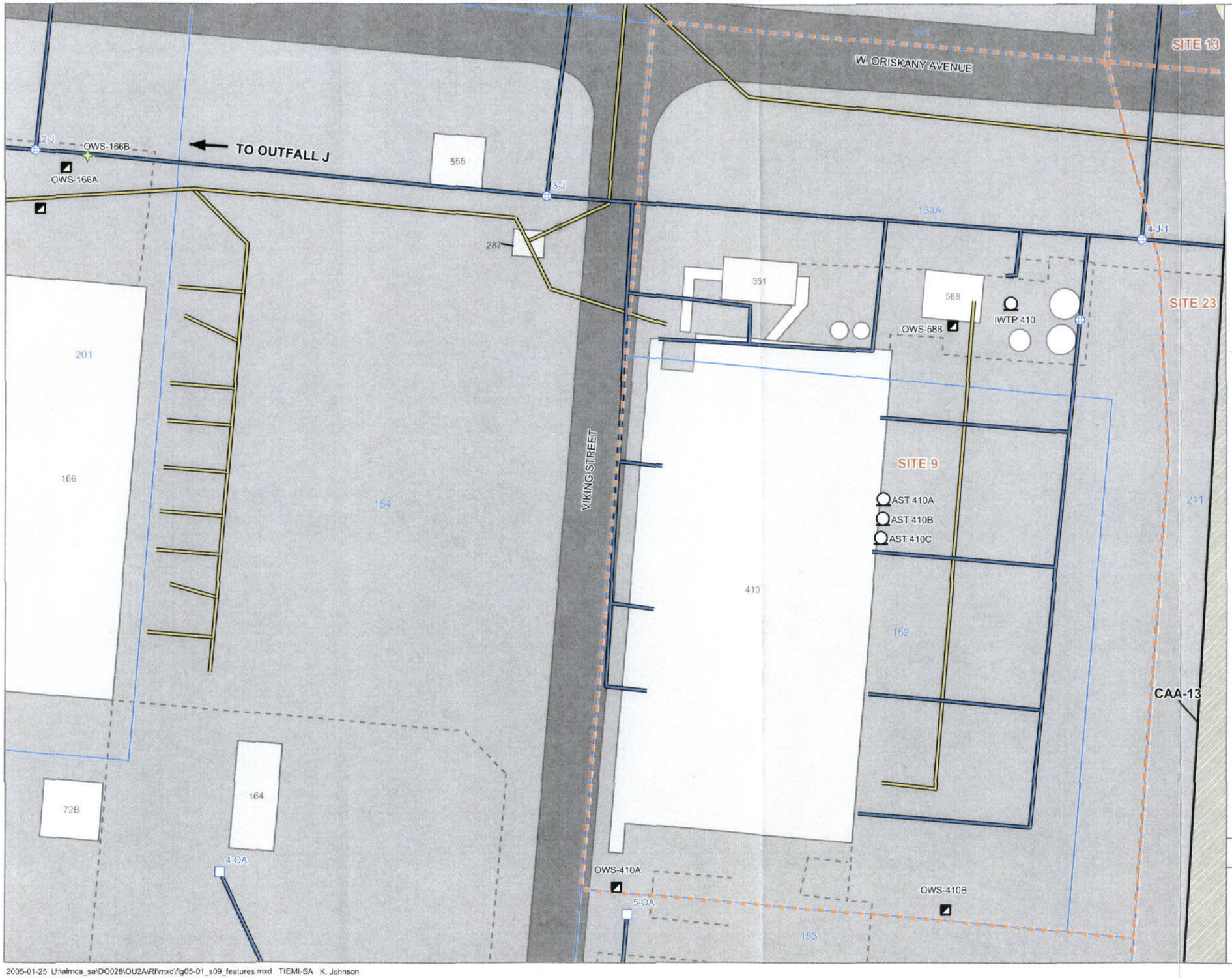
Previous



ABOVEGROUND STORAGE TANK (AST)
- Removed
- CATCH BASIN
- MANHOLE
- OIL-WATER SEPARATOR (OWS)
- FENCE
- SANITARY SEWER LINE
- STORM SEWER LINE
- CORRECTIVE ACTION AREA (CAA)
- CERCLA SITE BOUNDARY
- ENVIRONMENTAL BASELINE SURVEY (EBS) PARCEL AND NUMBER

LAND COVER
- Unpaved
- Paved
- Road

BUILDING
- Present
- Removed

Note:
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980
IWTP = Industrial Waste Treatment Plant

N

25 0 25 50 Feet

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U.S. Navy Southwest Division, NAVFAC, San Diego

FIGURE 5-1
SITE 9 FEATURES

Operable Unit 2A
Remedial Investigation Report

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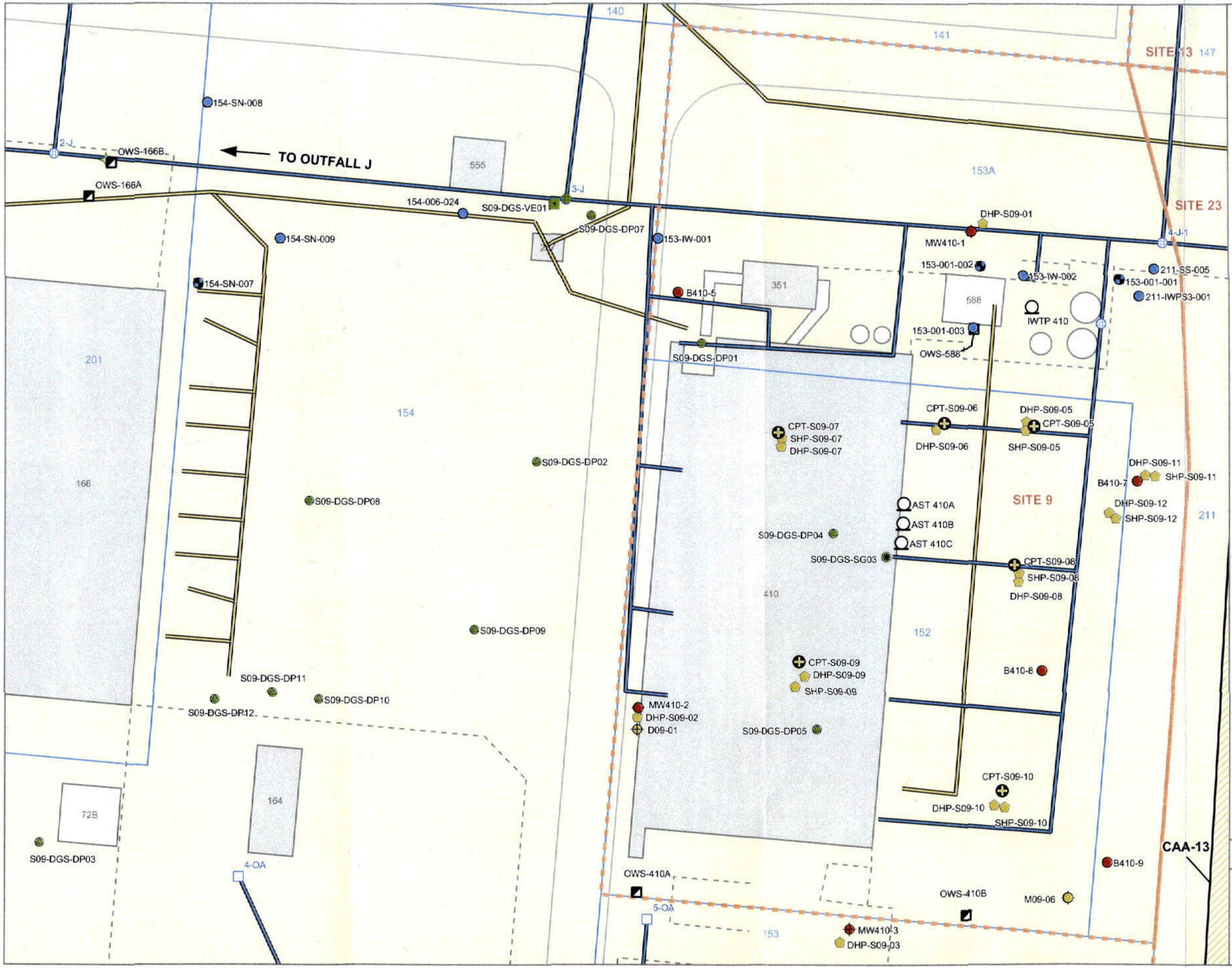

SAMPLE LOCATION
- Direct-Push
- Hydropunch
- Monitoring Well
- Vacuum Extraction
- Soil Boring
- Soil Gas
- Soil Punch

SAMPLE INVESTIGATION
- Phase 1 & 2A, 1991
- Follow-On Investigation 1994
- Follow-On Investigation 1998
- Data Gap Sampling 2001
- Environmental Basline Survey (EBS) 2001

ABOVEGROUND STORAGE TANK (AST)
- Removed
- OIL-WATER SEPARATOR (OWS)
- CATCH BASIN
- MANHOLE
- FENCE
- SANITARY SEWER LINE
- STORM SEWER LINE
- CORRECTIVE ACTION AREA (CAA)
- CERCLA SITE BOUNDARY
- # ENVIRONMENTAL BASELINE SURVEY (EBS) PARCEL AND NUMBER
- LAND COVER

BUILDING
- Present
- Former

Notes:
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980
IWTP = Industrial Waste Treatment Plant

25 0 25 50 Feet

N

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FIGURE 5-2
SITE 9 REMEDIAL INVESTIGATION AND EBS SOIL AND GROUNDWATER SAMPLE LOCATIONS

Operable Unit 2A
Remedial Investigation Report

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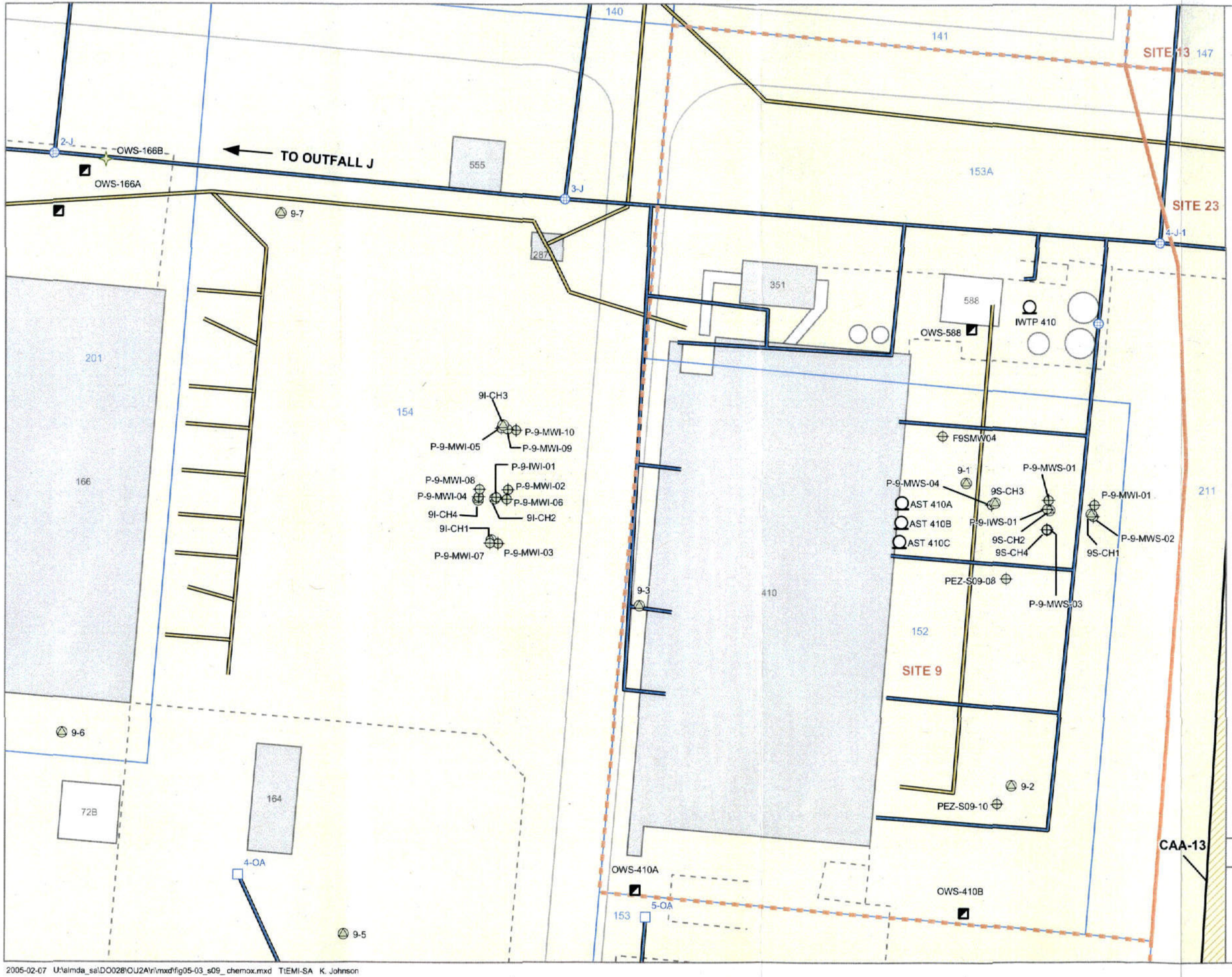

SAMPLE LOCATION
- Direct-Push
- Monitoring Well

ABOVEGROUND STORAGE TANK (AST)
- Removed
- CATCH BASIN
- MANHOLE
- OIL-WATER SEPARATOR (OWS)
- FENCE
- SANITARY SEWER LINE
- STORM SEWER LINE
- CORRECTIVE ACTION AREA (CAA)
- CERCLA SITE BOUNDARY
- # ENVIRONMENTAL BASELINE SURVEY (EBS) PARCEL AND NUMBER
- LAND COVER

BUILDING
- Present
- Former

Note:
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980
IWTP = Industrial Waste Treatment Plant

N

25 0 25 50 Feet

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FIGURE 5-3
SITE 9 CHEMICAL OXIDATION PILOT TEST DATA POINTS

Operable Unit 2A
Remedial Investigation Report

2005-02-07 U:\almda_sa\DO028\OU2A\ri\mxd\fig05-03_s09_chemox.mxd T:EMI-SA K. Johnson

CONDITION OF LINE
- Unclassified

ABOVEGROUND STORAGE TANK (AST)
- Removed
- CATCH BASIN
- MANHOLE
- OIL WATER SEPARATOR (OWS)
- FENCE
- CORRECTIVE ACTION AREA (CAA)
- CERCLA SITE
- ENVIRONMENTAL BASELINE SURVEY (EBS) PARCEL
- LAND COVER

BUILDING
- Present
- Former

Notes:

CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980

25 0 25 50 Feet

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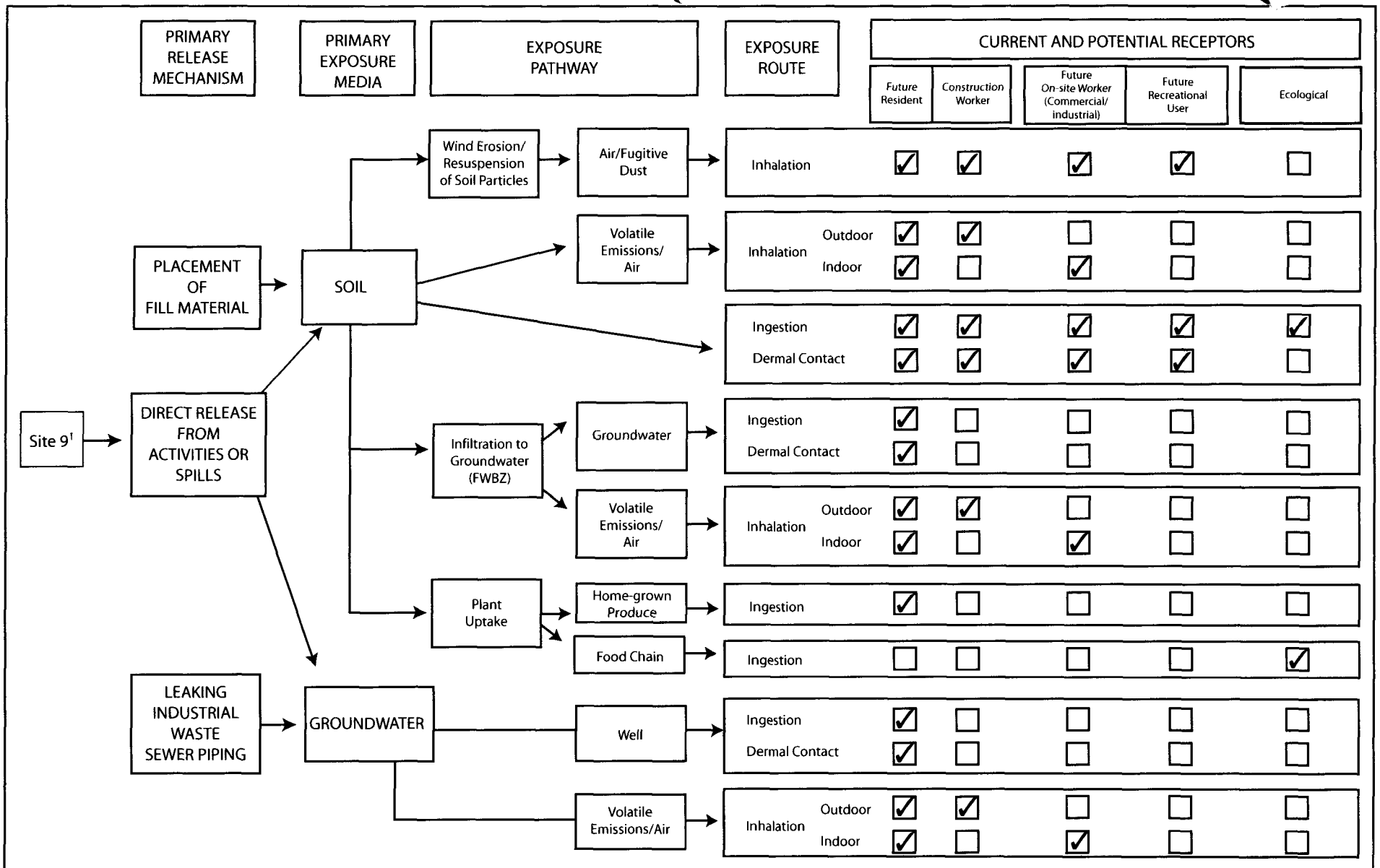
FIGURE 5-4
SITE 9
CONDITIONS OF STORM SEWERS

Operable Unit 2A
Remedial Investigation Report

2005-01-25 U:\almda_sa\DO028\OU2A\RI\mxd\fig05-04_s09_sewer_cond.mxd TtEMI-SA K. Johnson


PRIMARY RELEASE MECHANISM
PRIMARY EXPOSURE MEDIA
EXPOSURE PATHWAY
EXPOSURE ROUTE
CURRENT AND POTENTIAL RECEPTORS
Future Resident
Construction Worker
Future On-site Worker (Commercial/ industrial)
Future Recreational User
Ecological
Site 9[1]
PLACEMENT OF FILL MATERIAL
DIRECT RELEASE FROM ACTIVITIES OR SPILLS
LEAKING INDUSTRIAL WASTE SEWER PIPING
SOIL
GROUNDWATER
Wind Erosion/ Resuspension of Soil Particles
Air/Fugitive Dust
Inhalation
Volatile Emissions/ Air
Inhalation
Outdoor
Indoor
Ingestion
Dermal Contact
Infiltration to Groundwater (FWBZ)
Groundwater
Ingestion
Dermal Contact
Volatile Emissions/ Air
Inhalation
Outdoor
Indoor
Plant Uptake
Home-grown Produce
Ingestion
Food Chain
Ingestion
Well
Ingestion
Dermal Contact
Volatile Emissions/Air
Inhalation
Outdoor
Indoor
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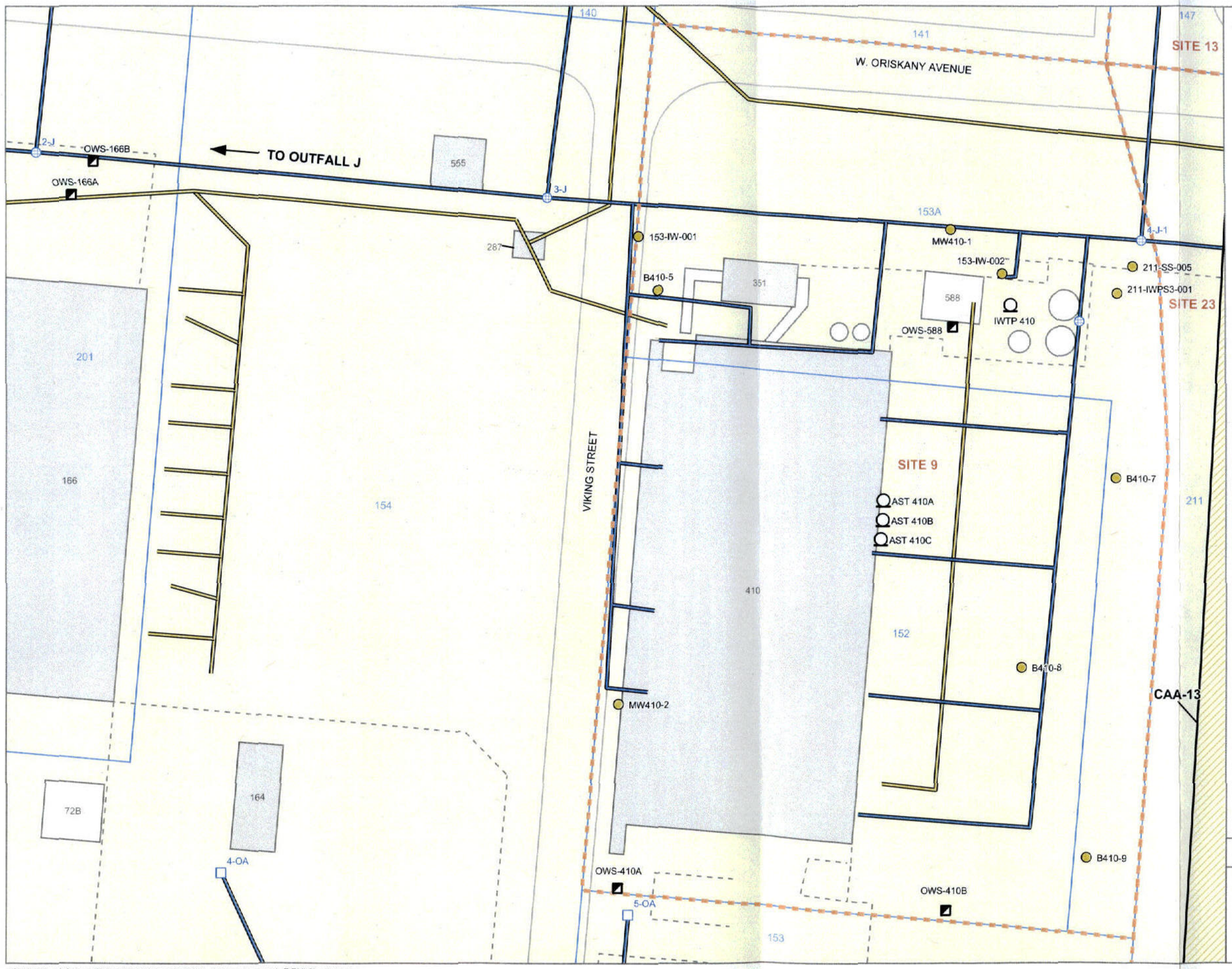
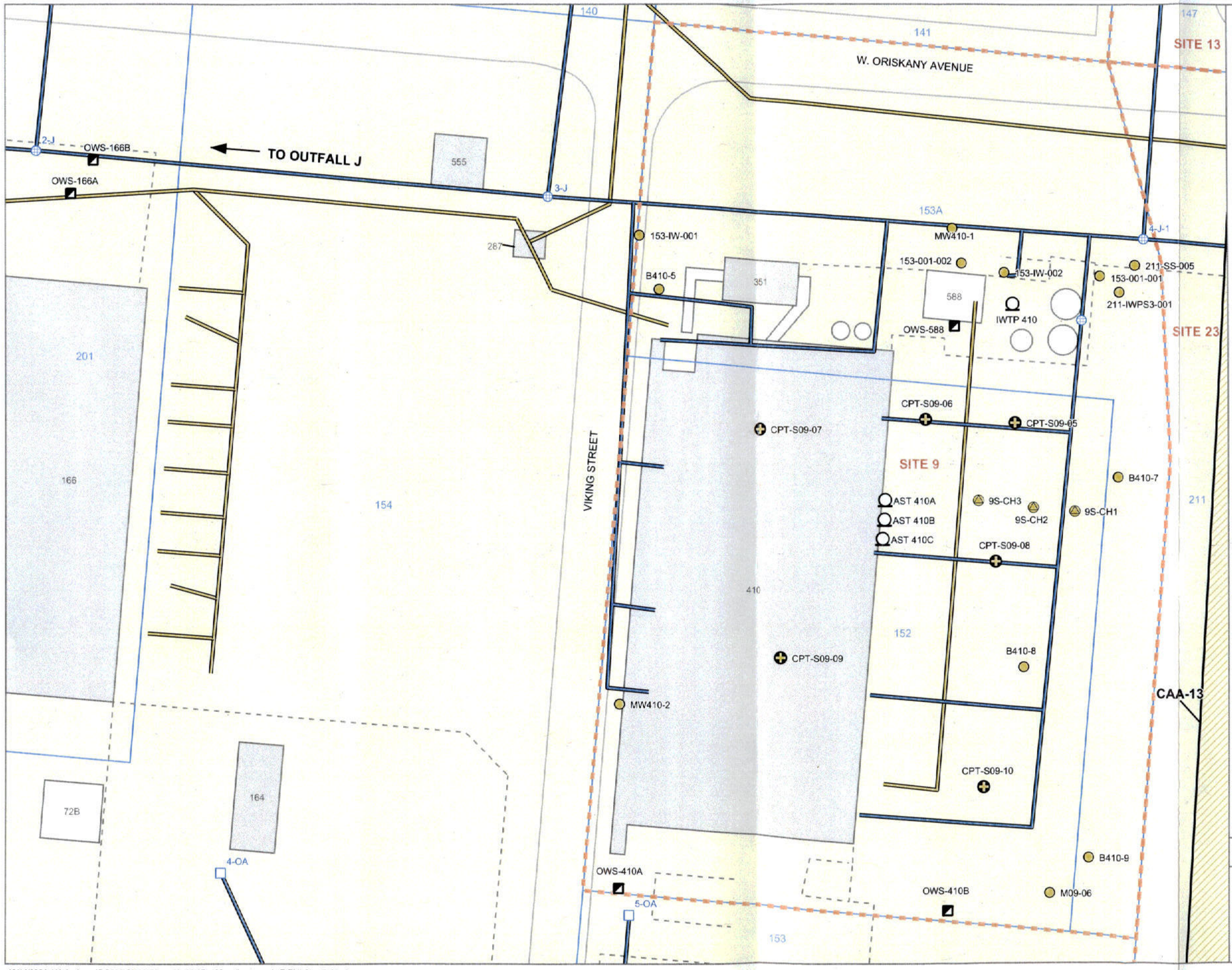
U.S. Navy Southwest Division, NAVFAC, San Diego
FIGURE 5-5
SITE 9 CONCEPTUAL SITE MODEL
Operable Unit 2A
Remedial Investigation Report
[1]Building 410, paint stripping, historical defueling and storage activities, fill material
Potentially Complete Exposure Pathway



12/14/2004 U:\alameda_sa\DO028\OU2A\RI\mxd\fig05-6A_s09_soil_svoc.mxd TtEMI-SA T. Munley



SAMPLING LOCATION
- Direct-Push
- Soil Boring
- Soil Punch

ABOVEGROUND STORAGE TANK (AST)
- Removed

- CATCH BASIN
- MANHOLE
- OIL-WATER SEPARATOR (OWS)
- FENCE
- SANITARY SEWER LINE
- STORM SEWER LINE
- CORRECTIVE ACTION AREA (CAA)
- CERCLA SITE BOUNDARY
- ENVIRONMENTAL BASELINE SURVEY (EBS) PARCEL AND NUMBER
- LAND COVER

BUILDING
- Present
- Removed

Notes:
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980
IWTP = Industrial Waste Treatment Plant
VOC = Volatile Organic Compound

N

25 0 25 50 Feet

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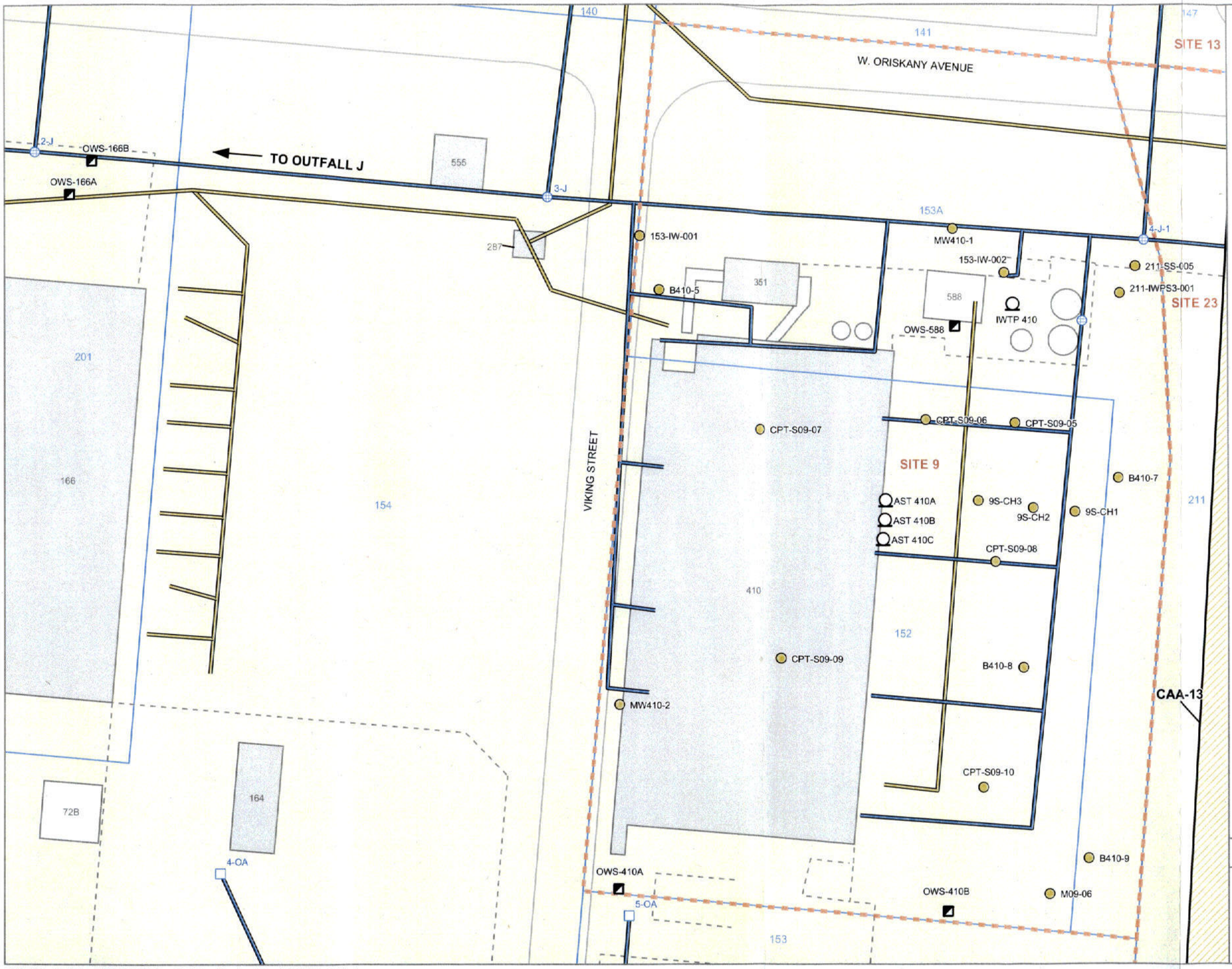
FIGURE 5-6B
SITE 9 SAMPLING LOCATIONS FOR VOCs IN SOIL

Operable Unit 2A
Remedial Investigation Report

12/14/2004 U:\almda_sa\DO028\OU2A\RI\mxd\fig05-6B_s09_soil_voc.mxd TtEMI-SA T. Munley



SAMPLING LOCATION
- Soil Boring

ABOVEGROUND STORAGE TANK (AST)
- Removed
- CATCH BASIN
- MANHOLE
- OIL-WATER SEPARATOR (OWS)
- FENCE
- SANITARY SEWER LINE
- STORM SEWER LINE
- CORRECTIVE ACTION AREA (CAA)
- CERCLA SITE BOUNDARY
- # ENVIRONMENTAL BASELINE SURVEY (EBS) PARCEL AND NUMBER
- LAND COVER

BUILDING
- Present
- Removed

Notes:
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980
IWTP = Industrial Waste Treatment Plant

25 0 25 50 Feet

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U.S. Navy Southwest Division, NAVFAC, San Diego

FIGURE 5-6C
SITE 9 SAMPLING LOCATIONS FOR METALS IN SOIL

Operable Unit 2A
Remedial Investigation Report

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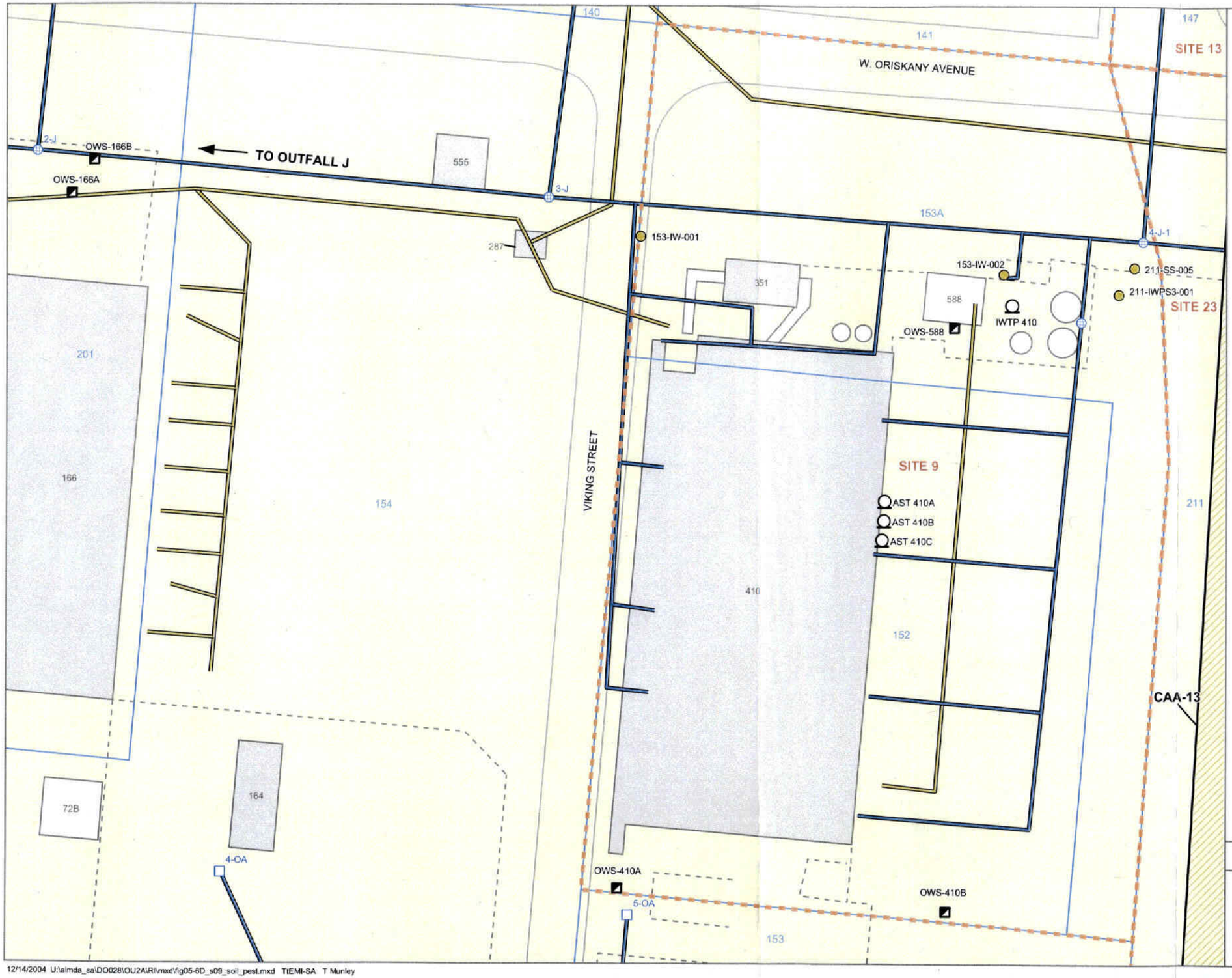

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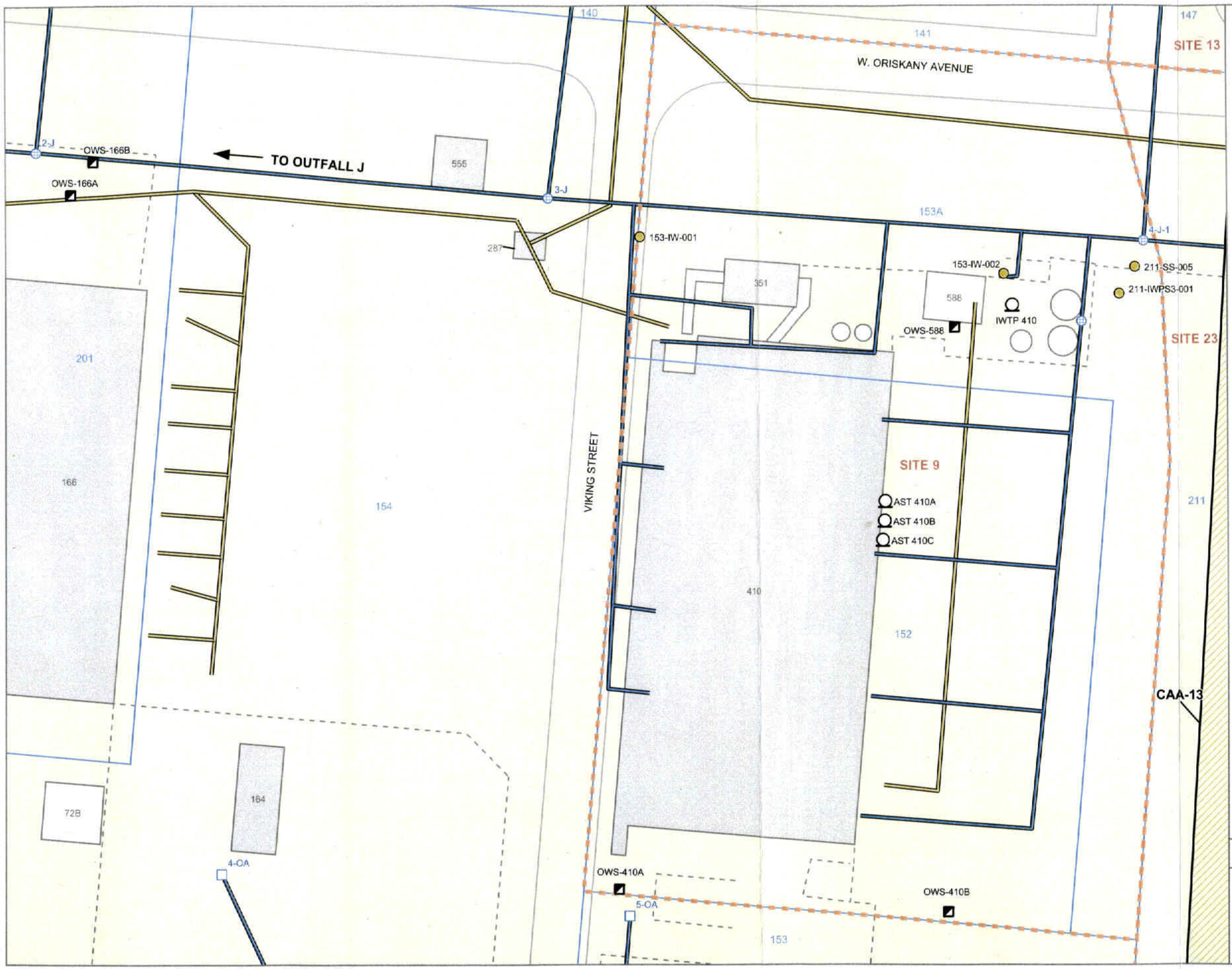

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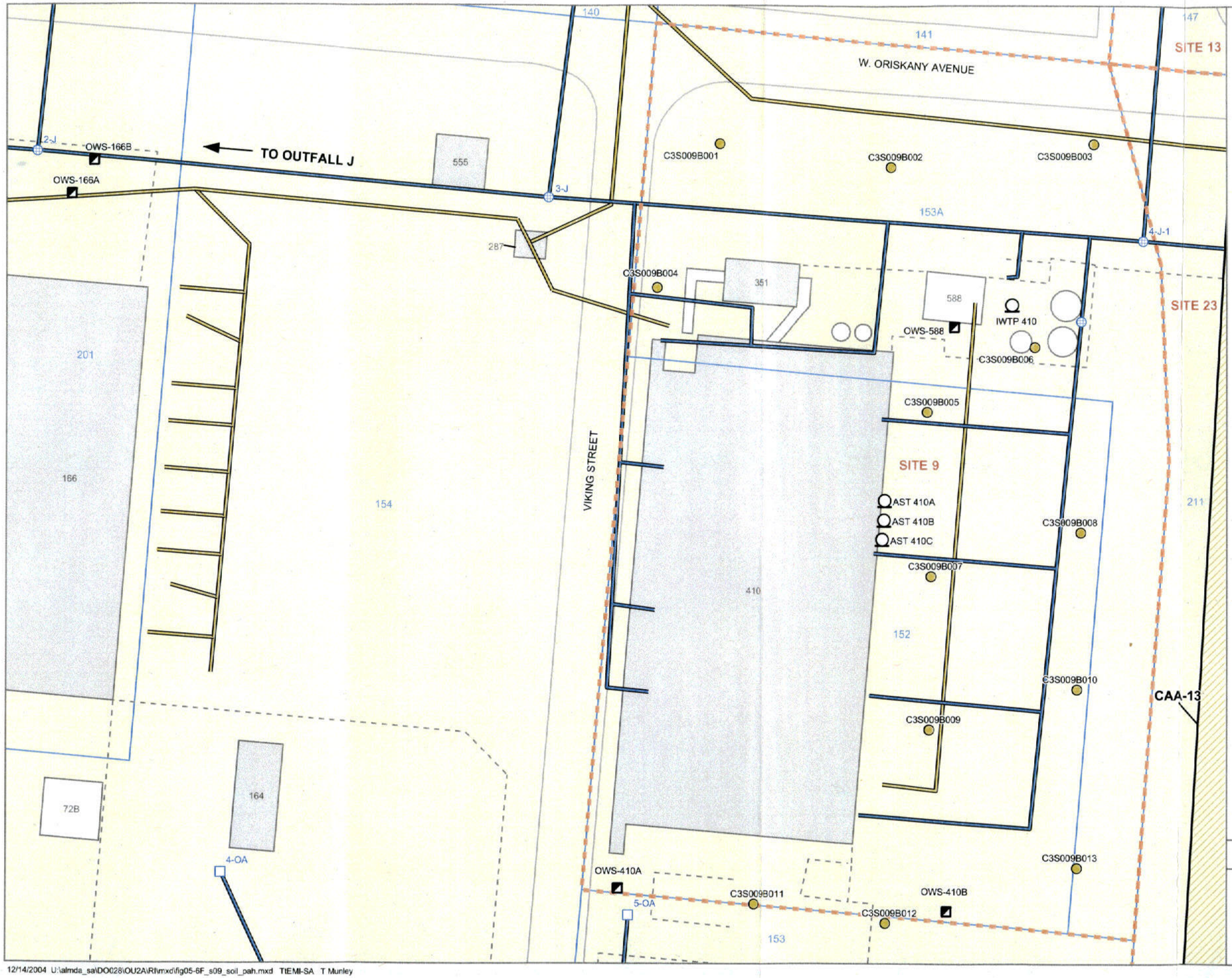
FIGURE 5-6E
SITE 9 SAMPLING LOCATIONS FOR PCBs IN SOIL

Operable Unit 2A
Remedial Investigation Report

12/20/2004 U:\almda_sa\DO028\OU2A\RI\mxd\fig05-6e_s09_soil_pcb.mxd TtEMI-SA T. Munley



SAMPLING LOCATION
- Soil Boring

ABOVEGROUND STORAGE TANK (AST)
- Removed

- CATCH BASIN
- MANHOLE
- OIL-WATER SEPARATOR (OWS)
- FENCE
- SANITARY SEWER LINE
- STORM SEWER LINE
- CORRECTIVE ACTION AREA (CAA)
- CERCLA SITE BOUNDARY
- ENVIRONMENTAL BASELINE SURVEY (EBS) PARCEL AND NUMBER
- LAND COVER

BUILDING
- Present
- Removed

Notes:
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980
IWTP = Industrial Waste Treatment Plant
PAH = Polynuclear Aromatic Hydrocarbon

N

25 0 25 50 Feet

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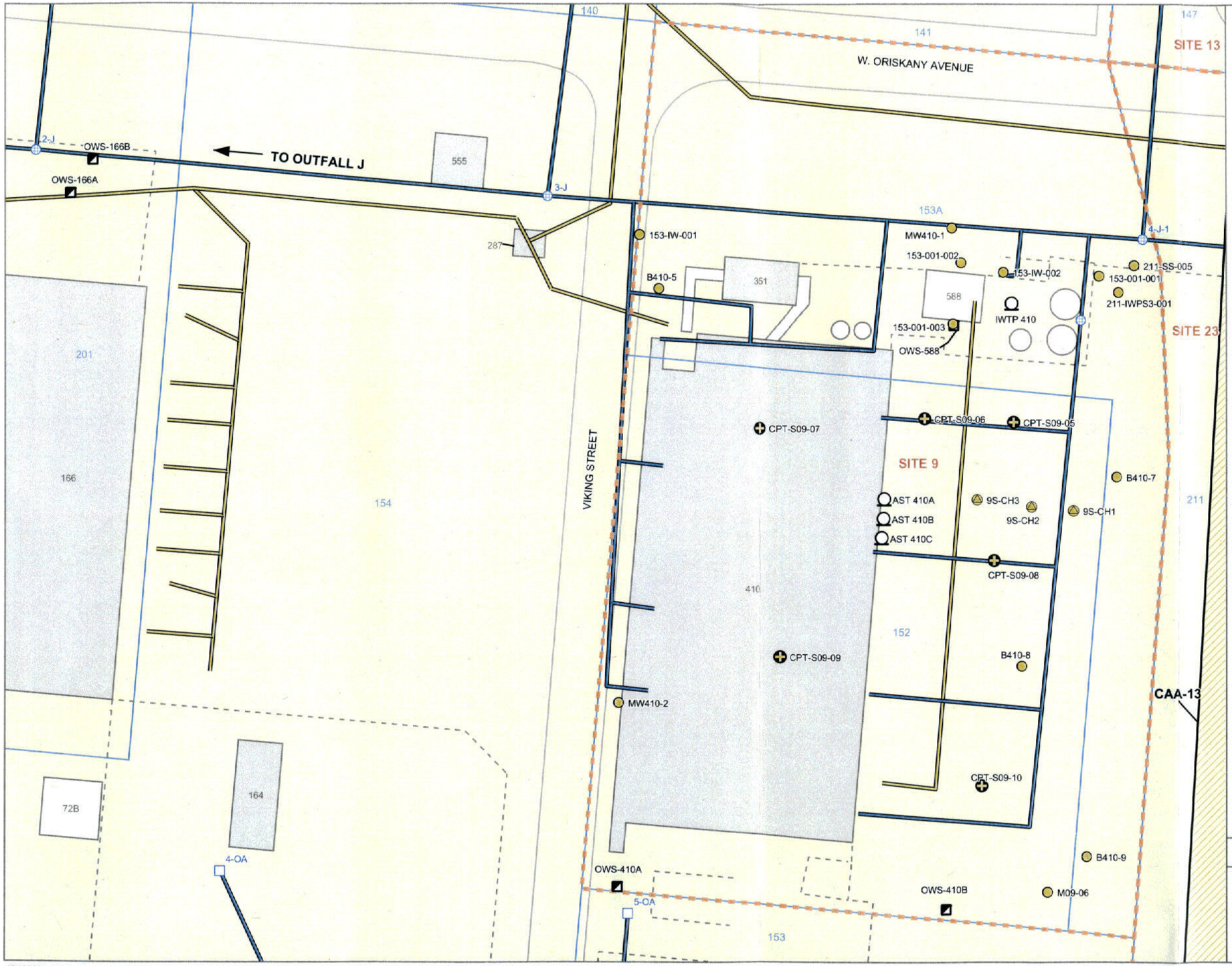
FIGURE 5-6F
SITE 9 SAMPLING LOCATIONS FOR PAHs IN SOIL

Operable Unit 2A
Remedial Investigation Report

12/14/2004 U:\almda_sa\DO028\OU2A\RI\mxd\fig05-6F_s09_soil_pah.mxd TtEMI-SA T Munley



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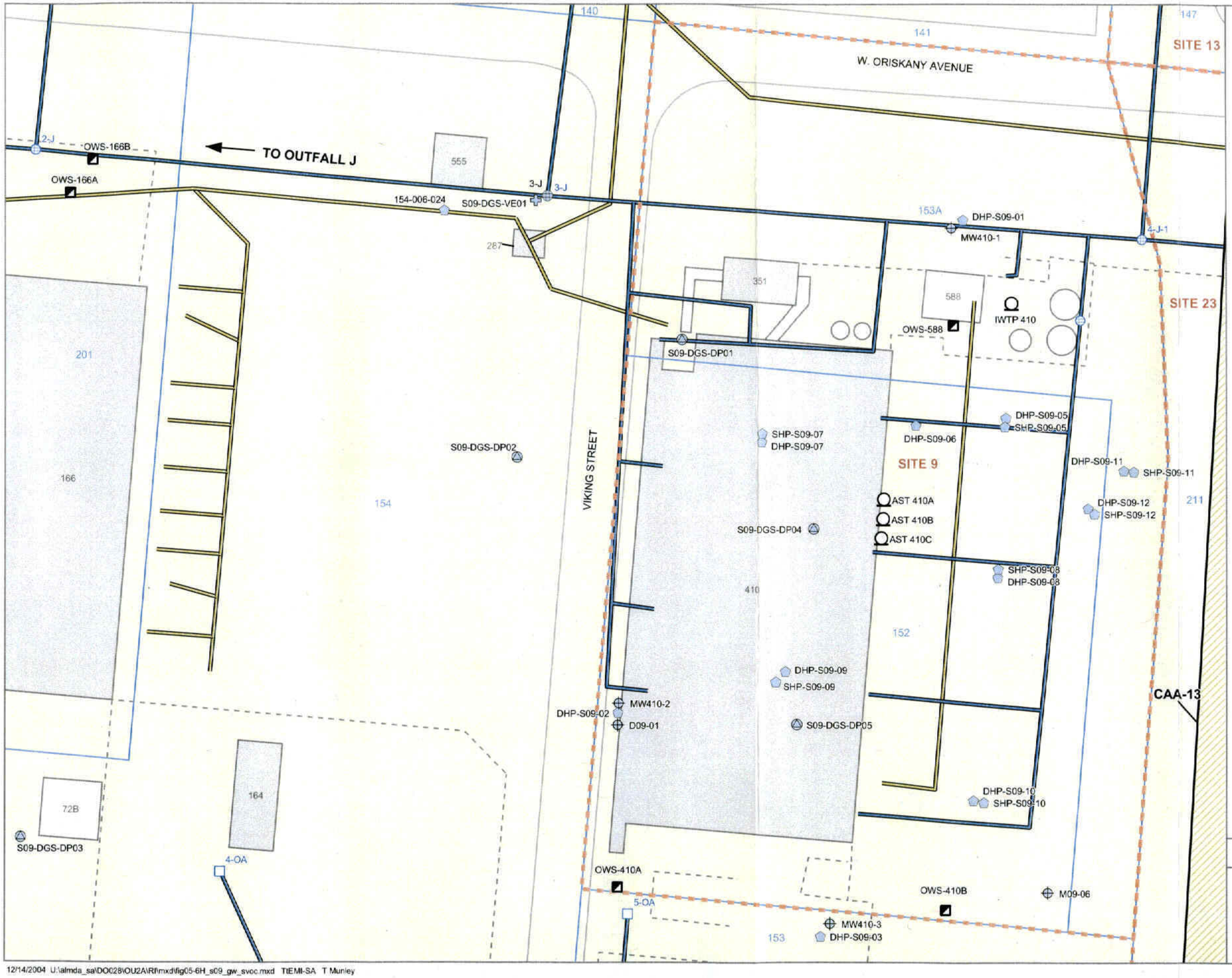
TO OUTFALL J
OWS-166B
OWS-166A
2-J
3-J
154-006-024
S09-DGS-VE01
W. ORISKANY AVENUE
SITE 13
SITE 23
SITE 9
DHP-S09-01
MW410-1
4-J-1
IWTP 410
OWS-588
S09-DGS-DP01
S09-DGS-DP02
SHP-S09-07
DHP-S09-07
DHP-S09-06
DHP-S09-05
SHP-S09-05
DHP-S09-11
SHP-S09-11
DHP-S09-12
SHP-S09-12
AST 410A
AST 410B
AST 410C
S09-DGS-DP04
SHP-S09-08
DHP-S09-08
DHP-S09-09
SHP-S09-09
MW410-2
DHP-S09-02
D09-01
S09-DGS-DP05
DHP-S09-10
SHP-S09-10
CAA-13
S09-DGS-DP03
4-OA
OWS-410A
5-OA
OWS-410B
M09-06
MW410-3
DHP-S09-03
VIKING STREET
201
166
154
555
287
351
588
153A
140
141
147
211
410
152
153
72B
164
SAMPLING LOCATION
Direct-Push
Hydropunch
Man Hole/Storm Drain
Monitoring Well
Vacuum Extraction
ABOVEGROUND STORAGE TANK (AST)
Removed
CATCH BASIN
MANHOLE
OIL-WATER SEPARATOR (OWS)
FENCE
SANITARY SEWER LINE
STORM SEWER LINE
CORRECTIVE ACTION AREA (CAA)
CERCLA SITE BOUNDARY
ENVIRONMENTAL BASELINE SURVEY (EBS) PARCEL AND NUMBER
LAND COVER
BUILDING
Present
Removed
Notes:
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980
IWTP = Industrial Waste Treatment Plant
SVOC = Semivolatile Organic Compound
N
25 0 25 50 Feet
Tetra Tech EM Inc.
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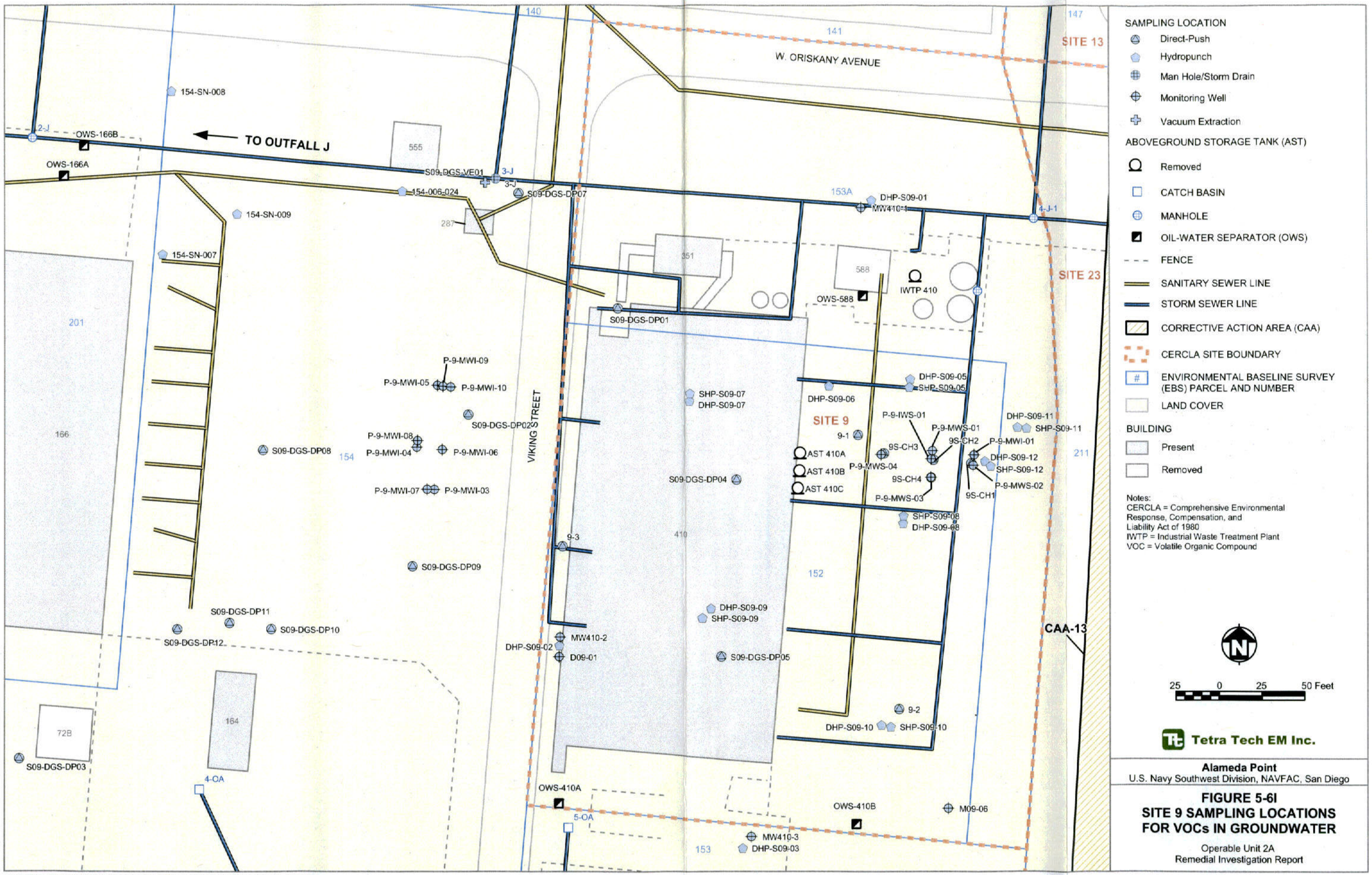
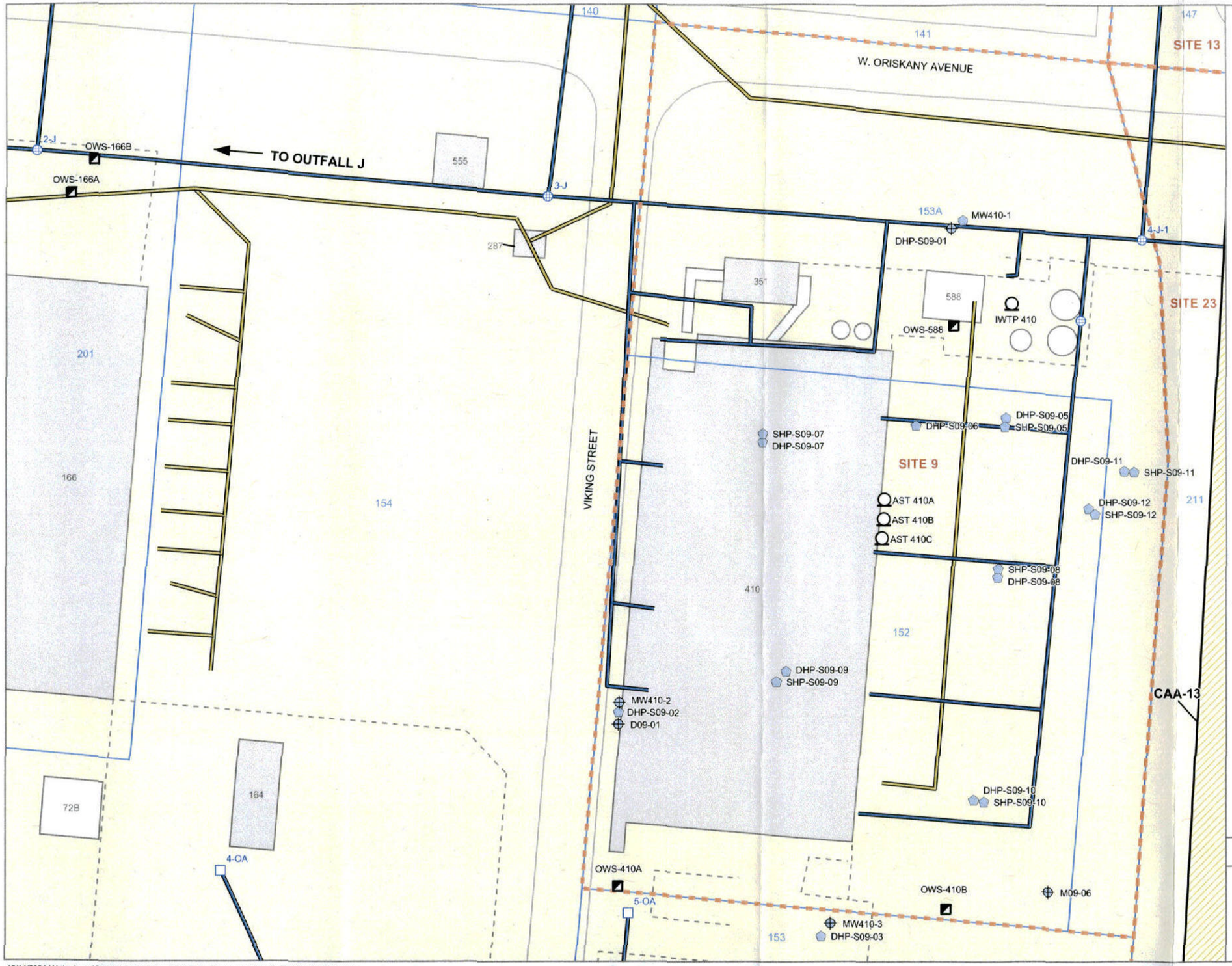
U.S. Navy Southwest Division, NAVFAC, San Diego
FIGURE 5-6H
SITE 9 SAMPLING LOCATIONS FOR SVOCs IN GROUNDWATER
Operable Unit 2A
Remedial Investigation Report
12/14/2004 U:\almda_sa\DO028\OU2A\RI\mxd\fig05-6H_s09_gw_svoc.mxd TtEMI-SA T Munley



12/14/2004 U:\almda_sa\DO028\OU2A\R\mxd\fig05-6I_s09_gw_voc.mxd TtEMI-SA T Munley



SAMPLING LOCATION
- Hydropunch
- Monitoring Well

ABOVEGROUND STORAGE TANK (AST)
- Removed
- CATCH BASIN
- MANHOLE
- OIL-WATER SEPARATOR (OWS)
- FENCE
- SANITARY SEWER LINE
- STORM SEWER LINE
- CORRECTIVE ACTION AREA (CAA)
- CERCLA SITE BOUNDARY
- ENVIRONMENTAL BASELINE SURVEY (EBS) PARCEL AND NUMBER
- LAND COVER

BUILDING
- Present
- Removed

Notes:
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980
IWTP = Industrial Waste Treatment Plant

25 0 25 50 Feet

Tetra Tech EM Inc.

