000	B07B-01-004	B07B-01-008	B07B-01-014	B07B-02-000	B07B-02-004	B07B-02-011
Date Sampled	06/24/91	06/24/91	06/24/91	06/24/91	06/24/91	06/24/91	06/24/91
Depth of Sample	0.0 ft	4.0 ft	8.0 ft	14.0 ft	0.0 ft	4.0 ft	11.0 ft
PARAMETER REPORTED							
METALS (mg/kg-dry)							
ALUMINUM	21600J	5300J	18900J	12200J	12700J	8130J	6120J
ANTIMONY	4.7	< 2.6	5.4	< 2.9	2.9	< 2.7	< 3.4
ARSENIC	3.04J	2.25J	6.93J	2.88J	2.34J	6.66J	6.34J
BARIUM	48.1	35.7	73.4	61.0	51.8	84.2	88.3
BERYLLIUM	1.77	0.866	2.20	1.37	0.899	1.25	0.680
CADMIUM	0.679	< 0.311	< 0.444	< 0.347	3.19	< 0.328	< 0.410
CALCIUM	17300J	4460J	42800J	1600J	7670J	7420J	43700J
CHROMIUM, TOTAL	16.0J	36.4J	74.3J	39.0J	27.1J	53.4J	27.1J
COBALT	15.2	6.42	16.0	7.78	21.1	12.6	7.25
COPPER	24.7	6.33	32.5	10.6	49.1	15.4	11.5
IRON	24800J	10200J	30600J	15400J	17700J	18800J	9730J
LEAD	8.97J	2.86J	32.2	3.96J	70.7	7.84J	21.7J
MAGNESIUM	10000J	3370J	11700J	3790J	5080J	7110J	4660J
MANGANESE	399J	150J	408J	160J	282J	342J	269J
MERCURY	< 0.269	< 0.261	< 0.379	< 0.302	0.481	< 0.269	< 0.330
NICKEL	19.7	32.1	98.1	51.8	22.1	80.4	23.3
POTASSIUM	461	712	2900	1520	861	885	1090
SELENIUM	< 0.219UJ	< 0.217UJ	< 0.323UJ	< 0.239UJ	< 0.218UJ	< 0.235UJ	< 0.285UJ
SILVER	0.813	< 0.508	0.749	< 0.566	5.64	< 0.536	< 0.669
SODIUM	467J	262J	2530J	1950J	849J	340J	1540J
THALLIUM	< 0.282	< 0.278	< 0.415	< 0.308	< 0.280	< 0.302	< 0.367
VANADIUM	48.7J	25.8J	60.2J	31.5J	46.4J	38.1J	26.1J
ZINC	52.7	20.0	77.8	28.9	66.3	36.2	39.9

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 9-6
NAS ALAMEDA - SITE 7B
SOIL ANALYTICAL RESULTS FOR METALS

Sample Number	Duplicate B07B-02-011	B07B-02-014	B07B-03-000	B07B-03-002	B07B-03-011	B07B-03-016
Date Sampled	06/24/91	06/24/91	06/21/91	06/21/91	06/21/91	06/21/91
Depth of Sample	11.0 ft	14.0 ft	0.0 ft	2.0 ft	11.0 ft	16.0 ft
PARAMETER REPORTED						
METALS (mg/kg-dry)						
ALUMINUM	11400J	12200J	7340J	6200J	6500J	9310J
ANTIMONY	5.6	3.1	2.9	< 2.4	< 2.9	4.0
ARSENIC	8.34J	3.14J	2.33J	2.51J	2.20J	5.40J
BARIUM	106	107	41.4	42.6	41.4	72.1
BERYLLIUM	1.83	1.53	1.02	1.13	0.824	1.31
CADMIUM	< 0.459	< 0.356	1.40	< 0.292	< 0.347	< 0.341
CALCIUM	32600J	2850J	4730J	6440J	5930J	1690J
CHROMIUM, TOTAL	48.5J	44.1J	26.8J	34.3J	31.4J	40.7J
COBALT	12.2	10.00	10.1	7.88	5.63	7.08
COPPER	23.9	16.2	16.7	10.9	7.23	8.36
IRON	19100J	16900J	13800J	12400J	10400J	14500J
LEAD	31.5	3.46J	44.1	5.30J	12.7J	3.71J
MAGNESIUM	7620J	4050J	3320J	4950J	2580J	3380J
MANGANESE	385J	143J	256J	206J	82.6J	105J
MERCURY	< 0.400	< 0.269	< 0.244	< 0.257	< 0.284	< 0.296
NICKEL	48.9	49.4	23.5	50.0	25.7	42.3
POTASSIUM	2140	1490	787	834	952	1300
SELENIUM	< 0.323UJ	< 0.232UJ	< 0.222UJ	< 0.209UJ	< 0.225UJ	< 0.247UJ
SILVER	1.01	0.587	0.607	< 0.477	< 0.567	< 0.557
SODIUM	2370J	2000J	499J	261J	1630J	2950J
THALLIUM	< 0.415	< 0.298	< 0.286	< 0.269	< 0.290	< 0.317
VANADIUM	42.6J	38.3J	30.0J	24.9J	26.0J	28.3J
ZINC	69.3	42.2	38.2	31.7	17.8	27.0