Alameda Point
U.S. Navy Southwest Division, NAVFAC, San Diego

FIGURE 5-6J
SITE 9 SAMPLING LOCATIONS FOR METALS IN GROUNDWATER

Operable Unit 2A
Remedial Investigation Report

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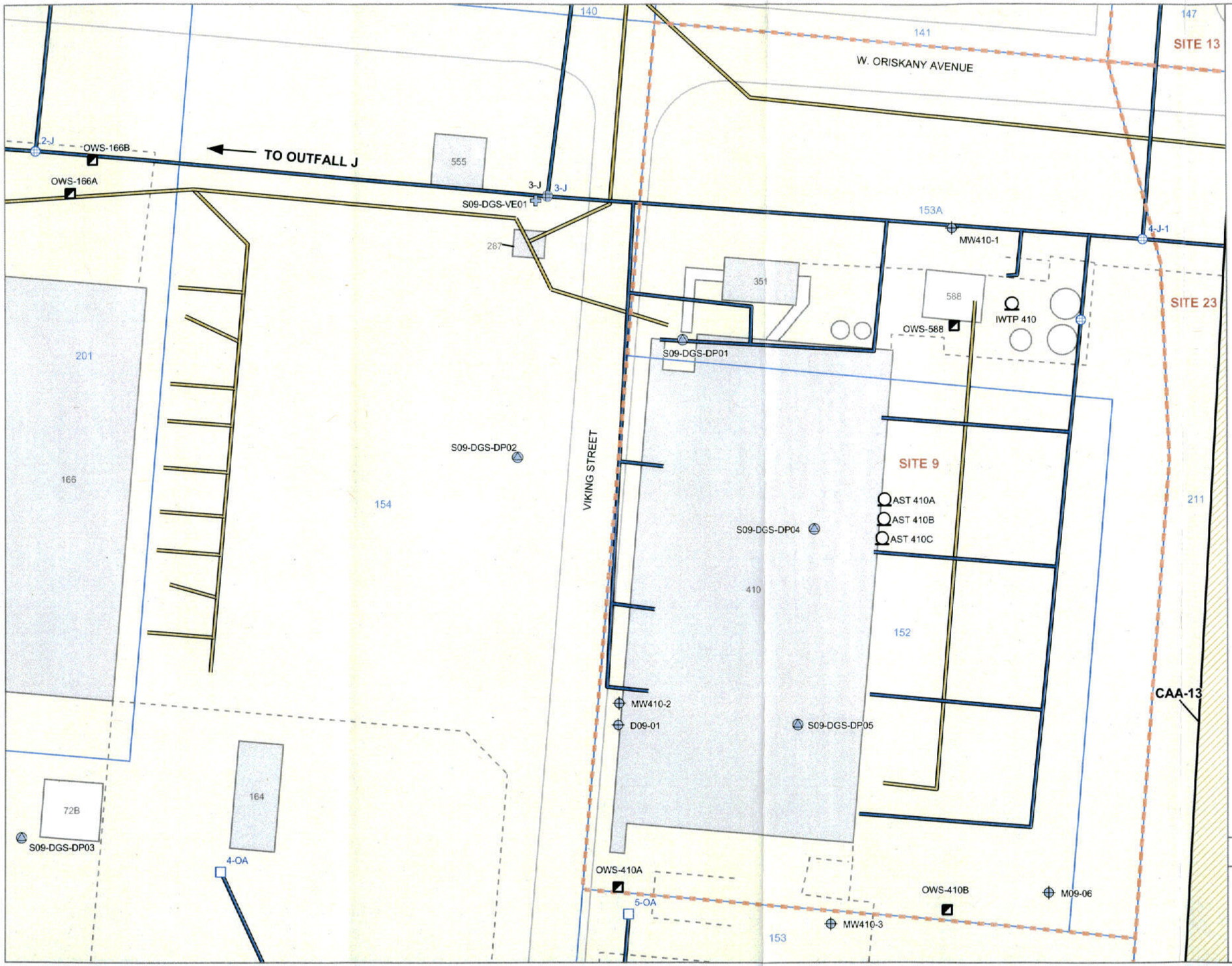

SAMPLING LOCATION
- Direct-Push
- Man Hole/Storm Drain
- Monitoring Well
- Vacuum Extraction

ABOVEGROUND STORAGE TANK (AST)
- Removed

- CATCH BASIN
- MANHOLE
- OIL-WATER SEPARATOR (OWS)
- FENCE
- SANITARY SEWER LINE
- STORM SEWER LINE
- CORRECTIVE ACTION AREA (CAA)
- CERCLA SITE BOUNDARY
- # ENVIRONMENTAL BASELINE SURVEY (EBS) PARCEL AND NUMBER
- LAND COVER

BUILDING
- Present
- Removed

Notes:
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980
IWTP = Industrial Waste Treatment Plant
PAH = Polynuclear Aromatic Hydrocarbon

N

25 0 25 50 Feet

Tetra Tech EM Inc.

Alameda Point
U.S. Navy Southwest Division, NAVFAC, San Diego

FIGURE 5-6K
SITE 9 SAMPLING LOCATIONS FOR PAHs IN GROUNDWATER

Operable Unit 2A
Remedial Investigation Report

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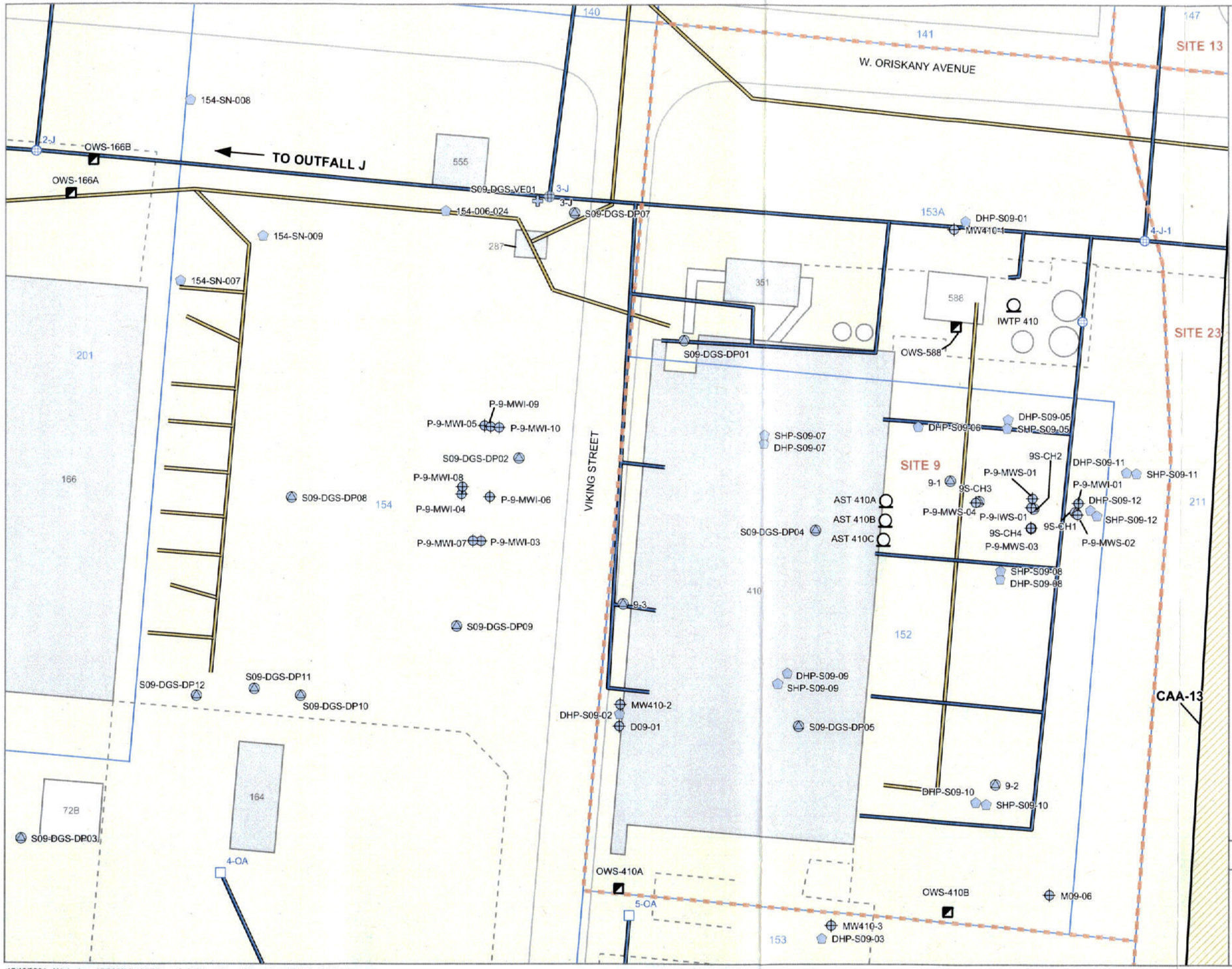

SAMPLING LOCATION
- Man hole Storm Drain
- Vacuum Extraction
- Hydropunch
- Direct Push
- Monitoring Well

ABOVEGROUND STORAGE TANK (AST)
- Removed

- CATCH BASIN
- MANHOLE
- OIL-WATER SEPARATOR (OWS)
- FENCE
- SANITARY SEWER LINE
- STORM SEWER LINE
- CORRECTIVE ACTION AREA (CAA)
- CERCLA SITE BOUNDARY
- # ENVIRONMENTAL BASELINE SURVEY (EBS) PARCEL AND NUMBER
- LAND COVER

BUILDING
- Present
- Removed

Notes:
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980
IWTP = Industrial Waste Treatment Plant
TPH = Total Petroleum Hydrocarbons

N

25 0 25 50 Feet

Tetra Tech EM Inc.

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U.S. Navy Southwest Division, NAVFAC, San Diego

FIGURE 5-6L
SITE 9 SAMPLING LOCATIONS FOR TPH IN GROUNDWATER

Operable Unit 2A
Remedial Investigation Report

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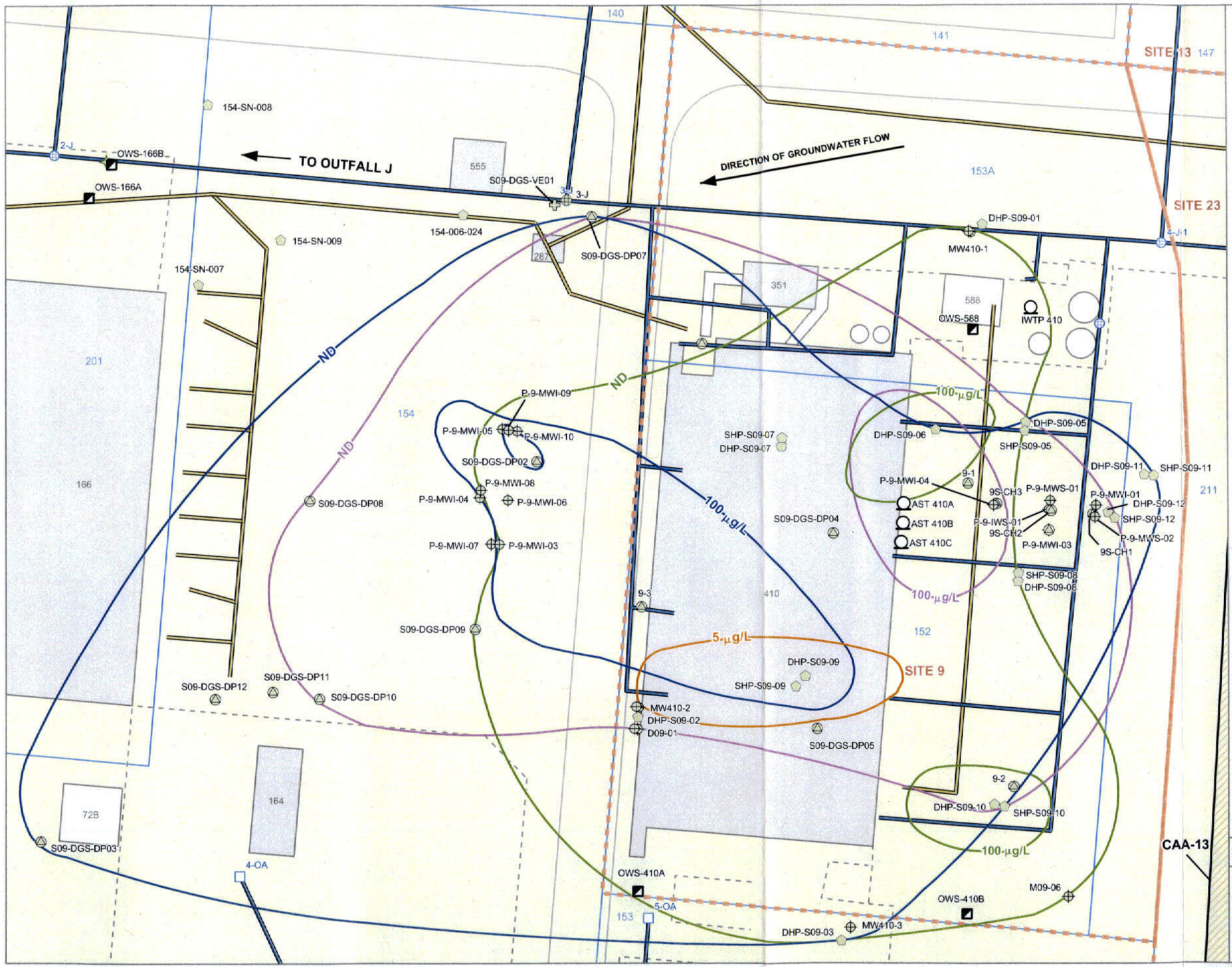
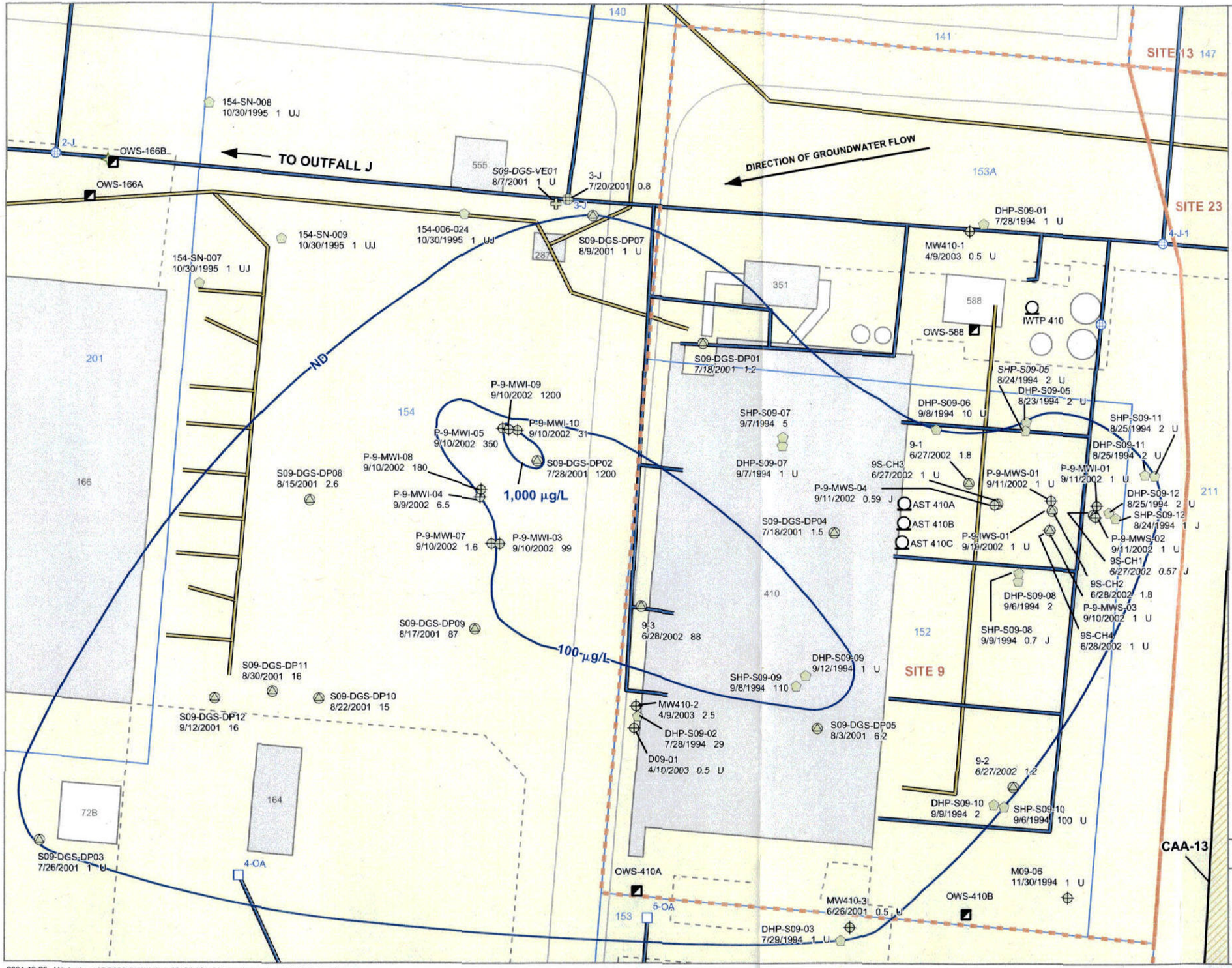


2004-12-28 U:\almda_sa\DO028\OU2A\ri\mxd\fig05-07_s09_ hydro_plumes.mxd TtEMI-SA K. Johnson



SAMPLE LOCATION
- Direct-Push
- Hydropunch
- Manhole / Storm Drain
- Monitoring Well
- Vacuum Extraction

ABOVEGROUND STORAGE TANK (AST)
- Removed

- OIL-WATER SEPARATOR (OWS)
- CATCH BASIN
- MANHOLE
- 1,1-DICHLOROETHANE (DCA) PLUME
- FENCE
- SANITARY SEWER LINE
- STORM SEWER LINE
- CORRECTIVE ACTION AREA (CAA)
- CERCLA SITE BOUNDARY
- ENVIRONMENTAL BASELINE SURVEY (EBS) PARCEL AND NUMBER
- LAND COVER

BUILDING
- Present
- Former

Notes:
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980
IWTP = Industrial Waste Treatment Plant
J = Estimated
ND = Non-detect
µg/L = Micrograms per liter
U = Not detected

See cross section, Figure 5-9. Full data are presented in Table 5-5 1,1-DCA.

Concentrations presented are either most recent monitoring well data or highest concentration detected in grab groundwater samples from a single point.
Groundwater data used in the RI were collected between 1990 and April 2003.

25 0 25 50 Feet

N

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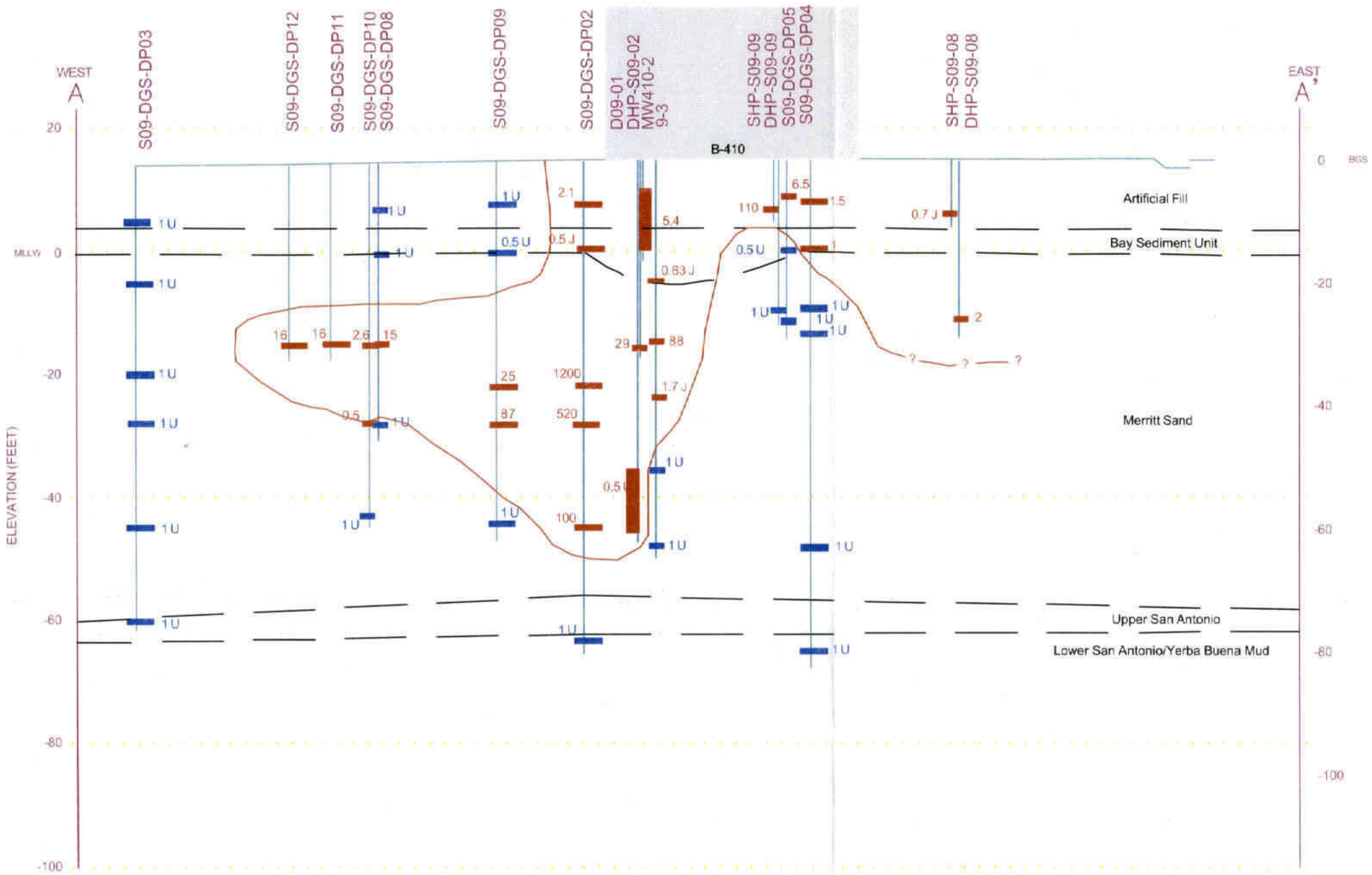
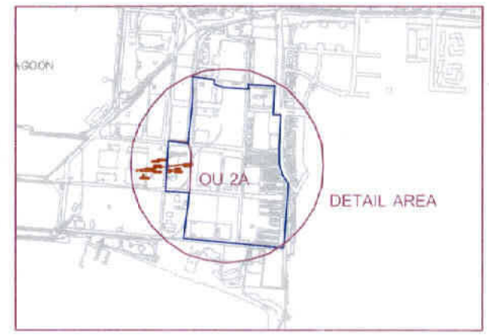
FIGURE 5-8
SITE 9 1,1-DICHLOROETHANE IN GROUNDWATER

Operable Unit 2A
Remedial Investigation Report

2004-12-28 U:\alameda_sa\DO028\OU2A\ri\mxd\fig05-08_s09_gw_dca.mxd TtEMI-SA K. Johnson



DETAIL AREA



LOCATION MAP

HORIZONTAL SCALE: 1" = 80'

LEGEND

0.5U = SAMPLE POINT, CONCENTRATION, AND QUALIFIER

——— ——— ——— IDEALIZED FORMATION CONTACT

MLLW MEAN LOWER LOW WATER

Note:
Vertical Exaggeration = 4X.

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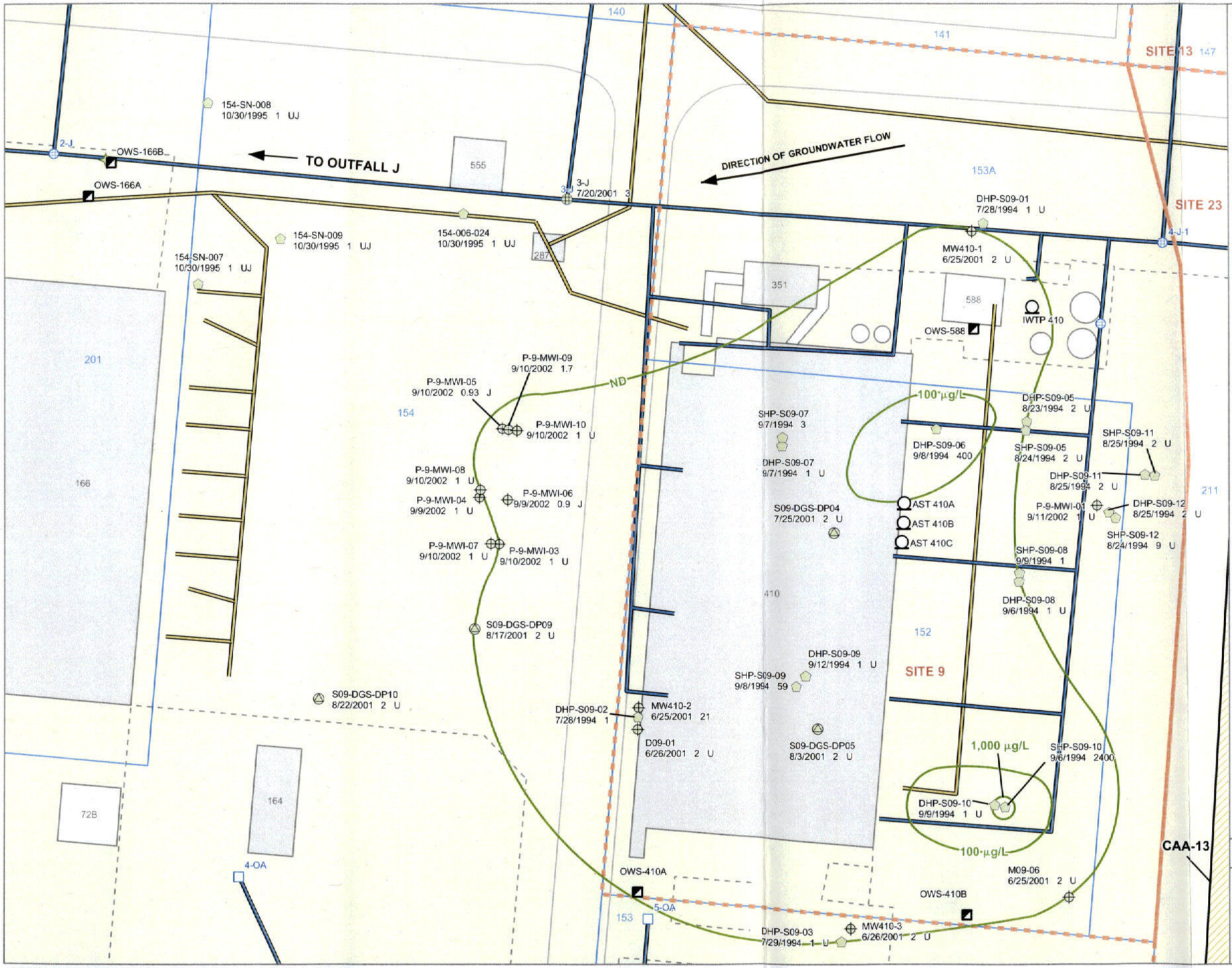
ALAMEDA POINT
U.S. Navy Southwest Division, NAVFAC, San Diego

FIGURE 5-9
SITE 9
1,1-DICHLOROETHANE
CROSS SECTION A-A'

OPERABLE UNIT 2A
REMEDIAL INVESTIGATION REPORT



SAMPLE LOCATION
- Direct-Push
- Hydropunch
- Manhole / Storm Drain
- Monitoring Well

ABOVEGROUND STORAGE TANK (AST)
- Removed
- OIL-WATER SEPARATOR (OWS)
- CATCH BASIN
- MANHOLE
- FENCE
- SANITARY SEWER LINE
- STORM SEWER LINE
- CORRECTIVE ACTION AREA (CAA)
- 1,2-DICHLOROETHENE PLUME
- CERCLA SITE BOUNDARY
- ENVIRONMENTAL BASELINE SURVEY (EBS) PARCEL AND NUMBER
- LAND COVER

BUILDING
- Present
- Former

Notes:
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980
IWTP = Industrial Waste Treatment Plant
J = Estimated
ND = Non-detect
U = Not detected
µg/L = Micrograms per liter

See cross section, Figure 5-11. Full data are presented in Table 5-6 1,2-DCE.

Concentrations presented are in micrograms per liter and are either most recent monitoring well data or highest concentration detected in grab groundwater samples from a single point. Groundwater data used in the RI were collected between 1990 and April 2003.

25 0 25 50 Feet

N

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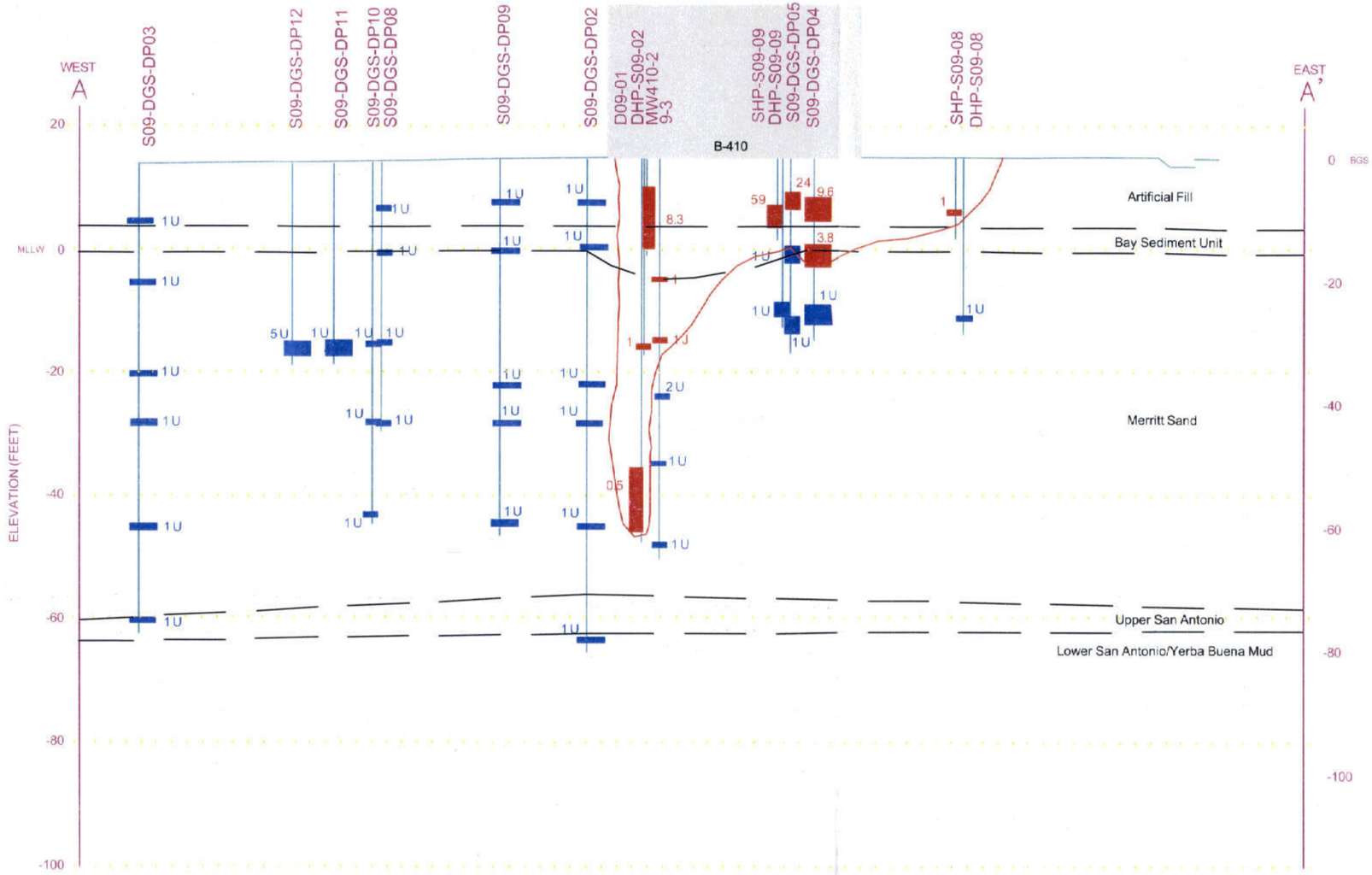
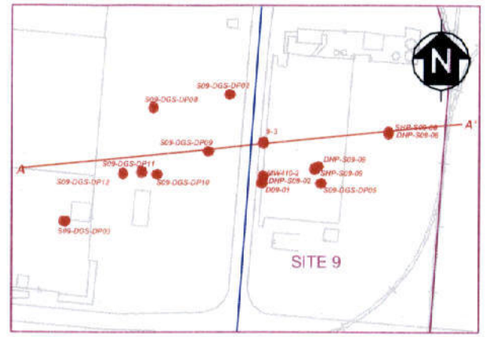
Alameda Point
U.S. Navy Southwest Division, NAVFAC, San Diego

FIGURE 5-10
SITE 9 1,2-DICHLOROETHENE IN GROUNDWATER

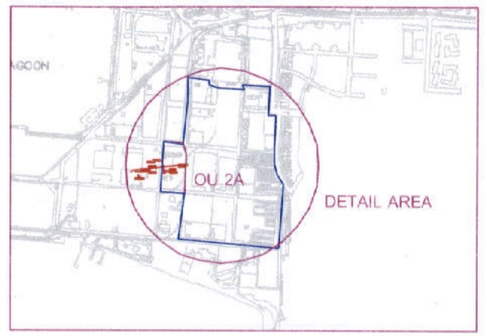
Operable Unit 2A
Remedial Investigation Report

2004-12-28 U:\alameda_sa\DO028\OU2A\ri\mxd\fig05-10_s09_dce.mxd TtEMI-SA K. Johnson





DETAIL AREA



LOCATION MAP

HORIZONTAL SCALE: 1" = 80'

LEGEND

0.5U = SAMPLE POINT, CONCENTRATION, AND QUALIFIER

IDEALIZED FORMATION CONTACT

MLLW MEAN LOWER LOW WATER

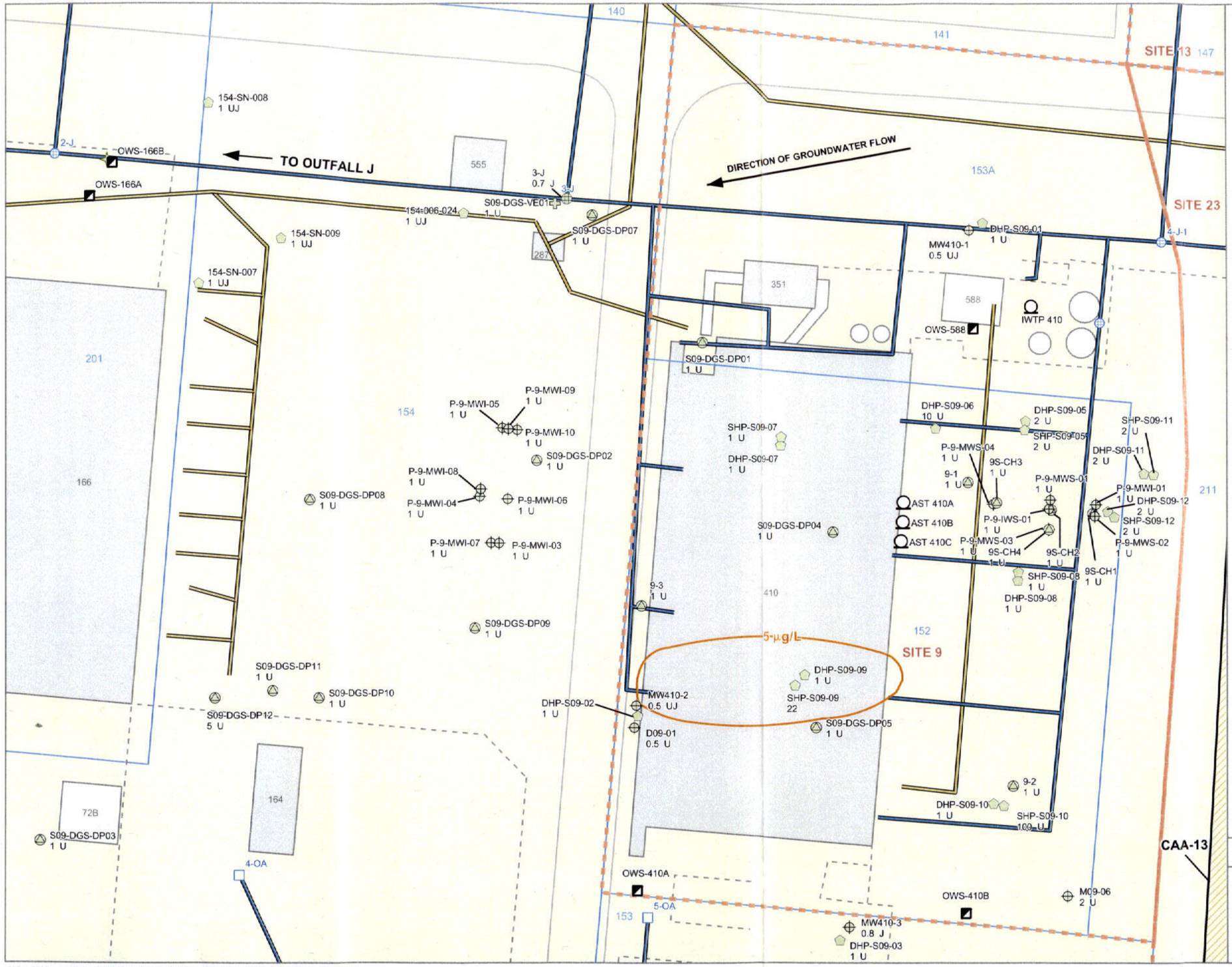
Note:
Vertical Exaggeration = 4X.

Tetra Tech EM Inc.

ALAMEDA POINT
U.S. Navy Southwest Division, NAVFAC, San Diego

FIGURE 5-11
SITE 9
1,2-DCE CROSS SECTION A-A'

OPERABLE UNIT 2A
REMEDIAL INVESTIGATION REPORT



SAMPLING LOCATION
- Direct-Push
- Hydropunch
- Manhole / Storm Drain
- Monitoring Well
- Vacuum Extraction

ABOVEGROUND STORAGE TANK (AST)
- Removed
- OIL-WATER SEPARATOR (OWS)
- CATCH BASIN
- MANHOLE
- FENCE
- SANITARY SEWER LINE
- STORM SEWER LINE
- 5 — TRICHLOROETHENE ISO-CONCENTRATION CONTOURS WITH CONCENTRATION IN µg/L.
- CORRECTIVE ACTION AREA (CAA)
- CERCLA SITE BOUNDARY
- # — ENVIRONMENTAL BASELINE SURVEY (EBS) PARCEL AND NUMBER
- LAND COVER

BUILDING
- Present
- Former

Notes:
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980
IWTP = Industrial Waste Treatment Plant
J = Estimated
U = Not detected
µg/L = Micrograms per liter

Concentrations presented are either most recent monitoring well data or highest concentration detected in grab groundwater samples from a single point. Groundwater data used in the RI were collected between 1990 and April 2003.

N

25 0 25 50 Feet

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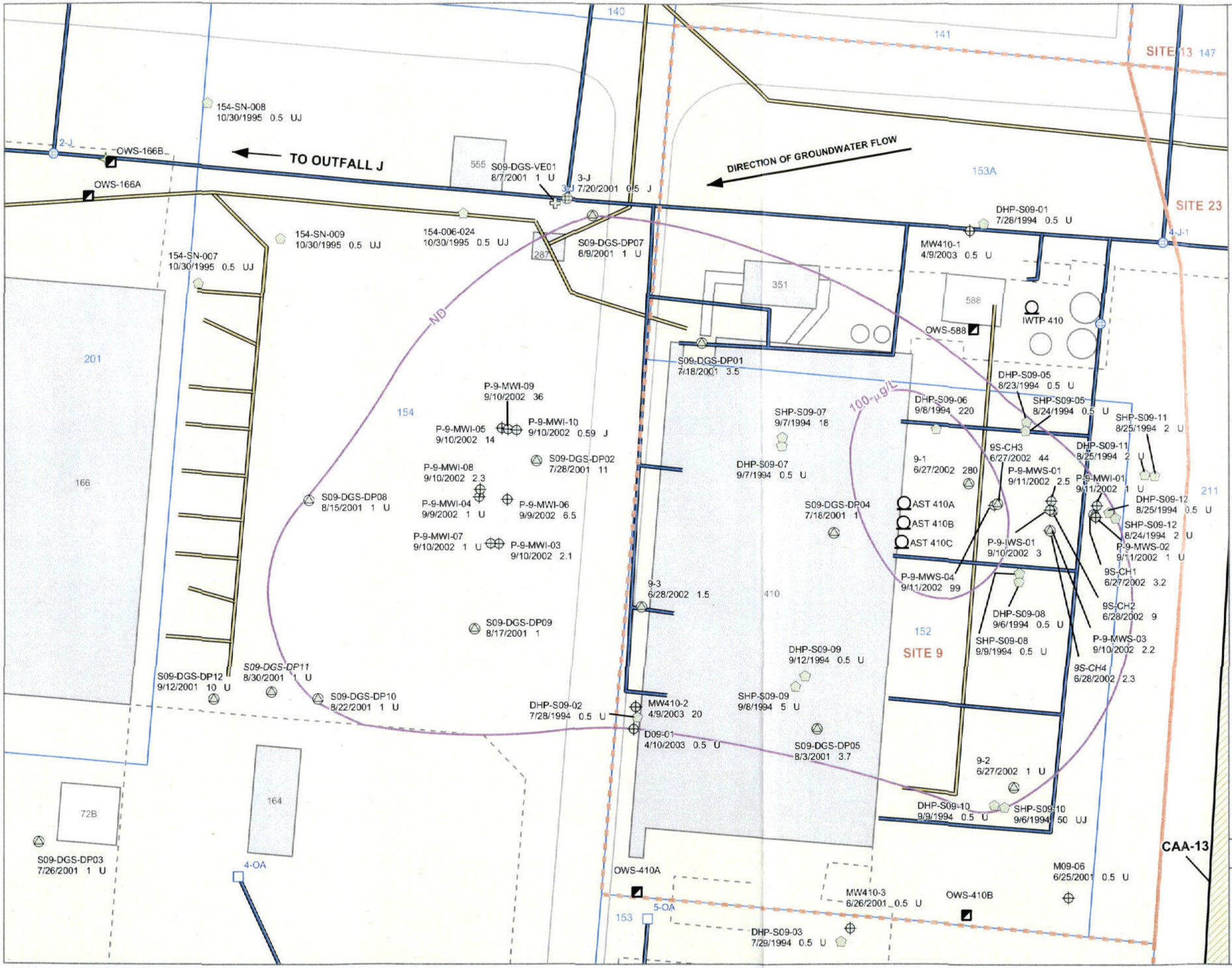
Alameda Point
U.S. Navy Southwest Division, NAVFAC, San Diego

FIGURE 5-12
SITE 9
TRICHLOROETHENE IN GROUNDWATER

Operable Unit 2A
Remedial Investigation Report

2004-12-28 U:\almda_sa\DO028\OU2A\RI\mxd\fig05-12_s09_gw_tce.mxd TtEMI-SA K. Johnson



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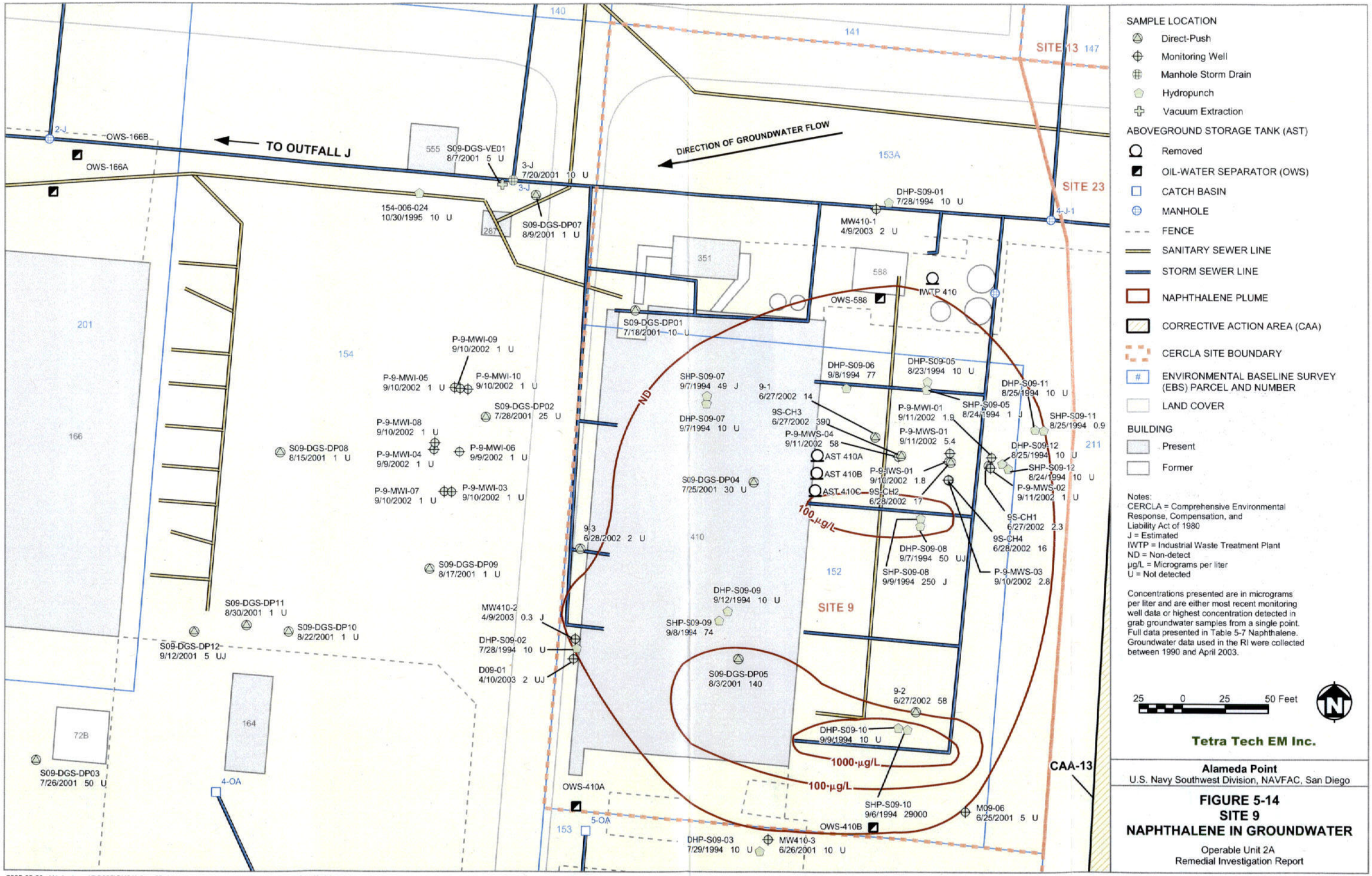
Alameda Point
U.S. Navy Southwest Division, NAVFAC, San Diego

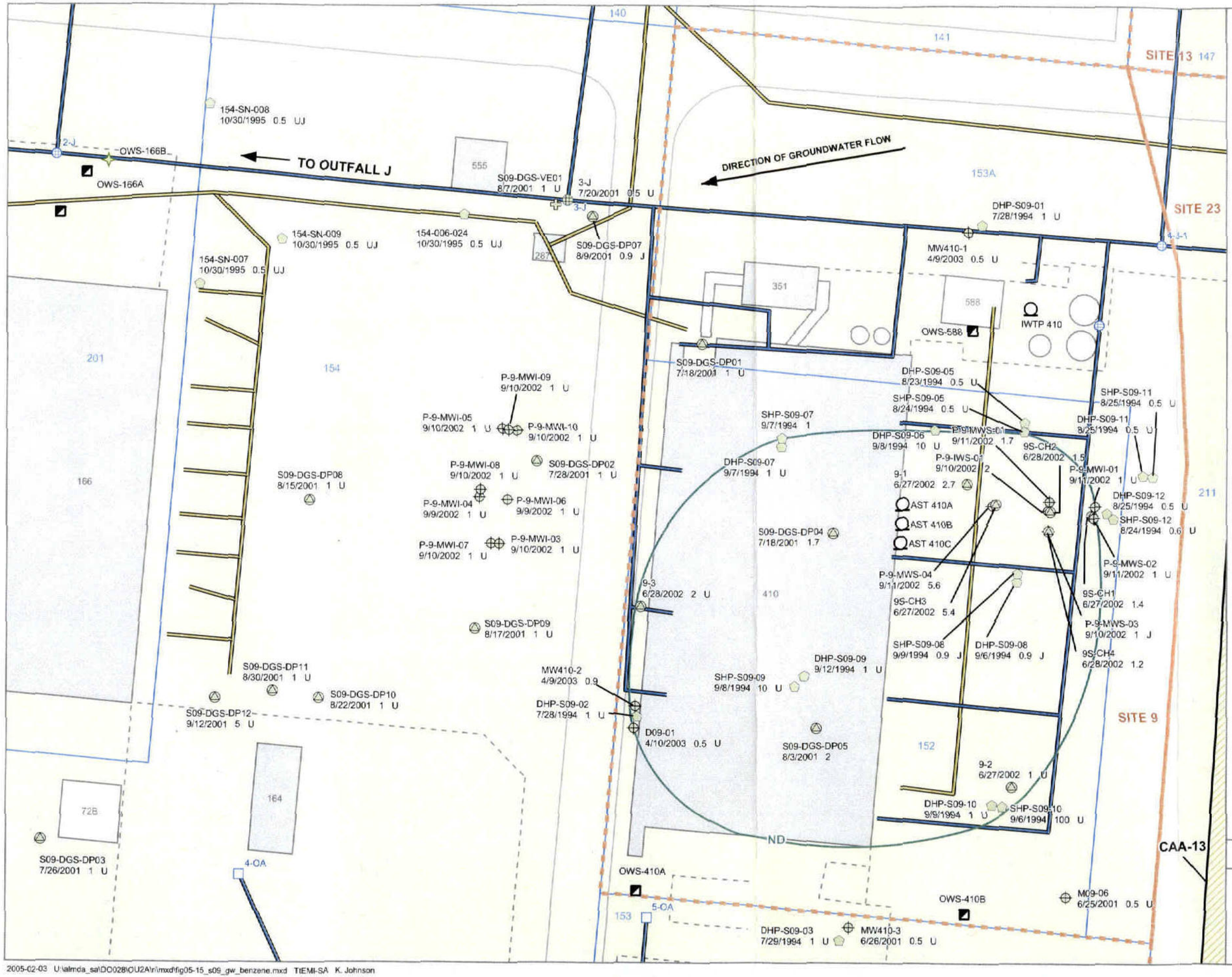
FIGURE 5-13
SITE 9
VINYL CHLORIDE IN GROUNDWATER

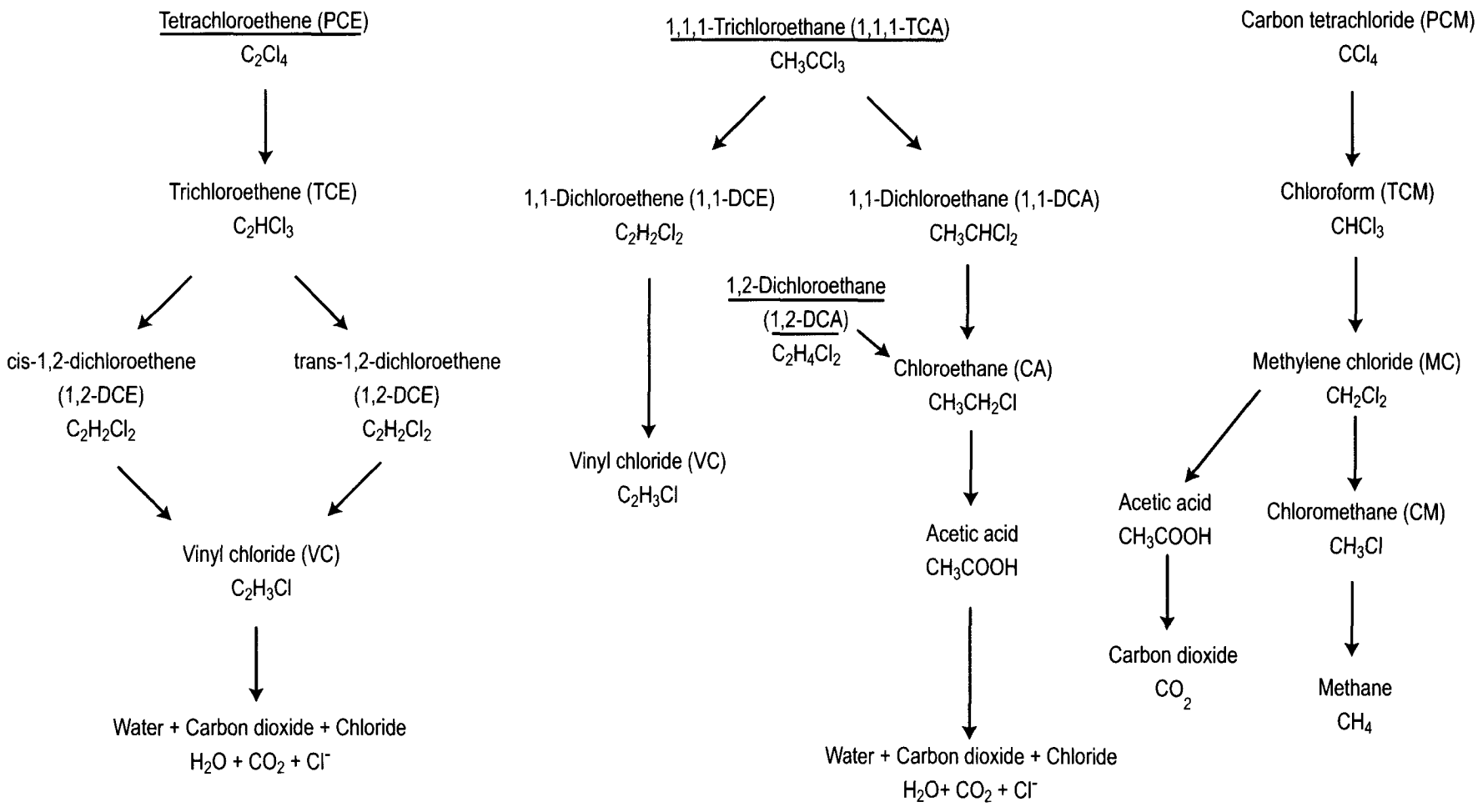
Operable Unit 2A
Remedial Investigation Report

2004-12-28 U:\alameda_sa\DO028\OU2A\ri\mxd\fig04-13_s09_gw_vc.mxd TtEMI-SA K. Johnson



2005-02-03 U:\almda_sa\DO028\OU2A\ri\mxd\fig05-14_s09_ gw_napthalene.mxd TtEMI-SA K. Johnson


140
141
SITE 13
147
154-SN-008
10/30/1995 0.5 UJ
2-J
OWS-166B
OWS-166A
TO OUTFALL J
555
S09-DGS-VE01
8/7/2001 1 U
3-J
7/20/2001 0.5 U
DIRECTION OF GROUNDWATER FLOW
153A
SITE 23
DHP-S09-01
7/28/1994 1 U
4-J-1
154-SN-009
10/30/1995 0.5 UJ
154-006-024
10/30/1995 0.5 UJ
287
S09-DGS-DP07
8/9/2001 0.9 J
MW410-1
4/9/2003 0.5 U
154-SN-007
10/30/1995 0.5 UJ
351
588
IWTP 410
OWS-588
201
154
S09-DGS-DP01
7/18/2001 1 U
DHP-S09-05
8/23/1994 0.5 U
SHP-S09-11
8/25/1994 0.5 U
P-9-MWI-09
9/10/2002 1 U
SHP-S09-05
8/24/1994 0.5 U
DHP-S09-11
8/25/1994 0.5 U
SHP-S09-07
9/7/1994 1
P-9-MWI-05
9/10/2002 1 U
P-9-MWI-10
9/10/2002 1 U
DHP-S09-06
9/8/1994 10 U
P-9-MWS-01
9/11/2002 1.7
9S-CH2
6/28/2002 1.5
P-9-IWS-01
9/10/2002 2
P-9-MWI-01
9/11/2002 1 U
S09-DGS-DP02
7/28/2001 1 U
P-9-MWI-08
9/10/2002 1 U
DHP-S09-07
9/7/1994 1 U
9-1
6/27/2002 2.7
AST 410A
AST 410B
AST 410C
DHP-S09-12
8/25/1994 0.5 U
SHP-S09-12
8/24/1994 0.6 U
211
166
S09-DGS-DP08
8/15/2001 1 U
P-9-MWI-04
9/9/2002 1 U
P-9-MWI-06
9/9/2002 1 U
S09-DGS-DP04
7/18/2001 1.7
P-9-MWI-07
9/10/2002 1 U
P-9-MWI-03
9/10/2002 1 U
P-9-MWS-02
9/11/2002 1 U
P-9-MWS-04
9/11/2002 5.6
9-3
6/28/2002 2 U
410
9S-CH1
6/27/2002 1.4
9S-CH3
6/27/2002 5.4
S09-DGS-DP09
8/17/2001 1 U
P-9-MWS-03
9/10/2002 1 J
SHP-S09-08
9/9/1994 0.9 J
DHP-S09-08
9/6/1994 0.9 J
9S-CH4
6/28/2002 1.2
DHP-S09-09
9/12/1994 1 U
MW410-2
4/9/2003 0.9
SHP-S09-09
9/8/1994 10 U
S09-DGS-DP11
8/30/2001 1 U
S09-DGS-DP10
8/22/2001 1 U
DHP-S09-02
7/28/1994 1 U
SITE 9
S09-DGS-DP12
9/12/2001 5 U
D09-01
4/10/2003 0.5 U
S09-DGS-DP05
8/3/2001 2
152
9-2
6/27/2002 1 U
72B
164
DHP-S09-10
9/9/1994 1 U
SHP-S09-10
9/6/1994 100 U
ND
CAA-13
S09-DGS-DP03
7/26/2001 1 U
4-OA
OWS-410A
OWS-410B
M09-06
6/25/2001 0.5 U
153
5-OA
DHP-S09-03
7/29/1994 1 U
MW410-3
6/26/2001 0.5 U
SAMPLE LOCATION
Direct-Push
Hydropunch
Manhole / Storm Drain
Monitoring Well
Vacuum Extraction
ABOVEGROUND STORAGE TANK (AST)
Removed
OIL-WATER SEPARATOR (OWS)
CATCH BASIN
MANHOLE
FENCE
SANITARY SEWER LINE
STORM SEWER LINE
BENZENE PLUME
CORRECTIVE ACTION AREA (CAA)
CERCLA SITE BOUNDARY
ENVIRONMENTAL BASELINE SURVEY (EBS) PARCEL AND NUMBER
LAND COVER
BUILDING
Present
Former
Notes:
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980
IWTP = Industrial Waste Treatment Plant
J = Estimated
ND = Non-detect
U = Not detected
Concentrations presented are in micrograms per liter and are the highest concentration detected in grab groundwater samples from a single point. Groundwater data used in the RI were collected between 1990 and April 2003.
25 0 25 50 Feet
N
Tetra Tech EM Inc.
Alameda Point
U.S. Navy Southwest Division, NAVFAC, San Diego
FIGURE 5-15
SITE 9
BENZENE IN GROUNDWATER
Operable Unit 2A
Remedial Investigation Report
2005-02-03 U:\almda_sa\DO028\OU2A\ri\mxd\fig05-15_s09_gw_benzene.mxd TtEMI-SA K. Johnson



Source: Murphy and Morrison (2002) *Introduction to Environmental Forensics.* Academic Press. San Diego, California.

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Alameda Point
U.S. Navy Southwest Division, NAVFAC, San Diego

FIGURE 5-16
DEGRADATION PATHWAYS OF COMMON SOLVENTS THROUGH DECHLORINATION

Operable Unit 2A
Remedial Investigation Report

TABLE 5-1: SITE 9 SOIL SAMPLING SUMMARY

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

SAMPLE LOCATION	SAMPLE IDENTIFICATION	DATE SAMPLED	DEPTH (ft bgs)	ANALYSES PERFORMED									
				SVOC	VOC	PAH	Pesticides/ PCB	Total Metals	General Chemistry	TPH	Herbicides	Tin	Organic Lead
CERCLA INVESTIGATIONS													
Phases 1 & 2A Investigation, 1991													
B410-5	B410-5 [0.5-1.0]	07/08/1990	0.5 - 1	X	--	--	--	X	--	--	--	--	--
	B410-5 [1.0-1.5]	07/11/1990	1 - 1.5	--	--	--	--	--	X	--	--	--	--
	B410-5 [2.0-2.5]	07/08/1990	2 - 2.5	X	X	--	--	--	--	--	--	--	--
	B410-5 [2.5-3.0]	07/11/1990	2.5 - 3	--	--	--	--	X	X	--	--	--	--
	B410-5 [5.0-5.5]	07/08/1990	5 - 5.5	X	X	--	--	--	--	--	--	--	--
	B410-5 [5.5-6.0]	07/08/1990	5.5 - 6	--	--	--	--	X	--	--	--	--	--
	B410-5 [8.0-8.5]	07/08/1990	8 - 8.5	X	X	--	--	--	--	--	--	--	--
	B410-5 [8.5-9.0]	07/08/1990	8.5 - 9	--	--	--	--	X	--	--	--	--	--
	B410-5 [10.5-11.0]	07/08/1990	10.5 - 11	X	X	--	--	--	--	--	--	--	--
	B410-5 [11.0-11.5]	07/08/1990	11 - 11.5	X	--	--	--	X	--	--	--	--	--
	B410-5 [11.5-12.0]	07/08/1990	11.5 - 12	--	--	--	--	X	--	--	--	--	--
	B410-5 [14.0-14.5]	07/08/1990	14 - 14.5	X	X	--	--	--	--	--	--	--	--
	B410-5 [14.5-15.0]	07/08/1990	14.5 - 15	--	--	--	--	X	--	--	--	--	--
B410-7	B410-7 [1.0-1.5]	07/12/1990	1 - 1.5	X	--	--	--	X	--	--	--	--	--
	B410-7 [2.5-3.0]	07/12/1990	2.5 - 3	X	X	--	--	--	--	--	--	--	--
	B410-7 [3.0-3.5]	07/12/1990	3 - 3.5	--	--	--	--	X	X	--	--	--	--
	B410-7 [4.0-4.5]	07/12/1990	4 - 4.5	--	--	--	--	--	--	--	--	--	--
	B410-7 [5.5-6.0]	07/16/1990	5.5 - 6	X	X	--	--	--	X	--	--	--	--
	B410-7 [6.0-6.5]	07/12/1990	6 - 6.5	--	--	--	--	X	--	--	--	--	--
	B410-7 [8.5-9.0]	07/16/1990	8.5 - 9	X	X	--	--	--	--	--	--	--	--
	B410-7 [9.0-9.5]	07/12/1990	9 - 9.5	--	--	--	--	X	--	--	--	--	--
	B410-7 [11.0-11.5]	07/16/1990	11 - 11.5	X	X	--	--	--	--	--	--	--	--
	B410-7 [11.5-12.0]	07/12/1990	11.5 - 12	--	--	--	--	X	--	--	--	--	--
	B410-7 [14.5-15.0]	07/16/1990	14.5 - 15	X	X	--	--	--	--	--	--	--	--
	B410-7 [15.0-15.5]	07/12/1990	15 - 15.5	--	--	--	--	X	--	--	--	--	--
B410-8	B410-8 [1.0-1.5]	07/16/1990	1 - 1.5	X	--	--	--	X	--	--	--	--	--
	B410-8 [1.5-2.0]	07/16/1990	1.5 - 2	--	--	--	--	--	X	--	--	--	--
	B410-8 [2.5-3.0]	07/16/1990	2.5 - 3	X	X	--	--	--	--	--	--	--	--
	B410-8 [3.0-3.5]	07/16/1990	3 - 3.5	--	--	--	--	X	X	--	--	--	--
	B410-8 [4.0-4.5]	07/16/1990	4 - 4.5	X	X	--	--	--	--	--	--	--	--
	B410-8 [4.5-5.0]	07/16/1990	4.5 - 5	--	--	--	--	X	--	--	--	--	--
	B410-8 [5.5-6.0]	07/16/1990	5.5 - 6	X	X	--	--	--	--	--	--	--	--

TABLE 5-1: SITE 9 SOIL SAMPLING SUMMARY

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

SAMPLE LOCATION	SAMPLE IDENTIFICATION	DATE SAMPLED	DEPTH (ft bgs)	ANALYSES PERFORMED									
				SVOC	VOC	PAH	Pesticides/ PCB	Total Metals	General Chemistry	TPH	Herbicides	Tin	Organic Lead
Phases 1 & 2A Investigation, 1991 (Continued)													
B410-8	B410-8 [6.0-6.5]	07/16/1990	6 - 6.5	--	--	--	--	X	--	--	--	--	--
(Continued)	B410-8 [7.0-7.5]	07/16/1990	7 - 7.5	X	X	--	--	--	--	--	--	--	--
	B410-8 [7.5-8.0]	07/16/1990	7.5 - 8	--	--	--	--	X	--	--	--	--	--
	B410-8 [8.5-9.0]	07/16/1990	8.5 - 9	X	X	--	--	--	--	--	--	--	--
	B410-8 [9.0-9.5]	07/16/1990	9 - 9.5	--	--	--	--	X	--	--	--	--	--
B410-9	B410-9 [1.0-1.5]	07/12/1990	1 - 1.5	X	--	--	--	X	--	--	--	--	--
	B410-9 [1.5-2.0]	07/12/1990	1.5 - 2	--	--	--	--	--	X	--	--	--	--
	B410-9 [2.5-3.0]	07/08/1990	2.5 - 3	X	X	--	--	--	--	--	--	--	--
	B410-9 [3.0-3.5]	07/12/1990	3 - 3.5	--	--	--	--	X	X	--	--	--	--
	B410-9 [5.5-6.0]	07/08/1990	5.5 - 6	X	X	--	--	--	--	--	--	--	--
	B410-9 [6.0-6.5]	07/12/1990	6 - 6.5	--	--	--	--	X	--	--	--	--	--
	B410-9 [8.5-9.0]	07/08/1990	8.5 - 9	X	X	--	--	--	--	--	--	--	--
	B410-9 [9.0-9.5]	07/12/1990	9 - 9.5	--	--	--	--	X	--	--	--	--	--
	B410-9 [11.5-12.0]	07/08/1990	11.5 - 12	X	X	--	--	--	--	--	--	--	--
	B410-9 [12.0-12.5]	07/12/1990	12 - 12.5	--	--	--	--	X	--	--	--	--	--
	B410-9 [14.5-15.0]	07/08/1990	14.5 - 15	X	X	--	--	--	--	--	--	--	--
	B410-9 [15.0-15.5]	07/12/1990	15 - 15.5	--	--	--	--	X	--	--	--	--	--
MW410-1	MW410-1 [0.5-1.0]	07/01/1990	0.5 - 1	X	--	--	--	X	--	--	--	--	--
	MW410-1 [1.0-1.5]	07/11/1990	1 - 1.5	--	--	--	--	--	X	--	--	--	--
	MW410-1 [2.0-2.5]	07/01/1990	2 - 2.5	X	X	--	--	--	--	--	--	--	--
	MW410-1 [3.0-3.5]	07/01/1990	3 - 3.5	--	--	--	--	X	X	--	--	--	--
	MW410-1 [5.5-6.0]	07/01/1990	5.5 - 6	X	X	--	--	--	--	--	--	--	--
	MW410-1 [6.5-7.0]	07/01/1990	6.5 - 7	--	--	--	--	X	--	--	--	--	--
	MW410-1 [7.0-7.5]	07/01/1990	7 - 7.5	X	X	--	--	--	--	--	--	--	--
	MW410-1 [7.5-8.0]	07/01/1990	7.5 - 8	--	--	--	--	X	--	--	--	--	--
	MW410-1 [8.0-8.5]	07/01/1990	8 - 8.5	--	--	--	--	X	--	--	--	--	--
	MW410-1 [11.0-11.5]	07/01/1990	11 - 11.5	X	X	--	--	--	--	--	--	--	--
	MW410-1 [11.5-12.0]	07/01/1990	11.5 - 12	X	--	--	--	--	--	--	--	--	--
	MW410-1 [12.5-13.0]	07/01/1990	12.5 - 13	--	--	--	--	X	--	--	--	--	--
	MW410-1 [14.0-14.5]	07/01/1990	14 - 14.5	X	X	--	--	--	--	--	--	--	--
	MW410-1 [14.5-15.0]	07/01/1990	14.5 - 15	--	--	--	--	X	--	--	--	--	--
MW410-2	MW410-2 [1.5-2.0]	07/16/1990	1.5 - 2	X	--	--	--	X	--	--	--	--	--
	MW410-2 [2.0-2.5]	07/16/1990	2 - 2.5	--	--	--	--	--	X	--	--	--	--

TABLE 5-1: SITE 9 SOIL SAMPLING SUMMARY

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

SAMPLE LOCATION	SAMPLE IDENTIFICATION	DATE SAMPLED	DEPTH (ft bgs)	ANALYSES PERFORMED									
				SVOC	VOC	PAH	Pesticides/ PCB	Total Metals	General Chemistry	TPH	Herbicides	Tin	Organic Lead
Phases 1 & 2A Investigation, 1991 (Continued)													
MW410-2	MW410-2 [3.0-3.5]	07/16/1990	3 - 3.5	X	X	--	--	--	--	--	--	--	--
(Continued)	MW410-2 [3.5-4.0]	07/16/1990	3.5 - 4	--	--	--	--	X	X	--	--	--	--
	MW410-2 [6.0-6.5]	07/16/1990	6 - 6.5	X	X	--	--	--	--	--	--	--	--
	MW410-2 [6.5-7.0]	07/16/1990	6.5 - 7	--	--	--	--	X	--	--	--	--	--
	MW410-2 [9.0-9.5]	07/16/1990	9 - 9.5	X	X	--	--	--	--	--	--	--	--
	MW410-2 [9.5-10.0]	07/16/1990	9.5 - 10	--	--	--	--	X	--	--	--	--	--
	MW410-2 [12.0-12.5]	07/16/1990	12 - 12.5	X	X	--	--	--	--	--	--	--	--
	MW410-2 [12.5-13.0]	07/16/1990	12.5 - 13	--	--	--	--	X	--	--	--	--	--
	MW410-2 [15.0-15.5]	07/16/1990	15 - 15.5	X	X	--	--	--	--	--	--	--	--
	MW410-2 [15.5-16.0]	07/16/1990	15.5 - 16	--	--	--	--	X	--	--	--	--	--
Follow-on Investigtion, 1994													
CPT-S09-05	280-S09-004	09/08/1994	0 - 0.5	--	X	--	--	X	X	--	--	--	--
	280-S09-005	09/08/1994	2.5 - 3	--	X	--	--	X	X	--	--	--	--
	280-S09-006	09/08/1994	4.7 - 5.2	--	X	--	--	X	X	--	--	--	--
CPT-S09-06	280-S09-007	09/08/1994	0 - 0.5	--	X	--	--	X	X	--	--	--	--
	280-S09-008	09/08/1994	2.5 - 3	--	X	--	--	X	X	--	--	--	--
	280-S09-009	09/08/1994	4.7 - 5.2	--	X	--	--	X	X	--	--	--	--
CPT-S09-07	280-S09-010	09/07/1994	0 - 0.5	--	X	--	--	X	X	--	--	--	--
	280-S09-011	09/07/1994	2.5 - 3	--	X	--	--	X	X	--	--	--	--
	280-S09-012	09/07/1994	5 - 5.5	--	X	--	--	X	X	--	--	--	--

TABLE 5-1: SITE 9 SOIL SAMPLING SUMMARY

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

SAMPLE LOCATION	SAMPLE IDENTIFICATION	DATE SAMPLED	DEPTH (ft bgs)	ANALYSES PERFORMED									
				SVOC	VOC	PAH	Pesticides/ PCB	Total Metals	General Chemistry	TPH	Herbicides	Tin	Organic Lead
Follow-on Investigtion, 1994 (Continued)													
CPT-S09-08	280-S09-013	09/08/1994	0 - 0.5	--	X	--	--	X	X	--	--	--	--
	280-S09-014	09/08/1994	2.5 - 3	--	X	--	--	X	X	--	--	--	--
	280-S09-015	09/09/1994	5 - 5.5	--	X	--	--	X	X	--	--	--	--
CPT-S09-09	280-S09-016	09/07/1994	0 - 0.5	--	X	--	--	X	X	--	--	--	--
	280-S09-017	09/07/1994	2.5 - 3	--	X	--	--	X	X	--	--	--	--
	280-S09-018	09/07/1994	5	--	X	--	--	X	X	--	--	--	--
CPT-S09-10	280-S09-019	09/09/1994	0 - 0.5	--	X	--	--	X	X	--	--	--	--
	280-S09-020	09/09/1994	2.5 - 3	--	X	--	--	X	X	--	--	--	--
	280-S09-021	09/09/1994	5 - 5.5	--	X	--	--	X	X	--	--	--	--
M09-06	280-S09-167	11/05/1994	1 - 2	--	X	--	--	X	X	--	--	--	--
	280-S09-168	11/05/1994	2.5 - 3.5	--	X	--	--	X	X	--	--	--	--
	280-S09-169	11/05/1994	5.5 - 6.5	--	X	--	--	X	X	--	--	--	--
Chemical Oxidation Removal Action, 2002										--			
9S-CH1	9S-CH1	06/21/2002	5 - 15	--	X	--	--	X	X	--	--	--	--
9S-CH2	9S-CH2	06/21/2002	5 - 15	--	X	--	--	X	X	--	--	--	--
9S-CH3	9S-CH3	06/21/2002	5 - 15	--	X	--	--	X	X	--	--	--	--
PAH Study, 2003													
C3S009B001	C0590525	8/6/2003	0 - 0.5	--	--	X	--	--	--	--	--	--	--
	C0590526	8/6/2003	0.5 - 2	--	--	X	--	--	--	--	--	--	--
	C0590527	8/6/2003	2 - 4	--	--	X	--	--	--	--	--	--	--
	C0590528	8/6/2003	4 - 8	--	--	X	--	--	--	--	--	--	--
C3S009B002	C0590529	8/6/2003	0 - 0.5	--	--	X	--	--	--	--	--	--	--
	C0590530	8/6/2003	0.5 - 2	--	--	X	--	--	--	--	--	--	--
	C0590531	8/6/2003	2 - 4	--	--	X	--	--	--	--	--	--	--
	C0590532	8/6/2003	4 - 8	--	--	X	--	--	--	--	--	--	--
C3S009B003	C0590533	8/6/2003	0 - 0.5	--	--	X	--	--	--	--	--	--	--
	C0590535	8/6/2003	0.5 - 2	--	--	X	--	--	--	--	--	--	--
	C0590536	8/6/2003	2 - 4	--	--	X	--	--	--	--	--	--	--
	C0590537	8/6/2003	4 - 8	--	--	X	--	--	--	--	--	--	--
C3S009B004	C0590538	8/6/2003	0 - 0.5	--	--	X	--	--	--	--	--	--	--
	C0590539	8/6/2003	0.5 - 2	--	--	X	--	--	--	--	--	--	--
	C0590540	8/6/2003	2 - 4	--	--	X	--	--	--	--	--	--	--
	C0590541	8/6/2003	4 - 8	--	--	X	--	--	--	--	--	--	--

TABLE 5-1: SITE 9 SOIL SAMPLING SUMMARY

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

SAMPLE LOCATION	SAMPLE IDENTIFICATION	DATE SAMPLED	DEPTH (ft bgs)	ANALYSES PERFORMED									
				SVOC	VOC	PAH	Pesticides/ PCB	Total Metals	General Chemistry	TPH	Herbicides	Tin	Organic Lead
PAH Study, 2003 (Continued)													
C3S009B005	C0590542	8/6/2003	0 - 0.5	--	--	X	--	--	--	--	--	--	--
	C0590543	8/6/2003	0.5 - 2	--	--	X	--	--	--	--	--	--	--
	C0590545	8/6/2003	2 - 4	--	--	X	--	--	--	--	--	--	--
	C0590546	8/6/2003	4 - 8	--	--	X	--	--	--	--	--	--	--
C3S009B006	C0590547	8/6/2003	0 - 0.5	--	--	X	--	--	--	--	--	--	--
	C0590548	8/6/2003	0.5 - 2	--	--	X	--	--	--	--	--	--	--
	C0590549	8/6/2003	2 - 4	--	--	X	--	--	--	--	--	--	--
	C0590550	8/6/2003	4 - 8	--	--	X	--	--	--	--	--	--	--
C3S009B007	C0591129	8/6/2003	0 - 0.5	--	--	X	--	--	--	--	--	--	--
	C0591130	8/6/2003	0.5 - 2	--	--	X	--	--	--	--	--	--	--
	C0591131	8/6/2003	2 - 4	--	--	X	--	--	--	--	--	--	--
	C0591133	8/6/2003	4 - 8	--	--	X	--	--	--	--	--	--	--
C3S009B008	C0590556	8/6/2003	0 - 0.5	--	--	X	--	--	--	--	--	--	--
	C0590557	8/6/2003	0.5 - 2	--	--	X	--	--	--	--	--	--	--
	C0590558	8/6/2003	2 - 4	--	--	X	--	--	--	--	--	--	--
	C0590559	8/6/2003	4 - 8	--	--	X	--	--	--	--	--	--	--
C3S009B009	C0590560	8/7/2003	0 - 0.5	--	--	X	--	--	--	--	--	--	--
	C0590561	8/7/2003	0.5 - 2	--	--	X	--	--	--	--	--	--	--
	C0590562	8/7/2003	2 - 4	--	--	X	--	--	--	--	--	--	--
	C0590563	8/7/2003	4 - 8	--	--	X	--	--	--	--	--	--	--
C3S009B010	C0590565	8/7/2003	0 - 0.5	--	--	X	--	--	--	--	--	--	--
	C0590566	8/7/2003	0.5 - 2	--	--	X	--	--	--	--	--	--	--
	C0590567	8/7/2003	2 - 4	--	--	X	--	--	--	--	--	--	--
	C0590568	8/7/2003	4 - 8	--	--	X	--	--	--	--	--	--	--
C3S009B011	C0590569	8/7/2003	0 - 0.5	--	--	X	--	--	--	--	--	--	--
	C0590570	8/7/2003	0.5 - 2	--	--	X	--	--	--	--	--	--	--
	C0590571	8/7/2003	2 - 4	--	--	X	--	--	--	--	--	--	--
	C0590572	8/7/2003	4 - 8	--	--	X	--	--	--	--	--	--	--
C3S009B012	C0590573	8/7/2003	0 - 0.5	--	--	X	--	--	--	--	--	--	--
	C0590575	8/7/2003	0.5 - 2	--	--	X	--	--	--	--	--	--	--
	C0590576	8/7/2003	2 - 4	--	--	X	--	--	--	--	--	--	--
	C0590577	8/7/2003	4 - 8	--	--	X	--	--	--	--	--	--	--
C3S009B013	C0590578	8/7/2003	0 - 0.5	--	--	X	--	--	--	--	--	--	--
	C0590579	8/7/2003	0.5 - 2	--	--	X	--	--	--	--	--	--	--
	C0590580	8/7/2003	2 - 4	--	--	X	--	--	--	--	--	--	--
	C0590581	8/7/2003	4 - 8	--	--	X	--	--	--	--	--	--	--

TABLE 5-1: SITE 9 SOIL SAMPLING SUMMARY

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

SAMPLE LOCATION	SAMPLE IDENTIFICATION	DATE SAMPLED	DEPTH (ft bgs)	ANALYSES PERFORMED									
				SVOC	VOC	PAH	Pesticides/ PCB	Total Metals	General Chemistry	TPH	Herbicides	Tin	Organic Lead
ENVIRONMENTAL BASELINE SURVEY													
Phase IIA Environmental Baseline Survey													
153-001-001	153-0001	04/06/1995	3 - 3.5	--	X	--	--	--	X	--	--	--	--
	153-0001M	04/06/1995	0.5 - 1	--		--	--	--	--	X	--	--	--
153-001-002	153-0002	04/06/1995	3 - 3.5	--	X	--	--	--	X	--	--	--	--
	153-0002M	04/06/1995	0.5 - 1	--	--	--	--	--	--	X	--	--	--
153-001-003	153-0003	04/06/1995	1 - 1.5	--	--	--	--	--	X	X	--	--	--
	153-0003M	04/06/1995	1 - 1.5	--	--	--	--	--	--	X	--	--	--
153-IW-001	153I-001	01/13/1995	8 - 8.5	X	X	--	X	X	X	X	X	X	X
	153I-001M	01/13/1995	8 - 8.5	--	X	--	--	X	--	--	--	--	--
153-IW-002	153I-002	01/23/1995	7 - 7.5	X	X	--	X	X	X	X	X	--	X
	153I-002M	01/23/1995	7 - 7.5	--	X	--	--	X	--	--	--	--	--

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Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

SAMPLE LOCATION	SAMPLE IDENTIFICATION	DATE SAMPLED	DEPTH (ft bgs)	ANALYSES PERFORMED									
				SVOC	VOC	PAH	Pesticides/ PCB	Total Metals	General Chemistry	TPH	Herbicides	Tin	Organic Lead
211-IWPS3-00	211P-001	01/30/1995	8.5 - 9	X	X	--	X	X	X	X	X	X	X
	211P-001M	01/30/1995	8.5 - 9	--	X	--	--	X	--	--	--	--	--
211-SS-005	211M-005	05/31/1995	10 - 11	X	--	--	X	--	X	--	--	X	X
	211M-005M	05/31/1995	10 - 11	--	X	--	--	X	--	X	--	--	--
J-2-J	J-2-J-01	12/01/1994		X	X	--	X	X	X	X	X	--	X

Notes:

--	These analyses were not performed.
X	These analyses were performed.
ft bgs	Feet below ground surface
General chemistry	Percent moisture, reactivity, TOC and/or pH
PAH	Polynuclear aromatic hydrocarbon
PCB	Polychlorinated biphenyl
TOC	Total organic carbon
TPH	Total petroleum hydrocarbon
SVOC	Semivolatile organic compound
VOC	Volatile organic compound

TABLE 5-2: SITE 9 GROUNDWATER SAMPLING SUMMARY

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

SAMPLE LOCATION	SAMPLE IDENTIFICATION	DATE SAMPLED	DEPTH (ft bgs)	ANALYSES PERFORMED							
				SVOC	VOC	Dissolved Metals	Total Metals	General Chemistry	Landfill Gases	TPH	PAHCERCLA
CERCLA INVESTIGATIONS											
Phases 1 & 2A Investigation, 1991											
MW410-1	MW410-1 [08/21/90]	08/21/1990	--	X	X	X	--	X	--	--	--
MW410-2	MW410-2 [08/22/90]	08/22/1990	--	X	X	X	--	X	--	--	--
MW410-3	MW410-3 [08/21/90]	08/21/1990	--	X	X	X	--	X	--	--	--
Follow-on Investigation, 1994											
D09-01	280-S09-100	12/20/1994		X	X	X	--	X	--	X	--
	280-S09-107	02/21/1995		X	X	X	--	X	--	--	--
	280-S09-108	06/22/1995		X	X	X	--	X	--	--	--
	280-S09-109	09/14/1995		X	X	X	--	X	--	--	--
DHP-S09-01	280-S09-053	07/28/1994	25.8	X	X	X	--	X	--	--	--
DHP-S09-02	280-S09-054	07/28/1994	30	X	X	X	--	X	--	--	--
DHP-S09-03	280-S09-055	07/29/1994	24	X	X	X	--	X	--	--	--
DHP-S09-05	280-S09-058	08/23/1994	23 - 25	--	X	X	--	X	--	--	--
DHP-S09-06	280-S09-059	09/08/1994	8 - 11	X	X	X	--	X	--	--	--
DHP-S09-07	280-S09-062	09/07/1994	21 - 24	X	X	X	--	X	--	--	--
DHP-S09-08	280-S09-064	09/06/1994	24	X	X	X	--	X	--	--	--
DHP-S09-09	280-S09-066	09/12/1994	22 - 25	X	X	X	--	X	--	--	--
DHP-S09-10	280-S09-068	09/09/1994	27 - 30	X	X	X	--	X	--	--	--
DHP-S09-11	280-S09-094	08/25/1994	20 - 24	X	X	X	--	X	--	--	--
DHP-S09-12	280-S09-096	08/25/1994	22.5 - 26	X	X	X	--	X	--	--	--
M09-06	280-S09-049	11/30/1994		X	X	X	--	X	--	X	--
	280-S09-050	02/21/1995		X	X	X	--	X	--	X	--
	280-S09-051	06/22/1995		X	X	X	--	X	--	X	--
	280-S09-052	08/08/1995		X	X	X	--	X	--	X	--
MW410-1	280-S09-026	10/18/1994		X	X	X	--	X	--	X	--
	280-S09-028	06/23/1995		X	X	X	X	X	--	X	--
	280-S09-030	08/08/1995		X	X	X	--	X	--	X	--
MW410-2	280-S09-031	10/18/1994		X	X	X	--	X	--	X	--
	280-S09-032	02/21/1995		X	X	X	--	X	--	X	--
	280-S09-033	06/22/1995		X	X	X	--	X	--	X	--
	280-S09-034	08/04/1995		X	X	X	--	X	--	X	--
MW410-3	280-S09-036	10/18/1994		X	X	X	--	X	--	X	--
	280-S09-037	02/21/1995		X	X	X	--	X	--	X	--
	280-S09-038	06/22/1995		X	X	X	X	X	--	X	--
	280-S09-039	08/07/1995		X	X	X	--	X	--	X	--
SHP-S09-05	280-S09-057	08/24/1994	7 - 10	X	X	X	--	X	--	--	--

TABLE 5-2: SITE 9 GROUNDWATER SAMPLING SUMMARY

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

SAMPLE LOCATION	SAMPLE IDENTIFICATION	DATE SAMPLED	DEPTH (ft bgs)	ANALYSES PERFORMED							
				SVOC	VOC	Dissolved Metals	Total Metals	General Chemistry	Landfill Gases	TPH	PAH
SHP-S09-07	280-S09-061	09/07/1994	8 - 11	X	X	X	--	X	--	--	--
SHP-S09-08	280-S09-063	09/09/1994	11	X	X	X	--	X	--	--	--
SHP-S09-09	280-S09-065	09/08/1994	8 - 11	X	X	X	--	X	--	--	--
SHP-S09-10	280-S09-067	09/06/1994	11	X	X	X	--	X	--	--	--
SHP-S09-11	280-S09-093	08/25/1994	15	X	X	X	--	X	--	--	--
SHP-S09-12	280-S09-095	08/24/1994	8	X	X	X	--	X	--	--	--
Follow-on Investigation, 1998											
D09-01	108-S09-003	11/11/1997		--	X	X	--	X	--	--	--
	108-S09-004	02/04/1998		--	X	X	--	X	--	--	--
	108-S09-007	05/13/1998		--	X	X	--	X	--	--	--
	108-S09-010	08/06/1998		--	X	--	X	X	--	--	--
M09-06	108-S09-001	11/05/1997		--	X	X	--	X	--	--	--
	108-S09-005	02/05/1998		--	X	X	--	X	--	--	--
	108-S09-009	05/12/1998		--	X	X	--	X	--	--	--
	108-S09-012	08/07/1998		--	X	--	X	X	--	--	--
Supplemental Remedial Investigation Data Gap Sampling, 2001											
3-J	385-S09-036	07/20/2001		X	X	--	--	--	--	--	X
D09-01	385-S09-031	06/26/2001		X	X	--	--	--	--	X	X
M09-06	385-S09-030	06/25/2001		X	X	--	--	--	--	X	X
MW410-1	385-S09-025	06/25/2001		X	X	--	--	--	--	X	X
MW410-2	385-S09-026	06/25/2001		X	X	--	--	--	--	X	X
MW410-3	385-S09-027	06/26/2001		X	X	--	--	--	--	X	X
	385-S09-028	06/26/2001		X	X	--	--	--	--	X	X
S09-DGS-DP01	385-S09-001	07/18/2001	8 - 10	--	X	--	--	--	--	--	--
	385-S09-001A	07/18/2001	8 - 10	X	--	--	--	--	--	--	X
	385-S09-002	07/18/2001	15 - 17	--	X	--	--	--	--	--	--
	385-S09-002A	07/18/2001	15 - 17	X	--	--	--	--	--	--	X
	385-S09-003	07/18/2001	30 - 32	--	X	--	--	--	--	--	--
	385-S09-003A	07/18/2001	30 - 32	X	--	--	--	--	--	--	X
S09-DGS-DP02	385-S09-004	07/28/2001	8	--	X	--	--	--	--	--	--
	385-S09-004A	07/28/2001	8	X	--	--	--	--	--	--	X
	385-S09-005	07/28/2001	15	--	X	--	--	--	--	--	--
	385-S09-005A	07/28/2001	15	X	--	--	--	--	--	--	X
S09-DGS-DP02	385-S09-006	07/28/2001	35	--	X	--	--	--	--	--	--
(Continued)	385-S09-006A	07/28/2001	35	X	--	--	--	--	--	--	X
	385-S09-007	07/28/2001	45	--	X	--	--	--	--	--	--
	385-S09-007A	07/28/2001	45	X	--	--	--	--	--	--	X

TABLE 5-2: SITE 9 GROUNDWATER SAMPLING SUMMARY

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SAMPLE LOCATION	SAMPLE IDENTIFICATION	DATE SAMPLED	DEPTH (ft bgs)	ANALYSES PERFORMED							
				SVOC	VOC	Dissolved Metals	Total Metals	General Chemistry	Landfill Gases	TPH	PAH
	385-S09-008	07/28/2001	60	--	X	--	--	--	--	--	--
	385-S09-008A	07/28/2001	60	X	--	--	--	--	--	--	X
	385-S09-009	07/28/2001	78	--	X	--	--	--	--	--	--
	385-S09-009A	07/28/2001	78	X	--	--	--	--	--	--	X
S09-DGS-DP03	385-S09-010	07/26/2001	10	--	X	--	--	--	--	--	--
	385-S09-010A	07/26/2001	10	--	--	--	--	--	--	--	X
	385-S09-011	07/26/2001	20	--	X	--	--	--	--	--	--
	385-S09-011A	07/26/2001	20	--	--	--	--	--	--	--	X
	385-S09-012	07/26/2001	35	--	X	--	--	--	--	--	--
	385-S09-012A	07/26/2001	35	--	--	--	--	--	--	--	X
	385-S09-013	07/26/2001	43	--	X	--	--	--	--	--	--
	385-S09-013A	07/26/2001	43	X	--	--	--	--	--	--	X
	385-S09-014	07/26/2001	60	--	X	--	--	--	--	--	--
	385-S09-014A	07/26/2001	60	X	--	--	--	--	--	--	X
	385-S09-015	07/26/2001	74	--	X	--	--	--	--	--	--
	385-S09-015A	07/26/2001	74	X	--	--	--	--	--	--	X
S09-DGS-DP04	385-S09-019	07/25/2001	50	--	X	--	--	--	--	--	--
	385-S09-019A	07/25/2001	50	X	X	--	--	--	--	--	X
	385-S09-020	07/25/2001	65	--	X	--	--	--	--	--	--
	385-S09-020A	07/25/2001	65	X	--	--	--	--	--	--	X
	385-S09-021	07/25/2001	80	--	X	--	--	--	--	--	--
	385-S09-021A	07/25/2001	80	X	--	--	--	--	--	--	X
	385-S09-022	07/18/2001	8 - 10	--	X	--	--	--	--	--	--
	385-S09-022A	07/18/2001	8 - 10	X	--	--	--	--	--	--	X
	385-S09-023	07/18/2001	15 - 17	--	X	--	--	--	--	--	--
	385-S09-023A	07/18/2001	15 - 17	X	--	--	--	--	--	--	X
	385-S09-024	07/18/2001	25 - 27	--	X	--	--	--	--	--	--
	385-S09-024A	07/18/2001	25 - 27	X	--	--	--	--	--	--	X
S09-DGS-DP05	385-S09-016	08/03/2001	7 - 9	--	X	--	--	--	--	--	--
	385-S09-016A	08/03/2001	7 - 9	X	--	--	--	--	--	--	X
	385-S09-017	08/03/2001	15 - 17	--	X	--	--	--	--	--	--
S09-DGS-DP05	385-S09-017A	08/03/2001	15 - 17	X	X	--	--	--	--	--	X
(Continued)	385-S09-018	08/03/2001	25 - 27	--	X	--	--	--	--	--	--
	385-S09-018A	08/03/2001	25 - 27	X	--	--	--	--	--	--	X
S09-DGS-DP07	385-S09-043	08/09/2001	7	--	X	--	--	--	--	--	--
	385-S09-044	08/09/2001	15	--	X	--	--	--	--	--	--
S09-DGS-DP08	385-S09-045	08/15/2001	7	--	X	--	--	--	--	--	--

TABLE 5-2: SITE 9 GROUNDWATER SAMPLING SUMMARY

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

SAMPLE LOCATION	SAMPLE IDENTIFICATION	DATE SAMPLED	DEPTH (ft bgs)	ANALYSES PERFORMED							
				SVOC	VOC	Dissolved Metals	Total Metals	General Chemistry	Landfill Gases	TPH	PAH
	385-S09-046	08/15/2001	15	--	X	--	--	--	--	--	--
	385-S09-047	08/15/2001	30	--	X	--	--	--	--	--	--
	385-S09-048	08/15/2001	45	--	X	--	--	--	--	--	--
S09-DGS-DP09	385-S09-049	08/17/2001	7	--	X	--	--	--	--	--	--
	385-S09-050	08/17/2001	15	--	X	--	--	--	--	--	--
	385-S09-050A	08/17/2001	15	--	X	--	--	--	--	--	--
	385-S09-051	08/17/2001	30	--	X	--	--	--	--	--	--
	385-S09-052	08/17/2001	45	--	X	--	--	--	--	--	--
	385-S09-057	08/22/2001	59	--	X	--	--	--	--	--	--
S09-DGS-DP10	385-S09-054	08/22/2001	30	--	X	--	--	--	--	--	--
	385-S09-055	08/22/2001	45	--	X	--	--	--	--	--	--
	385-S09-055A	08/22/2001	45	--	X	--	--	--	--	--	--
	385-S09-056	08/22/2001	58	--	X	--	--	--	--	--	--
S09-DGS-DP11	385-S09-058	08/30/2001	30 - 32	--	X	--	--	--	--	--	--
S09-DGS-DP12	385-S09-059	09/12/2001	30 - 32	--	X	--	--	--	--	--	--
S09-DGS-SG03	385-S09-040	07/26/2001	1.5	--	X	--	--	--	X	--	--
	385-S09-041	07/26/2001	3.5	--	X	--	--	--	X	--	--
S09-DGS-VE01	385-S09-034	08/07/2001	8.5 - 10	--	X	--	--	--	--	X	--
	385-S09-034A	08/07/2001	8.5 - 10	X	--	--	--	--	--	--	X
Basewide Groundwater Monitoring, 2002											
D09-01	D09-01-A1136	06/28/2002		--	X	X	--	X	X	X	--
	D09-01-A1338	09/05/2002		--	X	--	--	--	--	X	--
	D09-01-A1637	12/16/2002		--	X	X	--	X	X	X	--
	D09-01-A1992	04/10/2003		--	X	--	--	--	--	X	--
MW410-1	MW410-1-A1149	06/18/2002		--	X	X	--	X	X	X	--
	MW410-1-A1343	09/04/2002		--	X	--	--	--	--	X	--
	MW410-1-A1650	12/16/2002		--	X	X	--	X	X	X	--
	MW410-1-A1996	04/09/2003		--	X	--	--	--	--	X	--
MW410-2	MW410-2-A1150	06/18/2002		--	X	--	--	X	X	X	--
	MW410-2-A1344	09/05/2002		--	X	--	--	--	--	X	--
	MW410-2-A1651	12/16/2002		--	X	X	--	X	X	X	--
	MW410-2-A1997	04/09/2003		--	X	--	--	--	--	X	--
Chemical Oxidation Removal Action, 2002											
9-1	9-1-10	06/27/2002	8 - 12	--	X	--	--	--	--	--	--
	9-1-20	06/27/2002	18 - 22	--	X	--	--	--	--	--	--
	9-1-30	06/27/2002	28 - 32	--	X	--	--	--	--	--	--
	9-1-40	06/27/2002	38 - 42	--	X	--	--	--	--	--	--

TABLE 5-2: SITE 9 GROUNDWATER SAMPLING SUMMARY

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

SAMPLE LOCATION	SAMPLE IDENTIFICATION	DATE SAMPLED	DEPTH (ft bgs)	ANALYSES PERFORMED							
				SVOC	VOC	Dissolved Metals	Total Metals	General Chemistry	Landfill Gases	TPH	PAH
9-2	9-2-10	06/27/2002	8 - 10	--	X	--	--	--	--	--	--
	9-2-20	06/27/2002	18 - 22	--	X	--	--	--	--	--	--
	9-2-30	06/27/2002	28 - 32	--	X	--	--	--	--	--	--
	9-2-40	06/27/2002	38 - 42	--	X	--	--	--	--	--	--
9-3	9-3-20	06/28/2002	18 - 22	--	X	--	--	--	--	--	--
	9-3-30	06/28/2002	28 - 32	--	X	--	--	--	--	--	--
	9-3-40	06/28/2002	38 - 42	--	X	--	--	--	--	--	--
	9-3-55	07/02/2002	53 - 57	--	X	--	--	--	--	--	--
	9-3-63	07/02/2002	61 - 65	--	X	--	--	--	--	--	--
9S-CH1	9S-CH1-10	06/27/2002	8 - 12	--	X	--	--	--	--	--	--
	9S-CH1-20	06/27/2002	18 - 22	--	X	--	--	--	--	--	--
	9S-CH1-30	06/27/2002	28 - 32	--	X	--	--	--	--	--	--
9S-CH2	9S-CH2-10	06/28/2002	8 - 12	--	X	--	--	--	--	--	--
	9S-CH2-20	06/28/2002	18 - 22	--	X	--	--	--	--	--	--
	9S-CH2-30	06/28/2002	28 - 32	--	X	--	--	--	--	--	--
	9S-CH2-40	06/28/2002	38 - 42	--	X	--	--	--	--	--	--
9S-CH3	9S-CH3-10	06/27/2002	8 - 12	--	X	--	--	--	--	--	--
	9S-CH3-10D	06/27/2002	8 - 22	--	X	--	--	--	--	--	--
	9S-CH3-20	06/27/2002	8 - 12	--	X	--	--	--	--	--	--
	9S-CH3-30	06/28/2002	28 - 32	--	X	--	--	--	--	--	--
	9S-CH3-40	06/28/2002	38 - 42	--	X	--	--	--	--	--	--
9S-CH4	9S-CH4-10	06/28/2002	8 - 12	--	X	--	--	--	--	--	--
	9S-CH4-20	06/28/2002	18 - 22	--	X	--	--	--	--	--	--
	9S-CH4-30	06/28/2002	28 - 32	--	X	--	--	--	--	--	--
	9S-CH4-40	06/28/2002	38 - 42	--	X	--	--	--	--	--	--
P-9-IWS-01	SITE9-020	09/10/2002	--	--	X	--	X	X	--	--	--
P-9-MWI-01	SITE9-024	09/11/2002	--	--	X	--	X	X	--	--	--
P-9-MWI-03	SITE9-018	09/10/2002	--	--	X	--	X	X	--	--	--
P-9-MWI-04	SITE9-010	09/09/2002	--	--	X	--	X	X	--	--	--
P-9-MWI-05	SITE9-014	09/10/2002	--	--	X	--	X	X	--	--	--
P-9-MWI-06	SITE9-008	09/09/2002	--	--	X	--	X	X	--	--	--
P-9-MWI-07	SITE9-017	09/10/2002	--	--	X	--	X	X	--	--	--
P-9-MWI-08	SITE9-013	09/10/2002	--	--	X	--	X	X	--	--	--
P-9-MWI-09	SITE9-015	09/10/2002	--	--	X	--	X	X	--	--	--
P-9-MWI-10	SITE9-016	09/10/2002	--	--	X	--	X	X	--	--	--
P-9-MWS-01	SITE9-022	09/11/2002	--	--	X	--	X	X	--	--	--
P-9-MWS-02	SITE9-025	09/11/2002	--	--	X	--	X	X	--	--	--

TABLE 5-2: SITE 9 GROUNDWATER SAMPLING SUMMARY

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

SAMPLE LOCATION	SAMPLE IDENTIFICATION	DATE SAMPLED	DEPTH (ft bgs)	ANALYSES PERFORMED							
				SVOC	VOC	Dissolved Metals	Total Metals	General Chemistry	Landfill Gases	TPH	PAH
P-9-MWS-03	SITE9-019	09/10/2002	--	--	X	--	X	X	--	--	--
P-9-MWS-04	SITE9-023	09/11/2002	--	--	X	--	X	X	--	--	--
ENVIRONMENTAL BASELINE SURVEY											
Phase IIB Environmental Baseline Survey											
154-006-024	154-0038	10/30/1995	7.5 - 8.5	X	X	X	--	--	--	X	--
154-SN-007	154S-015	10/30/1995	9	--	X	--	--	--	--	X	--
154-SN-008	154S-018	10/30/1995	8 - 9	--	X	--	--	--	--	X	--
154-SN-009	154S-021	10/30/1995	9	--	X	--	--	--	--	X	--

Notes:

--	These analyses were not performed.
X	These analyses were performed.
ft bgs	Feet below ground surface
General chemistry	Acidity, alkalinity, major anions, conductivity, hardness, oxydation, MBAS, pH, TDS, TOC, and/or sulfide
MBAS	Methylene blue active substances (surfactants)
PAH	Polynuclear aromatic hydrocarbon
TDS	Total dissolved solids
TOC	Total organic carbon
TPH	Total petroleum hydrocarbon
SVOC	Semivolatile organic compound
VOC	Volatile organic compound

TABLE 5-3: SITE 9 STATISTICAL SUMMARY OF SOIL ANALYSES

Phases 1 and 2A Investigation, 1991

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Volatile Organic Compounds (µg/kg)											
1,1,1-TRICHLOROETHANE	29	0	0	--	--	--	5	27	0	0	1,200,000
1,1,2,2-TETRACHLOROETHANE	29	0	0	--	--	--	5	27	0	0	410
1,1,2-TRICHLOROETHANE	29	0	0	--	--	--	5	27	0	0	730
1,1-DICHLOROETHANE	28	0	0	--	--	--	5	27	0	0	2,800 (CAL-modified)
1,1-DICHLOROETHENE	30	0	0	--	--	--	5	27	0	0	120,000
1,2-DICHLOROBENZENE	29	0	0	--	--	--	5	960	0	0	370,000
1,2-DICHLOROETHANE	29	0	0	--	--	--	5	27	0	0	280
1,2-DICHLOROETHENE (TOTAL)	30	2	7	4	3J	4 J	5	27	0	0	43,000 (cis)
1,2-DICHLOROPROPANE	29	0	0	--	--	--	5	27	0	0	340
1,3-DICHLOROBENZENE	29	0	0	--	--	--	5	960	0	0	16,000
1,4-DICHLOROBENZENE	29	0	0	--	--	--	5	960	0	0	3,400
2-BUTANONE	29	1	3	9	9J	9 J	10	14	--	--	NA
2-CHLOROETHYLVINYLETHER	29	0	0	--	--	--	10	55	--	--	NA
2-HEXANONE	29	0	0	--	--	--	10	55	--	--	NA
4-METHYL-2-PENTANONE	29	0	0	--	--	--	10	55	--	--	NA
ACETONE	29	0	0	--	--	--	10	55	0	0	1,600,000
BENZENE	29	0	0	--	--	--	5	27	0	0	600
BROMODICHLOROMETHANE	29	0	0	--	--	--	5	27	0	0	820
BROMOFORM	29	0	0	--	--	--	5	27	0	0	62,000
BROMOMETHANE	29	0	0	--	--	--	10	55	0	0	3,900
CARBON DISULFIDE	29	0	0	--	--	--	5	27	0	0	360,000
CARBON TETRACHLORIDE	29	0	0	--	--	--	5	27	0	0	250
CHLOROBENZENE	29	0	0	--	--	--	5	27	0	0	150,000
CHLOROETHANE	29	0	0	--	--	--	10	55	0	0	3,000
CHLOROFORM	29	0	0	--	--	--	5	27	0	0	940 (CAL-modified)
CHLOROMETHANE	29	0	0	--	--	--	10	55	0	0	1,200
CIS-1,3-DICHLOROPROPENE	29	0	0	--	--	--	5	27	0	0	780 (not cis)
DIBROMOCHLOROMETHANE	29	0	0	--	--	--	5	27	0	0	1,100
ETHYLBENZENE	29	1	3	2	2J	2 J	5	27	0	0	8,900
METHYLENE CHLORIDE	29	0	0	--	--	--	6	27	0	0	9,100
STYRENE	29	0	0	--	--	--	5	27	0	0	1,700,000
TETRACHLOROETHENE	29	1	3	1	1J	1 J	5	27	0	0	1,500
TOLUENE	30	29	97	54	2J	730	6	6	0	0	520,000