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 9-7
NAS ALAMEDA - SITE 11
SOIL ANALYTICAL RESULTS FOR METALS

Sample Number	B11-01-000	B11-01-002	B11-01-005	B11-01-014	B11-02-000	B11-02-005	B11-02-010	B11-02-014
Date Sampled	06/26/91	06/26/91	06/26/91	06/26/91	06/26/91	06/26/91	06/26/91	06/26/91
Depth of Sample	0.0 ft	2.0 ft	5.0 ft	14.0 ft	0.0 ft	5.0 ft	10.0 ft	14.0 ft
PARAMETER REPORTED								
METALS (mg/kg-dry)								
ALUMINUM	4750	4840	4780	10200	5600	5830	18300	11100
ANTIMONY	< 2.6	< 2.6	< 2.6	< 3.0	< 2.6	< 2.9	< 4.1	< 3.0
ARSENIC	4.08	1.52	2.25	2.90	1.80	5.03	8.91	3.14
BARIUM	32.0	20.7	25.2	31.7	34.1	65.2	118	15.0
BERYLLIUM	0.687	0.398	0.412	0.884	0.617	0.925	2.34	1.37
CADMIUM	4.32	< 0.311	< 0.312	< 0.357	1.01	< 0.348	0.803	< 0.355
CALCIUM	2500	2650	2820	1130	6460	2400	4050	1210
CHROMIUM, TOTAL	32.8	27.5	27.1	36.8	30.2	36.0	73.5	55.9
COBALT	7.42	5.18	5.19	7.65	36.1	10.2	16.1	8.51
COPPER	37.1	4.77	5.92	10.4	13.8	15.0	62.5	10.6
IRON	11500	8750	8710	16100	9970	14600	32500	17600
LEAD	79.1	1.75	9.81	3.66	6.77	36.5	55.2	3.50
MAGNESIUM	3120	2320	2590	3360	2870	4280	11000	3620
MANGANESE	214	104	115	133	157	270	372	180
MERCURY	0.122	< 0.093	< 0.095	< 0.105	< 0.077	0.430	1.34	< 0.114
NICKEL	30.6	23.1	29.3	47.4	30.0	69.2	89.0	55.4
POTASSIUM	618	716	660	1260	713	836	3650	1280
SELENIUM	< 0.221	< 0.192	< 0.196	< 0.226	< 0.193	< 0.227	1.13	< 0.219
SILVER	< 0.507	< 0.509	< 0.510	< 0.582	0.651	< 0.569	0.870	< 0.580
SODIUM	119	97.4	126	1670	255	123	4420	2320
THALLIUM	< 0.284	< 0.247	< 0.252	< 0.291	< 0.248	< 0.292	< 0.449	< 0.281
VANADIUM	22.2	21.2	20.4	30.4	20.6	26.5	63.6	33.4
ZINC	196	16.9	23.9	29.8	45.9	39.9	159	29.7