TABLE 5-3: SITE 9 STATISTICAL SUMMARY OF SOIL ANALYSES (Continued)

Phases 1 and 2A Investigation, 1991

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Volatile Organic Compounds (µg/kg)											
TRANS-1,3-DICHLOROPROPENE	29	0	0	--	--	--	5	27	0	0	780 (not trans)
TRICHLOROETHENE	29	0	0	--	--	--	5	27	0	0	53
TRICHLOROFLUOROMETHANE	29	0	0	--	--	--	5	27	0	0	390,000
VINYL ACETATE	29	0	0	--	--	--	10	55	0	0	430,000
VINYL CHLORIDE	29	0	0	--	--	--	10	55	0	0	79 (child or adult)
XYLENE (TOTAL)	29	1	3	29	29	29	5	27	0	0	270,000
Semivolatile Organic Compounds (µg/kg)											
1,2,4-TRICHLOROBENZENE	38	0	0	--	--	--	340	1,000	0	0	650,000
1,2-DICHLOROBENZENE	38	0	0	--	--	--	340	1,000	0	0	370,000
1,2-DIPHENYLHYDRAZINE	38	0	0	--	--	--	340	**1,000**	0	10	610
1,3-DICHLOROBENZENE	38	0	0	--	--	--	340	1,000	0	0	16,000
1,4-DICHLOROBENZENE	38	0	0	--	--	--	340	1,000	0	0	3,400
2,4,5-TRICHLOROPHENOL	38	0	0	--	--	--	1,600	4,900	0	0	6,100,000
2,4,6-TRICHLOROPHENOL	38	0	0	--	--	--	340	1,000	0	0	6,900 (CAL-modified)
2,4-DICHLOROPHENOL	38	0	0	--	--	--	340	1,000	0	0	180,000
2,4-DIMETHYLPHENOL	38	0	0	--	--	--	340	1,000	0	0	1,200,000
2,4-DINITROPHENOL	38	0	0	--	--	--	1,600	4,900	0	0	120,000
2,4-DINITROTOLUENE	38	0	0	--	--	--	340	1,000	0	0	120,000
2,6-DINITROTOLUENE	38	0	0	--	--	--	340	1,000	0	0	61,000
2-CHLORONAPHTHALENE	38	0	0	--	--	--	340	1,000	--	--	NA
2-CHLOROPHENOL	38	0	0	--	--	--	340	1,000	0	0	63,000
2-METHYLNAPHTHALENE	38	1	3	320	320 J	320 J	340	1,000	--	--	NA
2-METHYLPHENOL	38	0	0	--	--	--	340	1,000	--	--	NA
2-NITROANILINE	38	0	0	--	--	--	1,600	**4,900**	0	28	1,700
2-NITROPHENOL	38	0	0	--	--	--	340	1,000	--	--	NA
3,3'-DICHLOROBENZIDINE	38	0	0	--	--	--	670	**2,000**	0	10	1,100
3-NITROANILINE	38	0	0	--	--	--	1,600	4,900	--	--	NA
4,6-DINITRO-2-METHYLPHENOL	38	0	0	--	--	--	1,600	4,900	--	--	NA
4-BROMOPHENYL-PHENYLETHER	38	0	0	--	--	--	340	1,000	--	--	NA
4-CHLORO-3-METHYLPHENOL	38	1	3	43	43 J	43 J	340	1,000	--	--	NA
4-CHLOROANILINE	38	0	0	--	--	--	340	1,000	0	0	240,000
4-CHLOROPHENYL-PHENYLETHER	38	0	0	--	--	--	340	1,000	--	--	NA

TABLE 5-3: SITE 9 STATISTICAL SUMMARY OF SOIL ANALYSES (Continued)

Phases 1 and 2A Investigation, 1991

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Semivolatile Organic Compounds (µg/kg)											
4-METHYLPHENOL	38	0	0	--	--	--	340	1,000	0	0	310,000
4-NITROANILINE	38	0	0	--	--	--	1,600	4,900	--	--	NA
4-NITROPHENOL	38	0	0	--	--	--	1,600	4,900	--	--	NA
ACENAPHTHENE	37	0	0	--	--	--	340	1,000	0	0	3,700,000
ACENAPHTHYLENE	38	1	3	130	130 J	130 J	340	1,000	--	--	NA
ANILINE	12	0	0	--	--	--	350	720	0	0	85,000
ANTHRACENE	38	2	5	220	59 J	390 J	340	1,000	0	0	22,000,000
BENZO(A)ANTHRACENE	38	7	18	240	64 J	**1,000**	340	**960**	1	8	620
BENZO(A)PYRENE	38	9	24	**350**	**140 J**	**1,300**	**340**	**960**	9	29	62
BENZO(B)FLUORANTHENE	38	9	24	250	66 J	**760**	340	**960**	1	8	620
BENZO(G,H,I)PERYLENE	38	4	11	380	140 J	950	340	1,000	--	--	NA
BENZO(K)FLUORANTHENE	38	5	13	330	58 J	**1,100**	340	**1,000**	1	22	380 (CAL-modified)
BENZOIC ACID	38	0	0	--	--	--	1,600	4,900	0	0	100,000,000
BENZYL ALCOHOL	38	0	0	--	--	--	340	1,000	0	0	18,000,000
BIS(2-CHLOROETHOXY)METHANE	38	0	0	--	--	--	340	1,000	--	--	NA
BIS(2-CHLOROETHYL)ETHER	38	0	0	--	--	--	**340**	**1,000**	0	38	210
BIS(2-ETHYLHEXYL)PHTHALATE	38	0	0	--	--	--	340	1,000	0	0	35,000
BUTYLBENZYLPHTHALATE	38	0	0	--	--	--	340	1,000	0	0	12,000,000
CHRYSENE	38	10	26	240	69 J	1,300	340	960	0	0	3,800 (CAL-modified)
DI-N-BUTYLPHTHALATE	38	0	0	--	--	--	340	1,000	--	--	NA
DI-N-OCTYLPHTHALATE	38	0	0	--	--	--	340	1,000	--	--	NA
DIBENZO(A,H)ANTHRACENE	38	1	3	**230**	**230 J**	**230**	**340**	**1,000**	1	37	62
DIBENZOFURAN	38	0	0	--	--	--	340	1,000	0	0	290,000
DIETHYLPHTHALATE	38	0	0	--	--	--	340	1,000	0	0	49,000,000
DIMETHYLPHTHALATE	38	0	0	--	--	--	340	1,000	0	0	100,000,000
FLUORANTHENE	38	9	24	430	95 J	2,000	340	960	0	0	2,300,000
FLUORENE	38	1	3	100	100 J	100 J	340	1,000	0	0	2,700,000
HEXACHLOROBENZENE	38	0	0	--	--	--	**340**	**1,000**	0	38	300
HEXACHLOROBUTADIENE	38	0	0	--	--	--	340	1,000	0	0	6,200
HEXACHLOROCYCLOPENTADIENE	38	0	0	--	--	--	340	1,000	0	0	370,000
HEXACHLOROETHANE	38	0	0	--	--	--	340	1,000	0	0	35,000
INDENO(1,2,3-CD)PYRENE	38	5	13	370	120 J	**930**	340	**1,000**	1	10	620
ISOPHORONE	38	0	0	--	--	--	340	1,000	0	0	510,000

TABLE 5-3: SITE 9 STATISTICAL SUMMARY OF SOIL ANALYSES (Continued)

Phases 1 and 2A Investigation, 1991

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Semivolatile Organic Compounds (µg/kg)											
N-NITROSO-DI-N-PROPYLAMINE	38	0	0	--	--	--	**340**	**1,000**	0	38	69
N-NITROSODIMETHYLAMINE	12	0	0	--	--	--	**350**	**720**	0	12	10
N-NITROSODIPHENYLAMINE	38	18	47	60	38J	120 J	340	1,000	0	0	99,000
NAPHTHALENE	38	2	5	36	35J	36 J	340	1,000	0	0	56,000
NITROBENZENE	38	0	0	--	--	--	340	1,000	0	0	20,000
PENTACHLOROPHENOL	38	1	3	430	430J	430 J	1,600	**4,900**	0	9	3,000
PHENANTHRENE	38	4	11	540	130J	1,600	340	960	--	--	NA
PHENOL	38	1	3	42	42J	42 J	340	1,000	0	0	37,000,000
PYRENE	38	12	32	600	85J	2,500	340	960	0	0	2,300,000
Metals (mg/kg)											
ALUMINUM	38	38	100	6,310	2,880	28,800	0.0	0.0	0	0	76,000
ANTIMONY	38	0	0	--	--	--	2.0	7.6	0	0	31.0
ARSENIC	38	16	42	**5.0**	**2.2**	**10.0**	**1.9**	**13.0**	16	22	0.39
BARIUM	38	36	95	50.7	16.3J	198	24.0	25.0	0	0	5,400
BERYLLIUM	38	18	47	0.28	0.090	0.81	0.20	1.3	0	0	150
CADMIUM	38	19	50	0.42	0.19	0.99	0.20	1.3	0	0	37.0
CALCIUM	38	38	100	4,540	1,340	19,200	0.0	0.0	--	--	NA
CHROMIUM	38	38	100	34.7	19.0	107	0.0	0.0	0	0	210
COBALT	38	27	71	7.4	2.9	23.0	5.2	6.3	0	0	900
COPPER	38	38	100	17.1	4.2	89.4	0.0	0.0	0	0	3,100
IRON	38	38	100	10,400	5,090	**39,000**	0.0	0.0	5	0	23,000
LEAD	38	9	24	10.7	7.0	16.2	3.5	6.8	0	0	150 (CAL-modified)
MAGNESIUM	38	37	97	3,120	1,570	10,200	520	520	--	--	NA
MANGANESE	38	38	100	166	62.5	1,060	0.0	0.0	0	0	1,800
MOLYBDENUM	38	0	0	--	--	--	0.31	6.3	0	0	390
NICKEL	38	38	100	31.7	14.6	111	0.0	0.0	0	0	1,600
POTASSIUM	38	34	89	1,070	310	3,740	560	610	--	--	NA
SELENIUM	38	0	0	--	--	--	4.3	13.0	0	0	390
SILVER	38	3	8	0.67	0.44	0.96	0.37	6.3	0	0	390
SODIUM	38	26	68	856	109	3,510	520	630	--	--	NA
THALLIUM	38	1	3	**5.3**	**5.3**	**5.3**	2.7	**13.0**	1	14	5.2
TITANIUM	38	38	100	403	223	1,190	0.0	0.0	--	--	NA

TABLE 5-3: SITE 9 STATISTICAL SUMMARY OF SOIL ANALYSES (Continued)

Phases 1 and 2A Investigation, 1991

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Metals (mg/kg)											
VANADIUM	38	38	100	21.7	12.7	70.8	0.0	0.0	0	0	550
ZINC	38	38	100	34.0	12.0	105	0.0	0.0	0	0	23,000

NOTES:

Bold denotes values elevated above the PRG

-- Not detected

J Estimated value

mg/kg Milligrams per kilogram

NA No PRG available

PRG Preliminary Remediation Goal, U.S. Environmental Protection Agency, Region 9 or CAL-modified

µg/kg Micrograms per kilogram

TABLE 5-4: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Phases 1 and 2A Investigation, 1991

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Volatile Organic Compounds (µg/L)												
1,1,1-TRICHLOROETHANE	3	0	0	--	--	--	5	5	0	0	3,200	200
1,1,2,2-TETRACHLOROETHANE	3	0	0	--	--	--	**5**	**5**	0	3	0.06	1
1,1,2-TRICHLOROETHANE	3	0	0	--	--	--	**5**	**5**	0	3	0.2	5
1,1-DICHLOROETHANE	3	0	0	--	--	--	**5**	**5**	0	3	2 (CAL-modified)	5
1,1-DICHLOROETHENE	3	0	0	--	--	--	5	5	0	0	340	6
1,2-DICHLOROETHANE	3	0	0	--	--	--	**5**	**5**	0	3	0.1	0.5
1,2-DICHLOROETHENE (TOTAL)	3	0	0	--	--	--	5	5	0	0	61 (cis)	NA
1,2-DICHLOROPROPANE	3	0	0	--	--	--	**5**	**5**	0	3	0.2	5
2-BUTANONE	3	0	0	--	--	--	10	10	--	--	NA	NA
2-HEXANONE	3	0	0	--	--	--	10	10	--	--	NA	NA
4-METHYL-2-PENTANONE	3	0	0	--	--	--	10	10	--	--	NA	NA
ACETONE	3	0	0	--	--	--	10	10	0	0	610	NA
BENZENE	3	0	0	--	--	--	**5**	**5**	0	3	0.3	1
BROMODICHLOROMETHANE	3	0	0	--	--	--	**5**	**5**	0	3	0.2	80
BROMOFORM	3	0	0	--	--	--	5	5	0	0	9	80
BROMOMETHANE	3	0	0	--	--	--	**10**	**10**	0	3	9	NA
CARBON DISULFIDE	3	0	0	--	--	--	5	5	0	0	1,000	NA
CARBON TETRACHLORIDE	3	0	0	--	--	--	**5**	**5**	0	3	0.2	0.5
CHLOROBENZENE	3	0	0	--	--	--	5	5	0	0	110	70
CHLOROETHANE	3	0	0	--	--	--	**10**	**10**	0	3	5	NA
CHLOROFORM	3	0	0	--	--	--	**5**	**5**	0	3	0.5 (CAL-modified)	80
CHLOROMETHANE	3	0	0	--	--	--	**10**	**10**	0	3	2	NA
CIS-1,3-DICHLOROPROPENE	3	0	0	--	--	--	**5**	**5**	0	3	0.4 (not cis)	0.5
DIBROMOCHLOROMETHANE	3	0	0	--	--	--	**5**	**5**	0	3	0.1	80
ETHYLBENZENE	3	0	0	--	--	--	**5**	**5**	0	3	3	300
METHYLENE CHLORIDE	3	0	0	--	--	--	**10**	**11**	0	3	4	NA
STYRENE	3	0	0	--	--	--	5	5	0	0	1,600	100
TETRACHLOROETHENE	3	0	0	--	--	--	**5**	**5**	0	3	0.7	5
TOLUENE	3	0	0	--	--	--	5	5	0	0	720	150
TRANS-1,3-DICHLOROPROPENE	3	0	0	--	--	--	**5**	**5**	0	3	0.4 (not trans)	0.5
TRICHLOROETHENE	3	0	0	--	--	--	**5**	**5**	0	3	0.03	5
VINYL ACETATE	3	0	0	--	--	--	5	5	0	0	410	NA
VINYL CHLORIDE	3	0	0	--	--	--	**10**	**10**	0	3	0.02 (child or adult)	0.5

TABLE 5-4: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Phases 1 and 2A Investigation, 1991

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Volatile Organic Compounds (µg/L)												
XYLENE (TOTAL)	3	0	0	--	--	--	5	5	0	0	210	1,800
Semivolatile Organic Compounds (µg/L)												
1,2,4-TRICHLOROBENZENE	3	0	0	--	--	--	10	10	0	0	190	5
1,2-DICHLOROBENZENE	3	0	0	--	--	--	10	10	0	0	370	600
1,3-DICHLOROBENZENE	3	0	0	--	--	--	**10**	**10**	0	3	6	NA
1,4-DICHLOROBENZENE	3	0	0	--	--	--	**10**	**10**	0	3	0.5	5
2,4,5-TRICHLOROPHENOL	3	0	0	--	--	--	50	50	0	0	3,600	50
2,4,6-TRICHLOROPHENOL	3	0	0	--	--	--	**10**	**10**	0	3	1 (CAL-modified)	NA
2,4-DICHLOROPHENOL	3	0	0	--	--	--	10	10	0	0	110	NA
2,4-DIMETHYLPHENOL	3	0	0	--	--	--	10	10	0	0	730	NA
2,4-DINITROPHENOL	3	0	0	--	--	--	50	50	0	0	73	NA
2,4-DINITROTOLUENE	3	0	0	--	--	--	10	10	0	0	73	NA
2,6-DINITROTOLUENE	3	0	0	--	--	--	10	10	0	0	36	NA
2-CHLORONAPHTHALENE	3	0	0	--	--	--	10	10	--	--	NA	NA
2-CHLOROPHENOL	3	0	0	--	--	--	10	10	0	0	30	NA
2-METHYLNAPHTHALENE	3	0	0	--	--	--	10	10	--	--	NA	NA
2-METHYLPHENOL	3	0	0	--	--	--	10	10	0	0	1,800	NA
2-NITROANILINE	3	0	0	--	--	--	**50**	**50**	0	3	1	NA
2-NITROPHENOL	3	0	0	--	--	--	10	10	--	--	NA	NA
3,3'-DICHLOROBENZIDINE	3	0	0	--	--	--	**20**	**20**	0	3	0.2	NA
3-NITROANILINE	3	0	0	--	--	--	50	50	--	--	NA	NA
4,6-DINITRO-2-METHYLPHENOL	3	0	0	--	--	--	50	50	--	--	NA	NA
4-BROMOPHENYL-PHENYLETHER	3	0	0	--	--	--	10	10	--	--	NA	NA
4-CHLORO-3-METHYLPHENOL	3	0	0	--	--	--	10	10	--	--	NA	NA
4-CHLOROANILINE	3	0	0	--	--	--	10	10	0	0	150	NA
4-CHLOROPHENYL-PHENYLETHER	3	0	0	--	--	--	10	10	--	--	NA	NA
4-METHYLPHENOL	3	0	0	--	--	--	10	10	0	0	180	NA
4-NITROANILINE	3	0	0	--	--	--	50	50	--	--	NA	NA
4-NITROPHENOL	3	0	0	--	--	--	50	50	--	--	NA	NA
ACENAPHTHENE	3	0	0	--	--	--	10	10	0	0	370	NA
ACENAPHTHYLENE	1	0	0	--	--	--	10	10	--	--	NA	NA
ANTHRACENE	3	0	0	--	--	--	10	10	0	0	1,800	NA

TABLE 5-4: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Phases 1 and 2A Investigation, 1991

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Semivolatile Organic Compounds (µg/L)												
BENZO(A)ANTHRACENE	3	0	0	--	--	--	**10**	**10**	0	3	0.09	0.1
BENZO(A)PYRENE	3	0	0	--	--	--	**10**	**10**	0	3	0.009	0.2
BENZO(B)FLUORANTHENE	3	0	0	--	--	--	**10**	**10**	0	3	0.09	NA
BENZO(G,H,I)PERYLENE	3	0	0	--	--	--	10	10	--	--	NA	NA
BENZO(K)FLUORANTHENE	3	0	0	--	--	--	**10**	**10**	0	3	0.06 (CAL-modified)	NA
BENZOIC ACID	3	0	0	--	--	--	50	50	0	0	150,000	NA
BENZYL ALCOHOL	3	0	0	--	--	--	10	10	0	0	11,000	NA
BIS(2-CHLOROETHOXY)METHANE	3	0	0	--	--	--	10	10	--	--	NA	NA
BIS(2-CHLOROETHYL)ETHER	3	0	0	--	--	--	**10**	**10**	0	3	0.01	NA
BIS(2-ETHYLHEXYL)PHTHALATE	3	0	0	--	--	--	**10**	**10**	0	3	5	NA
BUTYLBENZYLPHTHALATE	3	0	0	--	--	--	10	10	0	0	7,300	NA
CHRYSENE	3	0	0	--	--	--	**10**	**10**	0	3	0.6 (CAL-modified)	NA
DI-N-BUTYLPHTHALATE	3	0	0	--	--	--	10	10	--	--	NA	NA
DI-N-OCTYLPHTHALATE	3	0	0	--	--	--	10	10	--	--	NA	NA
DIBENZO(A,H)ANTHRACENE	3	0	0	--	--	--	**10**	**10**	0	3	0.009	NA
DIBENZOFURAN	3	0	0	--	--	--	10	10	0	0	24	NA
DIETHYLPHTHALATE	3	0	0	--	--	--	10	10	0	0	29,000	NA
DIMETHYLPHTHALATE	3	0	0	--	--	--	10	10	0	0	360,000	NA
FLUORANTHENE	3	0	0	--	--	--	10	10	0	0	1,500	NA
FLUORENE	3	0	0	--	--	--	10	10	0	0	240	NA
HEXACHLOROBENZENE	3	0	0	--	--	--	**10**	**10**	0	3	0.04	1
HEXACHLOROBUTADIENE	3	0	0	--	--	--	**10**	**10**	0	3	0.9	NA
HEXACHLOROCYCLOPENTADIENE	3	0	0	--	--	--	10	10	0	0	220	NA
HEXACHLOROETHANE	3	0	0	--	--	--	**10**	**10**	0	3	5	NA
INDENO(1,2,3-CD)PYRENE	3	0	0	--	--	--	**10**	**10**	0	3	0.09	NA
ISOPHORONE	3	0	0	--	--	--	10	10	0	0	71	NA
N-NITROSO-DI-N-PROPYLAMINE	3	0	0	--	--	--	**10**	**10**	0	3	0.01	NA
N-NITROSODIPHENYLAMINE	3	0	0	--	--	--	10	10	0	0	14	NA
NAPHTHALENE	3	0	0	--	--	--	**10**	**10**	0	3	6	NA
NITROBENZENE	3	0	0	--	--	--	**10**	**10**	0	3	3	NA
PENTACHLOROPHENOL	3	0	0	--	--	--	**50**	**50**	0	3	0.6	1
PHENANTHRENE	3	0	0	--	--	--	10	10	--	--	NA	NA
PHENOL	3	0	0	--	--	--	10	10	0	0	22,000	NA

TABLE 5-4: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Phases 1 and 2A Investigation, 1991

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Semivolatile Organic Compounds (µg/L)												
PYRENE	3	0	0	--	--	--	10	10	0	0	180	NA
Metals (µg/L)												
Filtered												
ALUMINUM	3	3	100	75,000	**38,000**	**98,000**	0.0	0.0	3	0	36,000	NA
ANTIMONY	3	0	0	--	--	--	**60.0**	**60.0**	0	3	15.0	6.0
ARSENIC	3	2	67	**62.0**	**54.0**	**70.0**	**50.0**	**50.0**	2	1	0.045	10.0
BARIUM	3	3	100	417	300	620	0.0	0.0	0	0	2,600	1,000
BERYLLIUM	3	0	0	--	--	--	5.0	5.0	0	0	73.0	4.0
CADMIUM	3	0	0	--	--	--	5.0	5.0	0	0	18.0	5.0
CALCIUM	3	3	100	56,700	30,000	83,000	0.0	0.0	--	--	NA	NA
CHROMIUM	3	3	100	257	150	350	0.0	0.0	--	--	NA	50.0
COBALT	3	1	33	63.0	63.0	63.0	50.0	50.0	0	0	730	NA
COPPER	3	3	100	111	74.0	140	0.0	0.0	0	0	1,500	1,300
IRON	3	3	100	102,000	**57,000**	**136,000**	0.0	0.0	3	0	11,000	NA
LEAD	3	2	67	89.0	88.0	90.0	50.0	50.0	--	--	NA	15.0
MAGNESIUM	3	3	100	47,000	35,000	65,000	0.0	0.0	--	--	NA	NA
MANGANESE	3	3	100	1,290	870	**1,500**	0.0	0.0	2	0	880	NA
MOLYBDENUM	3	0	0	--	--	--	50.0	50.0	0	0	180	NA
NICKEL	3	3	100	310	170	470	0.0	0.0	0	0	730	100
POTASSIUM	3	3	100	28,000	19,000	39,000	0.0	0.0	--	--	NA	NA
SELENIUM	3	0	0	--	--	--	50.0	50.0	0	0	180	50.0
SILVER	3	1	33	13.0	13.0	13.0	10.0	10.0	0	0	180	NA
SODIUM	3	3	100	180,000	143,000	246,000	0.0	0.0	--	--	NA	NA
THALLIUM	3	0	0	--	--	--	**50.0**	**50.0**	0	3	2.4	2.0
TITANIUM	3	3	100	2,570	1,400	3,900	0.0	0.0	--	--	NA	NA
VANADIUM	3	3	100	207	110	**280**	0.0	0.0	1	0	260	NA
ZINC	3	3	100	273	160	350	0.0	0.0	0	0	11,000	NA

TABLE 5-4: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Phases 1 and 2A Investigation, 1991

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

NOTES:

Bold denotes values elevated above the PRG

--	Not detected
MCL	Maximum Contaminant Level
NA	No criteria available
PRG	Preliminary Remediation Goal, U.S. Environmental Protection Agency, Region 9 or CAL-modified
µg/L	Micrograms per liter

TABLE 5-5: SITE 9 STATISTICAL SUMMARY OF SOIL ANALYSES

Follow-on Investigation, 1994

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Volatile Organic Compounds (µg/kg)											
1,1,1-TRICHLOROETHANE	21	0	0	--	--	--	11	120	0	0	1,200,000
1,1,2,2-TETRACHLOROETHANE	21	0	0	--	--	--	11	120	0	0	410
1,1,2-TRICHLOROETHANE	21	0	0	--	--	--	11	120	0	0	730
1,1-DICHLOROETHANE	21	0	0	--	--	--	11	120	0	0	2,800 (CAL-modified)
1,1-DICHLOROETHENE	21	0	0	--	--	--	11	120	0	0	120,000
1,2-DICHLOROETHANE	21	0	0	--	--	--	11	120	0	0	280
1,2-DICHLOROETHENE (TOTAL)	21	3	14	45	1J	130	11	120	0	0	43,000 (cis)
1,2-DICHLOROPROPANE	21	0	0	--	--	--	11	120	0	0	340
2-BUTANONE	21	0	0	--	--	--	11	120	--	--	NA
2-HEXANONE	21	0	0	--	--	--	11	120	--	--	NA
4-METHYL-2-PENTANONE	21	0	0	--	--	--	11	120	--	--	NA
ACETONE	21	0	0	--	--	--	11	120	0	0	1,600,000
BENZENE	21	0	0	--	--	--	11	120	0	0	600
BROMODICHLOROMETHANE	21	0	0	--	--	--	11	120	0	0	820
BROMOFORM	21	0	0	--	--	--	11	120	0	0	62,000
BROMOMETHANE	21	0	0	--	--	--	11	120	0	0	3,900
CARBON DISULFIDE	21	0	0	--	--	--	11	120	0	0	360,000
CARBON TETRACHLORIDE	21	0	0	--	--	--	11	120	0	0	250
CHLOROBENZENE	21	0	0	--	--	--	11	120	0	0	150,000
CHLOROETHANE	21	0	0	--	--	--	11	120	0	0	3,000
CHLOROFORM	21	0	0	--	--	--	11	120	0	0	940 (CAL-modified)
CHLOROMETHANE	21	0	0	--	--	--	11	120	0	0	1,200
CIS-1,3-DICHLOROPROPENE	21	0	0	--	--	--	11	120	0	0	780 (not cis)
DIBROMOCHLOROMETHANE	21	0	0	--	--	--	11	120	0	0	1,100
ETHYLBENZENE	21	2	10	180	160	200	11	120	0	0	8,900
METHYLENE CHLORIDE	21	0	0	--	--	--	11	120	0	0	9,100
STYRENE	21	0	0	--	--	--	11	120	0	0	1,700,000
TETRACHLOROETHENE	21	0	0	--	--	--	11	120	0	0	1,500
TOLUENE	21	3	14	19	3J	49 J	11	120	0	0	520,000
TRANS-1,3-DICHLOROPROPENE	21	0	0	--	--	--	11	120	0	0	780 (not trans)
TRICHLOROETHENE	21	0	0	--	--	--	11	**120**	0	5	53
VINYL CHLORIDE	21	0	0	--	--	--	11	**120**	0	1	79 (child or adult)
XYLENE (TOTAL)	21	8	38	850	2J	3,100	11	120	0	0	270,000

TABLE 5-5: SITE 9 STATISTICAL SUMMARY OF SOIL ANALYSES (Continued)

Follow-on Investigation, 1994

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Metals (mg/kg)											
ALUMINUM	21	21	100	4,830	3,300J	13,900 J	0.0	0.0	0	0	76,000
ANTIMONY	21	2	10	0.84	0.47J	1.2 J	0.48	1.8	0	0	31.0
ARSENIC	21	6	29	**1.9**	**0.85J**	**4.0**	**0.55**	**2.2**	6	15	0.39
BARIUM	21	21	100	64.3	17.8J	266	0.0	0.0	0	0	5,400
BERYLLIUM	21	18	86	0.73	0.36J	1.5	0.21	0.23	0	0	150
CADMIUM	21	3	14	0.30	0.11J	0.49 J	0.060	0.19	0	0	37.0
CALCIUM	21	21	100	5,530	1,350	16,800 J	0.0	0.0	--	--	NA
CHROMIUM	21	21	100	46.2	23.4	178	0.0	0.0	0	0	210
COBALT	21	5	24	7.4	4.1J	11.3 J	4.6	6.5	0	0	900
COPPER	21	17	81	7.0	4.1J	16.0	5.5	6.1	0	0	3,100
IRON	21	21	100	8,590	6,410	21,500	0.0	0.0	0	0	23,000
LEAD	21	19	90	4.5	1.3	22.2 J	2.1	2.4	0	0	150 (CAL-modified)
MAGNESIUM	21	21	100	2,270	1,740	5,100	0.0	0.0	--	--	NA
MANGANESE	21	21	100	98.3	75.3	182	0.0	0.0	0	0	1,800
MERCURY	21	0	0	--	--	--	0.16	0.36	0	0	23.0
MOLYBDENUM	21	0	0	--	--	--	2.7	6.7	0	0	390
NICKEL	21	21	100	23.8	17.0	50.8	0.0	0.0	0	0	1,600
POTASSIUM	21	21	100	828	567J	2,170 J	0.0	0.0	--	--	NA
SELENIUM	21	0	0	--	--	--	0.55	1.3	0	0	390
SILVER	21	0	0	--	--	--	0.18	0.81	0	0	390
SODIUM	21	21	100	182	68.0J	413 J	0.0	0.0	--	--	NA
THALLIUM	21	0	0	--	--	--	0.40	0.96	0	0	5.2
VANADIUM	21	21	100	21.3	15.0	42.3	0.0	0.0	0	0	550
ZINC	21	21	100	22.7	15.7J	51.3	0.0	0.0	0	0	23,000

NOTES:

Bold denotes values elevated above the PRG

-- Not detected

J Estimated value

mg/kg Milligrams per kilogram

NA No PRG available

PRG Preliminary Remediation Goal, U.S. Environmental Protection Agency, Region 9 or CAL-modified

µg/kg Micrograms per kilogram

TABLE 5-6: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Follow-on Investigation, 1994

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Volatile Organic Compounds (µg/L)												
1,1,1-TRICHLOROETHANE	37	1	3	3	3	3	1	100	0	0	3,200	200
1,1,2,2-TETRACHLOROETHANE	37	0	0	--	--	--	1	100	0	37	0.06	1
1,1,2-TRICHLOROETHANE	37	0	0	--	--	--	1	100	0	37	0.2	5
1,1-DICHLOROETHANE	37	9	24	17	0.7J	110	1	100	3	2	2 (CAL-modified)	5
1,1-DICHLOROETHENE	37	0	0	--	--	--	1	100	0	0	340	6
1,2-DICHLOROETHANE	37	2	5	0.6	0.5	0.6	0.5	50	2	35	0.1	0.5
1,2-DICHLOROETHENE (TOTAL)	37	10	27	290	1	2,400	1	9	2	0	61 (cis)	NA
1,2-DICHLOROPROPANE	37	1	3	2	2	2	1	100	1	36	0.2	5
2-BUTANONE	8	2	25	61	59J	63J	9	28	--	--	NA	NA
2-HEXANONE	34	0	0	--	--	--	2	200	--	--	NA	NA
4-METHYL-2-PENTANONE	37	2	5	3	0.7J	5J	2	200	--	--	NA	NA
ACETONE	7	1	14	150	150J	150J	2	8	0	0	610	NA
BENZENE	37	3	8	0.9	0.9J	1	0.5	100	3	34	0.3	1
BROMODICHLOROMETHANE	37	0	0	--	--	--	1	100	0	37	0.2	80
BROMOFORM	37	0	0	--	--	--	1	100	0	3	9	80
BROMOMETHANE	37	0	0	--	--	--	1	200	0	3	9	NA
CARBON DISULFIDE	37	5	14	7	0.5J	20J	1	100	0	0	1,000	NA
CARBON TETRACHLORIDE	37	0	0	--	--	--	0.5	50	0	37	0.2	0.5
CHLOROBENZENE	37	1	3	11	11	11	1	100	0	0	110	70
CHLOROETHANE	37	0	0	--	--	--	2	200	0	3	5	NA
CHLOROFORM	37	2	5	0.9	0.7J	1	1	100	2	35	0.5 (CAL-modified)	80
CHLOROMETHANE	37	0	0	--	--	--	2	200	0	37	2	NA
CIS-1,3-DICHLOROPROPENE	37	0	0	--	--	--	0.5	50	0	37	0.4 (not cis)	0.5
DIBROMOCHLOROMETHANE	37	0	0	--	--	--	1	100	0	37	0.1	80
ETHYLBENZENE	37	6	16	42	4J	120	1	2	6	0	3	300
METHYLENE CHLORIDE	37	0	0	--	--	--	1	100	0	3	4	NA
STYRENE	37	0	0	--	--	--	1	100	0	0	1,600	100
TETRACHLOROETHENE	37	1	3	0.7	0.7J	0.7J	1	100	1	36	0.7	5
TOLUENE	37	7	19	71	0.2J	230	1	2	0	0	720	150
TRANS-1,3-DICHLOROPROPENE	37	0	0	--	--	--	0.5	50	0	37	0.4 (not trans)	0.5
TRICHLOROETHENE	37	1	3	22	22	22	1	100	1	36	0.03	5

TABLE 5-6: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Follow-on Investigation, 1994

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Volatile Organic Compounds (µg/L)												
VINYL ACETATE	2	0	0	--	--	--	2	2	0	0	410	NA
VINYL CHLORIDE	37	2	5	**120**	**18**	**220**	**0.5**	**50**	2	35	0.02 (child or adult)	0.5
XYLENE (TOTAL)	37	6	16	**300**	6J	**1,200**	1	2	2	0	210	1,800
Semivolatile Organic Compounds (µg/L)												
1,2,4-TRICHLOROBENZENE	37	0	0	--	--	--	10	**16,000**	0	2	190	5
1,2-DICHLOROBENZENE	37	0	0	--	--	--	5	**8,000**	0	1	370	600
1,3-DICHLOROBENZENE	37	0	0	--	--	--	5	**8,000**	0	5	6	NA
1,4-DICHLOROBENZENE	37	0	0	--	--	--	**5**	**8,000**	0	37	0.5	5
2,2'-OXYBIS(1-CHLOROPROPANE)	37	1	3	0.7	0.7J	0.7J	10	16,000	--	--	NA	NA
2,4,5-TRICHLOROPHENOL	37	0	0	--	--	--	25	**40,000**	0	1	3,600	50
2,4,6-TRICHLOROPHENOL	37	0	0	--	--	--	**10**	**16,000**	0	37	1 (CAL-modified)	NA
2,4-DICHLOROPHENOL	37	0	0	--	--	--	10	**16,000**	0	2	110	NA
2,4-DIMETHYLPHENOL	37	4	11	39	2J	140J	10	**16,000**	0	1	730	NA
2,4-DINITROPHENOL	31	0	0	--	--	--	25	**40,000**	0	4	73	NA
2,4-DINITROTOLUENE	37	0	0	--	--	--	10	**16,000**	0	2	73	NA
2,6-DINITROTOLUENE	37	0	0	--	--	--	10	**16,000**	0	4	36	NA
2-CHLORONAPHTHALENE	37	0	0	--	--	--	10	16,000	--	--	NA	NA
2-CHLOROPHENOL	37	0	0	--	--	--	10	**16,000**	0	4	30	NA
2-METHYLNAPHTHALENE	37	4	11	1,600	7J	6,500J	10	250	--	--	NA	NA
2-METHYLPHENOL	37	2	5	25	9J	41J	10	**16,000**	0	1	1,800	NA
2-NITROANILINE	37	0	0	--	--	--	**25**	**40,000**	0	37	1	NA
2-NITROPHENOL	37	0	0	--	--	--	10	16,000	--	--	NA	NA
3,3'-DICHLOROBENZIDINE	37	0	0	--	--	--	**10**	**16,000**	0	37	0.2	NA
3-NITROANILINE	37	0	0	--	--	--	25	40,000	--	--	NA	NA
4,6-DINITRO-2-METHYLPHENOL	37	1	3	25	25J	25J	25	40,000	--	--	NA	NA
4-BROMOPHENYL-PHENYLETHER	37	0	0	--	--	--	10	16,000	--	--	NA	NA
4-CHLORO-3-METHYLPHENOL	37	0	0	--	--	--	10	16,000	--	--	NA	NA
4-CHLOROANILINE	37	0	0	--	--	--	10	**16,000**	0	2	150	NA
4-CHLOROPHENYL-PHENYLETHER	37	0	0	--	--	--	10	16,000	--	--	NA	NA
4-METHYLPHENOL	37	1	3	1,200	**1,200**	**1,200**	10	**16,000**	1	1	180	NA

TABLE 5-6: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Follow-on Investigation, 1994

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Semivolatile Organic Compounds (µg/L)												
4-NITROANILINE	37	0	0	--	--	--	25	40,000	--	--	NA	NA
4-NITROPHENOL	37	1	3	6	6J	6J	25	40,000	--	--	NA	NA
ACENAPHTHENE	37	1	3	0.9	0.9J	0.9J	10	**16,000**	0	1	370	NA
ACENAPHTHYLENE	37	0	0	--	--	--	10	16,000	--	--	NA	NA
ANTHRACENE	37	0	0	--	--	--	10	**16,000**	0	1	1,800	NA
BENZO(A)ANTHRACENE	37	2	5	**0.9**	**0.7J**	**1J**	**10**	**16,000**	2	35	0.09	0.1
BENZO(A)PYRENE	37	2	5	**2**	**1J**	**2J**	**10**	**16,000**	2	35	0.009	0.2
BENZO(B)FLUORANTHENE	37	2	5	**2**	**2J**	**2J**	**10**	**16,000**	2	35	0.09	NA
BENZO(G,H,I)PERYLENE	37	2	5	2	1J	2J	10	16,000	--	--	NA	NA
BENZO(K)FLUORANTHENE	37	1	3	**0.8**	**0.8J**	**0.8J**	**10**	**16,000**	1	36	0.06 (CAL-modified)	NA
BIS(2-CHLOROETHOXY)METHANE	37	0	0	--	--	--	10	16,000	--	--	NA	NA
BIS(2-CHLOROETHYL)ETHER	37	0	0	--	--	--	**10**	**16,000**	0	37	0.01	NA
BIS(2-ETHYLHEXYL)PHTHALATE	37	0	0	--	--	--	4	**6,400**	0	10	5	NA
BUTYLBENZYLPHTHALATE	37	0	0	--	--	--	10	**16,000**	0	1	7,300	NA
CARBAZOLE	37	0	0	--	--	--	**10**	**16,000**	0	37	3	NA
CHRYSENE	37	2	5	**0.9**	**0.8J**	**1J**	**10**	**16,000**	2	35	0.6 (CAL-modified)	NA
DI-N-BUTYLPHTHALATE	37	0	0	--	--	--	10	16,000	--	--	NA	NA
DI-N-OCTYLPHTHALATE	37	0	0	--	--	--	10	16,000	--	--	NA	NA
DIBENZO(A,H)ANTHRACENE	37	0	0	--	--	--	**10**	**16,000**	0	37	0.009	NA
DIBENZOFURAN	37	0	0	--	--	--	10	**16,000**	0	4	24	NA
DIETHYLPHTHALATE	37	0	0	--	--	--	10	16,000	0	0	29,000	NA
DIMETHYLPHTHALATE	37	0	0	--	--	--	10	16,000	0	0	360,000	NA
FLUORANTHENE	37	3	8	2	2J	3J	10	**16,000**	0	1	1,500	NA
FLUORENE	37	1	3	0.8	0.8J	0.8J	10	**16,000**	0	2	240	NA
HEXACHLOROBENZENE	37	0	0	--	--	--	**10**	**16,000**	0	37	0.04	1
HEXACHLOROBUTADIENE	37	0	0	--	--	--	**10**	**16,000**	0	37	0.9	NA
HEXACHLOROCYCLOPENTADIENE	37	0	0	--	--	--	10	**16,000**	0	2	220	NA
HEXACHLOROETHANE	37	0	0	--	--	--	**10**	**16,000**	0	37	5	NA
INDENO(1,2,3-CD)PYRENE	37	2	5	**1**	**0.9J**	**1J**	**10**	**16,000**	2	35	0.09	NA
ISOPHORONE	37	2	5	1	1J	1J	10	**16,000**	0	2	71	NA
N-NITROSO-DI-N-PROPYLAMINE	37	0	0	--	--	--	**10**	**16,000**	0	37	0.01	NA

TABLE 5-6: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Follow-on Investigation, 1994

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Semivolatile Organic Compounds (µg/L)												
N-NITROSODIPHENYLAMINE	37	0	0	--	--	--	10	**16,000**	0	5	14	NA
NAPHTHALENE	37	7	19	4,200	0.9J	**29,000**	**10**	**50**	5	30	6	NA
NITROBENZENE	37	0	0	--	--	--	**10**	**16,000**	0	37	3	NA
PENTACHLOROPHENOL	37	2	5	**2**	**1J**	**2J**	**25**	**40,000**	2	35	0.6	1
PHENANTHRENE	37	3	8	400	0.9J	1,200J	10	250	--	--	NA	NA
PHENOL	37	4	11	28	7J	50J	10	16,000	0	0	22,000	NA
PYRENE	37	5	14	2	0.5J	4J	10	**16,000**	0	2	180	NA
Metals (µg/L)												
Unfiltered												
ALUMINUM	2	1	50	195	195J	195J	41.2	41.2	0	0	36,000	NA
ANTIMONY	2	0	0	--	--	--	6.4	6.4	0	0	15.0	6.0
ARSENIC	2	1	50	**7.4**	**7.4J**	**7.4J**	**4.0**	**4.0**	1	1	0.045	10.0
BARIUM	2	2	100	78.8	47.6J	110J	0.0	0.0	0	0	2,600	1,000
BERYLLIUM	2	0	0	--	--	--	0.70	0.70	0	0	73.0	4.0
CADMIUM	2	0	0	--	--	--	0.30	0.43	0	0	18.0	5.0
CALCIUM	2	2	100	33,200	24,900	41,400	0.0	0.0	--	--	NA	NA
CHROMIUM	2	0	0	--	--	--	0.70	4.0	--	--	NA	50.0
COBALT	2	0	0	--	--	--	4.6	4.6	0	0	730	NA
COPPER	2	0	0	--	--	--	4.2	8.8	0	0	1,500	1,300
IRON	2	1	50	128	128	128	122	122	0	0	11,000	NA
LEAD	2	0	0	--	--	--	1.3	1.3	--	--	NA	15.0
MAGNESIUM	2	2	100	15,300	11,300	19,200	0.0	0.0	--	--	NA	NA
MANGANESE	2	2	100	93.7	14.3J	173	0.0	0.0	0	0	880	NA
MERCURY	2	0	0	--	--	--	0.20	0.20	0	0	11.0	2.0
MOLYBDENUM	2	0	0	--	--	--	9.8	9.8	0	0	180	NA
NICKEL	2	0	0	--	--	--	9.3	15.2	0	0	730	100
POTASSIUM	2	2	100	18,000	14,800	21,200	0.0	0.0	--	--	NA	NA
SELENIUM	2	0	0	--	--	--	2.6	2.6	0	0	180	50.0
SILVER	2	0	0	--	--	--	0.90	0.90	0	0	180	NA
SODIUM	2	2	100	101,000	55,200	147,000	0.0	0.0	--	--	NA	NA
THALLIUM	2	0	0	--	--	--	**2.9**	**2.9**	0	2	2.4	2.0

TABLE 5-6: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Follow-on Investigation, 1994

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Metals (µg/L)												
Unfiltered												
VANADIUM	2	0	0	--	--	--	4.2	7.2	0	0	260	NA
ZINC	2	1	50	13.2	13.2J	13.2J	5.3	5.3	0	0	11,000	NA
Filtered												
ALUMINUM	37	7	19	4,420	88.2J	17,400	15.2	141	0	0	36,000	NA
ANTIMONY	37	4	11	14.0	2.9J	**37.5J**	2.2	**44.0**	1	4	15.0	6.0
ARSENIC	37	18	49	**14.7**	**3.0J**	**33.0**	**2.6**	**100**	18	19	0.045	10.0
BARIUM	37	34	92	162	19.2J	785J	28.0	37.4	0	0	2,600	1,000
BERYLLIUM	37	6	16	3.0	1.1J	4.3J	0.10	5.0	0	0	73.0	4.0
CADMIUM	37	7	19	8.4	0.40J	**24.8J**	0.30	0.60	1	0	18.0	5.0
CALCIUM	37	35	95	210,000	3,540J	1,690,000J	3,430	6,340	--	--	NA	NA
CHROMIUM	37	6	16	48.3	1.9J	206J	0.40	32.0	--	--	NA	50.0
COBALT	37	7	19	26.3	9.8J	48.2J	3.8	38.5	0	0	730	NA
COPPER	37	7	19	12.6	5.4J	28.1	3.2	46.5	0	0	1,500	1,300
IRON	37	16	43	4,980	86.8J	**17,700J**	3.2	**22,500**	4	1	11,000	NA
LEAD	37	3	8	14.6	6.0	28.9J	1.0	20.0	--	--	NA	15.0
MAGNESIUM	37	36	97	215,000	3,520J	1,820,000	8,570	8,570	--	--	NA	NA
MANGANESE	37	35	95	2,030	6.6J	**14,900**	6.1	559	12	0	880	NA
MERCURY	37	0	0	--	--	--	0.20	0.20	0	0	11.0	2.0
MOLYBDENUM	37	3	8	32.6	12.0J	48.2J	7.9	63.5	0	0	180	NA
NICKEL	37	10	27	90.1	22.6J	157	7.5	139	0	0	730	100
POTASSIUM	37	36	97	27,400	4,580J	88,200	16,100	16,100	--	--	NA	NA
SELENIUM	37	1	3	9.7	9.7J	9.7J	2.4	54.0	0	0	180	50.0
SILVER	36	0	0	--	--	--	0.90	10.0	0	0	180	NA
SODIUM	37	37	100	1,030,000	22,500	6,050,000	0.0	0.0	--	--	NA	NA
THALLIUM	37	1	3	**31.3**	**31.3**	**31.3**	2.0	**76.0**	1	30	2.4	2.0
VANADIUM	37	9	24	34.1	7.5J	102J	3.7	35.0	0	0	260	NA
ZINC	37	12	32	105	6.7J	658	5.3	46.6	0	0	11,000	NA

TABLE 5-6: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Follow-on Investigation, 1994

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

NOTES:

Bold denotes values elevated above the PRG

--	Not detected
J	Estimated value
MCL	Maximum Contaminant Level
NA	No criteria available
PRG	Preliminary Remediation Goal, U.S. Environmental Protection Agency, Region 9 or CAL-modified
µg/L	Micrograms per liter

TABLE 5-7: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Follow-on Investigation, 1998

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Volatile Organic Compounds (µg/L)												
1,1,1-TRICHLOROETHANE	8	0	0	--	--	--	1	1	0	0	3,200	200
1,1,2,2-TETRACHLOROETHANE	8	0	0	--	--	--	**1**	**1**	0	8	0.06	1
1,1,2-TRICHLOROETHANE	8	0	0	--	--	--	**1**	**1**	0	8	0.2	5
1,1-DICHLOROETHANE	8	0	0	--	--	--	1	1	0	0	2 (CAL-modified)	5
1,1-DICHLOROETHENE	8	0	0	--	--	--	1	1	0	0	340	6
1,2,4-TRICHLOROBENZENE	8	0	0	--	--	--	1	1	0	0	190	5
1,2-DIBROMO-3-CHLOROPROPANE	8	0	0	--	--	--	**1**	**1**	0	8	0.002 (CAL-modified)	0.2
1,2-DICHLOROBENZENE	8	0	0	--	--	--	1	1	0	0	370	600
1,2-DICHLOROETHANE	8	0	0	--	--	--	**0.5**	**0.5**	0	8	0.1	0.5
1,2-DICHLOROPROPANE	8	0	0	--	--	--	**1**	**1**	0	8	0.2	5
1,3-DICHLOROBENZENE	8	0	0	--	--	--	1	1	0	0	6	NA
1,4-DICHLOROBENZENE	8	0	0	--	--	--	**1**	**1**	0	8	0.5	5
2-BUTANONE	1	0	0	--	--	--	5	5	--	--	NA	NA
2-HEXANONE	6	0	0	--	--	--	5	5	--	--	NA	NA
4-METHYL-2-PENTANONE	8	0	0	--	--	--	5	5	--	--	NA	NA
BENZENE	8	0	0	--	--	--	**0.5**	**0.5**	0	8	0.3	1
BROMOCHLOROMETHANE	8	0	0	--	--	--	1	1	--	--	NA	NA
BROMODICHLOROMETHANE	8	0	0	--	--	--	**1**	**1**	0	8	0.2	80
BROMOFORM	8	0	0	--	--	--	1	1	0	0	9	80
BROMOMETHANE	8	0	0	--	--	--	1	1	0	0	9	NA
CARBON DISULFIDE	8	0	0	--	--	--	1	1	0	0	1,000	NA
CARBON TETRACHLORIDE	8	0	0	--	--	--	**0.5**	**0.5**	0	8	0.2	0.5
CHLOROBENZENE	8	0	0	--	--	--	1	1	0	0	110	70
CHLOROETHANE	8	0	0	--	--	--	1	1	0	0	5	NA
CHLOROFORM	8	1	13	**2**	**2J**	**2J**	**1**	**1**	1	7	0.5 (CAL-modified)	80
CHLOROMETHANE	8	0	0	--	--	--	1	1	0	0	2	NA
CIS-1,2-DICHLOROETHENE	8	0	0	--	--	--	1	1	0	0	61	6
CIS-1,3-DICHLOROPROPENE	8	0	0	--	--	--	**0.5**	**0.5**	0	8	0.4 (not cis)	0.5
DIBROMOCHLOROMETHANE	8	0	0	--	--	--	**1**	**1**	0	8	0.1	80
ETHYLBENZENE	8	0	0	--	--	--	1	1	0	0	3	300
ETHYLENE DIBROMIDE	8	0	0	--	--	--	1	1	--	--	NA	0.05

TABLE 5-7: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Follow-on Investigation, 1998

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Volatile Organic Compounds (µg/L)												
METHYLENE CHLORIDE	8	0	0	--	--	--	2	2	0	0	4	NA
STYRENE	8	0	0	--	--	--	1	1	0	0	1,600	100
TETRACHLOROETHENE	8	0	0	--	--	--	**1**	**1**	0	8	0.7	5
TOLUENE	8	0	0	--	--	--	1	1	0	0	720	150
TRANS-1,2-DICHLOROETHENE	8	0	0	--	--	--	1	1	0	0	120	10
TRANS-1,3-DICHLOROPROPENE	8	0	0	--	--	--	**0.5**	**0.5**	0	8	0.4 (not trans)	0.5
TRICHLOROETHENE	8	0	0	--	--	--	**1**	**1**	0	8	0.03	5
VINYL CHLORIDE	8	0	0	--	--	--	**0.5**	**0.5**	0	8	0.02 (child or adult)	0.5
XYLENE (TOTAL)	8	0	0	--	--	--	1	1	0	0	210	1,800
Metals (µg/L)												
Unfiltered												
ALUMINUM	2	0	0	--	--	--	7.4	57.9	0	0	36,000	NA
ANTIMONY	2	0	0	--	--	--	1.8	3.4	0	0	15.0	6.0
ARSENIC	2	0	0	--	--	--	**2.1**	**2.1**	0	2	0.045	10.0
BARIUM	2	2	100	55.0	23.6J	86.4J	0.0	0.0	0	0	2,600	1,000
BERYLLIUM	2	0	0	--	--	--	0.20	0.20	0	0	73.0	4.0
CADMIUM	2	1	50	13.7	13.7	13.7	0.30	0.30	0	0	18.0	5.0
CALCIUM	2	2	100	241,000	40,900	442,000	0.0	0.0	--	--	NA	NA
CHROMIUM	2	1	50	1.8	1.8J	1.8J	0.80	0.80	--	--	NA	50.0
COBALT	2	1	50	6.2	6.2J	6.2J	2.5	2.5	0	0	730	NA
COPPER	2	0	0	--	--	--	2.8	2.9	0	0	1,500	1,300
IRON	2	0	0	--	--	--	12.5	12.5	0	0	11,000	NA
LEAD	2	0	0	--	--	--	1.7	1.7	--	--	NA	15.0
MAGNESIUM	2	2	100	257,000	9,340	504,000	0.0	0.0	--	--	NA	NA
MANGANESE	2	2	100	1,400	9.0J	**2,800**	0.0	0.0	1	0	880	NA
MERCURY	2	0	0	--	--	--	0.10	0.10	0	0	11.0	2.0
MOLYBDENUM	2	0	0	--	--	--	1.0	1.0	0	0	180	NA
NICKEL	2	0	0	--	--	--	4.3	5.7	0	0	730	100
POTASSIUM	2	2	100	11,500	4,820J	18,200	0.0	0.0	--	--	NA	NA
SELENIUM	2	0	0	--	--	--	2.2	2.2	0	0	180	50.0
SILVER	2	0	0	--	--	--	0.70	0.70	0	0	180	NA

TABLE 5-7: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Follow-on Investigation, 1998