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 9-7
NAS ALAMEDA - SITE 11
SOIL ANALYTICAL RESULTS FOR METALS

Sample Number	B11-03-000	B11-03-004	B11-03-008	B11-03-014	B11-04-000	Duplicate B11-04-000	B11-04-004	B11-04-010
Date Sampled	06/25/91	06/25/91	06/25/91	06/25/91	06/25/91	06/25/91	06/25/91	06/25/91
Depth of Sample	0.0 ft	3.5 ft	8.0 ft	14.0 ft	0.0 ft	0.0 ft	3.5 ft	9.5 ft
PARAMETER REPORTED								
METALS (mg/kg-dry)								
ALUMINUM	8250	3390	3740	9420	8610	8620	9190	6990
ANTIMONY	< 2.6	< 2.5	< 3.0	< 2.8	2.6	3.3	< 2.6	< 3.3
ARSENIC	1.54	1.42	2.56	3.47	2.07	1.51	0.651	5.59
BARIUM	38.8	17.2	29.1	41.5	69.1	78.0	19.5	51.2
BERYLLIUM	0.855	0.416	0.553	1.22	1.06	0.572	1.02	0.974
CADMIUM	0.698	< 0.303	< 0.357	< 0.335	3.21	3.43	< 0.309	< 0.392
CALCIUM	9070	1500	2510	1190	4820	4900	2320	3360
CHROMIUM, TOTAL	19.2	22.7	25.1	41.5	26.8	30.8	8.03	43.6
COBALT	7.38	4.47	6.90	8.68	12.9	14.7	9.70	8.72
COPPER	31.8	4.78	6.42	12.1	53.9	195	9.09	16.6
IRON	12800	6960	7910	16200	15800	15900	21900	14000
LEAD	242	1.43	5.32	3.14	109	115	0.775	77.4
MAGNESIUM	4620	2130	3400	3740	5530	6320	7290	5180
MANGANESE	213	80.8	159	188	381	383	417	242
MERCURY	0.307	< 0.086	< 0.116	< 0.108	< 0.087	< 0.087	< 0.103	0.620
NICKEL	20.6	23.9	36.7	54.3	37.8	49.4	6.75	49.3
POTASSIUM	658	511	560	1040	684	651	288	1140
SELENIUM	< 0.212	< 0.205	< 0.237	< 0.239	< 0.203	< 0.212	< 0.207	0.384
SILVER	< 0.506	< 0.494	< 0.584	< 0.547	0.824	0.740	< 0.504	< 0.640
SODIUM	882	167	269	1420	286	302	344	753
THALLIUM	< 0.272	< 0.264	< 0.305	< 0.308	< 0.261	< 0.273	< 0.266	< 0.296
VANADIUM	29.1	15.3	16.1	29.6	28.1	29.8	39.3	26.0
ZINC	31.4	16.1	19.5	31.1	57.6	64.6	23.0	54.5

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 9-7
NAS ALAMEDA - SITE 11
SOIL ANALYTICAL RESULTS FOR METALS

Sample Number	B11-04-014	B11-05-000	B11-05-004	Duplicate B11-05-004	B11-05-005	B11-05-014	B11-06-000	B11-06-004
Date Sampled	06/25/91	06/26/91	06/26/91	06/26/91	06/26/91	06/26/91	06/25/91	06/25/91
Depth of Sample	14.0 ft	0.0 ft	3.5 ft	3.5 ft	5.0 ft	14.0 ft	0.0 ft	3.5 ft
PARAMETER REPORTED								
METALS (mg/kg-dry)								
ALUMINUM	10600	5200	3150	4400	4550	8390	13400	3880
ANTIMONY	< 2.8	< 2.7	< 2.6	3.2	< 2.9	< 2.9	< 2.6	< 2.6
ARSENIC	3.90	2.04	1.27	1.59	1.11	2.34	2.95	1.44
BARIUM	36.3	38.2	16.6	21.3	24.4	17.4	61.0	19.2
BERYLLIUM	0.952	0.800	0.566	< 0.136	0.295	0.997	1.18	0.206
CADMIUM	< 0.340	3.27	< 0.313	< 0.313	< 0.347	< 0.345	1.11	< 0.313
CALCIUM	1690	3510	1380	2180	1880	971	12900	1780
CHROMIUM, TOTAL	53.1	27.7	22.8	27.7	28.0	41.8	21.0	25.9
COBALT	8.49	14.8	4.03	4.61	4.90	7.77	10.6	4.92
COPPER	13.7	28.0	4.86	5.31	5.25	10.7	83.2	5.13
IRON	16400	11500	6530	7990	8100	14000	19600	7610
LEAD	5.22	46.6	1.79	3.17	2.21	2.89	90.9	1.55
MAGNESIUM	4480	3060	1870	2160	2270	3270	5710	2240
MANGANESE	159	150	60.6	78.3	70.6	118	385	85.0
MERCURY	< 0.083	0.442	< 0.097	< 0.103	< 0.088	< 0.103	< 0.089	< 0.099
NICKEL	58.7	27.0	21.0	23.4	25.3	45.0	15.5	25.6
POTASSIUM	1170	536	438	628	673	961	652	582
SELENIUM	< 0.238	0.280	< 0.205	< 0.208	< 0.231	< 0.213	< 0.208	< 0.206
SILVER	< 0.556	< 0.526	< 0.512	< 0.511	< 0.568	< 0.563	0.755	< 0.511
SODIUM	1760	176	80.3	88.5	216	1880	999	93.2
THALLIUM	< 0.306	< 0.280	< 0.263	< 0.268	< 0.296	< 0.274	< 0.268	< 0.265
VANADIUM	31.1	23.1	15.3	20.4	20.1	29.1	49.1	17.1
ZINC	36.4	54.1	16.4	18.5	17.6	28.3	72.3	17.8