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Metals (µg/L)												
Unfiltered												
SODIUM	2	2	100	794,000	18,100	1,570,000	0.0	0.0	--	--	NA	NA
THALLIUM	2	0	0	--	--	--	1.1	1.4	0	0	2.4	2.0
VANADIUM	2	1	50	2.4	2.4J	2.4J	0.60	0.60	0	0	260	NA
ZINC	2	2	100	25.7	11.4J	40.0	0.0	0.0	0	0	11,000	NA
Filtered												
ALUMINUM	6	1	17	244	244	244	6.6	94.8	0	0	36,000	NA
ANTIMONY	6	0	0	--	--	--	0.70	1.3	0	0	15.0	6.0
ARSENIC	6	0	0	--	--	--	**0.80**	**5.2**	0	6	0.045	10.0
BARIUM	6	6	100	159	20.7J	363	0.0	0.0	0	0	2,600	1,000
BERYLLIUM	6	0	0	--	--	--	0.10	0.30	0	0	73.0	4.0
CADMIUM	6	4	67	8.0	0.50J	15.4	0.15	0.15	0	0	18.0	5.0
CALCIUM	6	6	100	391,000	51,300	1,690,000	0.0	0.0	--	--	NA	NA
CHROMIUM	6	2	33	2.5	1.9J	3.0J	0.20	2.2	--	--	NA	50.0
COBALT	6	5	83	3.1	0.36J	11.4J	0.40	0.40	0	0	730	NA
COPPER	6	0	0	--	--	--	0.65	5.4	0	0	1,500	1,300
IRON	6	2	33	635	230	1,040	5.6	8.4	0	0	11,000	NA
LEAD	6	0	0	--	--	--	0.50	65.0	--	--	NA	15.0
MAGNESIUM	6	6	100	400,000	11,500	1,810,000	0.0	0.0	--	--	NA	NA
MANGANESE	6	5	83	4,400	4.8J	**17,800**	2.3	2.3	3	0	880	NA
MERCURY	6	0	0	--	--	--	0.10	0.10	0	0	11.0	2.0
MOLYBDENUM	6	1	17	0.88	0.88J	0.88J	0.25	0.60	0	0	180	NA
NICKEL	6	5	83	6.6	2.5J	12.0J	5.2	5.2	0	0	730	100
POTASSIUM	6	6	100	17,900	4,440	38,500	0.0	0.0	--	--	NA	NA
SELENIUM	5	1	20	2.7	2.7J	2.7J	0.85	1.0	0	0	180	50.0
SILVER	6	1	17	0.17	0.17J	0.17J	0.15	1.6	0	0	180	NA
SODIUM	6	6	100	1,120,000	15,000	4,960,000	0.0	0.0	--	--	NA	NA
THALLIUM	6	0	0	--	--	--	0.90	**18.0**	0	1	2.4	2.0
VANADIUM	6	0	0	--	--	--	0.30	2.7	0	0	260	NA
ZINC	6	3	50	83.1	21.6	136	3.3	21.8	0	0	11,000	NA

TABLE 5-7: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Follow-on Investigation, 1998

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

NOTES:

Bold denotes values elevated above the PRG

--	Not detected
J	Estimated value
MCL	Maximum Contaminant Level
NA	No criteria available
PRG	Preliminary Remediation Goal, U.S. Environmental Protection Agency, Region 9 or CAL-modified
µg/L	Micrograms per liter

TABLE 5-8: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Supplemental Remedial Investigation Data Gap Sampling, 2001

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Volatile Organic Compounds (µg/L)												
1,1,1,2-TETRACHLOROETHANE	41	0	0	--	--	--	**1**	**5**	0	41	0.4	NA
1,1,1-TRICHLOROETHANE	52	1	2	0.7	0.7J	0.7J	1	5	0	0	3,200	200
1,1,2,2-TETRACHLOROETHANE	52	0	0	--	--	--	**1**	**5**	0	52	0.06	1
1,1,2-TRICHLOROETHANE	52	0	0	--	--	--	**1**	**5**	0	52	0.2	5
1,1-DICHLOROETHANE	52	17	33	**120**	0.5J	**1,200**	0.5	1	11	0	2 (CAL-modified)	5
1,1-DICHLOROETHENE	52	10	19	5	1J	23	1	5	0	0	340	6
1,1-DICHLOROPROPENE	1	0	0	--	--	--	5	5	--	--	NA	NA
1,2,3-TRICHLOROBENZENE	1	0	0	--	--	--	5	5	--	--	NA	NA
1,2,3-TRICHLOROPROPANE	1	0	0	--	--	--	**5**	**5**	0	1	0.006	NA
1,2,4-TRICHLOROBENZENE	1	0	0	--	--	--	5	5	0	0	190	5
1,2,4-TRIMETHYLBENZENE	1	0	0	--	--	--	5	5	0	0	12	NA
1,2-DIBROMO-3-CHLOROPROPANE	1	0	0	--	--	--	**5**	**5**	0	1	0.002 (CAL-modified)	0.2
1,2-DICHLOROBENZENE	52	0	0	--	--	--	1	5	0	0	370	600
1,2-DICHLOROETHANE	52	1	2	**0.7**	**0.7J**	**0.7J**	**0.5**	**5**	1	51	0.1	0.5
1,2-DICHLOROETHENE (TOTAL)	11	2	18	12	3	21	2	2	0	0	61 (cis)	NA
1,2-DICHLOROPROPANE	12	0	0	--	--	--	**2**	**5**	0	12	0.2	5
1,3,5-TRIMETHYLBENZENE	1	0	0	--	--	--	5	5	0	0	12	NA
1,3-DICHLOROBENZENE	52	0	0	--	--	--	1	5	0	0	6	NA
1,3-DICHLOROPROPANE	1	0	0	--	--	--	5	5	--	--	NA	NA
1,4-DICHLOROBENZENE	52	0	0	--	--	--	**1**	**5**	0	52	0.5	5
2,2-DICHLOROPROPANE	1	0	0	--	--	--	5	5	--	--	NA	NA
2-BUTANONE	12	0	0	--	--	--	2	10	--	--	NA	NA
2-CHLOROTOLUENE	1	0	0	--	--	--	5	5	--	--	NA	NA
2-HEXANONE	12	0	0	--	--	--	2	10	--	--	NA	NA
4-CHLOROTOLUENE	1	0	0	--	--	--	5	5	--	--	NA	NA
4-METHYL-2-PENTANONE	12	0	0	--	--	--	2	10	--	--	NA	NA
ACETONE	12	0	0	--	--	--	3	20	0	0	610	NA
BENZENE	52	6	12	**1**	**0.9**	**2**	**0.5**	**5**	6	46	0.3	1
BROMOBENZENE	1	0	0	--	--	--	5	5	0	0	20	NA
BROMOCHLOROMETHANE	1	0	0	--	--	--	10	10	--	--	NA	NA
BROMODICHLOROMETHANE	12	0	0	--	--	--	**2**	**5**	0	12	0.2	80

TABLE 5-8: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Supplemental Remedial Investigation Data Gap Sampling, 2001

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Volatile Organic Compounds (µg/L)												
BROMOFORM	12	0	0	--	--	--	2	5	0	0	9	80
BROMOMETHANE	12	0	0	--	--	--	2	**10**	0	1	9	NA
CARBON DISULFIDE	12	2	17	0.4	0.3J	0.4J	2	5	0	0	1,000	NA
CARBON TETRACHLORIDE	12	0	0	--	--	--	**0.5**	**5**	0	12	0.2	0.5
CHLOROBENZENE	52	2	4	0.5	0.4J	0.6J	1	5	0	0	110	70
CHLOROETHANE	52	2	4	4	3	**5**	1	**10**	1	1	5	NA
CHLOROFORM	12	0	0	--	--	--	**2**	**5**	0	12	0.5 (CAL-modified)	80
CHLOROMETHANE	52	0	0	--	--	--	1	**10**	0	12	2	NA
CIS-1,2-DICHLOROETHENE	41	6	15	9	1	24	1	5	0	0	61	6
CIS-1,3-DICHLOROPROPENE	12	0	0	--	--	--	**0.5**	**5**	0	12	0.4 (not cis)	0.5
DIBROMOCHLOROMETHANE	12	0	0	--	--	--	**2**	**5**	0	12	0.1	80
DIBROMOMETHANE	1	0	0	--	--	--	5	5	--	--	NA	NA
DICHLORODIFLUOROMETHANE	1	0	0	--	--	--	10	10	0	0	390	NA
ETHYLBENZENE	52	3	6	**19**	0.3J	**55**	1	**5**	1	1	3	300
ETHYLENE DIBROMIDE	1	0	0	--	--	--	5	5	--	--	NA	0.05
HEXACHLOROBUTADIENE	1	0	0	--	--	--	**5**	**5**	0	1	0.9	NA
ISOPROPYLBENZENE	1	0	0	--	--	--	5	5	--	--	NA	NA
M,P-XYLENE	41	4	10	54	1	210	1	5	0	0	210 (xylenes)	NA
METHYL-T-BUTYL ETHER	52	3	6	**22**	**7**	**40**	1	5	3	0	6 (CAL-modified)	13
METHYLENE CHLORIDE	52	0	0	--	--	--	1	**20**	0	1	4	NA
N-BUTYLBENZENE	1	0	0	--	--	--	5	5	--	--	NA	NA
N-PROPYLBENZENE	1	0	0	--	--	--	5	5	0	0	240	NA
NAPHTHALENE	41	2	5	**72**	4	**140**	1	5	1	0	6	NA
O-XYLENE	41	2	5	42	1	83	1	5	0	0	210 (xylenes)	NA
P-ISOPROPYLTOLUENE	1	0	0	--	--	--	5	5	--	--	NA	NA
SEC-BUTYLBENZENE	1	0	0	--	--	--	5	5	0	0	240	NA
STYRENE	12	0	0	--	--	--	2	5	0	0	1,600	100
TERT-BUTYLBENZENE	1	0	0	--	--	--	5	5	0	0	240	NA
TETRACHLOROETHENE	52	1	2	**3**	**3**	**3**	**1**	**5**	1	51	0.7	5
TOLUENE	52	5	10	7	1	20	1	5	0	0	720	150
TRANS-1,2-DICHLOROETHENE	41	0	0	--	--	--	1	5	0	0	120	10

TABLE 5-8: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Supplemental Remedial Investigation Data Gap Sampling, 2001

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Volatile Organic Compounds (µg/L)												
TRANS-1,3-DICHLOROPROPENE	12	0	0	--	--	--	**0.5**	**5**	0	12	0.4 (not trans)	0.5
TRICHLOROETHENE	52	2	4	**0.8**	**0.7J**	**0.8J**	**1**	**5**	2	50	0.03	5
TRICHLOROFLUOROMETHANE	1	0	0	--	--	--	5	5	--	--	NA	NA
TRICHLOROTRIFLUOROETHANE	1	0	0	--	--	--	5	5	--	--	NA	NA
VINYL ACETATE	1	0	0	--	--	--	50	50	0	0	410	NA
VINYL CHLORIDE	52	10	19	**4**	**0.5J**	**11**	**0.5**	**10**	10	42	0.02 (child or adult)	0.5
XYLENE (TOTAL)	11	1	9	2	2	2	2	2	0	0	210	1,800
Semivolatile Organic Compounds (µg/L)												
1,2,4-TRICHLOROBENZENE	29	0	0	--	--	--	10	50	0	0	190	5
1,2-DICHLOROBENZENE	29	0	0	--	--	--	5	25	0	0	370	600
1,3-DICHLOROBENZENE	29	0	0	--	--	--	5	**25**	0	3	6	NA
1,4-DICHLOROBENZENE	29	0	0	--	--	--	**5**	**25**	0	29	0.5	5
2,2'-OXYBIS(1-CHLOROPROPANE)	29	0	0	--	--	--	10	50	--	--	NA	NA
2,4,5-TRICHLOROPHENOL	29	0	0	--	--	--	25	130	0	0	3,600	50
2,4,6-TRICHLOROPHENOL	29	0	0	--	--	--	**10**	**50**	0	29	1 (CAL-modified)	NA
2,4-DICHLOROPHENOL	29	0	0	--	--	--	10	50	0	0	110	NA
2,4-DIMETHYLPHENOL	29	1	3	40	40	40	10	50	0	0	730	NA
2,4-DINITROPHENOL	29	0	0	--	--	--	25	**250**	0	3	73	NA
2,4-DINITROTOLUENE	29	0	0	--	--	--	10	50	0	0	73	NA
2,6-DINITROTOLUENE	29	0	0	--	--	--	10	**50**	0	1	36	NA
2-CHLORONAPHTHALENE	29	0	0	--	--	--	10	50	--	--	NA	NA
2-CHLOROPHENOL	29	0	0	--	--	--	10	**50**	0	1	30	NA
2-METHYLNAPHTHALENE	29	0	0	--	--	--	10	50	--	--	NA	NA
2-METHYLPHENOL	29	0	0	--	--	--	10	50	0	0	1,800	NA
2-NITROANILINE	29	0	0	--	--	--	**25**	**130**	0	29	1	NA
2-NITROPHENOL	29	0	0	--	--	--	10	50	--	--	NA	NA
3,3'-DICHLOROBENZIDINE	29	0	0	--	--	--	**12**	**60**	0	29	0.2	NA
3-NITROANILINE	29	0	0	--	--	--	25	130	--	--	NA	NA
4,6-DINITRO-2-METHYLPHENOL	29	0	0	--	--	--	25	130	--	--	NA	NA
4-BROMOPHENYL-PHENYLETHER	29	0	0	--	--	--	10	50	--	--	NA	NA

TABLE 5-8: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Supplemental Remedial Investigation Data Gap Sampling, 2001

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Semivolatile Organic Compounds (µg/L)												
4-CHLORO-3-METHYLPHENOL	29	0	0	--	--	--	10	50	--	--	NA	NA
4-CHLOROANILINE	29	0	0	--	--	--	17	85	0	0	150	NA
4-CHLOROPHENYL-PHENYLETHER	29	0	0	--	--	--	10	50	--	--	NA	NA
4-METHYLPHENOL	29	0	0	--	--	--	10	50	0	0	180	NA
4-NITROANILINE	29	0	0	--	--	--	25	130	--	--	NA	NA
4-NITROPHENOL	29	0	0	--	--	--	25	130	--	--	NA	NA
ACENAPHTHENE	29	0	0	--	--	--	10	50	0	0	370	NA
ACENAPHTHYLENE	29	0	0	--	--	--	10	50	--	--	NA	NA
ANTHRACENE	29	0	0	--	--	--	10	50	0	0	1,800	NA
BENZO(A)ANTHRACENE	29	0	0	--	--	--	**10**	**50**	0	29	0.09	0.1
BENZO(A)PYRENE	29	0	0	--	--	--	**1**	**7**	0	29	0.009	0.2
BENZO(B)FLUORANTHENE	29	0	0	--	--	--	**10**	**50**	0	29	0.09	NA
BENZO(G,H,I)PERYLENE	29	0	0	--	--	--	10	50	--	--	NA	NA
BENZO(K)FLUORANTHENE	29	0	0	--	--	--	**10**	**50**	0	29	0.06 (CAL-modified)	NA
BIS(2-CHLOROETHOXY)METHANE	29	0	0	--	--	--	10	50	--	--	NA	NA
BIS(2-CHLOROETHYL)ETHER	29	0	0	--	--	--	**10**	**50**	0	29	0.01	NA
BIS(2-ETHYLHEXYL)PHTHALATE	29	0	0	--	--	--	4	**20**	0	4	5	NA
BUTYLBENZYLPHTHALATE	29	0	0	--	--	--	10	50	0	0	7,300	NA
CARBAZOLE	29	0	0	--	--	--	**10**	**50**	0	29	3	NA
CHRYSENE	29	0	0	--	--	--	**10**	**50**	0	29	0.6 (CAL-modified)	NA
DI-N-BUTYLPHTHALATE	29	0	0	--	--	--	10	50	--	--	NA	NA
DI-N-OCTYLPHTHALATE	29	0	0	--	--	--	10	50	--	--	NA	NA
DIBENZO(A,H)ANTHRACENE	29	0	0	--	--	--	**20**	**100**	0	29	0.009	NA
DIBENZOFURAN	29	0	0	--	--	--	10	**50**	0	2	24	NA
DIETHYLPHTHALATE	29	0	0	--	--	--	10	50	0	0	29,000	NA
DIMETHYLPHTHALATE	29	0	0	--	--	--	10	50	0	0	360,000	NA
FLUORANTHENE	29	0	0	--	--	--	10	50	0	0	1,500	NA
FLUORENE	29	0	0	--	--	--	10	50	0	0	240	NA
HEXACHLOROBENZENE	29	0	0	--	--	--	**10**	**50**	0	29	0.04	1
HEXACHLOROBUTADIENE	29	0	0	--	--	--	**10**	**50**	0	29	0.9	NA
HEXACHLOROCYCLOPENTADIENE	29	0	0	--	--	--	11	55	0	0	220	NA

TABLE 5-8: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Supplemental Remedial Investigation Data Gap Sampling, 2001

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Semivolatile Organic Compounds (µg/L)												
HEXACHLOROETHANE	29	0	0	--	--	--	**10**	**50**	0	29	5	NA
INDENO(1,2,3-CD)PYRENE	29	0	0	--	--	--	**10**	**50**	0	29	0.09	NA
ISOPHORONE	29	0	0	--	--	--	10	50	0	0	71	NA
N-NITROSO-DI-N-PROPYLAMINE	29	0	0	--	--	--	**10**	**50**	0	29	0.01	NA
N-NITROSODIPHENYLAMINE	29	0	0	--	--	--	10	**50**	0	21	14	NA
NAPHTHALENE	29	1	3	**85**	**85**	**85**	**10**	**50**	1	28	6	NA
NITROBENZENE	29	0	0	--	--	--	**10**	**50**	0	29	3	NA
PENTACHLOROPHENOL	29	0	0	--	--	--	**25**	**130**	0	29	0.6	1
PHENANTHRENE	29	0	0	--	--	--	10	50	--	--	NA	NA
PHENOL	29	1	3	59	59	59	10	50	0	0	22,000	NA
PYRENE	29	0	0	--	--	--	10	50	0	0	180	NA
Polynuclear Aromatic Hydrocarbons (µg/L)												
ACENAPHTHENE	32	0	0	--	--	--	5	25	0	0	370	NA
ACENAPHTHYLENE	32	0	0	--	--	--	2	10	--	--	NA	NA
ANTHRACENE	32	5	16	0.2	0.1J	0.4	0.2	1	0	0	1,800	NA
BENZO(A)ANTHRACENE	32	9	28	**0.6**	**0.1J**	**2**	**0.2**	**1**	9	23	0.09	0.1
BENZO(A)PYRENE	32	12	38	**0.5**	**0.1J**	**3**	**0.2**	**1**	12	20	0.009	0.2
BENZO(B)FLUORANTHENE	32	7	22	**0.5**	**0.2**	**2**	**0.2**	**1**	7	25	0.09	NA
BENZO(G,H,I)PERYLENE	32	10	31	0.6	0.2	2	0.2	1	--	--	NA	NA
BENZO(K)FLUORANTHENE	32	3	9	**0.3**	**0.1J**	**0.6**	**0.2**	**1**	3	29	0.06 (CAL-modified)	NA
CHRYSENE	32	7	22	0.5	0.2J	**1**	0.2	**1**	2	2	0.6 (CAL-modified)	NA
DIBENZO(A,H)ANTHRACENE	32	9	28	**0.9**	**0.3J**	**2**	**0.5**	**3**	9	23	0.009	NA
FLUORANTHENE	32	12	38	0.8	0.2J	3	0.2	1	0	0	1,500	NA
FLUORENE	32	0	0	--	--	--	1	5	0	0	240	NA
INDENO(1,2,3-CD)PYRENE	32	8	25	**0.5**	**0.1J**	**2**	**0.2**	**1**	8	24	0.09	NA
NAPHTHALENE	32	1	3	**64**	**64**	**64**	5	**25**	1	3	6	NA
PHENANTHRENE	32	5	16	0.9	0.5J	2	1	5	--	--	NA	NA
PYRENE	32	14	44	1	0.2J	5	0.2	1	0	0	180	NA

TABLE 5-8: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Supplemental Remedial Investigation Data Gap Sampling, 2001

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

NOTES:

Bold denotes values elevated above the PRG

--	Not detected
J	Estimated value
MCL	Maximum Contaminant Level
NA	No criteria available
PRG	Preliminary Remediation Goal, U.S. Environmental Protection Agency, Region 9 or CAL-modified
µg/L	Micrograms per liter

TABLE 5-9: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Basewide Groundwater Monitoring, 2002 and 2003
Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Volatile Organic Compounds (ug/L)												
1,1,1,2-TETRACHLOROETHANE	12	0	0	--	--	--	**0.5**	**0.5**	0	12	0.4	NA
1,1,1-TRICHLOROETHANE	12	0	0	--	--	--	0.5	0.5	0	0	3,200	200
1,1,2,2-TETRACHLOROETHANE	12	0	0	--	--	--	**0.5**	**0.5**	0	12	0.06	1
1,1,2-TRICHLOROETHANE	12	0	0	--	--	--	**0.5**	**0.5**	0	12	0.2	5
1,1-DICHLOROETHANE	12	4	33	**4**	**3**	**5**	0.5	0.5	4	0	2 (CAL-modified)	5
1,1-DICHLOROETHENE	12	0	0	--	--	--	0.5	0.5	0	0	340	6
1,1-DICHLOROPROPENE	12	0	0	--	--	--	0.5	0.5	--	--	NA	NA
1,2,3-TRICHLOROBENZENE	12	0	0	--	--	--	0.5	0.5	--	--	NA	NA
1,2,3-TRICHLOROPROPANE	12	1	8	**0.3**	**0.3J**	**0.3J**	**0.5**	**0.5**	1	11	0.006	NA
1,2,4-TRICHLOROBENZENE	12	0	0	--	--	--	0.5	0.5	0	0	190	5
1,2,4-TRIMETHYLBENZENE	12	2	17	0.3	0.3J	0.3J	0.5	0.5	0	0	12	NA
1,2-DIBROMO-3-CHLOROPROPANE	12	0	0	--	--	--	**0.5**	**0.5**	0	12	0.002 (CAL-modified)	0.2
1,2-DICHLOROBENZENE	12	2	17	0.4	0.3J	0.5J	0.5	0.5	0	0	370	600
1,2-DICHLOROETHANE	12	0	0	--	--	--	**0.5**	**0.5**	0	12	0.1	0.5
1,2-DICHLOROPROPANE	12	0	0	--	--	--	**0.5**	**0.5**	0	12	0.2	5
1,3,5-TRIMETHYLBENZENE	12	2	17	0.4	0.3J	0.4J	0.5	0.5	0	0	12	NA
1,3-DICHLOROBENZENE	12	0	0	--	--	--	0.5	0.5	0	0	6	NA
1,3-DICHLOROPROPANE	12	4	33	0.7	0.4J	0.9	0.5	0.5	--	--	NA	NA
1,4-DICHLOROBENZENE	12	2	17	0.2	0.1J	0.2J	0.5	0.5	0	0	0.5	5
2,2-DICHLOROPROPANE	12	0	0	--	--	--	0.5	0.5	--	--	NA	NA
2-BUTANONE	12	0	0	--	--	--	10	10	--	--	NA	NA
2-CHLOROTOLUENE	12	1	8	0.1	0.1J	0.1J	0.5	0.5	--	--	NA	NA
2-HEXANONE	12	0	0	--	--	--	10	10	--	--	NA	NA
4-CHLOROTOLUENE	12	0	0	--	--	--	0.5	0.5	--	--	NA	NA
4-METHYL-2-PENTANONE	12	0	0	--	--	--	10	10	--	--	NA	NA
ACETONE	12	2	17	2	1J	2J	0.5	10	0	0	610	NA
BENZENE	12	4	33	**1**	**0.9**	**1**	**0.5**	**0.5**	4	8	0.3	1
BROMOBENZENE	12	0	0	--	--	--	0.5	0.5	0	0	20	NA
BROMOCHLOROMETHANE	12	0	0	--	--	--	0.5	0.5	--	--	NA	NA
BROMODICHLOROMETHANE	12	0	0	--	--	--	**0.5**	**0.5**	0	12	0.2	80
BROMOFORM	12	0	0	--	--	--	1	1	0	0	9	80

TABLE 5-9: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Basewide Groundwater Monitoring, 2002 and 2003

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Volatile Organic Compounds (ug/L)												
BROMOMETHANE	12	0	0	--	--	--	1	1	0	0	9	NA
CARBON DISULFIDE	12	0	0	--	--	--	0.5	0.5	0	0	1,000	NA
CARBON TETRACHLORIDE	12	0	0	--	--	--	**0.5**	**0.5**	0	12	0.2	0.5
CHLOROBENZENE	12	7	58	1	0.1J	2	0.5	0.5	0	0	110	70
CHLOROETHANE	12	1	8	0.5	0.5J	0.5J	1	1	0	0	5	NA
CHLOROFORM	12	0	0	--	--	--	0.2	0.5	0	0	0.5 (CAL-modified)	80
CHLOROMETHANE	12	0	0	--	--	--	1	1	0	0	2	NA
CIS-1,2-DICHLOROETHENE	12	4	33	8	7	10	0.5	0.5	0	0	61	6
DIBROMOCHLOROMETHANE	12	0	0	--	--	--	**0.5**	**0.5**	0	12	0.1	80
DIBROMOMETHANE	12	0	0	--	--	--	0.5	0.5	--	--	NA	NA
DICHLORODIFLUOROMETHANE	12	0	0	--	--	--	1	1	0	0	390	NA
DIISOPROPYL ETHER	12	4	33	1	0.8J	2	0.5	0.5	--	--	NA	NA
ETHYL TERT-BUTYL ETHER	12	0	0	--	--	--	0.5	0.5	--	--	NA	NA
ETHYLBENZENE	12	4	33	**4**	0.5J	**10**	0.5	0.5	2	0	3	300
ETHYLENE DIBROMIDE	12	0	0	--	--	--	0.5	0.5	--	--	NA	0.05
HEXACHLOROBUTADIENE	12	0	0	--	--	--	0.5	0.5	0	0	0.9	NA
ISOPROPYLBENZENE	12	3	25	1	0.3J	3	0.5	0.5	--	--	NA	NA
M,P-XYLENE	12	3	25	11	0.3J	30	0.5	0.5	0	0	210 (xylenes)	NA
METHYL-T-BUTYL ETHER	12	4	33	**9**	4	**14**	0.1	0.5	3	0	6 (CAL-modified)	13
METHYLENE CHLORIDE	12	0	0	--	--	--	0.1	**5**	0	8	4	NA
N-BUTYLBENZENE	12	0	0	--	--	--	0.5	0.5	--	--	NA	NA
N-PROPYLBENZENE	12	3	25	0.8	0.5J	1	0.5	0.5	0	0	240	NA
NAPHTHALENE	12	3	25	0.8	0.3J	2J	2	2	0	0	6	NA
O-XYLENE	12	3	25	5	0.5J	12	0.5	0.5	0	0	210 (xylenes)	NA
P-ISOPROPYLTOLUENE	12	0	0	--	--	--	0.5	0.5	--	--	NA	NA
SEC-BUTYLBENZENE	12	3	25	1	0.5J	2	0.5	0.5	0	0	240	NA
STYRENE	12	0	0	--	--	--	0.5	0.5	0	0	1,600	100
TERT-AMYL METHYL ETHER	12	0	0	--	--	--	0.5	0.5	--	--	NA	NA
TERT-BUTANOL	12	3	25	21	15J	25	10	20	--	--	NA	NA
TERT-BUTYLBENZENE	12	4	33	0.6	0.4J	0.9	0.5	0.5	0	0	240	NA
TETRACHLOROETHENE	12	0	0	--	--	--	0.5	0.5	0	0	0.7	5

TABLE 5-9: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

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Volatile Organic Compounds (µg/L)												
TOLUENE	12	3	25	0.4	0.2J	0.6	0.5	0.5	0	0	720	150
TRANS-1,2-DICHLOROETHENE	12	4	33	0.7	0.5	0.9	0.5	0.5	0	0	120	10
TRICHLOROETHENE	12	1	8	**0.1**	**0.1J**	**0.1J**	**0.5**	**0.5**	1	11	0.03	5
TRICHLOROFLUOROMETHANE	12	0	0	--	--	--	1	1	--	--	NA	NA
VINYL CHLORIDE	12	4	33	**13**	**10**	**20**	**0.5**	**0.5**	4	8	0.02 (child or adult)	0.5
Metals (µg/L)												
Filtered												
ALUMINUM	6	0	0	--	--	--	4.3	100	0	0	36,000	NA
ANTIMONY	6	2	33	0.12	0.12J	0.12J	0.12	0.20	0	0	15.0	6.0
ARSENIC	6	4	67	**20.5**	**8.4**	**37.0**	**5.0**	**5.0**	4	2	0.045	10.0
BARIUM	6	6	100	136	56.0	290	0.0	0.0	0	0	2,600	1,000
BERYLLIUM	6	0	0	--	--	--	2.0	2.0	0	0	73.0	4.0
CADMIUM	6	3	50	0.71	0.055J	2.0J	5.0	5.0	0	0	18.0	5.0
CALCIUM	6	6	100	522,000	21,000	1,600,000	0.0	0.0	--	--	NA	NA
CHROMIUM	6	6	100	3.5	0.51J	7.5J	0.0	0.0	--	--	NA	50.0
COBALT	6	6	100	5.4	0.11J	15.0	0.0	0.0	0	0	730	NA
COPPER	6	6	100	3.0	0.59J	7.7J	0.0	0.0	0	0	1,500	1,300
IRON	6	5	83	3,250	140	5,500	200	200	0	0	11,000	NA
LEAD	6	2	33	0.57	0.043J	1.1J	0.37	3.0	--	--	NA	15.0
MAGNESIUM	6	6	100	587,000	12,000	1,900,000	0.0	0.0	--	--	NA	NA
MANGANESE	6	6	100	5,430	160	**16,000**	0.0	0.0	4	0	880	NA
MERCURY	6	0	0	--	--	--	0.20	0.20	0	0	11.0	2.0
MOLYBDENUM	6	3	50	1.0	0.49J	1.7J	0.42	1.5	0	0	180	NA
NICKEL	6	3	50	15.9	0.76J	31.0	18.0	20.0	0	0	730	100
POTASSIUM	6	6	100	16,800	11,000	23,000	0.0	0.0	--	--	NA	NA
SELENIUM	6	1	17	0.85	0.85J	0.85J	5.0	5.0	0	0	180	50.0
SILVER	6	2	33	0.14	0.038J	0.24J	5.0	5.0	0	0	180	NA
SODIUM	6	6	100	2,100,000	150,000	6,500,000	0.0	0.0	--	--	NA	NA
THALLIUM	6	0	0	--	--	--	0.019	**2.6**	0	1	2.4	2.0
VANADIUM	6	3	50	3.1	2.6J	3.8J	1.2	10.0	0	0	260	NA
ZINC	6	3	50	31.0	1.4J	89.0J	20.0	100	0	0	11,000	NA

TABLE 5-9: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Basewide Groundwater Monitoring, 2002 and 2003
Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

NOTES:

Bold denotes values elevated above the PRG

--	Not detected
J	Estimated value
MCL	Maximum Contaminant Level
NA	No criteria available
PRG	Preliminary Remediation Goal, U.S. Environmental Protection Agency, Region 9 or CAL-modified
µg/L	Micrograms per liter

TABLE 5-10: SITE 9 STATISTICAL SUMMARY OF SOIL ANALYSES

Basewide Polynuclear Aromatic Hydrocarbon Investigation, 2003
Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Polynuclear Aromatic Hydrocarbons (µg/kg)											
2-METHYLNAPHTHALENE	52	26	50	180	0.2 J	2,800	0.006	7	--	--	NA
ACENAPHTHENE	52	9	17	27	0.4 J	140	0.006	7	0	0	3,700,000
ACENAPHTHYLENE	52	8	15	0.6	0.2 J	3 J	0.006	24	--	--	NA
ANTHRACENE	52	18	35	6	0.2 J	43	0.006	7	0	0	22,000,000
BENZ(A)ANTHRACENE	52	32	62	4	0.004 J	19	0.006	6	--	--	NA
BENZO(A)PYRENE	52	40	77	4	0.002 J	39	0.01	6	0	0	62
BENZO(B)FLUORANTHENE	52	38	73	5	0.002 J	54	0.01	6	0	0	620
BENZO(G,H,I)PERYLENE	52	45	87	11	0.002 J	110	0.01	5	--	--	NA
BENZO(K)FLUORANTHENE	52	28	54	3	0.2 J	21	0.006	6	0	0	380 (CAL-modified)
CHRYSENE	52	38	73	11	0.005 J	150	0.006	6	0	0	3,800 (CAL-modified)
DIBENZ(A,H)ANTHRACENE	52	26	50	4	0.3 J	34 J	0.006	6	--	--	NA
FLUORANTHENE	52	39	75	7	0.004 J	60	0.01	6	0	0	2,300,000
FLUORENE	52	18	35	35	0.2 J	380	0.006	7	0	0	2,700,000
INDENO(1,2,3-CD)PYRENE	52	36	69	4	0.2 J	39	0.006	6	0	0	620
NAPHTHALENE	52	21	40	280	0.3 J	4,300	0.006	7	0	0	56,000
PHENANTHRENE	52	39	75	36	0.2 J	640	0.006	6	--	--	NA
PYRENE	52	42	81	9	0.004 J	110	0.01	6	0	0	2,300,000

NOTES:

Bold denotes values elevated above the PRG
J Estimated value
NA No PRG available
PRG Preliminary Remediation Goal, U.S. Environmental Protection Agency, Region 9 or CAL-modified
µg/kg Micrograms per kilogram

TABLE 5-11: SITE 9 STATISTICAL SUMMARY OF SOIL ANALYSES

Environmental Baseline Survey Phase 2A

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Volatile Organic Compounds (ug/kg)											
1,1,1-TRICHLOROETHANE	3	0	0	--	--	--	6	11	0	0	1,200,000
1,1,2,2-TETRACHLOROETHANE	3	0	0	--	--	--	6	11	0	0	410
1,1,2-TRICHLOROETHANE	3	0	0	--	--	--	6	11	0	0	730
1,1-DICHLOROETHANE	3	0	0	--	--	--	6	11	0	0	2,800 (CAL-modified)
1,1-DICHLOROETHENE	3	0	0	--	--	--	6	11	0	0	120,000
1,2-DICHLOROETHANE	3	0	0	--	--	--	6	11	0	0	280
1,2-DICHLOROETHENE (TOTAL)	2	0	0	--	--	--	11	11	0	0	43,000 (cis)
1,2-DICHLOROPROPANE	3	0	0	--	--	--	6	11	0	0	340
2-BUTANONE	3	0	0	--	--	--	11	11	--	--	NA
2-HEXANONE	3	0	0	--	--	--	6	11	--	--	NA
4-METHYL-2-PENTANONE	3	0	0	--	--	--	11	11	--	--	NA
ACETONE	3	0	0	--	--	--	11	23	0	0	1,600,000
BENZENE	3	0	0	--	--	--	6	11	0	0	600
BROMODICHLOROMETHANE	3	0	0	--	--	--	6	11	0	0	820
BROMOFORM	3	0	0	--	--	--	6	11	0	0	62,000
BROMOMETHANE	3	0	0	--	--	--	11	11	0	0	3,900
CARBON DISULFIDE	3	0	0	--	--	--	6	11	0	0	360,000
CARBON TETRACHLORIDE	3	0	0	--	--	--	6	11	0	0	250
CHLOROBENZENE	3	0	0	--	--	--	6	11	0	0	150,000
CHLOROETHANE	3	0	0	--	--	--	11	11	0	0	3,000
CHLOROFORM	3	0	0	--	--	--	6	11	0	0	940 (CAL-modified)
CHLOROMETHANE	3	0	0	--	--	--	11	11	0	0	1,200
CIS-1,2-DICHLOROETHENE	1	0	0	--	--	--	6	6	0	0	43,000
CIS-1,3-DICHLOROPROPENE	3	0	0	--	--	--	6	11	0	0	780 (not cis)
DIBROMOCHLOROMETHANE	3	0	0	--	--	--	6	11	0	0	1,100
ETHYLBENZENE	3	0	0	--	--	--	6	11	0	0	8,900
HEXANE	1	0	0	--	--	--	6	6	0	0	110,000 (n-hexane)
METHYLENE CHLORIDE	3	0	0	--	--	--	11	23	0	0	9,100
O-XYLENE	1	0	0	--	--	--	6	6	0	0	270,000 (xylenes)
STYRENE	3	0	0	--	--	--	6	11	0	0	1,700,000
TETRACHLOROETHENE	3	1	33	2	2 J	2 J	6	11	0	0	1,500
TOLUENE	3	0	0	--	--	--	6	11	0	0	520,000
TRANS-1,2-DICHLOROETHENE	1	0	0	--	--	--	6	6	0	0	69,000

TABLE 5-11: SITE 9 STATISTICAL SUMMARY OF SOIL ANALYSES (Continued)

Environmental Baseline Survey Phase 2A

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Volatile Organic Compounds (ug/kg)											
TRANS-1,3-DICHLOROPROPENE	3	0	0	--	--	--	6	11	0	0	780 (not trans)
TRICHLOROETHENE	3	0	0	--	--	--	6	11	0	0	53
TRICHLOROFLUOROMETHANE	1	0	0	--	--	--	6	6	0	0	390,000
VINYL ACETATE	1	0	0	--	--	--	57	57	0	0	430,000
VINYL CHLORIDE	3	0	0	--	--	--	11	11	0	0	79 (child or adult)
XYLENE (TOTAL)	3	0	0	--	--	--	6	11	0	0	270,000
Semivolatile Organic Compounds (µg/kg)											
1,2,4-TRICHLOROBENZENE	1	0	0	--	--	--	390	390	0	0	650,000
1,2-DICHLOROBENZENE	1	0	0	--	--	--	390	390	0	0	370,000
1,3-DICHLOROBENZENE	1	0	0	--	--	--	390	390	0	0	16,000
1,4-DICHLOROBENZENE	1	0	0	--	--	--	390	390	0	0	3,400
2,2'-OXYBIS(1-CHLOROPROPANE)	1	0	0	--	--	--	390	390	--	--	NA
2,4,5-TRICHLOROPHENOL	1	0	0	--	--	--	940	940	0	0	6,100,000
2,4,6-TRICHLOROPHENOL	1	0	0	--	--	--	390	390	0	0	6,900 (CAL-modified)
2,4-DICHLOROPHENOL	1	0	0	--	--	--	390	390	0	0	180,000
2,4-DIMETHYLPHENOL	1	0	0	--	--	--	390	390	0	0	1,200,000
2,4-DINITROPHENOL	1	0	0	--	--	--	940	940	0	0	120,000
2,4-DINITROTOLUENE	1	0	0	--	--	--	390	390	0	0	120,000
2,6-DINITROTOLUENE	1	0	0	--	--	--	390	390	0	0	61,000
2-CHLORONAPHTHALENE	1	0	0	--	--	--	390	390	--	--	NA
2-CHLOROPHENOL	1	0	0	--	--	--	390	390	0	0	63,000
2-METHYLNAPHTHALENE	1	0	0	--	--	--	390	390	--	--	NA
2-METHYLPHENOL	1	0	0	--	--	--	390	390	--	--	NA
2-NITROANILINE	1	0	0	--	--	--	940	940	0	0	1,700
2-NITROPHENOL	1	0	0	--	--	--	390	390	--	--	NA
3,3'-DICHLOROBENZIDINE	1	0	0	--	--	--	390	390	0	0	1,100
3-NITROANILINE	1	0	0	--	--	--	940	940	--	--	NA
4,6-DINITRO-2-METHYLPHENOL	1	0	0	--	--	--	940	940	--	--	NA
4-BROMOPHENYL-PHENYLETHER	1	0	0	--	--	--	390	390	--	--	NA
4-CHLORO-3-METHYLPHENOL	1	0	0	--	--	--	390	390	--	--	NA
4-CHLOROANILINE	1	0	0	--	--	--	390	390	0	0	240,000
4-CHLOROPHENYL-PHENYLETHER	1	0	0	--	--	--	390	390	--	--	NA

TABLE 5-11: SITE 9 STATISTICAL SUMMARY OF SOIL ANALYSES (Continued)

Environmental Baseline Survey Phase 2A

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Semivolatile Organic Compounds (ug/kg)											
4-METHYLPHENOL	1	0	0	--	--	--	390	390	0	0	310,000
4-NITROANILINE	1	0	0	--	--	--	940	940	--	--	NA
4-NITROPHENOL	1	0	0	--	--	--	940	940	--	--	NA
ACENAPHTHENE	1	0	0	--	--	--	390	390	0	0	3,700,000
ACENAPHTHYLENE	1	0	0	--	--	--	390	390	--	--	NA
ANTHRACENE	1	0	0	--	--	--	390	390	0	0	22,000,000
BENZO(A)ANTHRACENE	1	0	0	--	--	--	390	390	0	0	620
BENZO(A)PYRENE	1	0	0	--	--	--	**390**	**390**	0	1	62
BENZO(B)FLUORANTHENE	1	0	0	--	--	--	390	390	0	0	620
BENZO(G,H,I)PERYLENE	1	0	0	--	--	--	390	390	--	--	NA
BENZO(K)FLUORANTHENE	1	0	0	--	--	--	**390**	**390**	0	1	380 (CAL-modified)
BIS(2-CHLOROETHOXY)METHANE	1	0	0	--	--	--	390	390	--	--	NA
BIS(2-CHLOROETHYL)ETHER	1	0	0	--	--	--	**390**	**390**	0	1	210
BIS(2-ETHYLHEXYL)PHTHALATE	1	1	100	25	25 J	25 J	0.0	0.0	0	0	35,000
BUTYLBENZYLPHTHALATE	1	0	0	--	--	--	390	390	0	0	12,000,000
CARBAZOLE	1	0	0	--	--	--	390	390	0	0	24,000
CHRYSENE	1	0	0	--	--	--	390	390	0	0	3,800 (CAL-modified)
DI-N-BUTYLPHTHALATE	1	1	100	170	170 J	170 J	0.0	0.0	--	--	NA
DI-N-OCTYLPHTHALATE	1	0	0	--	--	--	390	390	--	--	NA
DIBENZO(A,H)ANTHRACENE	1	0	0	--	--	--	**390**	**390**	0	1	62
DIBENZOFURAN	1	0	0	--	--	--	390	390	0	0	290,000
DIETHYLPHTHALATE	1	0	0	--	--	--	390	390	0	0	49,000,000
DIMETHYLPHTHALATE	1	0	0	--	--	--	390	390	0	0	100,000,000
FLUORANTHENE	1	0	0	--	--	--	390	390	0	0	2,300,000
FLUORENE	1	0	0	--	--	--	390	390	0	0	2,700,000
HEXACHLOROBENZENE	1	0	0	--	--	--	**390**	**390**	0	1	300
HEXACHLOROBUTADIENE	1	0	0	--	--	--	390	390	0	0	6,200
HEXACHLOROCYCLOPENTADIENE	1	0	0	--	--	--	390	390	0	0	370,000
HEXACHLOROETHANE	1	0	0	--	--	--	390	390	0	0	35,000
INDENO(1,2,3-CD)PYRENE	1	0	0	--	--	--	390	390	0	0	620
ISOPHORONE	1	0	0	--	--	--	390	390	0	0	510,000
N-NITROSO-DI-N-PROPYLAMINE	1	0	0	--	--	--	**390**	**390**	0	1	69
N-NITROSODIPHENYLAMINE	1	0	0	--	--	--	390	390	0	0	99,000

TABLE 5-11: SITE 9 STATISTICAL SUMMARY OF SOIL ANALYSES (Continued)

Environmental Baseline Survey Phase 2A

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Semivolatile Organic Compounds (µg/kg)											
NAPHTHALENE	1	0	0	--	--	--	390	390	0	0	56,000
NITROBENZENE	1	0	0	--	--	--	390	390	0	0	20,000
PENTACHLOROPHENOL	1	0	0	--	--	--	940	940	0	0	3,000
PHENANTHRENE	1	0	0	--	--	--	390	390	--	--	NA
PHENOL	1	0	0	--	--	--	390	390	0	0	37,000,000
PYRENE	1	0	0	--	--	--	390	390	0	0	2,300,000
PCBs/Pesticides (µg/kg)											
AROCLOR-1016	1	0	0	--	--	--	39	39	0	0	3,900
AROCLOR-1221	1	0	0	--	--	--	79	79	0	0	220
AROCLOR-1232	1	0	0	--	--	--	39	39	0	0	220
AROCLOR-1242	1	0	0	--	--	--	39	39	0	0	220
AROCLOR-1248	1	0	0	--	--	--	39	39	0	0	220
AROCLOR-1254	1	0	0	--	--	--	39	39	0	0	220
AROCLOR-1260	1	0	0	--	--	--	39	39	0	0	220

NOTES:

Bold denotes values elevated above the PRG

-- Not detected

J Estimated value

NA No PRG available

PCB Polychlorinated biphenyl

PRG Preliminary Remediation Goal, U.S. Environmental Protection Agency, Region 9 or CAL-modified

µg/kg Micrograms per kilogram

TABLE 5-12: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Environmental Baseline Survey Phase 2B

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Volatile Organic Compounds (ug/L)												
1,1,1-TRICHLOROETHANE	4	0	0	--	--	--	1	1	0	0	3,200	200
1,1,2,2-TETRACHLOROETHANE	4	0	0	--	--	--	1	1	0	4	0.06	1
1,1,2-TRICHLOROETHANE	4	0	0	--	--	--	1	1	0	4	0.2	5
1,1-DICHLOROETHANE	4	0	0	--	--	--	1	1	0	0	2 (CAL-modified)	5
1,1-DICHLOROETHENE	4	0	0	--	--	--	1	1	0	0	340	6
1,2-DICHLOROETHANE	4	0	0	--	--	--	0.5	0.5	0	4	0.1	0.5
1,2-DICHLOROETHENE (TOTAL)	4	0	0	--	--	--	1	1	0	0	61 (cis)	NA
1,2-DICHLOROPROPANE	4	0	0	--	--	--	1	1	0	4	0.2	5
2-BUTANONE	4	0	0	--	--	--	2	2	--	--	NA	NA
2-HEXANONE	4	0	0	--	--	--	2	2	--	--	NA	NA
4-METHYL-2-PENTANONE	4	0	0	--	--	--	2	2	--	--	NA	NA
ACETONE	4	0	0	--	--	--	2	2	0	0	610	NA
BENZENE	4	0	0	--	--	--	0.5	0.5	0	4	0.3	1
BROMODICHLOROMETHANE	4	0	0	--	--	--	1	1	0	4	0.2	80
BROMOFORM	4	0	0	--	--	--	1	1	0	0	9	80
BROMOMETHANE	4	0	0	--	--	--	1	1	0	0	9	NA
CARBON DISULFIDE	4	0	0	--	--	--	1	1	0	0	1,000	NA
CARBON TETRACHLORIDE	4	0	0	--	--	--	0.5	0.5	0	4	0.2	0.5
CHLOROBENZENE	4	0	0	--	--	--	1	1	0	0	110	70
CHLOROETHANE	4	0	0	--	--	--	2	2	0	0	5	NA
CHLOROFORM	4	1	25	9	9J	9J	1	1	1	3	0.5 (CAL-modified)	80
CHLOROMETHANE	4	1	25	2	2J	2J	2	2	1	3	2	NA
CIS-1,3-DICHLOROPROPENE	4	0	0	--	--	--	0.5	0.5	0	4	0.4 (not cis)	0.5
DIBROMOCHLOROMETHANE	4	0	0	--	--	--	1	1	0	4	0.1	80
ETHYLBENZENE	4	0	0	--	--	--	1	1	0	0	3	300
METHYLENE CHLORIDE	4	0	0	--	--	--	1	1	0	0	4	NA
STYRENE	4	0	0	--	--	--	1	1	0	0	1,600	100
TETRACHLOROETHENE	4	0	0	--	--	--	1	1	0	4	0.7	5
TOLUENE	4	0	0	--	--	--	1	1	0	0	720	150
TRANS-1,3-DICHLOROPROPENE	4	0	0	--	--	--	0.5	0.5	0	4	0.4 (not trans)	0.5
TRICHLOROETHENE	4	0	0	--	--	--	1	1	0	4	0.03	5

TABLE 5-12: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Environmental Baseline Survey Phase 2B

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Volatile Organic Compounds (µg/L)												
VINYL CHLORIDE	4	0	0	--	--	--	**0.5**	**0.5**	0	4	0.02 (child or adult)	0.5
XYLENE (TOTAL)	4	0	0	--	--	--	1	1	0	0	210	1,800
Semivolatile Organic Compounds (µg/L)												
1,2,4-TRICHLOROBENZENE	1	0	0	--	--	--	10	10	0	0	190	5
1,2-DICHLOROBENZENE	1	0	0	--	--	--	10	10	0	0	370	600
1,3-DICHLOROBENZENE	1	0	0	--	--	--	**10**	**10**	0	1	6	NA
1,4-DICHLOROBENZENE	1	0	0	--	--	--	**10**	**10**	0	1	0.5	5
2,2'-OXYBIS(1-CHLOROPROPANE)	1	0	0	--	--	--	10	10	--	--	NA	NA
2,4,5-TRICHLOROPHENOL	1	0	0	--	--	--	25	25	0	0	3,600	50
2,4,6-TRICHLOROPHENOL	1	0	0	--	--	--	**10**	**10**	0	1	1 (CAL-modified)	NA
2,4-DICHLOROPHENOL	1	0	0	--	--	--	10	10	0	0	110	NA
2,4-DIMETHYLPHENOL	1	0	0	--	--	--	10	10	0	0	730	NA
2,4-DINITROPHENOL	1	0	0	--	--	--	25	25	0	0	73	NA
2,4-DINITROTOLUENE	1	0	0	--	--	--	10	10	0	0	73	NA
2,6-DINITROTOLUENE	1	0	0	--	--	--	10	10	0	0	36	NA
2-CHLORONAPHTHALENE	1	0	0	--	--	--	10	10	--	--	NA	NA
2-CHLOROPHENOL	1	0	0	--	--	--	10	10	0	0	30	NA
2-METHYLNAPHTHALENE	1	0	0	--	--	--	10	10	--	--	NA	NA
2-METHYLPHENOL	1	0	0	--	--	--	10	10	0	0	1,800	NA
2-NITROANILINE	1	0	0	--	--	--	**25**	**25**	0	1	1	NA
2-NITROPHENOL	1	0	0	--	--	--	10	10	--	--	NA	NA
3,3'-DICHLOROBENZIDINE	1	0	0	--	--	--	**10**	**10**	0	1	0.2	NA
3-NITROANILINE	1	0	0	--	--	--	25	25	--	--	NA	NA
4,6-DINITRO-2-METHYLPHENOL	1	0	0	--	--	--	25	25	--	--	NA	NA
4-BROMOPHENYL-PHENYLETHER	1	0	0	--	--	--	10	10	--	--	NA	NA
4-CHLORO-3-METHYLPHENOL	1	0	0	--	--	--	10	10	--	--	NA	NA
4-CHLOROANILINE	1	0	0	--	--	--	10	10	0	0	150	NA
4-CHLOROPHENYL-PHENYLETHER	1	0	0	--	--	--	10	10	--	--	NA	NA
4-METHYLPHENOL	1	0	0	--	--	--	10	10	0	0	180	NA
4-NITROANILINE	1	0	0	--	--	--	25	25	--	--	NA	NA

TABLE 5-12: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Environmental Baseline Survey Phase 2B
Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Semivolatile Organic Compounds (µg/L)												
4-NITROPHENOL	1	0	0	--	--	--	25	25	--	--	NA	NA
ACENAPHTHENE	1	0	0	--	--	--	10	10	0	0	370	NA
ACENAPHTHYLENE	1	0	0	--	--	--	10	10	--	--	NA	NA
ANTHRACENE	1	0	0	--	--	--	10	10	0	0	1,800	NA
BENZO(A)ANTHRACENE	1	0	0	--	--	--	**10**	**10**	0	1	0.09	0.1
BENZO(A)PYRENE	1	0	0	--	--	--	**10**	**10**	0	1	0.009	0.2
BENZO(B)FLUORANTHENE	1	0	0	--	--	--	**10**	**10**	0	1	0.09	NA
BENZO(G,H,I)PERYLENE	1	0	0	--	--	--	10	10	--	--	NA	NA
BENZO(K)FLUORANTHENE	1	0	0	--	--	--	**10**	**10**	0	1	0.06 (CAL-modified)	NA
BIS(2-CHLOROETHOXY)METHANE	1	0	0	--	--	--	10	10	--	--	NA	NA
BIS(2-CHLOROETHYL)ETHER	1	0	0	--	--	--	**10**	**10**	0	1	0.01	NA
BIS(2-ETHYLHEXYL)PHTHALATE	1	0	0	--	--	--	**10**	**10**	0	1	5	NA
BUTYLBENZYLPHTHALATE	1	0	0	--	--	--	10	10	0	0	7,300	NA
CARBAZOLE	1	0	0	--	--	--	**10**	**10**	0	1	3	NA
CHRYSENE	1	0	0	--	--	--	**10**	**10**	0	1	0.6 (CAL-modified)	NA
DI-N-BUTYLPHTHALATE	1	0	0	--	--	--	10	10	--	--	NA	NA
DI-N-OCTYLPHTHALATE	1	0	0	--	--	--	10	10	--	--	NA	NA
DIBENZO(A,H)ANTHRACENE	1	0	0	--	--	--	**10**	**10**	0	1	0.009	NA
DIBENZOFURAN	1	0	0	--	--	--	10	10	0	0	24	NA
DIETHYLPHTHALATE	1	0	0	--	--	--	10	10	0	0	29,000	NA
DIMETHYLPHTHALATE	1	0	0	--	--	--	10	10	0	0	360,000	NA
FLUORANTHENE	1	0	0	--	--	--	10	10	0	0	1,500	NA
FLUORENE	1	0	0	--	--	--	10	10	0	0	240	NA
HEXACHLOROBENZENE	1	0	0	--	--	--	**10**	**10**	0	1	0.04	1
HEXACHLOROBUTADIENE	1	0	0	--	--	--	**10**	**10**	0	1	0.9	NA
HEXACHLOROCYCLOPENTADIENE	1	0	0	--	--	--	10	10	0	0	220	NA
HEXACHLOROETHANE	1	0	0	--	--	--	**10**	**10**	0	1	5	NA
INDENO(1,2,3-CD)PYRENE	1	0	0	--	--	--	**10**	**10**	0	1	0.09	NA
ISOPHORONE	1	0	0	--	--	--	10	10	0	0	71	NA
N-NITROSO-DI-N-PROPYLAMINE	1	0	0	--	--	--	**10**	**10**	0	1	0.01	NA
N-NITROSODIPHENYLAMINE	1	0	0	--	--	--	10	10	0	0	14	NA

TABLE 5-12: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Environmental Baseline Survey Phase 2B

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Semivolatile Organic Compounds (ug/L)												
NAPHTHALENE	1	0	0	--	--	--	**10**	**10**	0	1	6	NA
NITROBENZENE	1	0	0	--	--	--	**10**	**10**	0	1	3	NA
PENTACHLOROPHENOL	1	0	0	--	--	--	**25**	**25**	0	1	0.6	1
PHENANTHRENE	1	0	0	--	--	--	10	10	--	--	NA	NA
PHENOL	1	0	0	--	--	--	10	10	0	0	22,000	NA
PYRENE	1	0	0	--	--	--	10	10	0	0	180	NA
Metals (µg/L)												
Unfiltered												
ALUMINUM	1	1	100	376	376	376	0.0	0.0	0	0	36,000	NA
ANTIMONY	1	0	0	--	--	--	1.6	1.6	0	0	15.0	6.0
ARSENIC	1	1	100	**3.6**	**3.6**	**3.6**	0.0	0.0	1	0	0.045	10.0
BARIUM	1	1	100	65.2	65.2	65.2	0.0	0.0	0	0	2,600	1,000
BERYLLIUM	1	0	0	--	--	--	0.50	0.50	0	0	73.0	4.0
CADMIUM	1	1	100	2.4	2.4	2.4	0.0	0.0	0	0	18.0	5.0
CALCIUM	1	1	100	23,400	23,400	23,400	0.0	0.0	--	--	NA	NA
CHROMIUM	1	1	100	9.7	9.7	9.7	0.0	0.0	--	--	NA	50.0
COBALT	1	0	0	--	--	--	5.2	5.2	0	0	730	NA
COPPER	1	0	0	--	--	--	3.4	3.4	0	0	1,500	1,300
IRON	1	1	100	714	714	714	0.0	0.0	0	0	11,000	NA
LEAD	1	0	0	--	--	--	1.3	1.3	--	--	NA	15.0
MAGNESIUM	1	1	100	5,240	5,240	5,240	0.0	0.0	--	--	NA	NA
MANGANESE	1	1	100	9.6	9.6	9.6	0.0	0.0	0	0	880	NA
MERCURY	1	0	0	--	--	--	0.20	0.20	0	0	11.0	2.0
MOLYBDENUM	1	0	0	--	--	--	3.4	3.4	0	0	180	NA
NICKEL	1	0	0	--	--	--	3.9	3.9	0	0	730	100
POTASSIUM	1	1	100	6,220	6,220	6,220	0.0	0.0	--	--	NA	NA
SELENIUM	1	0	0	--	--	--	2.1	2.1	0	0	180	50.0
SILVER	1	0	0	--	--	--	1.5	1.5	0	0	180	NA
SODIUM	1	1	100	41,000	41,000	41,000	0.0	0.0	--	--	NA	NA
THALLIUM	1	0	0	--	--	--	1.3	1.3	0	0	2.4	2.0
VANADIUM	1	1	100	10.8	10.8	10.8	0.0	0.0	0	0	260	NA

TABLE 5-12: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Environmental Baseline Survey Phase 2B

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Metals (µg/L)												
Unfiltered												
ZINC	1	0	0	--	--	--	4.7	4.7	0	0	11,000	NA

NOTES:

Bold denotes values elevated above the PRG

-- Not detected

J Estimated value

MCL Maximum Contaminant Level

NA No criteria available

PRG Preliminary Remediation Goal, U.S. Environmental Protection Agency, Region 9 or CAL-modified

µg/L Micrograms per liter

TABLE 5-13: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Pilot Test Design Data Collection, 2002

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Volatile Organic Compounds (ug/L)												
1,1,1,2-TETRACHLOROETHANE	43	0	0	--	--	--	**1**	**2**	0	43	0.4	NA
1,1,1-TRICHLOROETHANE	43	0	0	--	--	--	1	2	0	0	3,200	200
1,1,2,2-TETRACHLOROETHANE	43	0	0	--	--	--	**1**	**2**	0	43	0.06	1
1,1,2-TRICHLOROETHANE	43	1	2	**3**	**3**	**3**	**1**	**2**	1	42	0.2	5
1,1-DICHLOROETHANE	42	15	36	**130**	0.6J	**1,200**	1	2	7	0	2 (CAL-modified)	5
1,1-DICHLOROETHENE	43	8	19	11	1J	38	1	2	0	0	340	6
1,1-DICHLOROPROPENE	43	0	0	--	--	--	1	2	--	--	NA	NA
1,2,3-TRICHLOROBENZENE	43	0	0	--	--	--	1	2	--	--	NA	NA
1,2,3-TRICHLOROPROPANE	43	0	0	--	--	--	**1**	**2**	0	43	0.006	NA
1,2,4-TRICHLOROBENZENE	43	0	0	--	--	--	1	2	0	0	190	5
1,2,4-TRIMETHYLBENZENE	43	23	53	**58**	0.8J	**370**	1	2	17	0	12	NA
1,2-DIBROMO-3-CHLOROPROPANE	43	0	0	--	--	--	**1**	**2**	0	43	0.002 (CAL-modified)	0.2
1,2-DICHLOROBENZENE	43	0	0	--	--	--	1	2	0	0	370	600
1,2-DICHLOROETHANE	43	0	0	--	--	--	**1**	**2**	0	43	0.1	0.5
1,2-DICHLOROETHENE (TOTAL)	9	3	33	1	0.9J	2	1	1	0	0	61 (cis)	NA
1,2-DICHLOROPROPANE	43	0	0	--	--	--	**1**	**2**	0	43	0.2	5
1,3,5-TRIMETHYLBENZENE	43	22	51	**48**	2	**300**	1	2	12	0	12	NA
1,3-DICHLOROBENZENE	43	0	0	--	--	--	1	2	0	0	6	NA
1,3-DICHLOROPROPANE	43	0	0	--	--	--	1	2	--	--	NA	NA
1,4-DICHLOROBENZENE	43	0	0	--	--	--	**1**	**2**	0	43	0.5	5
2,2-DICHLOROPROPANE	43	0	0	--	--	--	1	2	--	--	NA	NA
2-BUTANONE	43	7	16	10	3J	33	5	10	--	--	NA	NA
2-CHLOROTOLUENE	43	0	0	--	--	--	1	2	--	--	NA	NA
2-HEXANONE	43	0	0	--	--	--	5	10	--	--	NA	NA
4-CHLOROTOLUENE	43	0	0	--	--	--	1	2	--	--	NA	NA
4-METHYL-2-PENTANONE	43	0	0	--	--	--	5	10	--	--	NA	NA
ACETONE	43	27	63	12	4J	35	5	5	0	0	610	NA
BENZENE	43	13	30	**2**	**0.6J**	**6**	**1**	**2**	13	30	0.3	1
BROMOBENZENE	43	0	0	--	--	--	1	2	0	0	20	NA
BROMOCHLOROMETHANE	43	0	0	--	--	--	1	2	--	--	NA	NA
BROMODICHLOROMETHANE	43	0	0	--	--	--	**1**	**2**	0	43	0.2	80

TABLE 5-13: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Pilot Test Design Data Collection, 2002

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Volatile Organic Compounds (ug/L)												
BROMOFORM	43	0	0	--	--	--	1	2	0	0	9	80
BROMOMETHANE	43	0	0	--	--	--	1	2	0	0	9	NA
CARBON TETRACHLORIDE	43	0	0	--	--	--	**1**	**2**	0	43	0.2	0.5
CHLOROBENZENE	43	0	0	--	--	--	1	2	0	0	110	70
CHLOROETHANE	43	0	0	--	--	--	1	2	0	0	5	NA
CHLOROFORM	43	1	2	**0.8**	**0.8J**	**0.8J**	**1**	**2**	1	42	0.5 (CAL-modified)	80
CHLOROMETHANE	43	2	5	**3**	1	**5**	1	**2**	1	2	2	NA
CIS-1,2-DICHLOROETHENE	43	25	58	8	0.6J	39	1	2	0	0	61	6
DIBROMOCHLOROMETHANE	43	0	0	--	--	--	**1**	**2**	0	43	0.1	80
DIBROMOMETHANE	43	0	0	--	--	--	1	2	--	--	NA	NA
DICHLORODIFLUOROMETHANE	43	0	0	--	--	--	1	2	0	0	390	NA
ETHYLBENZENE	43	18	42	**25**	0.5J	**150**	1	2	9	0	3	300
ETHYLENE DIBROMIDE	43	0	0	--	--	--	1	2	--	--	NA	0.05
HEXACHLOROBUTADIENE	43	0	0	--	--	--	**1**	**2**	0	43	0.9	NA
ISOPROPYLBENZENE	43	23	53	20	0.7J	120	1	2	--	--	NA	NA
M,P-XYLENE	43	21	49	7	1	34	1	2	0	0	210 (xylenes)	NA
METHYL-T-BUTYL ETHER	43	0	0	--	--	--	1	2	0	0	6 (CAL-modified)	13
METHYLENE CHLORIDE	43	40	93	1	0.6J	**7**	1	1	2	0	4	NA
N-BUTYLBENZENE	43	23	53	15	1	55	1	2	--	--	NA	NA
N-PROPYLBENZENE	43	24	56	45	1	**280**	1	2	2	0	240	NA
NAPHTHALENE	43	27	63	**47**	1	**390**	1	2	15	0	6	NA
O-XYLENE	43	14	33	5	0.8J	29	1	2	0	0	210 (xylenes)	NA
P-ISOPROPYLTOLUENE	43	25	58	21	1	57	1	2	--	--	NA	NA
SEC-BUTYLBENZENE	43	24	56	21	0.9J	110	1	2	0	0	240	NA
STYRENE	43	0	0	--	--	--	1	2	0	0	1,600	100
TERT-BUTYLBENZENE	43	4	9	5	1	11	1	2	0	0	240	NA
TETRACHLOROETHENE	43	0	0	--	--	--	**1**	**2**	0	43	0.7	5
TOLUENE	43	20	47	1	0.5J	5	1	2	0	0	720	150
TRANS-1,2-DICHLOROETHENE	43	0	0	--	--	--	1	2	0	0	120	10
TRICHLOROETHENE	43	0	0	--	--	--	**1**	**2**	0	43	0.03	5
TRICHLOROFLUOROMETHANE	43	0	0	--	--	--	1	2	--	--	NA	NA

TABLE 5-13: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Pilot Test Design Data Collection, 2002

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Volatile Organic Compounds (ug/L)												
VINYL CHLORIDE	43	22	51	**25**	**0.6J**	**280**	**1**	**2**	22	21	0.02 (child or adult)	0.5
Metals (µg/L)												
Unfiltered												
ALUMINUM	14	14	100	884	115	4,440	0.0	0.0	0	0	36,000	NA
ANTIMONY	14	0	0	--	--	--	**20.0**	**200**	0	14	15.0	6.0
ARSENIC	14	11	79	**13.6**	**3.7**	**36.2**	**20.0**	**200**	11	3	0.045	10.0
BARIUM	14	14	100	84.4	12.5	234	0.0	0.0	0	0	2,600	1,000
BERYLLIUM	14	11	79	0.33	0.14	1.7	2.0	2.0	0	0	73.0	4.0
CADMIUM	14	0	0	--	--	--	6.0	**60.0**	0	1	18.0	5.0
CALCIUM	14	14	100	148,000	3,440	1,590,000	0.0	0.0	--	--	NA	NA
CHROMIUM	14	12	86	4.9	1.7	19.4	5.0	50.0	--	--	NA	50.0
COBALT	14	14	100	3.3	0.60	12.4	0.0	0.0	0	0	730	NA
COPPER	14	13	93	2.7	1.2	6.3	100	100	0	0	1,500	1,300
IRON	14	13	93	1,880	227	6,690	150	150	0	0	11,000	NA
LEAD	14	9	64	2.4	1.9	3.0	10.0	100	--	--	NA	15.0
MAGNESIUM	14	14	100	172,000	2,730	1,810,000	0.0	0.0	--	--	NA	NA
MANGANESE	14	14	100	1,820	26.9	**18,600**	0.0	0.0	5	0	880	NA
MERCURY	14	0	0	--	--	--	0.20	0.20	0	0	11.0	2.0
MOLYBDENUM	14	13	93	5.2	1.6	12.4	50.0	50.0	0	0	180	NA
NICKEL	14	14	100	30.0	6.5	106	0.0	0.0	0	0	730	100
POTASSIUM	14	14	100	21,700	6,290	41,700	0.0	0.0	--	--	NA	NA
SELENIUM	14	0	0	--	--	--	20.0	**200**	0	1	180	50.0
SILVER	14	2	14	5.4	0.83	10.0	3.0	30.0	0	0	180	NA
SODIUM	14	14	100	1,020,000	235,000	5,170,000	0.0	0.0	--	--	NA	NA
THALLIUM	14	0	0	--	--	--	**30.0**	**300**	0	14	2.4	2.0
VANADIUM	14	13	93	5.4	1.9	16.9	100	100	0	0	260	NA
ZINC	14	13	93	45.9	4.1	155	200	200	0	0	11,000	NA

TABLE 5-13: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Pilot Test Design Data Collection, 2002

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

NOTES:

Bold denotes values elevated above the PRG

--	Not detected
J	Estimated value
MCL	Maximum Contaminant Level
NA	*No criteria available*
PRG	Preliminary Remediation Goal, U.S. Environmental Protection Agency, Region 9 or CAL-modified
µg/L	Micrograms per liter

TABLE 5-14: SITE 9 STATISTICAL SUMMARY OF SOIL ANALYSES

All Soil Investigations

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Volatile Organic Compounds (ug/kg)											
1,1,1,2-TETRACHLOROETHANE	3	0	0	--	--	--	5	7	--	--	NA
1,1,1-TRICHLOROETHANE	56	0	0	--	--	--	5	120	0	0	1,200,000
1,1,2,2-TETRACHLOROETHANE	56	0	0	--	--	--	5	120	0	0	410
1,1,2-TRICHLOROETHANE	56	0	0	--	--	--	5	120	0	0	730
1,1-DICHLOROETHANE	55	0	0	--	--	--	5	120	0	0	2,800 (CAL-modified)
1,1-DICHLOROETHENE	57	0	0	--	--	--	5	120	0	0	120,000
1,1-DICHLOROPROPENE	3	0	0	--	--	--	5	7	--	--	NA
1,2,3-TRICHLOROBENZENE	3	0	0	--	--	--	5	7	--	--	NA
1,2,3-TRICHLOROPROPANE	3	0	0	--	--	--	5	7	--	--	NA
1,2,4-TRICHLOROBENZENE	3	0	0	--	--	--	5	7	0	0	650,000
1,2,4-TRIMETHYLBENZENE	3	2	67	14,000	25	28,000	5	5	0	0	52,000
1,2-DIBROMO-3-CHLOROPROPANE	3	0	0	--	--	--	5	7	--	--	NA
1,2-DICHLOROBENZENE	32	0	0	--	--	--	5	960	0	0	370,000
1,2-DICHLOROETHANE	56	0	0	--	--	--	5	120	0	0	280
1,2-DICHLOROETHENE (TOTAL)	53	5	9	28	1J	130	5	120	0	0	43,000 (cis)
1,2-DICHLOROPROPANE	56	0	0	--	--	--	5	120	0	0	340
1,3,5-TRIMETHYLBENZENE	3	1	33	2,400	2,400	2,400	5	5	0	0	21,000
1,3-DICHLOROBENZENE	32	0	0	--	--	--	5	960	0	0	16,000
1,3-DICHLOROPROPANE	3	0	0	--	--	--	5	7	--	--	NA
1,4-DICHLOROBENZENE	32	0	0	--	--	--	5	960	0	0	3,400
2,2-DICHLOROPROPANE	3	0	0	--	--	--	5	7	--	--	NA
2-BUTANONE	56	1	2	9	9J	9 J	10	120	--	--	NA
2-CHLOROETHYLVINYLETHER	29	0	0	--	--	--	10	55	--	--	NA
2-CHLOROTOLUENE	3	0	0	--	--	--	5	7	--	--	NA
2-HEXANONE	56	0	0	--	--	--	6	120	--	--	NA
4-CHLOROTOLUENE	3	0	0	--	--	--	5	7	--	--	NA
4-METHYL-2-PENTANONE	56	0	0	--	--	--	10	120	--	--	NA
ACETONE	56	3	5	33	24	52	10	120	0	0	1,600,000
BENZENE	56	0	0	--	--	--	5	120	0	0	600
BROMOBENZENE	3	0	0	--	--	--	5	7	--	--	NA
BROMOCHLOROMETHANE	3	0	0	--	--	--	5	7	--	--	NA

TABLE 5-14: SITE 9 STATISTICAL SUMMARY OF SOIL ANALYSES (Continued)

All Soil Investigations

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Volatile Organic Compounds (ug/kg)											
BROMODICHLOROMETHANE	56	0	0	--	--	--	5	120	0	0	820
BROMOFORM	56	0	0	--	--	--	5	120	0	0	62,000
BROMOMETHANE	56	0	0	--	--	--	10	120	0	0	3,900
CARBON DISULFIDE	53	0	0	--	--	--	5	120	0	0	360,000
CARBON TETRACHLORIDE	56	0	0	--	--	--	5	120	0	0	250
CHLOROBENZENE	56	0	0	--	--	--	5	120	0	0	150,000
CHLOROETHANE	56	0	0	--	--	--	10	120	0	0	3,000
CHLOROFORM	56	0	0	--	--	--	5	120	0	0	940 (CAL-modified)
CHLOROMETHANE	56	0	0	--	--	--	10	120	0	0	1,200
CIS-1,2-DICHLOROETHENE	4	1	25	23	23	23	5	6	0	0	43,000
CIS-1,3-DICHLOROPROPENE	53	0	0	--	--	--	5	120	0	0	780 (not cis)
DIBROMOCHLOROMETHANE	56	0	0	--	--	--	5	120	0	0	1,100
DIBROMOMETHANE	3	0	0	--	--	--	5	7	--	--	NA
DICHLORODIFLUOROMETHANE	3	0	0	--	--	--	5	7	--	--	NA
ETHYLBENZENE	56	4	7	120	2 J	200	5	120	0	0	8,900
ETHYLENE DIBROMIDE	3	0	0	--	--	--	5	7	--	--	NA
HEXACHLOROBUTADIENE	3	0	0	--	--	--	5	7	0	0	6,200
HEXANE	1	0	0	--	--	--	6	6	0	0	110,000 (n-hexane)
ISOPROPYLBENZENE	3	3	100	37	2 J	100	0.0	0.0	--	--	NA
M,P-XYLENE	3	1	33	320	320	320	5	5	0	0	270,000 (xylenes)
METHYL-T-BUTYL ETHER	3	0	0	--	--	--	5	7	0	0	17,000 (CAL-modified)
METHYLENE CHLORIDE	56	3	5	7	6 J	8 J	6	120	0	0	9,100
N-BUTYLBENZENE	3	1	33	150	150	150	5	5	--	--	NA
N-PROPYLBENZENE	3	1	33	240	240	240	5	5	--	--	NA
NAPHTHALENE	3	3	100	74	13	170	0.0	0.0	0	0	56,000
O-XYLENE	4	1	25	47	47	47	5	6	0	0	270,000 (xylenes)
P-ISOPROPYLTOLUENE	3	0	0	--	--	--	5	7	--	--	NA
SEC-BUTYLBENZENE	3	1	33	110	110	110	5	5	--	--	NA
STYRENE	56	0	0	--	--	--	5	120	0	0	1,700,000
TERT-BUTYLBENZENE	3	1	33	150	150	150	5	5	--	--	NA
TETRACHLOROETHENE	56	2	4	2	1 J	2 J	5	120	0	0	1,500

TABLE 5-14: SITE 9 STATISTICAL SUMMARY OF SOIL ANALYSES (Continued)

All Soil Investigations

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Volatile Organic Compounds (ug/kg)											
TOLUENE	57	33	58	49	2J	730	5	120	0	0	520,000
TRANS-1,2-DICHLOROETHENE	4	0	0	--	--	--	5	7	0	0	69,000
TRANS-1,3-DICHLOROPROPENE	53	0	0	--	--	--	5	120	0	0	780 (not trans)
TRICHLOROETHENE	56	0	0	--	--	--	5	**120**	0	5	53
TRICHLOROFLUOROMETHANE	33	0	0	--	--	--	5	27	0	0	390,000
VINYL ACETATE	30	0	0	--	--	--	10	57	0	0	430,000
VINYL CHLORIDE	56	0	0	--	--	--	10	**120**	0	1	79 (child or adult)
XYLENE (TOTAL)	53	9	17	760	2J	3,100	5	120	0	0	270,000
Semivolatile Organic Compounds (µg/kg)											
1,2,4-TRICHLOROBENZENE	39	0	0	--	--	--	340	1,000	0	0	650,000
1,2-DICHLOROBENZENE	39	0	0	--	--	--	340	1,000	0	0	370,000
1,2-DIPHENYLHYDRAZINE	38	0	0	--	--	--	340	**1,000**	0	10	610
1,3-DICHLOROBENZENE	39	0	0	--	--	--	340	1,000	0	0	16,000
1,4-DICHLOROBENZENE	39	0	0	--	--	--	340	1,000	0	0	3,400
2,2'-OXYBIS(1-CHLOROPROPANE)	1	0	0	--	--	--	390	390	--	--	NA
2,4,5-TRICHLOROPHENOL	39	0	0	--	--	--	940	4,900	0	0	6,100,000
2,4,6-TRICHLOROPHENOL	39	0	0	--	--	--	340	1,000	0	0	6,900 (CAL-modified)
2,4-DICHLOROPHENOL	39	0	0	--	--	--	340	1,000	0	0	180,000
2,4-DIMETHYLPHENOL	39	0	0	--	--	--	340	1,000	0	0	1,200,000
2,4-DINITROPHENOL	39	0	0	--	--	--	940	4,900	0	0	120,000
2,4-DINITROTOLUENE	39	0	0	--	--	--	340	1,000	0	0	120,000
2,6-DINITROTOLUENE	39	0	0	--	--	--	340	1,000	0	0	61,000
2-CHLORONAPHTHALENE	39	0	0	--	--	--	340	1,000	--	--	NA
2-CHLOROPHENOL	39	0	0	--	--	--	340	1,000	0	0	63,000
2-METHYLPHENOL	39	0	0	--	--	--	340	1,000	--	--	NA
2-NITROANILINE	39	0	0	--	--	--	940	**4,900**	0	28	1,700
2-NITROPHENOL	39	0	0	--	--	--	340	1,000	--	--	NA
3,3'-DICHLOROBENZIDINE	39	0	0	--	--	--	390	**2,000**	0	10	1,100
3-NITROANILINE	39	0	0	--	--	--	940	4,900	--	--	NA
4,6-DINITRO-2-METHYLPHENOL	39	0	0	--	--	--	940	4,900	--	--	NA

TABLE 5-14: SITE 9 STATISTICAL SUMMARY OF SOIL ANALYSES (Continued)

All Soil Investigations

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Semivolatile Organic Compounds (ug/kg)											
4-BROMOPHENYL-PHENYLETHER	39	0	0	--	--	--	340	1,000	--	--	NA
4-CHLORO-3-METHYLPHENOL	39	1	3	43	43J	43 J	340	1,000	--	--	NA
4-CHLOROANILINE	39	0	0	--	--	--	340	1,000	0	0	240,000
4-CHLOROPHENYL-PHENYLETHER	39	0	0	--	--	--	340	1,000	--	--	NA
4-METHYLPHENOL	39	0	0	--	--	--	340	1,000	0	0	310,000
4-NITROANILINE	39	0	0	--	--	--	940	4,900	--	--	NA
4-NITROPHENOL	39	0	0	--	--	--	940	4,900	--	--	NA
ANILINE	12	0	0	--	--	--	350	720	0	0	85,000
BENZOIC ACID	38	0	0	--	--	--	1,600	4,900	0	0	100,000,000
BENZYL ALCOHOL	38	0	0	--	--	--	340	1,000	0	0	18,000,000
BIS(2-CHLOROETHOXY)METHANE	39	0	0	--	--	--	340	1,000	--	--	NA
BIS(2-CHLOROETHYL)ETHER	39	0	0	--	--	--	**340**	**1,000**	0	39	210
BIS(2-ETHYLHEXYL)PHTHALATE	39	1	3	25	25J	25 J	340	1,000	0	0	35,000
BUTYLBENZYLPHTHALATE	39	0	0	--	--	--	340	1,000	0	0	12,000,000
CARBAZOLE	1	0	0	--	--	--	390	390	0	0	24,000
DI-N-BUTYLPHTHALATE	39	1	3	170	170J	170 J	340	1,000	--	--	NA
DI-N-OCTYLPHTHALATE	39	0	0	--	--	--	340	1,000	--	--	NA
DIBENZOFURAN	39	0	0	--	--	--	340	1,000	0	0	290,000
DIETHYLPHTHALATE	39	0	0	--	--	--	340	1,000	0	0	49,000,000
DIMETHYLPHTHALATE	39	0	0	--	--	--	340	1,000	0	0	100,000,000
HEXACHLOROBENZENE	39	0	0	--	--	--	**340**	**1,000**	0	39	300
HEXACHLOROBUTADIENE	39	0	0	--	--	--	340	1,000	0	0	6,200
HEXACHLOROCYCLOPENTADIENE	39	0	0	--	--	--	340	1,000	0	0	370,000
HEXACHLOROETHANE	39	0	0	--	--	--	340	1,000	0	0	35,000
ISOPHORONE	39	0	0	--	--	--	340	1,000	0	0	510,000
N-NITROSO-DI-N-PROPYLAMINE	39	0	0	--	--	--	**340**	**1,000**	0	39	69
N-NITROSODIMETHYLAMINE	12	0	0	--	--	--	**350**	**720**	0	12	10
N-NITROSODIPHENYLAMINE	39	18	46	60	38J	120 J	340	1,000	0	0	99,000
NITROBENZENE	39	0	0	--	--	--	340	1,000	0	0	20,000
PENTACHLOROPHENOL	39	1	3	430	430J	430 J	940	**4,900**	0	9	3,000
PHENOL	39	1	3	42	42J	42 J	340	1,000	0	0	37,000,000

TABLE 5-14: SITE 9 STATISTICAL SUMMARY OF SOIL ANALYSES (Continued)

All Soil Investigations

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Polynuclear Aromatic Hydrocarbons (ug/kg)											
2-METHYLNAPHTHALENE	52	26	50	180	0.2J	2,800	0.006	7	--	--	NA
ACENAPHTHENE	52	9	17	27	0.4J	140	0.006	7	0	0	3,700,000
ACENAPHTHYLENE	52	8	15	0.6	0.2J	3 J	0.006	24	--	--	NA
ANTHRACENE	52	18	35	6	0.2J	43	0.006	7	0	0	22,000,000
BENZ(A)ANTHRACENE	52	32	62	4	0.004J	19	0.006	6	--	--	NA
BENZO(A)PYRENE	52	40	77	4	0.002J	39	0.01	6	0	0	62
BENZO(B)FLUORANTHENE	52	38	73	5	0.002J	54	0.01	6	0	0	620
BENZO(G,H,I)PERYLENE	52	45	87	11	0.002J	110	0.01	5	--	--	NA
BENZO(K)FLUORANTHENE	52	28	54	3	0.2J	21	0.006	6	0	0	380 (CAL-modified)
CHRYSENE	52	38	73	11	0.005J	150	0.006	6	0	0	3,800 (CAL-modified)
DIBENZ(A,H)ANTHRACENE	52	26	50	4	0.3J	34 J	0.006	6	--	--	NA
FLUORANTHENE	52	39	75	7	0.004J	60	0.01	6	0	0	2,300,000
FLUORENE	52	18	35	35	0.2J	380	0.006	7	0	0	2,700,000
INDENO(1,2,3-CD)PYRENE	52	36	69	4	0.2J	39	0.006	6	0	0	620
NAPHTHALENE	52	21	40	280	0.3J	4,300	0.006	7	0	0	56,000
PHENANTHRENE	52	39	75	36	0.2J	640	0.006	6	--	--	NA
PYRENE	52	42	81	9	0.004J	110	0.01	6	0	0	2,300,000
PCBs/Pesticides (µg/kg)											
AROCLOR-1016	1	0	0	--	--	--	39	39	0	0	3,900
AROCLOR-1221	1	0	0	--	--	--	79	79	0	0	220
AROCLOR-1232	1	0	0	--	--	--	39	39	0	0	220
AROCLOR-1242	1	0	0	--	--	--	39	39	0	0	220
AROCLOR-1248	1	0	0	--	--	--	39	39	0	0	220
AROCLOR-1254	1	0	0	--	--	--	39	39	0	0	220
AROCLOR-1260	1	0	0	--	--	--	39	39	0	0	220
Metals (mg/kg)											
ALUMINUM	62	62	100	6,030	2,880	28,800	0.0	0.0	0	0	76,000
ANTIMONY	62	4	6	0.58	0.31	1.2 J	0.48	7.6	0	0	31.0
ARSENIC	62	25	40	**4.0**	**0.85J**	**10.0**	**0.55**	**13.0**	25	37	0.39

TABLE 5-14: SITE 9 STATISTICAL SUMMARY OF SOIL ANALYSES (Continued)

All Soil Investigations
Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Metals (mg/kg)											
BARIUM	62	60	97	58.2	16.3J	266	24.0	25.0	0	0	5,400
BERYLLIUM	62	39	63	0.49	0.090	1.5	0.20	1.3	0	0	150
CADMIUM	62	25	40	0.37	0.10	0.99	0.060	1.3	0	0	37.0
CALCIUM	62	62	100	4,840	1,340	19,200	0.0	0.0	--	--	NA
CHROMIUM	62	62	100	39.3	19.0	178	0.0	0.0	0	0	210
COBALT	62	35	56	7.4	2.9	23.0	4.6	6.5	0	0	900
COPPER	62	58	94	14.0	4.1J	89.4	5.5	6.1	0	0	3,100
IRON	62	62	100	10,100	5,090	**39,000**	0.0	0.0	6	0	23,000
LEAD	62	31	50	7.6	1.3	44.6	2.1	6.8	0	0	150 (CAL-modified)
MAGNESIUM	62	61	98	2,870	1,570	10,200	520	520	--	--	NA
MANGANESE	62	62	100	143	62.5	1,060	0.0	0.0	0	0	1,800
MERCURY	24	2	8	0.055	0.010	0.10	0.030	0.36	0	0	23.0
MOLYBDENUM	62	3	5	0.44	0.13	0.86	0.31	6.7	0	0	390
NICKEL	62	62	100	29.6	14.6	111	0.0	0.0	0	0	1,600
POTASSIUM	62	58	94	999	310	3,740	560	610	--	--	NA
SELENIUM	62	0	0	--	--	--	0.55	13.0	0	0	390
SILVER	62	3	5	0.67	0.44	0.96	0.18	6.3	0	0	390
SODIUM	62	50	81	562	68.0J	3,510	520	630	--	--	NA
THALLIUM	62	1	2	**5.3**	**5.3**	**5.3**	0.40	**13.0**	1	14	5.2
TITANIUM	38	38	100	403	223	1,190	0.0	0.0	--	--	NA
VANADIUM	62	62	100	22.3	12.7	70.8	0.0	0.0	0	0	550
ZINC	62	62	100	30.2	12.0	105	0.0	0.0	0	0	23,000

NOTES:

Bold denotes values elevated above the PRG
-- Not detected
J Estimated value
mg/kg Milligrams per kilogram
NA No PRG available
PCB Polychlorinated biphenyl
PRG Preliminary Remediation Goal, U.S. Environmental Protection Agency, Region 9 or CAL-modified
µg/kg Micrograms per kilogram

TABLE 5-15: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

All Groundwater Investigations

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Volatile Organic Compounds (ug/L)												
1,1,1,2-TETRACHLOROETHANE	96	0	0	--	--	--	**0.5**	**5**	0	96	0.4	NA
1,1,1-TRICHLOROETHANE	159	2	1	2	0.7J	3	0.5	100	0	0	3,200	200
1,1,2,2-TETRACHLOROETHANE	159	0	0	--	--	--	**0.5**	**100**	0	159	0.06	1
1,1,2-TRICHLOROETHANE	159	1	1	**3**	**3**	**3**	**0.5**	**100**	1	158	0.2	5
1,1-DICHLOROETHANE	158	45	28	**92**	0.5J	**1,200**	0.5	**100**	25	5	2 (CAL-modified)	5
1,1-DICHLOROETHENE	159	18	11	7	1J	38	0.5	100	0	0	340	6
1,1-DICHLOROPROPENE	56	0	0	--	--	--	0.5	5	--	--	NA	NA
1,2,3-TRICHLOROBENZENE	56	0	0	--	--	--	0.5	5	--	--	NA	NA
1,2,3-TRICHLOROPROPANE	56	1	2	**0.3**	**0.3J**	**0.3J**	**0.5**	**5**	1	55	0.006	NA
1,2,4-TRICHLOROBENZENE	64	0	0	--	--	--	0.5	5	0	0	190	5
1,2,4-TRIMETHYLBENZENE	56	25	45	**53**	0.3J	**370**	0.5	5	17	0	12	NA
1,2-DIBROMO-3-CHLOROPROPANE	64	0	0	--	--	--	**0.5**	**5**	0	64	0.002 (CAL-modified)	0.2
1,2-DICHLOROBENZENE	115	2	2	0.4	0.3J	0.5J	0.5	5	0	0	370	600
1,2-DICHLOROETHANE	159	3	2	**0.6**	**0.5**	**0.7J**	**0.5**	**50**	3	156	0.1	0.5
1,2-DICHLOROETHENE (TOTAL)	64	15	23	**200**	0.9J	**2,400**	1	9	2	0	61 (cis)	NA
1,2-DICHLOROPROPANE	119	1	1	**2**	**2**	**2**	**0.5**	**100**	1	118	0.2	5
1,3,5-TRIMETHYLBENZENE	56	24	43	**44**	0.3J	**300**	0.5	5	12	0	12	NA
1,3-DICHLOROBENZENE	115	0	0	--	--	--	0.5	5	0	0	6	NA
1,3-DICHLOROPROPANE	56	4	7	0.7	0.4J	0.9	0.5	5	--	--	NA	NA
1,4-DICHLOROBENZENE	115	2	2	0.2	0.1J	0.2J	0.5	**5**	0	103	0.5	5
2,2-DICHLOROPROPANE	56	0	0	--	--	--	0.5	5	--	--	NA	NA
2-BUTANONE	83	9	11	21	3J	63J	2	28	--	--	NA	NA
2-CHLOROTOLUENE	56	1	2	0.1	0.1J	0.1J	0.5	5	--	--	NA	NA
2-HEXANONE	114	0	0	--	--	--	2	200	--	--	NA	NA
4-CHLOROTOLUENE	56	0	0	--	--	--	0.5	5	--	--	NA	NA
4-METHYL-2-PENTANONE	119	2	2	3	0.7J	5J	2	200	--	--	NA	NA
ACETONE	81	30	37	16	1J	150J	0.5	20	0	0	610	NA
BENZENE	159	26	16	**2**	**0.6J**	**6**	**0.5**	**100**	26	133	0.3	1
BROMOBENZENE	56	0	0	--	--	--	0.5	5	0	0	20	NA
BROMOCHLOROMETHANE	64	0	0	--	--	--	0.5	10	--	--	NA	NA
BROMODICHLOROMETHANE	119	0	0	--	--	--	**0.5**	**100**	0	119	0.2	80

TABLE 5-15: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

All Groundwater Investigations

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Volatile Organic Compounds (ug/L)												
BROMOFORM	119	0	0	--	--	--	1	**100**	0	3	9	80
BROMOMETHANE	119	0	0	--	--	--	1	**200**	0	7	9	NA
CARBON DISULFIDE	76	7	9	5	0.3J	20J	0.5	100	0	0	1,000	NA
CARBON TETRACHLORIDE	119	0	0	--	--	--	**0.5**	**50**	0	119	0.2	0.5
CHLOROBENZENE	159	10	6	2	0.1J	11	0.5	100	0	0	110	70
CHLOROETHANE	159	3	2	3	0.5J	**5**	1	**200**	1	7	5	NA
CHLOROFORM	119	5	4	**3**	**0.7J**	**9J**	0.2	**100**	5	102	0.5 (CAL-modified)	80
CHLOROMETHANE	159	3	2	**3**	1	**5**	1	**200**	2	57	2	NA
CIS-1,2-DICHLOROETHENE	104	35	34	8	0.6J	39	0.5	5	0	0	61	6
CIS-1,3-DICHLOROPROPENE	64	0	0	--	--	--	**0.5**	**50**	0	64	0.4 (not cis)	0.5
DIBROMOCHLOROMETHANE	119	0	0	--	--	--	**0.5**	**100**	0	119	0.1	80
DIBROMOMETHANE	56	0	0	--	--	--	0.5	5	--	--	NA	NA
DICHLORODIFLUOROMETHANE	56	0	0	--	--	--	1	10	0	0	390	NA
DIISOPROPYL ETHER	12	4	33	1	0.8J	2	0.5	0.5	--	--	NA	NA
ETHYL TERT-BUTYL ETHER	12	0	0	--	--	--	0.5	0.5	--	--	NA	NA
ETHYLBENZENE	159	31	19	**25**	0.3J	**150**	0.5	**5**	18	4	3	300
ETHYLENE DIBROMIDE	64	0	0	--	--	--	0.5	5	--	--	NA	0.05
HEXACHLOROBUTADIENE	56	0	0	--	--	--	0.5	**5**	0	44	0.9	NA
ISOPROPYLBENZENE	56	26	46	17	0.3J	120	0.5	5	--	--	NA	NA
M,P-XYLENE	96	28	29	14	0.3J	210	0.5	5	0	0	210 (xylenes)	NA
METHYL-T-BUTYL ETHER	107	7	7	**15**	4	**40**	0.1	5	6	0	6 (CAL-modified)	13
METHYLENE CHLORIDE	159	40	25	1	0.6J	**7**	0.1	**100**	2	15	4	NA
N-BUTYLBENZENE	56	23	41	15	1	55	0.5	5	--	--	NA	NA
N-PROPYLBENZENE	56	27	48	40	0.5J	**280**	0.5	5	2	0	240	NA
NAPHTHALENE	96	32	33	**44**	0.3J	**390**	1	5	16	0	6	NA
O-XYLENE	96	19	20	9	0.5J	83	0.5	5	0	0	210 (xylenes)	NA
P-ISOPROPYLTOLUENE	56	25	45	21	1	57	0.5	5	--	--	NA	NA
SEC-BUTYLBENZENE	56	27	48	18	0.5J	110	0.5	5	0	0	240	NA
STYRENE	119	0	0	--	--	--	0.5	100	0	0	1,600	100
TERT-AMYL METHYL ETHER	12	0	0	--	--	--	0.5	0.5	--	--	NA	NA
TERT-BUTANOL	12	3	25	21	15J	25	10	20	--	--	NA	NA

TABLE 5-15: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

All Groundwater Investigations

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Volatile Organic Compounds (ug/L)												
TERT-BUTYLBENZENE	56	8	14	3	0.4J	11	0.5	5	0	0	240	NA
TETRACHLOROETHENE	159	2	1	**2**	**0.7J**	**3**	0.5	**100**	2	145	0.7	5
TOLUENE	159	35	22	16	0.2J	230	0.5	5	0	0	720	150
TRANS-1,2-DICHLOROETHENE	104	4	4	0.7	0.5	0.9	0.5	5	0	0	120	10
TRANS-1,3-DICHLOROPROPENE	64	0	0	--	--	--	**0.5**	**50**	0	64	0.4 (not trans)	0.5
TRICHLOROETHENE	159	4	3	**6**	**0.1J**	**22**	**0.5**	**100**	4	155	0.03	5
TRICHLOROFLUOROMETHANE	56	0	0	--	--	--	1	5	--	--	NA	NA
TRICHLOROTRIFLUOROETHANE	1	0	0	--	--	--	5	5	--	--	NA	NA
VINYL ACETATE	6	0	0	--	--	--	2	50	0	0	410	NA
VINYL CHLORIDE	159	38	24	**23**	**0.5J**	**280**	**0.5**	**50**	38	121	0.02 (child or adult)	0.5
XYLENE (TOTAL)	63	7	11	**260**	2	**1,200**	1	5	2	0	210	1,800
Semivolatile Organic Compounds (µg/L)												
1,2,4-TRICHLOROBENZENE	70	0	0	--	--	--	10	**16,000**	0	2	190	5
1,2-DICHLOROBENZENE	70	0	0	--	--	--	5	**8,000**	0	1	370	600
1,3-DICHLOROBENZENE	70	0	0	--	--	--	5	**8,000**	0	12	6	NA
1,4-DICHLOROBENZENE	70	0	0	--	--	--	**5**	**8,000**	0	70	0.5	5
2,2'-OXYBIS(1-CHLOROPROPANE)	67	1	1	0.7	0.7J	0.7J	10	16,000	--	--	NA	NA
2,4,5-TRICHLOROPHENOL	70	0	0	--	--	--	25	**40,000**	0	1	3,600	50
2,4,6-TRICHLOROPHENOL	70	0	0	--	--	--	**10**	**16,000**	0	70	1 (CAL-modified)	NA
2,4-DICHLOROPHENOL	70	0	0	--	--	--	10	**16,000**	0	2	110	NA
2,4-DIMETHYLPHENOL	70	5	7	39	2J	140J	10	**16,000**	0	1	730	NA
2,4-DINITROPHENOL	64	0	0	--	--	--	25	**40,000**	0	7	73	NA
2,4-DINITROTOLUENE	70	0	0	--	--	--	10	**16,000**	0	2	73	NA
2,6-DINITROTOLUENE	70	0	0	--	--	--	10	**16,000**	0	5	36	NA
2-CHLORONAPHTHALENE	70	0	0	--	--	--	10	16,000	--	--	NA	NA
2-CHLOROPHENOL	70	0	0	--	--	--	10	**16,000**	0	5	30	NA
2-METHYLNAPHTHALENE	70	4	6	1,600	7J	6,500J	10	250	--	--	NA	NA
2-METHYLPHENOL	70	2	3	25	9J	41J	10	**16,000**	0	1	1,800	NA
2-NITROANILINE	70	0	0	--	--	--	**25**	**40,000**	0	70	1	NA
2-NITROPHENOL	70	0	0	--	--	--	10	16,000	--	--	NA	NA

TABLE 5-15: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

All Groundwater Investigations

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Semivolatile Organic Compounds (ug/L)												
3,3'-DICHLOROBENZIDINE	70	0	0	--	--	--	**10**	**16,000**	0	70	0.2	NA
3-NITROANILINE	70	0	0	--	--	--	25	40,000	--	--	NA	NA
4,6-DINITRO-2-METHYLPHENOL	70	1	1	25	25J	25J	25	40,000	--	--	NA	NA
4-BROMOPHENYL-PHENYLETHER	70	0	0	--	--	--	10	16,000	--	--	NA	NA
4-CHLORO-3-METHYLPHENOL	70	0	0	--	--	--	10	16,000	--	--	NA	NA
4-CHLOROANILINE	70	0	0	--	--	--	10	**16,000**	0	2	150	NA
4-CHLOROPHENYL-PHENYLETHER	70	0	0	--	--	--	10	16,000	--	--	NA	NA
4-METHYLPHENOL	70	1	1	1,200	**1,200**	**1,200**	10	**16,000**	1	1	180	NA
4-NITROANILINE	70	0	0	--	--	--	25	40,000	--	--	NA	NA
4-NITROPHENOL	70	1	1	6	6J	6J	25	40,000	--	--	NA	NA
ACENAPHTHENE	70	1	1	0.9	0.9J	0.9J	10	**16,000**	0	1	370	NA
ACENAPHTHYLENE	68	0	0	--	--	--	10	16,000	--	--	NA	NA
ANTHRACENE	70	0	0	--	--	--	10	**16,000**	0	1	1,800	NA
BENZO(A)ANTHRACENE	70	2	3	**0.9**	**0.7J**	**1J**	**10**	**16,000**	2	68	0.09	0.1
BENZO(A)PYRENE	70	2	3	**2**	**1J**	**2J**	**1**	**16,000**	2	68	0.009	0.2
BENZO(B)FLUORANTHENE	70	2	3	**2**	**2J**	**2J**	**10**	**16,000**	2	68	0.09	NA
BENZO(G,H,I)PERYLENE	70	2	3	2	1J	2J	10	16,000	--	--	NA	NA
BENZO(K)FLUORANTHENE	70	1	1	**0.8**	**0.8J**	**0.8J**	**10**	**16,000**	1	69	0.06 (CAL-modified)	NA
BENZOIC ACID	3	0	0	--	--	--	50	50	0	0	150,000	NA
BENZYL ALCOHOL	3	0	0	--	--	--	10	10	0	0	11,000	NA
BIS(2-CHLOROETHOXY)METHANE	70	0	0	--	--	--	10	16,000	--	--	NA	NA
BIS(2-CHLOROETHYL)ETHER	70	0	0	--	--	--	**10**	**16,000**	0	70	0.01	NA
BIS(2-ETHYLHEXYL)PHTHALATE	70	0	0	--	--	--	4	**6,400**	0	18	5	NA
BUTYLBENZYLPHTHALATE	70	0	0	--	--	--	10	**16,000**	0	1	7,300	NA
CARBAZOLE	67	0	0	--	--	--	**10**	**16,000**	0	67	3	NA
CHRYSENE	70	2	3	**0.9**	**0.8J**	**1J**	**10**	**16,000**	2	68	0.6 (CAL-modified)	NA
DI-N-BUTYLPHTHALATE	70	0	0	--	--	--	10	16,000	--	--	NA	NA
DI-N-OCTYLPHTHALATE	70	0	0	--	--	--	10	16,000	--	--	NA	NA
DIBENZO(A,H)ANTHRACENE	70	0	0	--	--	--	**10**	**16,000**	0	70	0.009	NA
DIBENZOFURAN	70	0	0	--	--	--	10	**16,000**	0	6	24	NA
DIETHYLPHTHALATE	70	0	0	--	--	--	10	16,000	0	0	29,000	NA

TABLE 5-15: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

All Groundwater Investigations
Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Semivolatile Organic Compounds (ug/L)												
DIMETHYLPHTHALATE	70	0	0	--	--	--	10	16,000	0	0	360,000	NA
FLUORANTHENE	70	3	4	2	2J	3J	10	**16,000**	0	1	1,500	NA
FLUORENE	70	1	1	0.8	0.8J	0.8J	10	**16,000**	0	2	240	NA
HEXACHLOROBENZENE	70	0	0	--	--	--	**10**	**16,000**	0	70	0.04	1
HEXACHLOROBUTADIENE	70	0	0	--	--	--	**10**	**16,000**	0	70	0.9	NA
HEXACHLOROCYCLOPENTADIENE	70	0	0	--	--	--	10	**16,000**	0	2	220	NA
HEXACHLOROETHANE	70	0	0	--	--	--	**10**	**16,000**	0	70	5	NA
INDENO(1,2,3-CD)PYRENE	70	2	3	**1**	**0.9J**	**1J**	**10**	**16,000**	2	68	0.09	NA
ISOPHORONE	70	2	3	1	1J	1J	10	**16,000**	0	2	71	NA
N-NITROSO-DI-N-PROPYLAMINE	70	0	0	--	--	--	**10**	**16,000**	0	70	0.01	NA
N-NITROSODIPHENYLAMINE	70	0	0	--	--	--	10	**16,000**	0	26	14	NA
NAPHTHALENE	70	8	11	3,700	0.9J	**29,000**	**10**	**50**	6	62	6	NA
NITROBENZENE	70	0	0	--	--	--	**10**	**16,000**	0	70	3	NA
PENTACHLOROPHENOL	70	2	3	**2**	**1J**	**2J**	**25**	**40,000**	2	68	0.6	1
PHENANTHRENE	70	3	4	400	0.9J	1,200J	10	250	--	--	NA	NA
PHENOL	70	5	7	34	7J	59	10	16,000	0	0	22,000	NA
PYRENE	70	5	7	2	0.5J	4J	10	**16,000**	0	2	180	NA
Polynuclear Aromatic Hydrocarbons (µg/L)												
ACENAPHTHENE	32	0	0	--	--	--	5	25	0	0	370	NA
ACENAPHTHYLENE	32	0	0	--	--	--	2	10	--	--	NA	NA
ANTHRACENE	32	5	16	0.2	0.1J	0.4	0.2	1	0	0	1,800	NA
BENZO(A)ANTHRACENE	32	9	28	**0.6**	**0.1J**	**2**	**0.2**	**1**	9	23	0.09	0.1
BENZO(A)PYRENE	32	12	38	**0.5**	**0.1J**	**3**	**0.2**	**1**	12	20	0.009	0.2
BENZO(B)FLUORANTHENE	32	7	22	**0.5**	**0.2**	**2**	**0.2**	**1**	7	25	0.09	NA
BENZO(G,H,I)PERYLENE	32	10	31	0.6	0.2	2	0.2	1	--	--	NA	NA
BENZO(K)FLUORANTHENE	32	3	9	**0.3**	**0.1J**	**0.6**	**0.2**	**1**	3	29	0.06 (CAL-modified)	NA
CHRYSENE	32	7	22	0.5	0.2J	**1**	0.2	**1**	2	2	0.6 (CAL-modified)	NA
DIBENZO(A,H)ANTHRACENE	32	9	28	**0.9**	**0.3J**	**2**	**0.5**	**3**	9	23	0.009	NA
FLUORANTHENE	32	12	38	0.8	0.2J	3	0.2	1	0	0	1,500	NA
FLUORENE	32	0	0	--	--	--	1	5	0	0	240	NA

TABLE 5-15: SITE 9 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

All Groundwater Investigations
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Polynuclear Aromatic Hydrocarbons (ug/L)												
INDENO(1,2,3-CD)PYRENE	32	8	25	**0.5**	**0.1J**	**2**	**0.2**	**1**	8	24	0.09	NA
NAPHTHALENE	32	1	3	**64**	**64**	**64**	5	**25**	1	3	6	NA
PHENANTHRENE	32	5	16	0.9	0.5J	2	1	5	--	--	NA	NA
PYRENE	32	14	44	1	0.2J	5	0.2	1	0	0	180	NA
Metals (µg/L)												
Unfiltered												
ALUMINUM	19	16	84	809	115	4,440	7.4	57.9	0	0	36,000	NA
ANTIMONY	19	0	0	--	--	--	1.6	**200**	0	14	15.0	6.0
ARSENIC	19	13	68	**12.3**	**3.6**	**36.2**	**2.1**	**200**	13	6	0.045	10.0
BARIUM	19	19	100	79.7	12.5	234	0.0	0.0	0	0	2,600	1,000
BERYLLIUM	19	11	58	0.33	0.14	1.7	0.20	2.0	0	0	73.0	4.0
CADMIUM	19	2	11	8.1	2.4	13.7	0.30	***60.0***	0	1	18.0	5.0
CALCIUM	19	19	100	140,000	3,440	1,590,000	0.0	0.0	--	--	NA	NA
CHROMIUM	19	14	74	5.0	1.7	19.4	0.70	50.0	--	--	NA	50.0
COBALT	19	15	79	3.5	0.60	12.4	2.5	5.2	0	0	730	NA
COPPER	19	13	68	2.7	1.2	6.3	2.8	100	0	0	1,500	1,300
IRON	19	15	79	1,690	128	6,690	12.5	150	0	0	11,000	NA
LEAD	19	9	47	2.4	1.9	3.0	1.3	100	--	--	NA	15.0
MAGNESIUM	19	19	100	155,000	2,730	1,810,000	0.0	0.0	--	--	NA	NA
MANGANESE	19	19	100	1,500	9.0J	**18,600**	0.0	0.0	6	0	880	NA
MERCURY	19	0	0	--	--	--	0.10	0.20	0	0	11.0	2.0
MOLYBDENUM	19	13	68	5.2	1.6	12.4	1.0	50.0	0	0	180	NA
NICKEL	19	14	74	30.0	6.5	106	3.9	15.2	0	0	730	100
POTASSIUM	19	19	100	19,500	4,820J	41,700	0.0	0.0	--	--	NA	NA
SELENIUM	19	0	0	--	--	--	2.1	***200***	0	1	180	50.0
SILVER	19	2	11	5.4	0.83	10.0	0.70	30.0	0	0	180	NA
SODIUM	19	19	100	851,000	18,100	5,170,000	0.0	0.0	--	--	NA	NA
THALLIUM	19	0	0	--	--	--	1.1	**300**	0	16	2.4	2.0
VANADIUM	19	15	79	5.6	1.9	16.9	0.60	100	0	0	260	NA
ZINC	19	16	84	41.3	4.1	155	4.7	200	0	0	11,000	NA
Filtered												
ALUMINUM	52	11	21	23,300	88.2J	**98,000**	4.3	141	3	0	36,000	NA

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All Groundwater Investigations

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Metals (µg/L)												
Filtered												
ANTIMONY	52	6	12	9.4	0.12J	**37.5J**	0.12	**60.0**	1	7	15.0	6.0
ARSENIC	52	24	46	**19.6**	**3.0J**	**70.0**	**0.80**	**100**	24	28	0.045	10.0
BARIUM	52	49	94	174	19.2J	785J	28.0	37.4	0	0	2,600	1,000
BERYLLIUM	52	6	12	3.0	1.1J	4.3J	0.10	5.0	0	0	73.0	4.0
CADMIUM	52	14	27	6.6	0.055J	**24.8J**	0.15	5.0	1	0	18.0	5.0
CALCIUM	52	50	96	260,000	3,540J	1,690,000	3,430	6,340	--	--	NA	NA
CHROMIUM	52	17	33	63.9	0.51J	350	0.20	32.0	--	--	NA	50.0
COBALT	52	19	37	15.5	0.11J	63.0	0.40	50.0	0	0	730	NA
COPPER	52	16	31	27.5	0.59J	140	0.65	46.5	0	0	1,500	1,300
IRON	52	26	50	15,500	86.8J	**136,000**	3.2	**22,500**	7	1	11,000	NA
LEAD	52	7	13	31.9	0.043J	90.0	0.37	65.0	--	--	NA	15.0
MAGNESIUM	52	51	98	271,000	3,520J	1,900,000	8,570	8,570	--	--	NA	NA
MANGANESE	52	49	94	2,640	4.8J	**17,800**	2.3	559	21	0	880	NA
MERCURY	49	0	0	--	--	--	0.10	0.20	0	0	11.0	2.0
MOLYBDENUM	52	7	13	14.6	0.49J	48.2J	0.25	63.5	0	0	180	NA
NICKEL	52	21	40	91.0	0.76J	470	5.2	139	0	0	730	100
POTASSIUM	52	51	98	25,100	4,440	88,200	16,100	16,100	--	--	NA	NA
SELENIUM	51	3	6	4.4	0.85J	9.7J	0.85	54.0	0	0	180	50.0
SILVER	51	4	8	3.4	0.038J	13.0	0.15	10.0	0	0	180	NA
SODIUM	52	52	100	1,110,000	15,000	6,500,000	0.0	0.0	--	--	NA	NA
THALLIUM	52	1	2	**31.3**	**31.3**	**31.3**	0.019	**76.0**	1	35	2.4	2.0
TITANIUM	3	3	100	2,570	1,400	3,900	0.0	0.0	--	--	NA	NA
VANADIUM	52	15	29	62.4	2.6J	**280**	0.30	35.0	1	0	260	NA
ZINC	52	21	40	115	1.4J	658	3.3	100	0	0	11,000	NA

NOTES:

Bold denotes values elevated above the PRG

-- Not detected

J Estimated value

MC Maximum Contaminant Level

NA No criteria available

PRG *Preliminary Remediation Goal*, U.S. Environmental Protection Agency, Region 9 or CAL-modified

µg/L Micrograms per liter

TABLE 5-16: SITE 9 STATISTICAL SUMMARY OF SOIL GAS ANALYSES

Supplemental RI Data Gap Sampling, 2001
Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentrations	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Detection Limit	Maximum Detection Limit	Number of Detection Limits Over PRG	Ambient Air PRG
Volatile Organic Compounds ($\mu g/m^3$)										
1,1,1-TRICHLOROETHANE	2	0	0	--	--	--	69.86	73.24	0	2,300
1,1,2,2-TETRACHLOROETHANE	2	0	0	--	--	--	**87.89**	**92.15**	2	0.033
1,1,2-TRICHLOROETHANE	2	1	50	**593.13**	**593.13**	**593.13**	**69.86**	**69.86**	1	0.12
1,1-DICHLOROETHANE	2	1	50	**78.44**	**78.44**	**78.44**	**51.82**	**51.82**	1	1.2 (CAL-modified)
1,1-DICHLOROETHENE	2	0	0	--	--	--	50.76	53.22	0	210
1,2-DICHLOROBENZENE	2	0	0	--	--	--	76.98	80.7	0	210
1,2-DICHLOROETHANE	2	0	0	--	--	--	**51.82**	**54.33**	2	0.074
1,3-DICHLOROBENZENE	2	0	0	--	--	--	**76.98**	**80.7**	2	3.3
1,4-DICHLOROBENZENE	2	0	0	--	--	--	**76.98**	**80.7**	2	0.31
BENZENE	2	2	100	**662.19**	**122.88**	**1,201.5**	--	--	--	0.23
CHLOROETHANE	2	0	0	--	--	--	**33.79**	**35.42**	2	2.3
CHLOROMETHANE	2	0	0	--	--	--	**26.44**	**27.72**	2	1.1
CIS-1,2-DICHLOROETHENE	2	0	0	--	--	--	**50.76**	**53.22**	2	37
ETHYLBENZENE	2	2	100	**3,100.31**	**308.88**	**5,891.73**	--	--	--	1.7
M-XYLENE	2	2	100	**13,936.33**	**1,077.17**	**26,795.5**	--	--	--	110
NAPHTHALENE	2	0	0	--	--	--	671.16	703.64	--	NA
O-XYLENE	2	2	100	**2,722.23**	**181.97**	**5,262.49**	--	--	--	110
TETRACHLOROETHENE	2	0	0	--	--	--	**87.36**	**91.59**	2	0.67
TOLUENE	2	2	100	**4,636.66**	**487.39**	**8,785.93**	--	--	--	400
TRANS-1,2-DICHLOROETHENE	2	0	0	--	--	--	50.76	53.22	0	73
TRICHLOROETHENE	2	0	0	--	--	--	**68.8**	**72.13**	2	0.017
VINYL CHLORIDE	2	0	0	--	--	--	**32.73**	**34.31**	2	0.11