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 9-7
NAS ALAMEDA - SITE 11
SOIL ANALYTICAL RESULTS FOR METALS

Sample Number	B11-06-008	Duplicate B11-06-008	B11-06-014	B11-07-000	B11-07-001	B11-07-008	B11-07-014
Date Sampled	06/25/91	06/25/91	06/25/91	06/24/91	06/24/91	06/24/91	06/24/91
Depth of Sample	8.0 ft	8.0 ft	14.0 ft	0.0 ft	1.0 ft	8.0 ft	14.0 ft
PARAMETER REPORTED							
METALS (mg/kg-dry)							
ALUMINUM	7390	6230	9890	6320J	7750J	5260J	12400J
ANTIMONY	< 3.6	< 2.9	< 2.9	2.6	< 2.6	< 2.9	< 2.8
ARSENIC	6.49	2.29	2.84	1.11J	2.16J	7.37J	1.69J
BARIUM	42.9	39.5	63.9	33.0	44.2	26.9	19.4
BERYLLIUM	0.968	0.695	1.05	1.20	1.29	0.944	1.56
CADMIUM	< 0.429	< 0.352	0.764	< 0.299	< 0.313	< 0.350	< 0.337
CALCIUM	3200	3390	1470	6030J	7760J	3260J	1710J
CHROMIUM, TOTAL	39.5	37.1	53.1	26.0J	23.9J	29.7J	41.2J
COBALT	8.90	8.10	9.45	8.32	9.38	8.93	8.46
COPPER	12.4	9.64	12.5	13.8	14.1	9.23	9.65
IRON	13900	11100	14000	11700J	15100J	10800J	17100J
LEAD	7.89	4.81	3.56	7.03J	8.04J	6.57J	4.18J
MAGNESIUM	5030	4180	3540	3910J	4710J	4940J	3840J
MANGANESE	228	246	142	188J	211J	225J	140J
MERCURY	< 0.133	0.154	< 0.096	< 0.247	< 0.252	< 0.296	< 0.288
NICKEL	51.2	43.7	53.2	24.7	25.3	41.0	52.4
POTASSIUM	1190	964	1170	614	642	779	1540
SELENIUM	< 0.298	< 0.490	< 0.217	< 0.219UJ	< 0.214UJ	< 0.238UJ	< 0.230UJ
SILVER	< 0.701	< 0.575	< 0.571	< 0.489	< 0.511	< 0.571	< 0.550
SODIUM	876	476	1160	368J	414J	550J	2070J
THALLIUM	< 0.383	< 0.315	< 0.279	< 0.282	< 0.275	< 0.306	< 0.296
VANADIUM	30.0	25.5	33.4	30.5J	38.1J	21.9J	33.5J
ZINC	36.1	29.1	32.0	28.8	30.7	52.0	30.7

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 9-8
NAS ALAMEDA - SITE 7B
GROUNDWATER ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

		Duplicate	
Sample Number	**M07B-01**	**M07B-01**	**WA-8**
Date Sampled	**08/21/91**	**08/21/91**	**09/04/91**
PARAMETER REPORTED			
VOLATILE ORGANICS (µg/L)			
1,2-DICHLOROETHENE	8.3	7.2	< 1.0
ACETONE	2.7	3.0	3.4
BENZENE	1.5	< 1.0	< 1.0
VINYL CHLORIDE	1.8	1.5	< 1.0
SEMIVOLATILE ORGANICS (µg/L)			
BIS(2-ETHYLHEXYL)PHTHALATE	8.6UJ	< 2.2	< 2.0
PYRENE	< 1.0	< 1.1	1.1J
PESTICIDES/PCBS (µg/L)			
ALDRIN	<0.050	<0.050	<0.050UJ
TOTAL PETRO. HYDROCARBONS (mg/L)	ND	ND	ND

Notes: ND = Not detected
< = Analyte reported below detection limit
Shaded areas highlight detections above the detection limit.
UJ = Qualifed, estimated not detected
J = Qualified, estimated value
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 9-9
NAS ALAMEDA - SITE 11
GROUNDWATER ANALYTICAL RESULTS FOR ORGANIC COMPOUNDS

Sample Number Date Sampled	M11-01 08/22/91	M11-02 08/22/91	M11-03 08/22/91	M11-04 08/22/91
PARAMETER REPORTED				
VOLATILE ORGANICS (µg/L)				
1,1-DICHLOROETHANE	< 2.0	4.8	< 1.0	1.2
1,2-DICHLOROETHENE, TOTAL	< 2.0	6.9	< 1.0	< 1.0
ACETONE	76J	2.4	< 2.0	< 2.0
TRICHLOROETHENE	< 2.0	1.6	< 1.0	< 1.0
VINYL CHLORIDE	< 2.0	3.3	< 1.0	< 1.0
SEMIVOLATILE ORGANICS (µg/L)	ND	ND	ND	ND
PESTICIDES/PCBS/HERBICIDES (µg/L)	ND	ND	ND	ND
TOTAL PETRO. HYDROCARBONS (mg/L)	ND	ND	ND	ND

Notes: ND = Not detected
J = Qualified, estimated value
< = Analyte reported below detection limit
TOTAL = Includes "trans" and "cis" isomers
Shaded areas highlight detections above the detection limit.
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 9-10
NAS ALAMEDA - SITE 7B
GROUNDWATER ANALYTICAL RESULTS FOR METALS

Sample Number	M07B-01	Duplicate M07B-01	WA-8
Date Sampled	**08/21/91**	**08/21/91**	**09/04/91**
PARAMETER REPORTED			
METALS (µg/L)			
ALUMINUM	< 31.0	226	121
ANTIMONY	< 25.1	< 25.1	< 25.1
ARSENIC	9.4	9.1	9.4
BARIUM	47.1	50.8	373
BERYLLIUM	< 1.3	< 1.3	< 1.3
CADMIUM	< 3.0	< 3.0	< 3.0
CALCIUM	16400J	16600J	54800J
CHROMIUM,TOTAL	< 5.7	< 5.7	< 5.7
COBALT	< 6.1	< 6.1	< 6.1
COPPER	40.1	34.2	25.3
IRON	12.6	288	169J
LEAD	< 2.0	< 2.0	< 2.0UJ
MAGNESIUM	13200J	13400J	67500
MANGANESE	98.2	107	932
MERCURY	< 0.2	< 0.2	< 0.2
NICKEL	< 13.2	< 13.2	< 13.2
POTASSIUM	23800	24000	59500
SELENIUM	< 2.1UJ	< 2.1UJ	< 2.1UJ
SILVER	< 4.9UJ	< 4.9UJ	< 4.9
SODIUM	232000J	249000J	1300000J
THALLIUM	< 2.7	< 2.7	< 2.7
VANADIUM	5.1	5.1	13.8
ZINC	6.3UJ	12.8UJ	5.7UJ

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 9-11
NAS ALAMEDA - SITE 11
GROUNDWATER ANALYTICAL RESULTS FOR METALS

Sample Number Date Sampled	M11-01 08/22/91	M11-02 08/22/91	M11-03 08/22/91	M11-04 08/22/91
PARAMETER REPORTED				
METALS (µg/L)				
ALUMINUM	< 31.0	229	133	< 31.0
ANTIMONY	< 25.1	< 25.1	< 25.1	< 25.1
ARSENIC	4.8	5.2	7.9	8.4
BARIUM	13.1	66.6	86.7	29.0
BERYLLIUM	< 1.3	< 1.3	< 1.3	< 1.3
CADMIUM	< 3.0	< 3.0	< 3.0	< 3.0
CALCIUM	10800J	42900J	32300J	45600J
CHROMIUM,TOTAL	< 5.7	< 5.7	< 5.7	< 5.7
COBALT	< 6.1	< 6.1	< 6.1	< 6.1
COPPER	17.8	16.7	17.2	< 2.1
IRON	74.3	310	39.7	6.6
LEAD	< 2.0	< 2.0	< 2.0	2.7
MAGNESIUM	13100J	40300J	15700J	17800J
MANGANESE	145	315	226	58.0
MERCURY	< 0.2	< 0.2	< 0.2	< 0.2
NICKEL	< 13.2	17.1	< 13.2	< 13.2
POTASSIUM	27400	43700	14100	22000
SELENIUM	< 2.1UJ	< 2.1UJ	< 2.1UJ	< 2.1UJ
SILVER	< 4.9UJ	< 4.9UJ	< 4.9UJ	< 4.9UJ
SODIUM	366000J	338000J	92700J	130000J
THALLIUM	< 2.7UJ	< 2.7UJ	< 2.7	< 2.7
VANADIUM	5.2	7.7	8.9	11.0
ZINC	7.6UJ	4.8UJ	5.7UJ	2.4UJ