NOTES:

Bold denotes value elevated above the PRG

-- Not detected

PRG Preliminary Remediation Goal, U.S. Environmental Protection Agency, Region 9 or CAL-modified

$\mu g/m^3$ Micrograms per cubic meter

TABLE 5-17: SITE 9 1,1-DICHLOROETHANE IN GROUNDWATER ANALYTICAL DATA

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Point Name	Sample Identification	Sample Date	Sample Depth (ft bgs)	1,1-Dichloroethane (µg/L)	Qualifier
154-006-024	154-0038	10/30/1995	7.5 - 8.5	1	UJ
154-SN-007	154S-015	10/30/1995	9 - 9	1	UJ
154-SN-008	154S-018	10/30/1995	8 - 9	1	UJ
154-SN-009	154S-021	10/30/1995	9 - 9	1	UJ
3-J	385-S09-036	07/20/2001	0	0.8	
9-1	9-1-10	06/27/2002	8 - 12	1.8	
9-1	9-1-20	06/27/2002	18 - 22	1	U
9-1	9-1-30	06/27/2002	28 - 32	1	U
9-1	9-1-40	06/27/2002	38 - 42	1	U
9-2	9-2-10	06/27/2002	8 - 10	1	U
9-2	9-2-20	06/27/2002	18 - 22	1.2	
9-2	9-2-30	06/27/2002	28 - 32	1	U
9-2	9-2-40	06/27/2002	38 - 42	1	U
9-3	9-3-20	06/28/2002	18 - 22	0.63	J
9-3	9-3-30	06/28/2002	28 - 32	88	
9-3	9-3-40	06/28/2002	38 - 42	1.7	J
9-3	9-3-55	07/02/2002	53 - 57	1	U
9-3	9-3-63	07/02/2002	61 - 65	1	U
9S-CH1	9S-CH1-10	06/27/2002	8 - 12	0.57	J
9S-CH1	9S-CH1-20	06/27/2002	18 - 22	1	U
9S-CH1	9S-CH1-30	06/27/2002	28 - 32	1	U
9S-CH2	9S-CH2-10	06/28/2002	8 - 12	1.8	
9S-CH2	9S-CH2-20	06/28/2002	18 - 22	1	U
9S-CH2	9S-CH2-30	06/28/2002	28 - 32	1	U
9S-CH2	9S-CH2-40	06/28/2002	38 - 42	2	U
9S-CH3	9S-CH3-10	06/27/2002	8 - 22	1	U
9S-CH3	9S-CH3-10D	06/27/2002	8 - 12	1	U
9S-CH3	9S-CH3-20	06/27/2002	8 - 12	1	U
9S-CH3	9S-CH3-30	06/28/2002	28 - 32	1	U
9S-CH3	9S-CH3-40	06/28/2002	38 - 42	1	U
9S-CH4	9S-CH4-10	06/28/2002	8 - 12	1	U
9S-CH4	9S-CH4-20	06/28/2002	18 - 22	1	U
9S-CH4	9S-CH4-30	06/28/2002	28 - 32	1	U
9S-CH4	9S-CH4-40	06/28/2002	38 - 42	1	U
D09-01	280-S09-100	12/20/1994	46.6 - 61	1	U
D09-01	280-S09-107	02/21/1995	46.6 - 61	1	U
D09-01	280-S09-108	06/22/1995	46.6 - 61	1	U
D09-01	280-S09-109	09/14/1995	46.6 - 61	1	U
D09-01	108-S09-003	11/11/1997	46.6 - 61	1	UJ
D09-01	108-S09-004	02/04/1998	46.6 - 61	1	U
D09-01	108-S09-007	05/13/1998	46.6 - 61	1	U
D09-01	108-S09-010	08/06/1998	46.6 - 61	1	UJ
D09-01	385-S09-031	06/26/2001	46.6 - 61	0.5	U
D09-01	D09-01-A1136	06/28/2002	46.6 - 61	0.5	U
D09-01	D09-01-A1338	09/05/2002	46.6 - 61	0.5	U
D09-01	D09-01-A1637	12/16/2002	46.6 - 61	0.5	U
D09-01	D09-01-A1992	04/10/2003	46.6 - 61	0.5	U
DHP-S09-01	280-S09-053	07/28/1994	25.8	1	U
DHP-S09-02	280-S09-054	07/28/1994	30	29	
DHP-S09-03	280-S09-055	07/29/1994	24	1	U
DHP-S09-05	280-S09-058	08/23/1994	23 - 26	2	U

TABLE 5-17: SITE 9 1,1-DICHLOROETHANE IN GROUNDWATER ANALYTICAL DATA

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Point Name	Sample Identification	Sample Date	Sample Depth (ft bgs)	1,1-Dichloroethane (µg/L)	Qualifier
DHP-S09-06	280-S09-059	09/08/1994	8 - 11	10	U
DHP-S09-07	280-S09-062	09/07/1994	21 - 24	1	U
DHP-S09-08	280-S09-064	09/06/1994	24	2	
DHP-S09-09	280-S09-066	09/12/1994	22 - 25	1	U
DHP-S09-10	280-S09-068	09/09/1994	27 - 30	2	
DHP-S09-11	280-S09-094	08/25/1994	20 - 24	2	U
DHP-S09-12	280-S09-096	08/25/1994	22.5 - 26	2	U
M09-06	280-S09-049	11/30/1994	3.5 - 14	1	U
M09-06	280-S09-050	02/21/1995	3.5 - 14	1	U
M09-06	280-S09-051	06/22/1995	3.5 - 14	1	U
M09-06	280-S09-052	08/08/1995	3.5 - 14	1	U
M09-06	108-S09-001	11/05/1997	3.5 - 14	1	U
M09-06	108-S09-005	02/05/1998	3.5 - 14	1	U
M09-06	108-S09-009	05/12/1998	3.5 - 14	1	U
M09-06	108-S09-012	08/07/1998	3.5 - 14	1	UJ
M09-06	385-S09-030	06/25/2001	3.5 - 14	0.5	U
MW410-1	MW410-1 [08/21/90]	08/21/1990	4.5 - 15	5	U
MW410-1	280-S09-026	10/18/1994	4.5 - 15	1	U
MW410-1	280-S09-028	06/23/1995	4.5 - 15	1	U
MW410-1	280-S09-030	08/08/1995	4.5 - 15	1	U
MW410-1	385-S09-025	06/25/2001	4.5 - 15	0.5	U
MW410-1	MW410-1-A1149	06/18/2002	4.5 - 15	0.5	U
MW410-1	MW410-1-A1343	09/04/2002	4.5 - 15	0.5	U
MW410-1	MW410-1-A1650	12/16/2002	4.5 - 15	0.5	U
MW410-1	MW410-1-A1996	04/09/2003	4.5 - 15	0.5	U
MW410-2	MW410-2 [08/22/90]	08/22/1990	4.5 - 15	5	U
MW410-2	280-S09-031	10/18/1994	4.5 - 15	1	U
MW410-2	280-S09-032	02/21/1995	4.5 - 15	1	U
MW410-2	280-S09-033	06/22/1995	4.5 - 15	1	
MW410-2	280-S09-034	08/04/1995	4.5 - 15	1	
MW410-2	385-S09-026	06/25/2001	4.5 - 15	2	
MW410-2	MW410-2-A1150	06/18/2002	4.5 - 15	2.5	
MW410-2	MW410-2-A1344	09/05/2002	4.5 - 15	3.8	
MW410-2	MW410-2-A1651	12/16/2002	4.5 - 15	5.4	
MW410-2	MW410-2-A1997	04/09/2003	4.5 - 15	2.5	
MW410-3	MW410-3 [08/21/90]	08/21/1990	4.5 - 15	5	U
MW410-3	280-S09-036	10/18/1994	4.5 - 15	1	U
MW410-3	280-S09-037	02/21/1995	4.5 - 15	1	U
MW410-3	280-S09-038	06/22/1995	4.5 - 15	1	U
MW410-3	280-S09-039	08/07/1995	4.5 - 15	1	U
MW410-3	385-S09-027	06/26/2001	4.5 - 15	0.5	U
MW410-3	385-S09-028	06/26/2001	4.5 - 15	0.5	U
P-9-IWS-01	SITE9-020	09/10/2002	--	1	U
P-9-MWI-01	SITE9-024	09/11/2002	--	1	U
P-9-MWI-03	SITE9-018	09/10/2002	--	99	
P-9-MWI-04	SITE9-010	09/09/2002	--	6.5	
P-9-MWI-05	SITE9-014	09/10/2002	--	350	
P-9-MWI-07	SITE9-017	09/10/2002	--	1.6	
P-9-MWI-08	SITE9-013	09/10/2002	--	180	
P-9-MWI-09	SITE9-015	09/10/2002	--	1200	
P-9-MWI-10	SITE9-016	09/10/2002	--	31	

TABLE 5-17: SITE 9 1,1-DICHLOROETHANE IN GROUNDWATER ANALYTICAL DATA

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Point Name	Sample Identification	Sample Date	Sample Depth (ft bgs)	1,1-Dichloroethane (µg/L)	Qualifier
P-9-MWS-01	SITE9-022	09/11/2002	--	1	U
P-9-MWS-02	SITE9-025	09/11/2002	--	1	U
P-9-MWS-03	SITE9-019	09/10/2002	--	1	U
P-9-MWS-04	SITE9-023	09/11/2002	--	0.59	J
S09-DGS-DP01	385-S09-001	07/18/2001	8 - 10	1.2	
S09-DGS-DP01	385-S09-002	07/18/2001	15 - 17	1	U
S09-DGS-DP01	385-S09-003	07/18/2001	30 - 32	1	U
S09-DGS-DP02	385-S09-004	07/28/2001	8 - 10	2.1	
S09-DGS-DP02	385-S09-005	07/28/2001	15	0.5	J
S09-DGS-DP02	385-S09-006	07/28/2001	35	1200	
S09-DGS-DP02	385-S09-007	07/28/2001	45	520	
S09-DGS-DP02	385-S09-008	07/28/2001	60	100	
S09-DGS-DP02	385-S09-009	07/28/2001	78	1	U
S09-DGS-DP03	385-S09-010	07/26/2001	10	1	U
S09-DGS-DP03	385-S09-011	07/26/2001	20	1	U
S09-DGS-DP03	385-S09-012	07/26/2001	35	1	U
S09-DGS-DP03	385-S09-013	07/26/2001	43	1	U
S09-DGS-DP03	385-S09-014	07/26/2001	60	1	U
S09-DGS-DP03	385-S09-015	07/26/2001	74	1	U
S09-DGS-DP04	385-S09-022	07/18/2001	8 - 10	1.5	
S09-DGS-DP04	385-S09-023	07/18/2001	15 - 17	1	
S09-DGS-DP04	385-S09-024	07/18/2001	25 - 27	1	U
S09-DGS-DP04	385-S09-019	07/25/2001	50	1	U
S09-DGS-DP04	385-S09-019A	07/25/2001	50	0.5	U
S09-DGS-DP04	385-S09-020	07/25/2001	65	1	U
S09-DGS-DP04	385-S09-021	07/25/2001	80	1	U
S09-DGS-DP05	385-S09-016	08/03/2001	7 - 9	6.2	
S09-DGS-DP05	385-S09-017	08/03/2001	15 - 17	1	U
S09-DGS-DP05	385-S09-017A	08/03/2001	15 - 17	0.5	U
S09-DGS-DP05	385-S09-018	08/03/2001	25 - 27	1	U
S09-DGS-DP07	385-S09-043	08/09/2001	7	1	U
S09-DGS-DP07	385-S09-044	08/09/2001	15	1	U
S09-DGS-DP08	385-S09-045	08/15/2001	7	1	U
S09-DGS-DP08	385-S09-046	08/15/2001	15	1	U
S09-DGS-DP08	385-S09-047	08/15/2001	30	2.6	
S09-DGS-DP08	385-S09-048	08/15/2001	45	1	U
S09-DGS-DP09	385-S09-049	08/17/2001	7	1	U
S09-DGS-DP09	385-S09-050	08/17/2001	15	1	U
S09-DGS-DP09	385-S09-050A	08/17/2001	15	0.5	U
S09-DGS-DP09	385-S09-051	08/17/2001	30	25	
S09-DGS-DP09	385-S09-052	08/17/2001	45	87	
S09-DGS-DP09	385-S09-057	08/22/2001	59	1	U
S09-DGS-DP10	385-S09-054	08/22/2001	30	15	
S09-DGS-DP10	385-S09-055	08/22/2001	45	1	U
S09-DGS-DP10	385-S09-055A	08/22/2001	45	0.5	U
S09-DGS-DP10	385-S09-056	08/22/2001	58	1	U
S09-DGS-DP11	385-S09-058	08/30/2001	30 - 32	16	
S09-DGS-DP12	385-S09-059	09/12/2001	30 - 32	16	
S09-DGS-VE01	385-S09-034	08/07/2001	8.5 - 10	1	U
SHP-S09-05	280-S09-057	08/24/1994	7 - 10	2	U
SHP-S09-07	280-S09-061	09/07/1994	8 - 11	5	

TABLE 5-17: SITE 9 1,1-DICHLOROETHANE IN GROUNDWATER ANALYTICAL DATA

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Point Name	Sample Identification	Sample Date	Sample Depth (ft bgs)	1,1-Dichloroethane (µg/L)	Qualifier
SHP-S09-08	280-S09-063	09/09/1994	11	0.7	J
SHP-S09-09	280-S09-065	09/08/1994	8 - 11	110	
SHP-S09-10	280-S09-067	09/06/1994	11	100	U
SHP-S09-11	280-S09-093	08/25/1994	15	2	U
SHP-S09-12	280-S09-095	08/24/1994	8	1	J

Notes:

–	Chemical not detected at site
ft bgs	Feet below ground surface
J	Indicates an estimated concentration value
U	Indicates compound was analyzed for but not detected above the concentration listed
µg/L	Microgram per liter
UJ	Indicates compound was analyzed for but not detected above the estimated concentration listed

TABLE 5-18: SITE 9 1,2-DICHLOROETHENE (TOTAL) IN GROUNDWATER ANALYTICAL DATA

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Point Name	Sample Identificaton	Sample Date	Sample Depth (ft bgs)	1,2-Dichloroethene (total) (µg/L)	Qualifier
154-006-024	154-0038	10/30/1995	7.5 - 8.5	1	UJ
154-SN-007	154S-015	10/30/1995	9 - 9	1	UJ
154-SN-008	154S-018	10/30/1995	8 - 9	1	UJ
154-SN-009	154S-021	10/30/1995	9 - 9	1	UJ
3-J	385-S09-036	07/20/2001	0	3	
D09-01	280-S09-100	12/20/1994	46.6 - 61	1	U
D09-01	280-S09-107	02/21/1995	46.6 - 61	1	U
D09-01	280-S09-108	06/22/1995	46.6 - 61	1	U
D09-01	280-S09-109	09/14/1995	46.6 - 61	1	U
D09-01	385-S09-031	06/26/2001	46.6 - 61	2	U
DHP-S09-01	280-S09-053	07/28/1994	25.8	1	U
DHP-S09-02	280-S09-054	07/28/1994	30	1	
DHP-S09-03	280-S09-055	07/29/1994	24	1	U
DHP-S09-05	280-S09-058	08/23/1994	23 - 26	2	U
DHP-S09-06	280-S09-059	09/08/1994	8 - 11	400	
DHP-S09-07	280-S09-062	09/07/1994	21 - 24	1	U
DHP-S09-08	280-S09-064	09/06/1994	24	1	U
DHP-S09-09	280-S09-066	09/12/1994	22 - 25	1	U
DHP-S09-10	280-S09-068	09/09/1994	27 - 30	1	U
DHP-S09-11	280-S09-094	08/25/1994	20 - 24	2	U
DHP-S09-12	280-S09-096	08/25/1994	22.5 - 26	2	U
M09-06	280-S09-049	11/30/1994	3.5 - 14	1	U
M09-06	280-S09-050	02/21/1995	3.5 - 14	1	U
M09-06	280-S09-051	06/22/1995	3.5 - 14	1	U
M09-06	280-S09-052	08/08/1995	3.5 - 14	1	U
M09-06	385-S09-030	06/25/2001	3.5 - 14	2	U
MW410-1	MW410-1 [08/21/90]	08/21/1990	4.5 - 15	5	U
MW410-1	280-S09-026	10/18/1994	4.5 - 16	1	U
MW410-1	280-S09-028	06/23/1995	4.5 - 17	1	U
MW410-1	280-S09-030	08/08/1995	4.5 - 18	1	U
MW410-1	385-S09-025	06/25/2001	4.5 - 19	2	U
MW410-2	MW410-2 [08/22/90]	08/22/1990	4.5 - 20	5	U
MW410-2	280-S09-031	10/18/1994	4.5 - 21	4	
MW410-2	280-S09-032	02/21/1995	4.5 - 22	5	
MW410-2	280-S09-033	06/22/1995	4.5 - 23	11	
MW410-2	280-S09-034	08/04/1995	4.5 - 24	20	
MW410-2	385-S09-026	06/25/2001	4.5 - 25	21	
MW410-3	MW410-3 [08/21/90]	08/21/1990	4.5 - 26	5	U
MW410-3	280-S09-036	10/18/1994	4.5 - 27	1	U
MW410-3	280-S09-037	02/21/1995	4.5 - 28	1	U
MW410-3	280-S09-038	06/22/1995	4.5 - 29	1	U
MW410-3	280-S09-039	08/07/1995	4.5 - 30	1	U
MW410-3	385-S09-027	06/26/2001	4.5 - 31	2	U
MW410-3	385-S09-028	06/26/2001	4.5 - 32	2	U
P-9-MWI-01	SITE9-024	09/11/2002	--	1	U
P-9-MWI-03	SITE9-018	09/10/2002	--	1	U
P-9-MWI-04	SITE9-010	09/09/2002	--	1	U
P-9-MWI-05	SITE9-014	09/10/2002	--	0.93	J
P-9-MWI-06	SITE9-008	09/09/2002	--	0.9	J
P-9-MWI-07	SITE9-017	09/10/2002	--	1	U
P-9-MWI-08	SITE9-013	09/10/2002	--	1	U
P-9-MWI-09	SITE9-015	09/10/2002	--	1.7	
P-9-MWI-10	SITE9-016	09/10/2002	--	1	U
S09-DGS-DP04	385-S09-019A	07/25/2001	50	2	U
S09-DGS-DP05	385-S09-017A	08/03/2001	15 - 17	2	U

TABLE 5-18: SITE 9 1,2-DICHLOROETHENE (TOTAL) IN GROUNDWATER ANALYTICAL DATA

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Point Name	Sample Identificaton	Sample Date	Sample Depth (ft bgs)	1,2-Dichloroethene (total) (µg/L)	Qualifier
S09-DGS-DP09	385-S09-050A	08/17/2001	15	2	U
S09-DGS-DP10	385-S09-055A	08/22/2001	45	2	U
SHP-S09-05	280-S09-057	08/24/1994	7 - 10	2	U
SHP-S09-07	280-S09-061	09/07/1994	8 - 11	3	
SHP-S09-08	280-S09-063	09/09/1994	11	1	
SHP-S09-09	280-S09-065	09/08/1994	8 - 11	59	
SHP-S09-10	280-S09-067	09/06/1994	11	2400	
SHP-S09-11	280-S09-093	08/25/1994	15	2	U
SHP-S09-12	280-S09-095	08/24/1994	8	9	U

Notes:

--	Chemical not detected at site
ft bgs	Feet below ground surface
J	Indicates an estimated concentration value
U	Indicates compound was analyzed for but not detected above the concentration listed
µg/L	Micrograms per liter
UJ	Indicates compound was analyzed for but not detected above the estimated concentration listed

TABLE 5-19: SITE 9 VINYL CHLORIDE IN GROUNDWATER ANALYTICAL DATA

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Point Name	Sample Identification	Sample Date	Sample Depth (ft bgs)	Vinyl Chloride (µg/L)	Qualifier
154-006-024	154-0038	10/30/1995	7.5 - 9	0.5	UJ
154-SN-007	154S-015	10/30/1995	9 - 9	0.5	UJ
154-SN-008	154S-018	10/30/1995	8 - 9	0.5	UJ
154-SN-009	154S-021	10/30/1995	9 - 9	0.5	UJ
3-J	75	07/20/2001	0	0.5	J
9-1	9-1-10	06/27/2002	8 - 12	280	
9-1	9-1-20	06/27/2002	18 - 22	1.4	
9-1	9-1-30	06/27/2002	28 - 32	0.64	J
9-1	9-1-40	06/27/2002	38 - 42	1	U
9-2	9-2-10	06/27/2002	8 - 10	1	U
9-2	9-2-20	06/27/2002	18 - 22	1	U
9-2	9-2-30	06/27/2002	28 - 32	1	U
9-2	9-2-40	06/27/2002	38 - 42	1	U
9-3	9-3-20	06/28/2002	18 - 22	1	U
9-3	9-3-30	06/28/2002	28 - 32	1.5	
9-3	9-3-40	06/28/2002	38 - 42	2	U
9-3	9-3-55	07/02/2002	53 - 57	1	U
9-3	9-3-63	07/02/2002	61 - 65	1	U
9S-CH1	9S-CH1-10	06/27/2002	8 - 12	3.2	
9S-CH1	9S-CH1-20	06/27/2002	18 - 22	1	U
9S-CH1	9S-CH1-30	06/27/2002	28 - 32	1	U
9S-CH2	9S-CH2-10	06/28/2002	8 - 12	9	
9S-CH2	9S-CH2-20	06/28/2002	18 - 22	1	U
9S-CH2	9S-CH2-30	06/28/2002	28 - 32	1	U
9S-CH2	9S-CH2-40	06/28/2002	38 - 42	2	U
9S-CH3	9S-CH3-10	06/27/2002	8 - 12	42	
9S-CH3	9S-CH3-10D	06/27/2002	8 - 22	44	
9S-CH3	9S-CH3-20	06/27/2002	8 - 12	0.68	J
9S-CH3	9S-CH3-30	06/28/2002	28 - 32	0.56	J
9S-CH3	9S-CH3-40	06/28/2002	38 - 42	0.86	J
9S-CH4	9S-CH4-10	06/28/2002	8 - 12	2.3	
9S-CH4	9S-CH4-20	06/28/2002	18 - 22	1	U
9S-CH4	9S-CH4-30	06/28/2002	28 - 32	1	U
9S-CH4	9S-CH4-40	06/28/2002	38 - 42	1	U
D09-01	280-S09-100	12/20/1994	46.6 - 61	0.5	UJ
D09-01	280-S09-107	02/21/1995	46.6 - 61	0.5	U
D09-01	280-S09-108	06/22/1995	46.6 - 61	0.5	U
D09-01	280-S09-109	09/14/1995	46.6 - 61	0.5	U
D09-01	108-S09-003	11/11/1997	46.6 - 61	0.5	UJ
D09-01	108-S09-004	02/04/1998	46.6 - 61	0.5	U
D09-01	108-S09-007	05/13/1998	46.6 - 61	0.5	U
D09-01	108-S09-010	08/06/1998	46.6 - 61	0.5	UJ
D09-01	385-S09-031	06/26/2001	46.6 - 61	0.5	U
D09-01	D09-01-A1136	06/28/2002	46.6 - 61	0.5	U
D09-01	D09-01-A1338	09/05/2002	46.6 - 61	0.5	U
D09-01	D09-01-A1637	12/16/2002	46.6 - 61	0.5	U
D09-01	D09-01-A1992	04/10/2003	46.6 - 61	0.5	U
DHP-S09-01	280-S09-053	07/28/1994	25.8	0.5	U
DHP-S09-02	280-S09-054	07/28/1994	30	0.5	U
DHP-S09-03	280-S09-055	07/29/1994	24	0.5	U
DHP-S09-05	280-S09-058	08/23/1994	23 - 26	0.5	U

TABLE 5-19: SITE 9 VINYL CHLORIDE IN GROUNDWATER ANALYTICAL DATA

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Point Name	Sample Identification	Sample Date	Sample Depth (ft bgs)	Vinyl Chloride (µg/L)	Qualifier
DHP-S09-06	280-S09-059	09/08/1994	8 - 11	220	
DHP-S09-07	280-S09-062	09/07/1994	21 - 24	0.5	U
DHP-S09-08	280-S09-064	09/06/1994	24	0.5	U
DHP-S09-09	280-S09-066	09/12/1994	22 - 25	0.5	U
DHP-S09-10	280-S09-068	09/09/1994	27 - 30	0.5	U
DHP-S09-11	280-S09-094	08/25/1994	20 - 24	2	U
DHP-S09-12	280-S09-096	08/25/1994	22.5 - 26	0.5	U
M09-06	280-S09-049	11/30/1994	3.5 - 14	0.5	U
M09-06	280-S09-050	02/21/1995	3.5 - 14	0.5	U
M09-06	280-S09-051	06/22/1995	3.5 - 14	0.5	U
M09-06	280-S09-052	08/08/1995	3.5 - 14	0.5	U
M09-06	108-S09-001	11/05/1997	3.5 - 14	0.5	U
M09-06	108-S09-005	02/05/1998	3.5 - 14	0.5	UJ
M09-06	108-S09-009	05/12/1998	3.5 - 14	0.5	U
M09-06	108-S09-012	08/07/1998	3.5 - 14	0.5	UJ
M09-06	385-S09-030	06/25/2001	3.5 - 14	0.5	U
MW410-1	MW410-1[08/21/90]	08/21/1990	4.5 - 15	10	U
MW410-1	280-S09-026	10/18/1994	4.5 - 15	0.5	U
MW410-1	280-S09-028	06/23/1995	4.5 - 15	0.5	U
MW410-1	280-S09-030	08/08/1995	4.5 - 15	0.5	U
MW410-1	385-S09-025	06/25/2001	4.5 - 15	0.5	U
MW410-1	MW410-1-A1149	06/18/2002	4.5 - 15	0.5	U
MW410-1	MW410-1-A1343	09/04/2002	4.5 - 15	0.5	U
MW410-1	MW410-1-A1650	12/16/2002	4.5 - 15	0.5	U
MW410-1	MW410-1-A1996	04/09/2003	4.5 - 15	0.5	U
MW410-2	MW410-2 [08/22/90]	08/22/1990	4.5 - 15	10	U
MW410-2	280-S09-031	10/18/1994	4.5 - 15	0.5	U
MW410-2	280-S09-032	02/21/1995	4.5 - 15	0.5	U
MW410-2	280-S09-033	06/22/1995	4.5 - 15	0.5	U
MW410-2	280-S09-034	08/04/1995	4.5 - 15	0.5	U
MW410-2	385-S09-026	06/25/2001	4.5 - 15	10	
MW410-2	MW410-2-A1150	06/18/2002	4.5 - 15	9.9	
MW410-2	MW410-2-A1344	09/05/2002	4.5 - 15	9.6	
MW410-2	MW410-2-A1651	12/16/2002	4.5 - 15	12	
MW410-2	MW410-2-A1997	04/09/2003	4.5 - 15	20	
MW410-3	MW410-3 [08/21/90]	08/21/1990	4.5 - 15	10	U
MW410-3	280-S09-036	10/18/1994	4.5 - 15	0.5	U
MW410-3	280-S09-037	02/21/1995	4.5 - 15	0.5	U
MW410-3	280-S09-038	06/22/1995	4.5 - 15	0.5	U
MW410-3	280-S09-039	08/07/1995	4.5 - 15	0.5	U
MW410-3	385-S09-027	06/26/2001	4.5 - 15	0.5	U
MW410-3	385-S09-028	06/26/2001	4.5 - 15	0.5	U
P-9-IWS-01	SITE9-020	09/10/2002	--	3	
P-9-MWI-01	SITE9-024	09/11/2002	--	1	U
P-9-MWI-03	SITE9-018	09/10/2002	--	2.1	
P-9-MWI-04	SITE9-010	09/09/2002	--	1	U
P-9-MWI-05	SITE9-014	09/10/2002	--	14	
P-9-MWI-06	SITE9-008	09/09/2002	--	6.5	
P-9-MWI-07	SITE9-017	09/10/2002	--	1	U
P-9-MWI-08	SITE9-013	09/10/2002	--	2.3	
P-9-MWI-09	SITE9-015	09/10/2002	--	36	

TABLE 5-19: SITE 9 VINYL CHLORIDE IN GROUNDWATER ANALYTICAL DATA

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Point Name	Sample Identification	Sample Date	Sample Depth (ft bgs)	Vinyl Chloride (µg/L)	Qualifier
P-9-MWI-10	SITE9-016	09/10/2002	--	0.59	J
P-9-MWS-01	SITE9-022	09/11/2002	--	2.5	
P-9-MWS-02	SITE9-025	09/11/2002	--	1	U
P-9-MWS-03	SITE9-019	09/10/2002	--	2.2	
P-9-MWS-04	SITE9-023	09/11/2002	--	99	
S09-DGS-DP01	385-S09-001	07/18/2001	8 - 10	3.5	
S09-DGS-DP01	385-S09-002	07/18/2001	15 - 17	1	U
S09-DGS-DP01	385-S09-003	07/18/2001	30 - 32	1	U
S09-DGS-DP02	385-S09-004	07/28/2001	8 - 10	1	U
S09-DGS-DP02	385-S09-005	07/28/2001	15	1	U
S09-DGS-DP02	385-S09-006	07/28/2001	35	11	
S09-DGS-DP02	385-S09-007	07/28/2001	45	4.6	
S09-DGS-DP02	385-S09-008	07/28/2001	60	1.1	
S09-DGS-DP02	385-S09-009	07/28/2001	78	1	U
S09-DGS-DP03	385-S09-010	07/26/2001	10	1	U
S09-DGS-DP03	385-S09-011	07/26/2001	20	1	U
S09-DGS-DP03	385-S09-012	07/26/2001	35	1	U
S09-DGS-DP03	385-S09-013	07/26/2001	43	1	U
S09-DGS-DP03	385-S09-014	07/26/2001	60	1	U
S09-DGS-DP03	385-S09-015	07/26/2001	74	1	U
S09-DGS-DP04	385-S09-022	07/18/2001	8 - 10	1	
S09-DGS-DP04	385-S09-023	07/18/2001	15 - 17	1	U
S09-DGS-DP04	385-S09-024	07/18/2001	25 - 27	1	U
S09-DGS-DP04	385-S09-019	07/25/2001	50	1	U
S09-DGS-DP04	385-S09-019A	07/25/2001	50	0.5	U
S09-DGS-DP04	385-S09-020	07/25/2001	65	1	U
S09-DGS-DP04	385-S09-021	07/25/2001	80	1	U
S09-DGS-DP05	385-S09-016	08/03/2001	7 - 9	3.7	
S09-DGS-DP05	385-S09-017	08/03/2001	15 - 17	1	U
S09-DGS-DP05	385-S09-017A	08/03/2001	15 - 17	0.5	U
S09-DGS-DP05	385-S09-018	08/03/2001	25 - 27	1	U
S09-DGS-DP07	385-S09-043	08/09/2001	7	1	U
S09-DGS-DP07	385-S09-044	08/09/2001	15	1	U
S09-DGS-DP08	385-S09-045	08/15/2001	7	1	U
S09-DGS-DP08	385-S09-046	08/15/2001	15	1	U
S09-DGS-DP08	385-S09-047	08/15/2001	30	1	U
S09-DGS-DP08	385-S09-048	08/15/2001	45	1	U
S09-DGS-DP09	385-S09-049	08/17/2001	7	1	U
S09-DGS-DP09	385-S09-050	08/17/2001	15	1	U
S09-DGS-DP09	385-S09-050A	08/17/2001	15	0.5	U
S09-DGS-DP09	385-S09-051	08/17/2001	30	0.6	J
S09-DGS-DP09	385-S09-052	08/17/2001	45	1	
S09-DGS-DP09	385-S09-057	08/22/2001	59	1	U
S09-DGS-DP10	385-S09-054	08/22/2001	30	1	U
S09-DGS-DP10	385-S09-055	08/22/2001	45	1	U
S09-DGS-DP10	385-S09-055A	08/22/2001	45	0.5	U
S09-DGS-DP10	385-S09-056	08/22/2001	58	1	U
S09-DGS-DP11	385-S09-058	08/30/2001	30 - 32	1	U
S09-DGS-DP12	385-S09-059	09/12/2001	30 - 32	10	U
S09-DGS-VE01	385-S09-034	08/07/2001	8.5 - 10	1	U
SHP-S09-05	280-S09-057	08/24/1994	7 - 10	0.5	U

TABLE 5-19: SITE 9 VINYL CHLORIDE IN GROUNDWATER ANALYTICAL DATA

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Point Name	Sample Identification	Sample Date	Sample Depth (ft bgs)	Vinyl Chloride (µg/L)	Qualifier
SHP-S09-07	280-S09-061	09/07/1994	8 - 11	18	
SHP-S09-08	280-S09-063	09/09/1994	11	0.5	U
SHP-S09-09	280-S09-065	09/08/1994	8 - 11	5	U
SHP-S09-10	280-S09-067	09/06/1994	11	50	UJ
SHP-S09-11	280-S09-093	08/25/1994	15	2	U
SHP-S09-12	280-S09-095	08/24/1994	8	2	U

Notes:

--	Chemical not detected at site
ft bgs	Feet below ground surface
J	Indicates an estimated concentration value
U	Indicates compound was analyzed for but not detected above the concentration listed
µg/L	Microgram per liter
UJ	Indicates compound was analyzed for but not detected above the estimated concentration listed

TABLE 5-20: SITE 9 NAPHTHALENE IN GROUNDWATER ANALYTICAL DATA

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Point Name	Sample Identification	Sample Date	Sample Depth (ft bgs)	Naphthalene (µg/L)	Qualifier
154-006-024	154-0038	10/30/1995	7.5 - 8.5	10	U
3-J	385-S09-036	07/20/2001	0	5	U
3-J	385-S09-036	07/20/2001	0	10	U
9-1	9-1-10	06/27/2002	8 - 12	14	
9-1	9-1-20	06/27/2002	18 - 22	3.6	
9-1	9-1-30	06/27/2002	28 - 32	1.1	
9-1	9-1-40	06/27/2002	38 - 42	1.2	
9-2	9-2-10	06/27/2002	8 - 10	30	
9-2	9-2-20	06/27/2002	18 - 22	5.7	
9-2	9-2-30	06/27/2002	28 - 32	58	
9-2	9-2-40	06/27/2002	38 - 42	14	
9-3	9-3-20	06/28/2002	18 - 22	1	U
9-3	9-3-30	06/28/2002	28 - 32	1	U
9-3	9-3-40	06/28/2002	38 - 42	2	U
9-3	9-3-55	07/02/2002	53 - 57	1	U
9-3	9-3-63	07/02/2002	61 - 65	1	U
9S-CH1	9S-CH1-10	06/27/2002	8 - 12	2.3	
9S-CH1	9S-CH1-30	06/27/2002	28 - 32	1	U
9S-CH1	9S-CH1-20	06/27/2002	18 - 22	1	U
9S-CH2	9S-CH2-10	06/28/2002	8 - 12	8.9	
9S-CH2	9S-CH2-40	06/28/2002	38 - 42	9	
9S-CH2	9S-CH2-20	06/28/2002	18 - 22	17	
9S-CH2	9S-CH2-30	06/28/2002	28 - 32	3	
9S-CH3	9S-CH3-10D	06/27/2002	8 - 22	390	
9S-CH3	9S-CH3-20	06/27/2002	8 - 12	40	
9S-CH3	9S-CH3-10	06/27/2002	8 - 12	250	
9S-CH3	9S-CH3-30	06/28/2002	28 - 32	54	
9S-CH3	9S-CH3-40	06/28/2002	38 - 42	260	
9S-CH4	9S-CH4-10	06/28/2002	8 - 12	1.8	
9S-CH4	9S-CH4-20	06/28/2002	18 - 22	1.3	
9S-CH4	9S-CH4-30	06/28/2002	28 - 32	13	
9S-CH4	9S-CH4-40	06/28/2002	38 - 42	16	
D09-01	280-S09-100	12/20/1994	46.6 - 61	10	U
D09-01	280-S09-107	02/21/1995	46.6 - 61	10	U
D09-01	280-S09-108	06/22/1995	46.6 - 61	10	U
D09-01	280-S09-109	09/14/1995	46.6 - 61	10	U
D09-01	385-S09-031	06/26/2001	46.6 - 61	5	U
D09-01	385-S09-031	06/26/2001	46.6 - 61	10	U
D09-01	D09-01-A1136	06/28/2002	46.6 - 61	2	U
D09-01	D09-01-A1338	09/05/2002	46.6 - 61	2	U
D09-01	D09-01-A1637	12/16/2002	46.6 - 61	2	U
D09-01	D09-01-A1992	04/10/2003	46.6 - 61	2	UJ
DHP-S09-01	280-S09-053	07/28/1994	25.8	10	U
DHP-S09-02	280-S09-054	07/28/1994	30	10	U
DHP-S09-03	280-S09-055	07/29/1994	24	10	U
DHP-S09-05	280-S09-058	08/23/1994	23 - 26	10	U
DHP-S09-06	280-S09-059	09/08/1994	8 - 11	77	

TABLE 5-20: SITE 9 NAPHTHALENE IN GROUNDWATER ANALYTICAL DATA

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Point Name	Sample Identification	Sample Date	Sample Depth (ft bgs)	Naphthalene (µg/L)	Qualifier
DHP-S09-07	280-S09-062	09/07/1994	21 - 24	10	U
DHP-S09-08	280-S09-064	09/07/1994	0	50	UJ
DHP-S09-09	280-S09-066	09/12/1994	22 - 25	10	U
DHP-S09-10	280-S09-068	09/09/1994	27 - 30	10	U
DHP-S09-11	280-S09-094	08/25/1994	20 - 24	10	U
DHP-S09-12	280-S09-096	08/25/1994	22.5 - 26	10	U
M09-06	280-S09-049	11/30/1994	3.5 - 14	10	U
M09-06	280-S09-050	02/21/1995	3.5 - 14	10	U
M09-06	280-S09-051	06/22/1995	3.5 - 14	10	U
M09-06	280-S09-052	08/08/1995	3.5 - 14	10	U
M09-06	385-S09-030	06/25/2001	3.5 - 14	5	U
M09-06	385-S09-030	06/25/2001	3.5 - 14	10	U
MW410-1	MW410-1[08/21/90]	08/21/1990	4.5 - 15	10	U
MW410-1	280-S09-026	10/18/1994	4.5 - 15	10	U
MW410-1	280-S09-028	06/23/1995	4.5 - 15	10	U
MW410-1	280-S09-030	08/08/1995	4.5 - 15	10	U
MW410-1	385-S09-025	06/25/2001	4.5 - 15	10	U
MW410-1	385-S09-025	06/25/2001	4.5 - 15	5	U
MW410-1	MW410-1-A1149	06/18/2002	4.5 - 15	2	U
MW410-1	MW410-1-A1343	09/04/2002	4.5 - 15	2	U
MW410-1	MW410-1-A1650	12/16/2002	4.5 - 15	2	U
MW410-1	MW410-1-A1996	04/09/2003	4.5 - 15	2	U
MW410-2	MW410-2 [08/22/90]	08/22/1990	4.5 - 15	10	U
MW410-2	280-S09-031	10/18/1994	4.5 - 15	10	U
MW410-2	280-S09-032	02/21/1995	4.5 - 15	10	U
MW410-2	280-S09-033	06/22/1995	4.5 - 15	10	U
MW410-2	280-S09-034	08/04/1995	4.5 - 15	10	U
MW410-2	385-S09-026	06/25/2001	4.5 - 15	5	U
MW410-2	385-S09-026	06/25/2001	4.5 - 15	10	U
MW410-2	MW410-2-A1150	06/18/2002	4.5 - 15	0.5	J
MW410-2	MW410-2-A1344	09/05/2002	4.5 - 15	1.5	J
MW410-2	MW410-2-A1651	12/16/2002	4.5 - 15	2	U
MW410-2	MW410-2-A1997	04/09/2003	4.5 - 15	0.3	J
MW410-3	MW410-3 [08/21/90]	08/21/1990	4.5 - 15	10	U
MW410-3	280-S09-036	10/18/1994	4.5 - 15	10	UJ
MW410-3	280-S09-037	02/21/1995	4.5 - 15	10	U
MW410-3	280-S09-038	06/22/1995	4.5 - 15	10	U
MW410-3	280-S09-039	08/07/1995	4.5 - 15	10	U
MW410-3	385-S09-027	06/26/2001	4.5 - 15	5	U
MW410-3	385-S09-027	06/26/2001	4.5 - 15	10	U
MW410-3	385-S09-028	06/26/2001	4.5 - 15	5	U
MW410-3	385-S09-028	06/26/2001	4.5 - 15	10	U
P-9-IWS-01	SITE9-020	09/10/2002	--	1.8	
P-9-MWI-01	SITE9-024	09/11/2002	--	1.9	
P-9-MWI-03	SITE9-018	09/10/2002	--	1	U
P-9-MWI-04	SITE9-010	09/09/2002	--	1	U
P-9-MWI-05	SITE9-014	09/10/2002	--	1	U

TABLE 5-20: SITE 9 NAPHTHALENE IN GROUNDWATER ANALYTICAL DATA

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Point Name	Sample Identification	Sample Date	Sample Depth (ft bgs)	Naphthalene (µg/L)	Qualifier
P-9-MWI-06	SITE9-008	09/09/2002	--	1	U
P-9-MWI-07	SITE9-017	09/10/2002	--	1	U
P-9-MWI-08	SITE9-013	09/10/2002	--	1	U
P-9-MWI-09	SITE9-015	09/10/2002	--	1	U
P-9-MWI-10	SITE9-016	09/10/2002	--	1	U
P-9-MWS-01	SITE9-022	09/11/2002	--	5.4	
P-9-MWS-02	SITE9-025	09/11/2002	--	1	U
P-9-MWS-03	SITE9-019	09/10/2002	--	2.8	
P-9-MWS-04	SITE9-023	09/11/2002	--	58	
S09-DGS-DP01	385-S09-001	07/18/2001	8 - 10	1	U
S09-DGS-DP01	385-S09-001A	07/18/2001	8 - 10	5	U
S09-DGS-DP01	385-S09-001A	07/18/2001	8 - 10	10	U
S09-DGS-DP01	385-S09-002	07/18/2001	15 - 17	1	U
S09-DGS-DP01	385-S09-002A	07/18/2001	15 - 17	5	U
S09-DGS-DP01	385-S09-002A	07/18/2001	15 - 17	10	U
S09-DGS-DP01	385-S09-003	07/18/2001	30 - 32	1	U
S09-DGS-DP01	385-S09-003A	07/18/2001	30 - 32	5	U
S09-DGS-DP01	385-S09-003A	07/18/2001	30 - 32	10	U
S09-DGS-DP02	385-S09-004	07/28/2001	8 - 10	1	U
S09-DGS-DP02	385-S09-004A	07/28/2001	8	5	U
S09-DGS-DP02	385-S09-004A	07/28/2001	8	10	U
S09-DGS-DP02	385-S09-005	07/28/2001	15	1	U
S09-DGS-DP02	385-S09-005A	07/28/2001	15	5	U
S09-DGS-DP02	385-S09-005A	07/28/2001	15	10	U
S09-DGS-DP02	385-S09-006	07/28/2001	35	1	U
S09-DGS-DP02	385-S09-006A	07/28/2001	35	6.3	U
S09-DGS-DP02	385-S09-006A	07/28/2001	35	10	U
S09-DGS-DP02	385-S09-007	07/28/2001	45	1	U
S09-DGS-DP02	385-S09-007A	07/28/2001	45	25	U
S09-DGS-DP02	385-S09-007A	07/28/2001	45	10	U
S09-DGS-DP02	385-S09-008	07/28/2001	60	1	U
S09-DGS-DP02	385-S09-008A	07/28/2001	60	17	U
S09-DGS-DP02	385-S09-008A	07/28/2001	60	10	UJ
S09-DGS-DP02	385-S09-009	07/28/2001	78	1	U
S09-DGS-DP02	385-S09-009A	07/28/2001	78	5	U
S09-DGS-DP02	385-S09-009A	07/28/2001	78	10	U
S09-DGS-DP03	385-S09-010	07/26/2001	10	1	U
S09-DGS-DP03	385-S09-010A	07/26/2001	10	5	U
S09-DGS-DP03	385-S09-011	07/26/2001	20	1	U
S09-DGS-DP03	385-S09-011A	07/26/2001	20	5	U
S09-DGS-DP03	385-S09-012	07/26/2001	35	1	U
S09-DGS-DP03	385-S09-012A	07/26/2001	35	5	U
S09-DGS-DP03	385-S09-013	07/26/2001	43	1	U
S09-DGS-DP03	385-S09-013A	07/26/2001	43	5	U
S09-DGS-DP03	385-S09-013A	07/26/2001	43	10	U
S09-DGS-DP03	385-S09-014	07/26/2001	60	1	U
S09-DGS-DP03	385-S09-014A	07/26/2001	60	5	U

TABLE 5-20: SITE 9 NAPHTHALENE IN GROUNDWATER ANALYTICAL DATA

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Point Name	Sample Identification	Sample Date	Sample Depth (ft bgs)	Naphthalene (µg/L)	Qualifier
S09-DGS-DP03	385-S09-014A	07/26/2001	60	50	U
S09-DGS-DP03	385-S09-015	07/26/2001	74	1	U
S09-DGS-DP03	385-S09-015A	07/26/2001	74	5	U
S09-DGS-DP03	385-S09-015A	07/26/2001	74	10	U
S09-DGS-DP04	385-S09-022A	07/18/2001	8 - 10	5	U
S09-DGS-DP04	385-S09-022A	07/18/2001	8 - 10	10	U
S09-DGS-DP04	385-S09-023A	07/18/2001	15 - 17	5	U
S09-DGS-DP04	385-S09-023A	07/18/2001	15 - 17	10	U
S09-DGS-DP04	385-S09-024A	07/18/2001	25 - 27	5	U
S09-DGS-DP04	385-S09-024A	07/18/2001	25 - 27	10	U
S09-DGS-DP04	385-S09-019	07/25/2001	50	1	U
S09-DGS-DP04	385-S09-020	07/25/2001	65	1	U
S09-DGS-DP04	385-S09-021A	07/25/2001	80	5	U
S09-DGS-DP04	385-S09-022	07/18/2001	8 - 10	1	U
S09-DGS-DP04	385-S09-023	07/18/2001	15 - 17	1	U
S09-DGS-DP04	385-S09-024	07/18/2001	25 - 27	1	U
S09-DGS-DP04	385-S09-019A	07/25/2001	50	5	U
S09-DGS-DP04	385-S09-019A	07/25/2001	50	30	U
S09-DGS-DP04	385-S09-020A	07/25/2001	65	5	U
S09-DGS-DP04	385-S09-020A	07/25/2001	65	20	U
S09-DGS-DP04	385-S09-021	07/25/2001	80	1	U
S09-DGS-DP04	385-S09-021A	07/25/2001	80	10	U
S09-DGS-DP05	385-S09-016	08/03/2001	7 - 10	140	
S09-DGS-DP05	385-S09-016A	08/03/2001	7 - 10	64	
S09-DGS-DP05	385-S09-016A	08/03/2001	7 - 10	85	
S09-DGS-DP05	385-S09-017	08/03/2001	15 - 17	3.5	
S09-DGS-DP05	385-S09-017A	08/03/2001	15 - 17	5	U
S09-DGS-DP05	385-S09-017A	08/03/2001	15 - 17	10	U
S09-DGS-DP05	385-S09-018	08/03/2001	25 - 27	1	U
S09-DGS-DP05	385-S09-018A	08/03/2001	25 - 27	5	U
S09-DGS-DP05	385-S09-018A	08/03/2001	25 - 27	10	U
S09-DGS-DP07	385-S09-043	08/09/2001	7 - 10	1	U
S09-DGS-DP07	385-S09-044	08/09/2001	15	1	U
S09-DGS-DP08	385-S09-045	08/15/2001	7 - 10	1	U
S09-DGS-DP08	385-S09-046	08/15/2001	15	1	U
S09-DGS-DP08	385-S09-047	08/15/2001	30	1	U
S09-DGS-DP08	385-S09-048	08/15/2001	45	1	U
S09-DGS-DP09	385-S09-049	08/17/2001	7 - 10	1	U
S09-DGS-DP09	385-S09-050	08/17/2001	15	1	U
S09-DGS-DP09	385-S09-051	08/17/2001	30	1	U
S09-DGS-DP09	385-S09-052	08/17/2001	45	1	U
S09-DGS-DP09	385-S09-057	08/22/2001	59	1	U
S09-DGS-DP10	385-S09-054	08/22/2001	30	1	U
S09-DGS-DP10	385-S09-055	08/22/2001	45	1	U
S09-DGS-DP10	385-S09-056	08/22/2001	58	1	U
S09-DGS-DP11	385-S09-058	08/30/2001	30 - 32	1	U
S09-DGS-DP12	385-S09-059	09/12/2001	30 - 32	5	UJ

TABLE 5-20: SITE 9 NAPHTHALENE IN GROUNDWATER ANALYTICAL DATA

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Point Name	Sample Identification	Sample Date	Sample Depth (ft bgs)	Naphthalene (µg/L)	Qualifier
S09-DGS-VE01	385-S09-034	08/07/2001	8.5 - 10	1	U
S09-DGS-VE01	385-S09-034A	08/07/2001	8.5 - 10	5	U
S09-DGS-VE01	385-S09-034A	08/07/2001	8.5 - 10	10	U
SHP-S09-05	280-S09-057	08/24/1994	7 - 10	1	J
SHP-S09-07	280-S09-061	09/07/1994	8 - 11	49	J
SHP-S09-08	280-S09-063	09/09/1994	11	250	J
SHP-S09-09	280-S09-065	09/08/1994	8 - 11	74	
SHP-S09-10	280-S09-067	09/06/1994	11	29000	
SHP-S09-11	280-S09-093	08/25/1994	15	0.9	J
SHP-S09-12	280-S09-095	08/24/1994	8	10	U

Notes:

--	Chemical not detected at site
ft bgs	Feet below ground surface
J	Indicates an estimated concentration value
U	Indicates compound was analyzed for but not detected above the concentration listed
µg/L	Microgram per liter
UJ	Indicates compound was analyzed for but not detected above the estimated concentration listed

TABLE 5-21: SITE 9 SUMMARY OF HUMAN HEALTH RISKS; REASONABLE MAXIMUM EXPOSURE

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

	CANCER RISK					NONCANCER HAZARD				
EXPOSURE PATHWAY	Current/ Future Industrial Worker (0-2 ft)	Future Construction Worker (0-2 ft)	Future Resident (Adult + Child) (0-2 ft)	Future Construction Worker (0-8 ft)	Future Resident (Adult + Child) (0-8 ft)	Current/ Future Industrial Worker (0-2 ft)	Future Construction Worker (0-2 ft)	Future Resident (Child) (0-2 ft)	Future Construction Worker (0-8 ft)	Future Resident (Child) (0-8 ft)
Soil Exposure Pathways										
Soil Ingestion	3E-06	4E-07	1E-05	3E-07	1E-05	0.02	0.06	0.3	0.05	0.2
Dermal Contact with Soil	6E-07	4E-08	1E-06	3E-08	1E-06	0.004	0.006	0.02	0.004	0.02
Inhalation of Particulates and Volatiles Released from Soil to Outdoor Air	5E-09	2E-10	1E-08	1E-10	8E-09	--	--	--	--	--
Ingestion of Homegrown Produce	--	--	2E-05	--	1E-05	--	--	0.1	--	0.08
Soil Total	**4E-06**	**4E-07**	**3E-05**	**3E-07**	**3E-05**	**0.02**	**0.07**	**0.4**	**0.05**	**0.3**
Groundwater Exposure Pathways										
Inhalation of Volatiles Released from Groundwater to Indoor Air	5E-06	--	2E-04	--	2E-04	0.03	--	1	--	1
Groundwater Ingestion	--	--	2E-03	--	2E-03	--	--	55	--	55
Dermal Contact with Groundwater	--	--	1E-03	--	1E-03	--	--	7	--	7
Inhalation of Volatiles Released from Household Use of Groundwater	--	--	2E-05	--	2E-05	--	--	67	--	67
Groundwater Total	**5E-06**	**--**	**3E-03**	**--**	**3E-03**	**0.03**	**--**	**129**	**--**	**129**
Multipathway Total	**9E-06**	**4E-07**	**3E-03**	**3E-07**	**3E-03**	**0.06**	**0.07**	**130**	**0.05**	**130**

Notes:

-- Not applicable; exposure pathway is not complete for this receptor.
(0-2 ft) Interval of soil below ground surface evaluated in this exposure scenario
(0-8 ft) Interval of soil below ground surface evaluated in this exposure scenario

TABLE 5-22: SITE 9 SUMMARY OF HUMAN HEALTH RISKS; CENTRAL TENDENCY EXPOSURE

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

	CANCER RISK					NONCANCER HAZARD				
EXPOSURE PATHWAY	Current/ Future Industrial Worker (0-2 ft)	Future Construction Worker (0-2 ft)	Future Resident (Adult + Child) (0-2 ft)	Future Construction Worker (0-8 ft)	Future Resident (Adult + Child) (0-8 ft)	Current/ Future Industrial Worker (0-2 ft)	Future Construction Worker (0-2 ft)	Future Resident (Child) (0-2 ft)	Future Construction Worker (0-8 ft)	Future Resident (Child) (0-8 ft)
Soil Exposure Pathways										
Soil Ingestion	1E-07	1E-08	2E-06	1E-08	3E-06	0.003	0.002	0.05	0.002	0.06
Dermal Contact with Soil	4E-09	1E-09	8E-08	1E-09	9E-08	0.0001	0.0002	0.002	0.0002	0.002
Inhalation of Particulates and Volatiles Released from Soil to Outdoor Air	4E-11	2E-11	1E-10	2E-11	1E-10	--	--	--	--	--
Ingestion of Homegrown Produce	--	--	7E-07	--	8E-07	--		0.008	--	0.009
Soil Total	**1E-07**	**1E-08**	**3E-06**	**2E-08**	**4E-06**	**0.004**	**0.002**	**0.06**	**0.002**	**0.07**
Groundwater Exposure Pathways										
Inhalation of Volatiles Released from Groundwater to Indoor Air	2E-08	--	1E-06	--	1E-06	0.0009	--	0.01	--	0.01
Groundwater Ingestion	--	--	4E-04	--	4E-04	--	--	15	--	15
Dermal Contact with Groundwater	--	--	2E-04	--	2E-04	--	--	0.4	--	0.4
Inhalation of Volatiles Released from Household Use of Groundwater	--	--	5E-08	--	5E-08	--	--	0.2	--	0.2
Groundwater Total	**2E-08**	**--**	**7E-04**	**--**	**7E-04**	**0.0009**	**--**	**15**	**--**	**15**
Multipathway Total	**1E-07**	**1E-08**	**7E-04**	**2E-08**	**7E-04**	**0.004**	**0.002**	**15**	**0.002**	**15**

Notes:

-- Not applicable; exposure pathway is not complete for this receptor.
(0-2 ft) Interval of soil below ground surface evaluated in this exposure scenario
(0-8 ft) Interval of soil below ground surface evaluated in this exposure scenario

TABLE 5-23: RESULTS OF CHEMICAL OF POTENTIAL ECOLOGICAL CONCERN SCREENING FOR SOIL AT SITE 9

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

	Screening Evaluation	
Chemical of Potential Ecological Concern	**Rejected**	**Retained**
Metals		
Aluminum	CSB	--
Antimony	FOD	--
Arsenic	CSB	--
Barium	--	X
Beryllium	--	X
Cadmium	CSB	--
Chromium	--	X
Cobalt	CSB	--
Copper	CSB	--
Iron	EN	--
Lead	--	X
Manganese	CSB	--
Mercury	--	--
Molybdenum	--	--
Nickel	CSB	--
Selenium	--	--
Silver	--	--
Thallium	--	--
Titanium	CSB	--
Vanadium	CSB	--
Zinc	CSB	--
Pesticides and Polychlorinated Biphenyls		
alpha-Chlordane	--	--
Aroclor-1260	--	--
4,4'-Dichlorodiphenyldichloroethane	--	--
4,4'-Dichlorodiphenyldichloroethylene	--	--
4,4'-Dichlorodiphenyltrichloroethane	--	--
gamma-Chlordane	--	--
Heptachlor epoxide	--	--
Semivolatile Organic Compounds		
1,2,4-Trichlorobenzene	--	--
2,4-Dimethylphenol	--	--
2-Chlorophenol	--	--
2-Methylnaphthalene	--	X
2-Methylphenol	--	--
4-Chloro-3-Methylphenol	--	--
4-Methylphenol	--	--
Acenaphthene	--	X
Acenaphthylene	--	X
Anthracene	--	X
Benzo(a)anthracene	--	X
Benzo(a)pyrene	--	X
Benzo(b)fluoranthene	--	X
Benzo(g,h,i)perylene	--	X
Benzo(k)fluoranthene	--	X
Bis(2-ethylhexyl)phthalate	--	--

TABLE 5-23: RESULTS OF CHEMICAL OF POTENTIAL ECOLOGICAL CONCERN SCREENING FOR SOIL AT SITE 9

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

Chemical of Potential Ecological Concern	Screening Evaluation	
	Rejected	Retained
Semivolatile Organic Compounds (Continued)		
Carbazole	--	--
Chrysene	--	X
Dibenzo(a,h)anthracene	--	X
Di-n-butylphthalate	--	--
Fluoranthene	--	X
Fluorene	--	X
Indeno(1,2,3-cd)pyrene	--	X
Naphthalene	--	X
n-Nitroso-diphenylamine	--	X
Pentachlorphenol	--	X
Phenanthrene	--	X
Pyrene	--	X
Volatile Organic Compounds		
1,2-Dichloroethene	--	X
1,3-Dichlorobenzene	--	--
2-Butanone	FOD-NB	--
4-Methyl-2-Pentanone	--	--
Acetone	--	--
Benzene	--	--
Carbon Disulfide	--	--
Ethylbenzene	--	X
Methylene Chloride	--	--
Tetrachloroethene	--	X
Toluene	--	X
Trichloroethene	--	--
Xylene	--	X

Notes:

--	These analyses were not performed.
CSB	Concentrations within statistical background
EN	Essential nutrient
FOD	Frequency of detection five percent or lower
NB	Non-bioaccumulating
X	These analyses were performed.