Notes: J = Qualified, estimate
UJ = Qualifed, estimated not detected
< = Analyte reported below detection limit
TOTAL = Includes trivalent and hexavalent chromium
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.

TABLE 9-12
NAS ALAMEDA - SITE 7B
GROUNDWATER ANALYTICAL RESULTS FOR GENERAL CHEMICALS

Sample Number	M07B-01	M07B-01DUP	WA-8
Date Sampled	08/21/91	08/21/91	09/04/91
PARAMETER REPORTED			
PHYSICAL PARAMETERS-LAB			
ALKALINITY, BICA (mg/L-CaC03)	175	177	233
ALKALINITY, CARB (mg/L-CaC03)	< 5.0	< 5.0	< 5.0
ALKALINITY, NC/OH (mg/L-CaCO3)	< 5.0	< 5.0	< 5.0
ALKALINITY, PHENOLPH (mg/L)	< 5.0	< 5.0	< 5.0
ALKALINITY, T. (mg/L-CaCO3)	175J	177J	233J
HARDNESS (mg/L-CaCO3)	112	104	460
PHYSICAL PARAMETERS-FIELD			
pH, FIELD (Std. Units)	7.83	7.83	7.60
SP. COND., FIELD @25C (µmhos/cm)	13000	1300	4500
WATER TEMP (C)	NA	NA	21.0
TOTAL ORGANIC CARBON (mg/L)			
CARBON, TOC	23.8J	16.4J	90.5J
ANIONS (mg/L)			
CHLORIDE	152.0J	142.2J	1332J
FLUORIDE	0.74J	0.86J	0.75J
NITRATE/NITRITE, NO2 + NO3	0.063	0.096	0.061
SULFATE	44.79J	43.72J	80.12J

Notes: NA = Not analyzed, < = Analyte reported below detection limit
J = Qualified, estimated value
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.
Shaded areas highlight detections above the detection limit.

Continue

TABLE 9-13
NAS ALAMEDA - SITE 11
GROUNDWATER ANALYTICAL RESULTS FOR GENERAL CHEMICALS

Sample Number Date Sampled	M11-01 08/22/91	M11-02 08/22/91	M11-03 08/22/91	M11-04 08/22/91
PARAMETER REPORTED				
PHYSICAL PARAMETERS-LAB				
ALKALINITY, BICA (mg/L-CaC03)	138	97.0	79.0	101
ALKALINITY, CARB (mg/L-CaC03)	< 5.0	< 5.0	< 5.0	< 5.0
ALKALINITY, NC/OH (mg/L-CaCO3)	< 5.0	< 5.0	< 5.0	< 5.0
ALKALINITY, PHENOLPH (mg/L)	< 5.0	< 5.0	< 5.0	< 5.0
ALKALINITY, T. (mg/L-CaCO3)	138J	97.0J	79.0J	101J
PHYSICAL PARAMETERS-FIELD				
pH, FIELD (Std. Units)	7.93	7.62	7.00	6.00
SP. COND., FIELD @25C (µmhos/cm)	1600	1800	2500	3000
WATER TEMP (C)	19.2	20.4	22.0	23.0
TOTAL ORGANIC CARBON (mg/L)				
CARBON, TOC	10.8J	23.3J	13.1J	17.6J
ANIONS (mg/L)				
CHLORIDE	248.9J	251.4J	59.06J	32.63J
FLUORIDE	0.83J	0.65J	0.31J	0.49J
NITRATE/NITRITE, NO2 + NO3	0.071	0.042	0.071	0.069
SULFATE	7.480J	130.7J	7.024J	97.31J

Notes: J = Qualified, estimated value
< = Analyte reported below detection limit
Shaded areas highlight detections above the detection limit.
Rationale and justification for data qualification are presented in the Phases 2B and 3 QCSR.