TABLE 5-24: SITE 9 ECOLOGICAL RISK ASSESSMENT SOIL HAZARD QUOTIENTS

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23, Alameda Point, Alameda, California

	MEASUREMENT ENDPOINTS							
	Reproductive or physiological impacts to the California ground squirrel		Reproductive or physiological impacts to the Alameda song sparrow		Reproductive or physiological impacts to the American robin		Reproductive or physiological impacts to the Red-tailed hawk	
	HAZARD QUOTIENT							
COPEC	High TRV	Low TRV	High TRV	Low TRV	High TRV	Low TRV	High TRV	Low TRV
Barium	<1	<1	<1	<1	<1	<1	<1	<1
Beryllium	<1	<1	QE	QE	QE	QE	QE	QE
Chromium	<1	<1	<1	<1	<1	<1	<1	<1
Lead	<1	<1	<1	1.87	<1	6.25	<1	15.1
Lead alternate low TRV	NA	NA	NA	<1	NA	<1	NA	<1
HMW PAHs	<1	<1	QE	QE	QE	QE	QE	QE
LMW PAHs	<1	<1	QE	QE	QE	QE	QE	QE
n-Nitroso-diphenylamine	QE	QE	QE	QE	QE	QE	QE	QE
Pentachlorophenol	1.01	101	QE	QE	QE	QE	QE	QE
1,2-Dichlorethene	<1	<1	QE	QE	QE	QE	QE	QE
Ethylbenzene	QE	QE	QE	QE	QE	QE	QE	QE
Tetrachloroethene	<1	<1	QE	QE	QE	QE	QE	QE
Toluene	<1	<1	QE	QE	QE	QE	QE	QE
Xylene	2.76	3.40	QE	QE	QE	QE	QE	QE

Notes:

	Hazard quotient exceeds 1.0
<	Less than
COPEC	Chemical of potential ecological concern
HMW	High molecular weight
LMW	Low molecular weight
NA	Not applicable
PAH	Polynuclear aromatic hydrocarbon
QE	No TRV developed for COPEC and endpoint-qualitative evaluation only
TRV	Toxicity reference value

TABLE 5-25: ECOLOGICAL RISK ASSESSMENT HAZARD QUOTIENTS FOR SOIL BACKGROUND

Remedial Investigation Report for Sites 9, 13, 19, 22, and 23 Alameda Point, Alameda, California

	MEASUREMENT ENDPOINTS							
	Reproductive or physiological impacts to the California ground squirrel		Reproductive or physiological impacts to the Alameda song sparrow		Reproductive or physiological impacts to the American robin		Reproductive or physiological impacts to the Red-tailed hawk	
	HAZARD QUOTIENT							
COPEC	High TRV	Low TRV	High TRV	Low TRV	High TRV	Low TRV	High TRV	Low TRV
Antimony	0.042	0.218	0.000114	0.000455	0.000361	0.00144	0.00168	0.0067
Arsenic	5.06E-02	2.62E-01	1.44E-04	5.76E-04	4.65E-04	1.86E-03	1.92E-03	7.70E-03
Barium	0.0687	0.217	0.0196	0.0393	0.0622	0.125	0.294	0.592
Beryllium	0.00132	0.0132	NV	NV	NV	NV	NV	NV
Cadmium	0.0553	2.37	0.000554	0.00484	0.00179	0.0156	0.0596	0.522
Chromium	0.0171	0.0684	0.00135	0.00672	0.00462	0.023	0.00722	0.036
Copper	0.00531	1.05	0.000434	0.00577	0.00141	0.0188	0.00286	0.0379
Lead	0.0041	0.103	0.000372	2.71	0.00124	9.07	0.00299	21.9
Lead, alternate TRV	NA	NA	NA	0.0075	NA	0.025	NA	0.0603
Mercury	ND	ND	ND	ND	ND	ND	ND	ND
Selenium	0.842	20.4	0.00429	0.0174	0.0137	0.0554	0.0684	0.277
Zinc	0.00523	1.37	0.000404	0.00404	0.00127	0.0127	0.00723	0.0723

Notes:

COPEC	Chemical of potential ecological concern
NA	Not applicable
ND	Not detected in background samples
NV	Reference value not available, hazard quotient could not be calculated
TRV	Toxicity reference value

6.0 BACKGROUND AND RI RESULTS FOR CERCLA SITE 13 FORMER OIL REFINERY

Section 6.0 includes a comprehensive site summary and analysis of contamination located at CERCLA Site 13. The physical features and history of the site are presented in Section 6.1. The investigation history is presented in Section 6.2, and the initial data evaluation, which includes the site-specific conceptual site model, data quality assessment, and background evaluation, are presented in Section 6.3. The nature and extent evaluation is presented in Section 6.4, and the fate and transport analysis is included in Section 6.5. The HHRA and ERA are summarized in Sections 6.6 and 6.7, respectively. Conclusions and recommendations for Site 13 are identified in Section 6.8.

6.1 PHYSICAL FEATURES AND SITE HISTORY

This section summarizes the physical features and history of Site 13. The physical features of Site 13 are summarized in Section 6.1.1. The history and activities conducted at Site 13, including generation of hazardous wastes and past disposal and storage practices associated with these wastes, are summarized in Section 6.1.2. The Site 13 regulatory history is provided in Section 6.1.3.

6.1.1 Site 13 Physical Features

Site 13 is situated approximately 1,000 feet east of the Seaplane Lagoon and lies at the center of OU-2A (see Figure 1-2). The site is approximately 17.5 acres in size, relatively flat, partially paved and comprises primarily open space with several structures. Site 13 includes Building 397, a self storage area consisting of Buildings MS-01 through MS-10, an RV park, and NADEP GAP 62 (a temporary storage area for hazardous waste); OWSs 397A, 397B, and 397C; and several storm sewer lines. Building 397 consisted of the former jet engine test cells (JETC) and also contains GAP 62; the OWSs 397A, 397B, and 397C are located nearby. Buildings MS-01 through MS-10 comprise the Navy exchange mini-storage area, including a mobile trailer and self-storage office. The RV park is a concrete parking area identified as the MWR B Lot and was used for RV and trailer storage (see Figure 6-1).

Historic site features include the former location of the Pacific Coast Oil Works Company Refinery, which operated from 1879 to 1903. No structures from the refinery remain at Site 13. In addition, Buildings 298 and 401, Structure 285, ASTs 324 through 328, OWS 397D, and underground fuel lines that ran from Building 397 to Building 372 (located on Site 11 to the north) were formerly located at Site 13. Structure 285 consisted of 18 rectangular buildings previously located in the northeast corner of Site 13 and used for unknown purposes.

Currently, approximately 90 percent of Site 13 consists of open space. Approximately half of the ground surface is exposed soil, and the other half is paved with asphalt or concrete with some minor areas of exposed soil and weeds. Current uses include vehicle parking, storage, and a bicycle path (IT 2001).

6.1.2 Site 13 History

The eastern portion of Site 13 was located within the original boundaries of Alameda Island. The southwest portion of the site was submerged below the Bay. Site 13 was originally farmland.

Between 1879 and 1903, the oil refinery operated in Alameda at the current location of Site 13 and possibly portions of adjoining CERCLA Sites 19, 22, and 23. Most of the operations occurred in the southern part of Site 13. The refinery used an acid-sludge process for refining fresh crude oil. A 1897 Sanborn fire insurance map shows the location of the refinery structures, which consisted of pump and lubricating houses, two laboratories, agitators, and bleaching tanks as well as approximately 19 ASTs, 6 USTs, and a storage area containing drums of oil (Sanborn 1897) (see Figure 6-2). The former tanks were used to store crude oil and finished products. In addition, some of the tanks were used to complete processes such as bleaching and condensing. In the late 1800s, petroleum refinery operations included distilling crude oil to kerosene, lubricating, and fuel oils. Common oil refining practices also included mixing strong acid with the crude oil to "crack" the oil to increase yields of kerosene. Sulfuric acid was a relatively inexpensive strong acid available in bulk quantities. Wastes from this type of operation would be expected to include heavier-end hydrocarbons. Although the type and quantity of wastes and the disposal locations are not documented, it is assumed that the refinery wastes and asphaltic residues were disposed of at Site 13 and the surrounding tidal lands. Wastes and residues are considered a potential source of the hydrocarbon-rich material observed at the ground surface in two locations at Site 13. Oil refinery operations ceased in 1903. There is no documentation regarding the decommissioning of the refinery equipment.

In 1930, the Army acquired the installation property from the City of Alameda and began construction activities in 1931. In 1936, the Navy acquired title to the land from the Army and began building the air station in response to the military buildup in Europe before World War II.

Former Building 401, a 137-ft^2 structure used as a bus shelter, was built in 1945. The area it formerly occupied is now open space (IT 2001).

Former Building 298, a 306-ft^2 structure used as a weather station, was built in 1946. The building was demolished in 1989.

In 1947, ASTs 324 through 328 were installed in the eastern portion of Site 13. ASTs 324 through 328 consisted of steel fuel storage tanks on top of concrete foundations. The tanks were demolished in May 1990 (IT 2001). The specific capacities and contents of the tanks are unknown. During the late 1940s and 1950s, open space in this area was used as aircraft storage, and these tanks likely contained fuels to support aircraft operation and maintenance. No documented release is known to have occurred from these tanks.

Former Structure 285 was built before 1947 and consisted of 18 buildings. The buildings were located on the east side of Site 13. Sixteen of the buildings were demolished before August

1953, and the remaining 2 buildings were demolished before November 1981 (IT 2001). Base history for these buildings is incomplete.

In 1958, Building 397 was constructed. The building is approximately 17,400 ft^2 in size and is located in the northwest portion of Site 13. It served as an aircraft overhaul plant services facility until 1997. It contains two JETCs, JETC-15 and JETC-16, which were operated by NADEP. Between 1980 and 1981, the building was renovated to include new exhaust towers. Materials stored at Building 397 included petroleum products, halogenated and nonhalogenated solvents, and aircraft fuel (IT 2001). Several additional features associated with Building 397 operations included floor drains that discharge to OWSs, fuel lines, and a GAP, which are discussed below. As of May 2002, Building 397 was being leased from the Alameda Reuse and Redevelopment Authority (ARRA) to the City of Alameda for storage. The City of Alameda stores equipment from their parks and recreation department and fire department within and around Building 397.

NADEP GAP 62 was a nonpermitted RCRA GAP located in shop 96231 at the west end of Building 397. GAP 62 served as a temporary storage area for 30- to 55-gallon drums containing hazardous waste, including Mil-L-23699 lubrication and engine oil. The Phase I EBS concluded that NADEP GAP 62 did not require further investigation because Site 13 was paved and site inspectors did not observe staining. DTSC recommended NFA on November 4, 1999 (DTSC 1999a). The Navy recommends NFA in Appendix G of this report.

OWSs 397A, 397B, 397C, and 397D were installed near the eastern end of Building 397 for recycling oil from the waste stream before process water or storm water was discharged to the storm drains. OWS 397A and 397B have 6,000-gallon capacities, and the capacities of OWS 397C and 397D are unknown. OWSs 397A, 397B, and 397C were filled with cement slurry and closed in place in 1993. OWS 397D was removed in 1993 (Navy 1993).

Industrial waste treatment sewer lines were likely installed at Building 397 in 1972 to transport the industrial waste to an off-site municipal treatment plant. The original lines transported waste from the JETCs to the treatment plant operated by EBMUD. In 1981, two small segments of the lines were relocated during installation of the new exhaust towers on the east side of Building 397. In 1989, the line was plugged to satisfy the requirements of a cease and desist order from EBMUD; therefore, Building 397 was no longer discharging waste to the off site treatment plant.

In 1987, the southeastern portion of Site 13 was developed as a self storage area, which consists of Buildings MS-01 through MS-10, and was the Navy exchange mini-storage area, including a mobile trailer and self-storage office (EFA West 1999). A private lessee currently operates this area.

An underground fuel line ran from Building 372 (located on Site 11 to the north) into Building 397 to support fuel jet engine testing activities. The line was approximately 1,000 feet in length and supplied JP-5 to Building 397. In June 1991, a scheduled pressure test was conducted on the line as part of a preventive maintenance program. The line lost approximately

15 pounds per square inch (psi) of pressure from an initial 100 psi in about 20 minutes (PRC and JMM 1992). This loss of pressure was considered a minor leak by the NAS Fuel Department. The location of the leak was not known, and the pipe continued to be used. The fuel line was removed in October 1998 (Tetra Tech and R&M 2000). Results of confirmation sampling are discussed in Section 6.3.

In early 1991, between 3,500 to 17,000 gallons of JP-5 were released from Building 397. It is believed that the release occurred when a small drain valve on a fuel supply line in the fuel room of Building 397 was left open. A flexible hose attached to the open drain valve ran into a floor drain leading to an OWS. The flexible tubing obscured the release of fuel from the supply line to the floor drain. The floor drain emptied to three OWSs (OWS 397A, 397B, and 397C) located at the eastern end of Building 397, which in turn drained to the storm sewer system. The release occurred over an unknown period of time from January 21, 1991, to March 1, 1991, when an investigation by NADEP discovered the drain valve on the supply line open (PRC and JMM 1992). Immediate cleanup involved pumping floating free product from the OWS, manholes, and storm water lines that contained free product. The EBS conducted by IT in 2001 concluded that jet fuel contamination at Site 13 would be addressed as part of the basewide TPH strategy. Currently, the site is part of CAA-13, and remediation is being handled under the TPH program.

Floor drains in Building 397 discharged to OWS and then to storm sewer systems installed during base development. In 1991, the Navy conducted a storm sewer inspection, cleaning, and replacement project at Site 13. The following storm sewers were addressed:

- East-west storm sewer line that parallels the southern side of West Oriskany Avenue to Outfall J and crosses Site 13 was cleaned and inspected
- North-south sewer line beneath Skyhawk Street that crosses Site 13 was cleaned and inspected
- One section of storm sewer line was replaced at Site 13
- East-west storm sewer line located along West Pacific Avenue was replaced with PVC pipe

Building 397 is currently used by the City of Alameda for storage, and the self storage area is still in operation.

6.1.3 Site 13 Regulatory History

Several facilities and areas within Site 13 are regulated by different programs. These programs include the CERCLA program, the TPH program, and the RCRA program. This section briefly describes each program at Site 13.

6.1.3.1 CERCLA Program

The location of the former oil refinery was initially reviewed (as Site 11, Oil Refinery) in 1983, during the IAS (E&E 1983), for inclusion in the NACIP program discussed in Section 3.3. However, this study concluded that the former location of the oil refinery was not an area that required further investigation. On June 6, 1988, the Navy received a Remedial Action Order from the California Department of Health Services (now known as DTSC) that identified that a total of 20 sites, which included the former location of the oil refinery, should undergo an RI and FS in accordance with CERCLA requirements (DTSC 1988). The former location of the oil refinery became Site 13. The original Site 13, as defined in the Phase 1 and 2A RI (PRC EMI 1993), encompassed the current Site 13 and current Site 23 boundaries, except for Building 530 in Site 23. On July 31, 2000, the boundaries for Site 13 and Site 23 were redefined to the existing boundaries based on locations of groundwater plumes (Navy 2000).

6.1.3.2 RCRA Program

Several areas were identified in the RFA at Site 13, including Building 397 (AOC 397), former ASTs 324 through 328 (AOC 009), and NADEP GAP 62 (DTSC 1992a).

The RCRA RFIs were implemented through the coordination of other ongoing programs, including the TPH program and the CERCLA program. At Site 13, petroleum contaminants at AOC 397 and AOC 009 were to be further addressed under CAA-13 in the TPH program. AOC 397 is still being addressed under the TPH program; however, AOC 009 is being reviewed under the CERCLA program because petroleum-related contaminants are commingled with CERCLA chemicals. The Navy and DTSC recommended NFA for GAP 62 (DTSC 1999a). The Navy recommended OWS 397A through 397D for further action for TPH only. The OWSs are not a continuing source of contamination because three of the OWSs were filled in place with cement slurry and one OWS was removed. Navy recommendations are included in SWMU Appendix (Appendix G).

6.1.3.3 TPH Program

After Alameda Point was identified for closure in September 1993, the TPH program was implemented to decommission all USTs and other fuel-related items. As part of the program, TPH contamination was evaluated at 22 CAAs and 3 fuel line-specific CAAs. Site 13 was included in CAA-13.

Several areas at Site 13 contain free product TPH contamination, as shown in the TPH screening strategy included in Appendix F. As stated previously, AOC 397 is the only area within Site 13 that is currently being addressed under the TPH program because it is the only TPH plume that is not commingled with CERCLA wastes. AOC 397 is undergoing remediation; JP-5-impacted soil was removed around Building 397 in 1993 by IT (Navy 1993), as described in Section 6.2.5. In situ corrective action of this area began in 2002, when a dual-vacuum-extraction (DVE) system was installed on the eastern side of Building 397. The purpose of the DVE system is to

remove JP-5 free product. Remediation activities at Building 397 were suspended on September 17, 2003, after 1,148 pounds of TPH was removed.

6.2 SITE 13 ENVIRONMENTAL INVESTIGATIONS

This section describes the environmental investigations conducted at Site 13, which include investigations conducted before the IRP, under CERCLA, under the EBS and TPH Programs, and during removal actions and treatability studies.

Tables 6-1 and 6-2 summarize the soil and groundwater samples collected by the environmental investigations conducted at Site 13 and the types of analyses conducted. Sampling locations are shown on Figure 6-3 and are categorized by investigation. Results for each of the investigations are presented in Tables 6-3 through 6-14. The tables are organized by analytical group and detail the number and percent of detections; the minimum, average, and maximum detected concentration; the minimum and maximum detection limit; the number of detections exceeding either the residential (for soil) or tap water (for groundwater) PRGs (EPA 2002a); the number of detection limits for nondetected samples exceeding the PRG; and the PRG.

The following subsections summarize investigations conducted at Site 13 prior to the IRP (Section 6.2.1), under the CERCLA (Section 6.2.2), EBS (Section 6.2.3), and TPH programs (Section 6.2.4), and as a part of removal actions and treatability studies (Sections 6.2.5 and 6.2.6, respectively).

6.2.1 Investigations Conducted Before the IRP

Investigations conducted at Site 13 before the IRP include the IAS in 1983, the soil and groundwater investigation in 1989, and the Phase I, II, and III soil investigation conducted in 1991. The subsections below summarize activities conducted under each investigation.

6.2.1.1 IAS, 1983

The Navy initiated the NACIP in 1982 to identify, assess, and control contamination of the environment resulting from base activities. The 1983 IAS (E&E 1983) identified several areas for further investigation. In addition, information from several active portions of NAS Alameda was documented in IAS. These findings provide much of the operational and historical information presented in this document and set the stage for much of the Navy's subsequent investigations at Alameda Point. The IAS report discusses activities conducted at the base and identified the former oil refinery as a potential concern. The Navy began investigation activities at Site 13 to evaluate whether the property had been part of the former oil refinery identified by DTSC in a 1988 Remedial Action Order (DTSC 1988).

6.2.1.2 Soil and Groundwater Investigation, 1989

In 1989, the Navy conducted a geotechnical investigation in preparation for construction of the Intermediate Maintenance Facility (IMF) (Harding Lawson Associates [HLA] 1989). The planned location for the IMF was south of Building 397 at Site 13. Initially, three soil borings (B-1 through B-3) were drilled at this location at which black stained soil and the smell of hydrocarbons was observed. Subsequently, 15 soil borings (B-4 through B-18) were drilled and 1 boring as a groundwater monitoring well (MW-1) was installed at Site 13. Results of the investigation indicated the presence of free-floating petroleum hydrocarbon products in 1 boring and hydrocarbon stains or odors were noted in 9 of the 18 soil borings (HLA 1989). Eleven soil samples contained detectable concentrations of TPH as well as oil and grease. A sample from one boring contained an elevated lead concentration of 13,000 mg/kg and a pH below 2. Sampling locations are shown on Figure 6-3. A list of soil samples and analyses are presented in Table 6-1.

6.2.1.3 Phases I, II, and III, 1991

Based on the results of the 1989 HLA investigation, DTSC requested that the Navy initiate soil removal in the center of Site 13, near soil boring B-7. The Navy performed a Phase I assessment on the extent of lead contamination and low pH soils around soil boring B-7 in 1991. Eight soil borings (B-IMF-01 through B-IMF-08) were drilled, and one groundwater monitoring well was installed (M-IMF-01). Soil samples were collected in each boring and screened in the field for pH. Hydrocarbon stains and odors were noted in all borings, and a 0.7-foot layer of free hydrocarbon product accumulated in the newly installed monitoring well. Although the focus of this investigation was to determine the extent of elevated lead concentrations, seven soil samples were analyzed for total recoverable petroleum hydrocarbons (TRPH), three samples were analyzed for VOCs, and three samples were analyzed for SVOCs. Sampling locations are shown on Figure 6-3.

Because of discrepancies between field pH screening results and laboratory results for two of the samples collected in the Phase I assessment, DTSC requested additional pH sampling. Phase II field investigation samples were collected from surface soils immediately adjacent to each of the eight Phase I soil borings. Subsurface soil samples were collected immediately adjacent to soil borings B-IMF-04, B-IMF-06, and B-7. Two samples were collected from each location; one sample was submitted for laboratory analysis of pH by EPA Method 9040, and the other sample was field screened for pH using four different procedures (PRC and JMM 1996). Laboratory and field pH measurements were generally consistent.

The Phase II investigation confirmed the low pH near soil boring B-7, but did not fully characterize the extent of the low pH levels. Subsequently, an additional soil and groundwater investigation (Phase III) was performed at the proposed IMF site. The focus of the Phase III investigation was to further evaluate pH and the extent of lead in the immediate vicinity of soil boring B-7. For the Phase III investigation, three soil borings were advanced (B-IMF-09 through B-IMF-11), and one additional groundwater monitoring well (M-IMF-02) was installed. The Phase III investigation concluded that low pH (less than 2) and high concentrations of lead in

soils were common within a 6-foot radius of boring B-7. In general, the low pH and high lead concentrations correlated with the presence of the black, stained material.

6.2.2 CERCLA Investigations

The following subsections summarize investigations conducted at Site 13 under CERCLA. These investigations include the Phase 1 and 2A investigation performed in 1991, the follow-on investigations conducted in 1994 and 1998, the storm sewer investigation in 2000, the supplemental RI data gaps sampling performed in 2001, the basewide groundwater monitoring conducted in 2002 and 2003, and the PAH study in 2003.

Boring logs for all investigations are presented in Appendix B.

6.2.2.1 Phase 1 and 2A Investigation, 1991

The Navy contracted with Canonie to conduct an investigation at Site 13 to determine whether contamination from oil refinery operations was leaching into the groundwater (Canonie 1989). At the time of this investigation, the site boundaries for Site 13 included the location of the former oil refinery. Site 23 originally consisted only of Building 530, a small area now located within the boundaries of Site 23. Subsequently, in October 2000, the boundaries for Site 13 and Site 23 were redefined to the existing boundaries based on locations of groundwater plumes. This section addresses investigation activity conducted within the current Site 13 boundaries.

Soil

Twenty-seven soil borings were drilled (BOR-1 through BOR-27), and 5 of the 27 borings were completed as monitoring wells and renamed (MWOR-1 through MWOR-5). Of these, 15 soil borings (BOR-6 through BOR-11, BOR-13 through BOR-19, BOR-21, BOR-24) and four groundwater monitoring wells (MWOR-1 through MWOR-4) were located within the current Site 13 boundary. Figure 6-3 presents the sampling locations. Within the current Site 13 boundaries, 165 soil samples were collected from soil borings and analyzed for VOCs, SVOCs, pesticide and PCBs, TRPH, TOC, metals, cations and anions, pH, cyanide, and general chemical characteristics (PRC and MW 1993a) (see Table 6-3). The table below summarizes chemicals detected at concentrations exceeding the PRG and the sampling location with the highest detected concentration for each chemical.

Site 13 1991 Phase 1 and 2A Investigation Soil Summary		
Analytical Group	**Detected Chemical Exceeding 2002 Residential PRG**	**Location of Highest Concentration**
VOCs	Benzene	BOR-9
SVOCs	None	N/A
PAHs	Benzo(a)pyrene, benzo(b)fluoranthene, Benzo(k)fluoranthene, and indeno(1,2,3-cd)pyrene	MWOR-2
Pesticides and PCBs	None	Not Applicable
Metals	Arsenic	BOR-18
	Iron	BOR-15
	Lead	BOR-16
	Vanadium	MWOR-4

Note:

PAH data collected for soil during this investigation were not used in this RI because of high detection limits; data from additional PAH sampling conducted in 2003 were used.

The VOC benzene was detected in soil above the residential PRG in a sample collected from BOR-9 at 6.5 to 7.0 feet bgs.

No SVOCs were detected in soil above their respective residential PRGs.

PAHs were detected exceeding the 2002 residential PRG in the SVOC analytical run in borings BOR-10 (0.5 to 1.0 feet bgs), BOR-8 (11.0 to 11.5 feet bgs), BOR-11 (11.0 to 11.5 feet bgs), BOR-21 (0.5 to 1.0 feet bgs), BOR-7 (2.5 to 3.0 feet bgs), and MWOR-2 (12.0 to 12.5 feet bgs). It was noted that several borings had PAHs detected in the saturated zone (beneath approximately 6 feet bgs) (PRC and JMM 1992). The investigation report concluded that naphthalene was detected in laboratory blanks and was suspected to be a laboratory contaminant (PRC and JMM 1992).

No PCBs or pesticides were detected in soil above their respective residential PRGs.

Arsenic (BOR-10, MWOR-02, MWOR-03, MWOR-04, BOR-17, BOR-15, BOR-18, BOR-19, BOR-11, BOR-21, and BOR-24), iron (BOR-15 and MWOR-2), lead (BOR-16), and vanadium (MWOR-4) were detected at concentrations exceeding 2002 residential PRGs.

TRPH were detected in some soil samples and are discussed in Section 6.4.1 and Appendix F under the TPH program.

Groundwater

Four groundwater samples, one from each monitoring well (MWOR-1, MWOR-2, MWOR-3, and MWOR-4), were analyzed for VOCs, SVOCs, pesticides and PCBs, metals, TRPH, and

general chemistry characteristics. MWOR-1 was installed east of Building 397, MWOR-2 was located in the southwest corner of Site 13, MWOR-3 was installed near the center of Site 13 near the former location of AST 326, and MWOR-4 was installed in the southeast corner of the site (see Table 6-4). The table below summarizes chemicals detected at concentrations greater then the tap water PRG and the sampling location with the highest detected concentrations of each chemical.

SITE 13 1991 PHASE 1 AND 2A INVESTIGATION GROUNDWATER SUMMARY

ANALYTICAL GROUP	DETECTED CHEMICAL EXCEEDING 2002 RESIDENTIAL PRG	LOCATION OF HIGHEST CONCENTRATION
VOCS	BENZENE AND ETHYLBENZENE	MW-1
SVOCS	NONE	NA
PAHs	NAPHTHALENE	MW-1
PESTICIDES AND PCBS	NONE	NA
METALS	ALUMINUM	MWOR-4
	IRON	MWOR-4
	MANGANESE	MWOR-4
	NICKEL	MWOR-4
	VANADIUM	MWOR-4

Note:

PAH data collected for soil during this investigation were not used in this RI because of high detection limits; data from additional PAH sampling conducted in 2003 were used.

Petroleum-related VOCs benzene and ethylbenzene were detected at concentrations exceeding the 2002 tap water PRG at one sample from monitoring well, MW-1.

No SVOCs were detected in groundwater above the 2002 tap water PRGs.

The PAH naphthalene was detected in groundwater at a concentration exceeding the 2002 tap water PRG in one sample from well MW-1.

No PCBs or pesticides were detected in groundwater at concentrations exceeding the 2002 tap water PRGs.

Various metals from the four monitoring wells detected in groundwater were within the background ranges for metals at Site 13 (PRC and JMM 1992). Aluminum, iron, manganese, nickel, and vanadium were detected in well MWOR-4 at concentrations exceeding the 2002 tap water PRG.

Analytical detection limits of numerous VOCs, SVOCs, and metals in soil and groundwater exceeded the 2002 residential tap water PRGs. Furthermore, QA/QC information was not

available for data validation at the time the investigation report was prepared. Groundwater and soil data were used for qualitative purposes only for the investigation report; however, the Navy and agencies consider the data acceptable for inclusion in the risk assessments.

The investigation report concluded that additional soil data were necessary to further evaluate TRPH and BTEX around boring locations BOR-9, BOR-15, BOR-17, BOR-19, and the IMF (PRC and JMM 1992). In addition, more pesticides data were required around soil boring BOR-26. The report concluded that, except for TRPH and BTEX, sufficient VOCs, SVOCs, PCBs, and metals data were collected in soil from Site 13.

The investigation report concluded that additional groundwater data were necessary to evaluate tidal influence on the shallow and deep water-bearing zone; characterize the extent of VOCs, SVOCs, pesticides, TRPH, and metals in groundwater; and evaluate whether groundwater beneath Site 13 is considered a potential drinking water source (PRC and JMM 1992).

6.2.2.2 Follow-On Investigation, 1994

Based on the recommendations of the 1991 investigation, and discussions with the regulatory agencies, a follow-on field investigation was conducted to provide additional lithologic, chemical, and hydrogeologic information (PRC and MW 1995). Field activities included a Geoprobe® investigation, CPT, Hydropunch sampling, soil sampling, monitoring well installation, and storm drain sediment sampling. Sampling locations are presented on Figure 6-3.

A Geoprobe® investigation was conducted first during this investigation to assist in determining the nature and extent of soil and groundwater contamination and to assist in determining the locations for the soil borings and monitoring wells. No soil samples were collected for chemical analysis. Groundwater samples collected at six locations were analyzed using field screening test kits. Two locations were resampled and submitted to a laboratory for VOC, TPH-P, and TPH-E analyses. None of these analytes were detected.

The objective of the CPT sampling program was to evaluate the lithology and hydrogeologic characteristics below 15 feet and to identify the SWBZ. Four CPT location (CPT-S13-02 through CPT-S13-05) were driven across Site 13. No soil samples were collected using the CPT; however, CPT resistivity readings were used to evaluate lithology.

A groundwater sample was collected from the SWBZ at each CPT location using a Hydropunch sampling device (DHP-S13-01 through DHP-S13-04). The samples were analyzed for VOCs, SVOCs, TPH-P, TPH-E, metals, and general chemical parameters, including TDS.

Soil

Nine hollow-stem auger borings (B13-28 through B13-32 and M13-06 through M13-09) were advanced, and soil samples and groundwater samples were collected to further evaluate the vertical extent and nature of petroleum hydrocarbons. Soil samples were collected at the surface

and at 2.5 and 5 feet bgs from each boring and monitoring well location. Samples were analyzed for VOCs, TPH-P, TPH-E, and metals (see Table 6-5).

The table below summarizes chemicals detected at concentrations exceeding the residential PRG (EPA 2002a) and the sampling location with the highest detected for each chemical.

Site 13 1994 Follow-On Investigation Soil Summary

Analytical Group	Detected Chemicals Exceeding 2002 Residential PRG	Location of Highest Concentration
VOCs	None	Not Applicable
SVOCs	None	Not Applicable
PAHs	Benzo(a)anthracene, BaP, benzo(k)fluoranthene, and indeno(1,2,3-cd)pyrene	B13-39
	Benzo(b)fluoranthene and chrysene	B13-41
	Dibenzo(a,h)anthracene	B13-44
Metals	Arsenic	M07C-06
	Chromium	B13-30
	Iron and lead	B13-32

Note:

PAH data collected for soil during this investigation were not used in this RI because of high detection limits; data from additional PAH sampling conducted in 2003 were used.

No VOCs were detected in soil at concentrations exceeding their respective 2002 residential PRGs.

No SVOCs were detected in soil at concentrations exceeding their respective 2002 residential PRGs.

PAHs were detected at concentrations exceeding their respective 2002 residential PRGs in samples collected from borings B13-39, B13-41, and B13-44 from 14.5 to 15 and 7.0 to 7.5 feet bgs respectively.

Arsenic, iron, and lead were detected at concentrations exceeding their respective 2002 residential PRG in most soil samples collected at Site 13. Chromium from 1.0 to 2.0 feet bgs from soil boring B13-30 also exceeded the 2002 residential PRG. In addition, four metals (lead, nickel, cadmium, and zinc) were detected at concentrations exceeding 10 times the solubility threshold limit concentration value in six soil samples collected from the southeastern portion of Site 13.

Petroleum hydrocarbon-related VOCs and TPH-P were detected in most soil samples collected from borings B13-28 through B13-32. TPH-E, quantified as motor oil, was detected in all of the soil samples collected from the soil borings (PRC and MW 1995).

Based upon Geoprobe® and Hydropunch sampling results, four of the soil borings referenced previously were completed as shallow monitoring wells (M13-06 through M13-09), and one deep monitoring well (D13-01) was installed at Site 13.

Groundwater

A quarterly groundwater monitoring program was conducted from October 1994 to August 1995. Quarterly groundwater samples were collected from the following monitoring wells: MWOR-1, MWOR-2, MWOR-4, MW-1, M13-06, M13-08, M13-09, M07C-06, M07C-07, M07C-09, and D13-01. Samples were analyzed for VOCs, SVOCs, ethylene dibromide (EDB), pesticides/PCBs, dissolved metals, cyanide, TPH-P and TPH-E, sulfide, and general chemistry parameters. Benzene and SVOCs were detected in M13-07 near former ASTs 324 through 328. Elevated concentrations of TPH quantified as diesel (TPH-d) were detected in monitoring wells in the northeast and central portions of Site 13. TPH quantified as motor oil (TPH-mo) was detected in 3 of the 10 monitoring wells located in the east and central portions of Site 13. TPH-P was detected in one groundwater sample near Building 397 (MW-1) (see Table 6-6). The table below summarizes chemicals detected at concentrations exceeding the PRG and sampling location with the highest detected concentration for each chemical.

Site 13 1994 Follow-On Investigation Groundwater Summary

Analytical Group	Detected Chemical Exceeding 2002 Residential PRG	Location of Highest Concentration
VOC	1,2-DCA	M07C-09
	Benzene	B13-30
	Ethylbenzene and total xylenes	B13-28
SVOC	Pentachlorophenol	MWOR-3
PAH	Naphthalene	M13-07
Pesticides and PCBs	None	Not Applicable
Metals	Arsenic, iron, and manganese	M13-07
	Thallium	M07C-06

VOCs were detected in groundwater at concentrations exceeding their respective tap water PRGs in samples from M07C-09, B13-30, and B13-28.

The SVOC pentachlorophenol was detected in groundwater at concentrations exceeding the tap water PRG in two samples from MWOR-3.

The PAH naphthalene was detected in groundwater at concentrations exceeding it's the tap water PRG in samples from MW13-07.

No PCBs or pesticides were detected in groundwater at concentrations exceeding their respective tap water PRGs.

Various filtered metals were detected in groundwater at concentrations above their respective tap water PRGs in samples from M13-07 and M07C-06.

Although one storm drain sediment sample (NPS-S13-01) was collected from Site 13 during this investigation, no data were received from the laboratory; therefore, results are not included in this RI report.

The investigation report concluded that chemicals detected in soil and groundwater are similar in nature to those found during the previous (1991) investigation (PRC and MW 1995). TPH-E, quantified as motor oil, extends to 30 feet bgs, and additional soil or groundwater data may be necessary for an HHRA or ERA due to the TPH-E concentrations in groundwater.

6.2.2.3 Follow-On Investigation, 1998

The 1998 investigation consisted of 1 year of basewide quarterly groundwater monitoring to assess and monitor the status of plumes at various sites at Alameda Point (U&A 1998). Samples were collected each quarter from monitoring wells M13-06 and M13-09. The analytical parameters prescribed for these samples varied from quarter to quarter and well to well, but generally included VOCs, SVOCs, dissolved metals, TPH-P and TPH-E, TOC, and general chemistry. VOC and SVOC concentrations were not detected above laboratory reporting limits in groundwater. Dissolved metals concentrations in groundwater generally exceeded MCLs at Site 13. TPH-d and TPH-mo were detected at low concentrations in groundwater at Site 13 (see Table 6-7). The table below summarizes chemicals detected at concentrations exceeding the tap water PRG and the sampling location with the highest detected concentration for each chemical.

Site 13 1998 Follow-On Investigation Groundwater Summary

Analytical Group	Detected Chemical Exceeding 2002 Tap Water PRG	Location of Highest Concentration
VOC	None	Not Applicable
SVOC	None	Not Applicable
PAH	None	Not Applicable
Metals	Unfiltered manganeso, filtered arsenic, and filtered manganese	MW13-09

Note:

PAH data collected for soil during this investigation were not used in this RI because of high detection limits; data from additional PAH sampling conducted in 2003 were used.

No VOCs, SVOCs, or PAHs were detected in groundwater at concentrations exceeding their respective tap water PRGs.

Filtered and unfiltered metals were detected in groundwater at concentrations exceeding their respective tap water PRGs in samples from M13-09.

Additionally, a tidal influence study was conducted as part of this investigation to establish tidal effects (if any) on groundwater at Alameda Point; however, no data were collected that related to Site 13.

6.2.2.4 Storm Sewer Investigation, 2000

The basewide storm sewer investigation evaluated the physical conditions of storm sewers; identified the places where storm sewers are submerged below groundwater; identified locations where contaminated groundwater intercepts submerged, damaged sections of storm sewers; and identified significant data gaps for further evaluation.

The storm sewer investigation also evaluated the need for repairing the lines by level of priority based on whether the lines were damaged and were intersected by plumes. Most of the storm sewer lines at Site 13 were partially submerged at Site 13. Site 13 contained one segment of pipe with a high priority for repair and two segments of pipe with low priority for repair. The table below summarizes information about the storm sewer lines, and the lines are shown on Figure 6-4.

Damaged Storm Sewer Line Segments

Segment		Diameter (Inches)	Length (feet)	Material	Contaminants
From	To				
High Priority					
6-J	6-JC	12	270	Concrete	BTEX
6J-1	6J-F	15	440	Reinforced Concrete	BTEX
Low Priority					
6J-1A	6J-3	12	332	Reinforced Concrete	BTEX and PAH

6.2.2.5 Supplemental Data Gaps Sampling, 2001

Based on identified data gaps, a supplemental data gap sampling effort was conducted at OU-2A to address two primary data gaps categories: (1) the status of groundwater contaminant plumes and (2) preferential flow paths associated with the storm sewer system (Tetra Tech 2002a). This sampling effort included sampling of groundwater monitoring wells and bedding material at the storm sewers. Additional sampling for secondary data gaps was conducted within Site 13; this included collection of one soil gas sample (see Figure 6-3).

One round of groundwater samples was collected at Site 13 during the data gaps sampling to obtain more recent groundwater data. All wells at Site 13 were sampled during this investigation. Samples were analyzed for VOCs, TPH-P, TPH-E, SVOC, and field parameters (see Table 6-8). The table below summarizes chemicals detected at concentrations exceeding the tap water PRG (EPA 2002a) and the sampling location with the highest detected concentration for each chemical.

Site 13 2001 Supplemental Data Gaps Sampling Investigation Groundwater Summary		
Analytical Group	**Detected Chemicals Exceeding 2002 Tap Water PRG**	**Location of Highest Concentration**
VOCs	TCE	MWOR-2
SVOCs	Naphthalene	M13-07
PAHs	Dibenzo(a,h)anthracene	MWOR-1
	Naphthalene	MW13-07

VOCs were detected in groundwater at concentrations exceeding their respective tap water PRGs in samples from MWOR-2.

No SVOCs were detected in groundwater at concentrations exceeding their respective tap water PRGs.

PAHs were detected in groundwater at concentrations exceeding their respective tap water PRGs in samples from MWOR-1 and MW13-07.

No VOCs, SVOCs, or PAHs were detected in groundwater at concentrations exceeding their respective MCLs.

Soil and groundwater samples were collected along storm sewer lines at Site 13 to determine whether storm sewer bedding materials are acting as a preferential pathway for contaminant migration. Vacuum excavation borings were advanced immediately adjacent to storm sewer lines where undisturbed samples of the bedding material were collected. For comparison purposes, samples of the native soil were collected at the approximate depth of the storm sewer, 10 feet away from the vacuum excavation locations. Soil samples were analyzed for geotechnical parameters. Groundwater samples collected from the vacuum extraction locations were analyzed for TPH-P and TPH-E and VOCs. One sample, S13-DGS-VE01, was collected from the storm sewer bedding, and one sample was collected from the native soil located east of Building 397. Two additional samples, S13-DGS-VE02 and S13-DGS-VE03, were collected in the middle of Site 13, along the storm sewer corridor running north and south near ASTs 324 through 328. One sample from the native soil was collected near location S13-DGS-VE02. All three samples exhibited elevated concentrations of TPH. It was concluded that the storm sewer bedding material has a higher hydraulic conductivity than the native soil at Site 13.

One boring was advanced for soil gas sampling at a location selected with assistance from the BCT for use in a future HHRA (see Figure 6-3). The boring was advanced near former ASTs 324 through 328. At the soil gas sampling location, two continuous core soil borings were completed to determine specific groundwater depths and evaluate physical soil parameters required for the risk assessment model. Samples were collected at depths of 1.5 and 4.0 feet bgs. Chlorinated hydrocarbons and BTEX were detected in the soil gas samples.

6.2.2.6 Basewide Groundwater Monitoring, 2002 and 2003

The specific objectives of the 2002 and 2003 basewide monitoring investigation were (1) to evaluate contaminant plumes in groundwater and (2) to determine the main chemicals of concern (Shaw 2003a). The monitoring scheme for OU-2A included 23 of the 46 wells located within the five sites of OU-2A (Sites 9, 13, 19, 22, and 23). Eight monitoring wells (MW-1, D13-01, M07C-06, M07C-09, M13-06, M13-07, M13-08, M13-09, and MWOR-4) located within Site 13 were identified for quarterly or semiannual (twice per year) monitoring. Sampling was conducted in June, September, and December 2002 and April 2003. Samples were analyzed for VOCs, TPH, dissolved metals, and general chemistry (see Table 6-9). The table below summarizes chemicals detected at concentrations exceeding the tap water PRG (EPA 2002a) and the sampling location with the highest detected concentration for each chemical.

Site 13 2002 and 2003 Basewide Groundwater Monitoring Investigation Summary

Analytical Group	Detected Chemical Exceeding 2002 Tap Water PRG	Location of Highest Concentration
VOCs	Naphthalene	M13-07
	TCE	M07C-09
Metals	Arsenic and manganese	M07C-06
	Iron	MW-1

VOCs were detected in groundwater at concentrations exceeding their respective tap water PRGs in samples from M07C-09 and M07C-09.

Various filtered metals were detected in groundwater at concentrations exceeding their respective tap water PRGs and MCLs in samples from 07C-06 and MW-1.

TPH in the diesel, gasoline, motor oil, and JP-5 ranges were detected in samples collected from Site 13.

6.2.2.7 Basewide PAH Study, 2003

The primary objective of the 2003 PAH study was to collect sufficient PAH data to calculate EPCs for ERAs and HHRAs at CERCLA sites (Bechtel 2003). The mean and standard deviation of BaP concentrations from historical PAH data were used to determine the appropriate number of PAH samples to collect at each site. At Site 13, 66 soil borings were advanced using direct-push sample methods. Samples were collected from each of the following four depth intervals: 0 to 0.5, 0.5 to 2, 2 to 4, and 4 to 8 feet bgs. Boring logs are presented in Appendix B.

In general, the concentrations of individual PAHs were low. PAH concentrations in samples from nine locations exceeded the action level of 0.62 mg/kg for BaP equivalents (Navy 2001d) (see Table 6-10) (Navy 2001d). Samples collected from locations B029, B034, B047, B051, B052, and B080 exceeded a BaP equivalent of 1.0 mg/kg. The table below summarizes

chemicals detected at concentrations exceeding the 2002 residential PRG (EPA 2002a) and the sampling location with the highest detected concentration for each chemical. Results of this investigation are presented separately in Table 6-11, with PAH results summarized as BaP equivalents.

Site 13 2003 Basewide PAH Study Soil Summary

Analytical Group	Detected Chemicals Exceeding 2002 Residential PRG	Location of Highest Concentration
PAH	BaP, benzo(b)fluoranthene, benzo(k)fluoranthene, fluoranthene, indeno(1,2,3-cd)pyrene, and pyrene	C3S013B051
	Chrysene	C3S013B052
	Naphthalene	C3S013B08A

6.2.3 EBS Investigations

The EBS was performed to identify the environmental condition of all base property and facilities to facilitate transfer to the community as expeditiously as possible. Two phases of the EBS were conducted at the installation. Results for the EBS investigations are presented in Table 6-12.

Phase 1. The first phase of investigation comprised an examination of aerial photographs and historical records as well as the performance of site inspections and interviews with current and former employees involved in operations. The Phase 1 EBS found that many parcels had insufficient information to classify them as transferable; therefore, recommendations for additional investigations were prepared and presented in the zone analysis plans and parcel evaluation plans (ERM-West 1995a, 1995b).

Phase 2A. As recommended by the IAS (E&E 1983), the Phase 2 investigations did not focus on areas already under evaluation. Other Navy land uses or areas that may impact transfer were the subject of the investigations. Site 13 is within Zone 22 and comprises Parcels 146, 147, 210, and 214 (see Figure 6-1). EBS samples were collected only at the previous parcels during the EBS Phase 2A sampling effort (IT 2001). One storm sewer corridor sample was collected from Parcel 146 in February 1995 as part of the EBS Phase 2A. In addition, soil sampling was conducted at Parcel 147 in January, February, April, and May 1995 to investigate the former incinerator (now within Site 7 boundaries), the storm sewer corridor, and the industrial waste sewer corridor (IT 2001). Parcels 210 and 214 were not sampled during the EBS. Table 6-1 lists the analyses conducted. Sampling locations are presented on Figure 6-3. No evidence of an incinerator was found at Site 13, and the incinerator was ultimately identified to be present at Site 7.

6.2.4 TPH Investigations

Site 13 was identified as part of CAA 13. Sampling was conducted at Site 13, in relation to CAA-13, under the TPH program in 2000 during the data gaps investigation at the CAAs (Tetra Tech 2001e). This investigation addressed 12 different data gap types, and Site 13 sampling involved data gap Types I, III, IV, and V samples. Figure 6-3 shows each sampling location, and Tables 6-13 and 6-14 present the results for the TPH investigations. This section describes the sampling associated with each type of data gap at Site 13.

Six data gap Type I samples were collected to assess the presence of floating free product. Five samples, CA13-02 through CA13-06, were collected near the eastern end of Building 397, and one sample, CA13-01, was collected east of ASTs 324 through 328. Because approximately 6 inches of floating free product was present at sampling locations CA13-03 and CA13-06, groundwater samples were not collected from these locations (Tetra Tech 2001e). Floating free product also was observed in manhole 5J-2; however, this storm drain section is reportedly capped with no release to an outfall. No floating product was present at the other four sampling locations, and groundwater samples were analyzed for BTEX, MTBE, TPH-P, TPH-E, and dissolved metals.

Two Type III samples were collected to investigate current groundwater TPH concentrations the near storm drains. One groundwater sample was collected from monitoring well MW-1 to investigate the storm drain running from the eastern side of Building 397 to the southern part of Site 13. The second groundwater sample was collected from M13-07 to investigate the storm drain running north and south near the southern end of AST 324 through 328. Both samples were analyzed for BTEX, MTBE, TPH-P, TPH-E, and dissolved metals. MW13-07 exhibited low concentrations of JP-5-range organics.

One Type IV groundwater sample (CA13-26) was collected to investigate OWSs south of Building 397. The groundwater sample was analyzed for BTEX, MTBE, TPH-P, TPH-E, and lead. TPH-d and TPH-mo were detected in the sample.

Fifteen Type V soil and groundwater samples were collected to investigate the source area beneath the storage units located in the southeastern corner of Site 13. The samples were analyzed for BTEX, MTBE, TPH-P, TPH-E, and lead. TTPH was detected in soil at a maximum concentration of 66,000 mg/kg. TPH-mo, TPH-d, and TPH-g were detected in soil at maximum concentrations of 30,000, 36,000, and 1,400 mg/kg respectively. TTPH was detected at a maximum concentration of 1,091 mg/L in groundwater. Several samples indicated the presence of free product.

A concurrent analysis is being completed to analyze TTPH constituents as part of the TPH program and CERCLA chemicals as part of the CERCLA program. In locations where TPH and CERCLA chemicals are commingled, the commingled area or plume will be addressed as part of the CERCLA program. Any residual TPH contamination remaining upon remediation of the CERCLA chemicals will be addressed under the TPH program.

As stated in Section 6.1.3, TPH contamination at AOC 397 is not commingled with CERCLA chemicals and is being addressed under the TPH screening strategy described in Appendix F. At AOC 009, petroleum-related chemicals are commingled with CERCLA chemicals associated with refinery waste; therefore, the chemicals in soil and groundwater at AOC 009 are further discussed in Section 6.4, Nature and Extent of Chemicals in Soil and Groundwater.

6.2.5 Removal Actions

Several removal actions have been conducted at Site 13. These removal actions included removal of tarry refinery waste (TRW) in 1940, removal of lead in 1993, removal of free product at Building 397 in 1993, removal of a fuel line in 1998, and removal of TPH in 2002. Each removal action is summarized below.

TRW Removal, 1940. The area once occupied by the oil refinery had been filled and surfaced by the Navy. The resulting gas pressure buildup from underground hydrocarbons and refinery wastes induced a surface rupture sometime in the 1940s. An area approximately 30 feet by 30 feet was excavated down to the old material, and a concrete slab was emplaced in the bottom of the excavation. The excavation was then backfilled and resurfaced. No information was provided on the location of the excavation area or the concrete slab. These procedures apparently mitigated the problem of gas pressure buildup (E&E 1983).

Lead Removal, 1993. As part of a plan to construct a two-building IMF at Site 13, the Navy conducted a geotechnical investigation in 1989. Free hydrocarbon product and hydrocarbon stains or odors were identified in selected borings. The boring with the highest concentrations of TPH-g, oil and grease, and lead and the lowest pH was located in the central portion of a former oil refinery, adjacent to the previous lubricating building and close to former bleaching tanks and activators (see Figure 6-2). It is believed that these units were the source of the high TPH and high lead and low pH found in the boring. The Navy was directed by DTSC to initiate soil removal activities in the vicinity of the boring. Following three phases of additional characterization sampling near the boring, a removal action was eventually conducted in 1993. The first portion of the removal action activities was conducted from September to October 1993. Confirmation samples indicated that residual total lead concentrations exceeded the interim cleanup goal of 100 mg/kg. Additional excavation was performed from October 1994 to December 1994 to complete the removal action. The final excavation area measured about 25 by 30 feet and had a maximum depth of 7 feet bgs. Approximately 120 cubic yards of contaminated soil was excavated and shipped to a Class I landfill. Lead concentrations in all but one confirmation sample were below the interim cleanup goal of 100 mg/kg. Lead was detected at a concentration (121 mg/kg) exceeding the interim cleanup goal in one confirmation sample (PRC and MW 1995a). The location of the excavation is shown on Figure 6-5.

Free Product Removal at Building 397, 1993. After the 3,500- to 17,000-gallon spill of JP-5 in 1991, DTSC entered into an agreement with NAS Alameda for a soil cleanup action limited to contamination caused by the JP-5 spill. The project scope initially included removal of soil contaminated by only JP-5 and only down to groundwater. In February 1993, IT began an excavation of test holes to groundwater. Samples were collected and analyzed for JP-5 and

BTEX. The excavation extended out from those areas that tested above the cleanup goal of 1,000 ppm total; the excavation was extended 2 feet below the groundwater table. The maximum extent of the excavation was reached on March 8, 1993, with a total of 1,310 tons of soil removed (Navy 1993). The location of the excavation is shown on Figure 6-5.

Contaminated water and floating fuel product were pumped into temporary tanks before testing and disposal. Numerous underground structures and abandoned pipes were encountered and contained water and product. The piping was cut off, plugged, and removed as encountered. Damaged storm and industrial sewers and manholes abandoned in place earlier could not be removed because of their proximity to the building; therefore, they were filled with concrete slurry.

The occurrence of floating free product required installation of a recovery system, based on the Navy's agreement with DTSC. The recovery system consisted of a thick gravel drainage bed in the groundwater and six vertical pipes to allow for pumping. The product recovery system consisted of an air-powered floating pump in the well, a packaged air compressor, a control panel, and a double-walled tank. No information is available on the amount of free product removed.

Fuel Line Removal, 1998. One fuel line ran from Building 372 to Building 397. The line carried JP-5 to the jet engine testing facility located in Building 397. The section of fuel line on Site 13 was removed in October 1998 (Tetra Tech and R&M 2000). Three confirmation samples (030-S19-001 through 030-S19-003) were collected and analyzed for TTPH. Two soil samples (030-S19-002) and (030-S19-003) collected along the north side of Building 397 exhibited elevated concentrations of TPH. Figure 6-3 shows the location of the former fuel line and sampling locations.

DVE for Residual Free Product Recovery, 2001 to 2003. A DVE pilot test was conducted in 2001 by IT to demonstrate the capability of DVE technology to recover free product from the groundwater surface and to capture hydrocarbon vapors from soil. The pilot test indicated that DVE was successfully removing hydrocarbon contaminants from soil. In 2002, a full-scale DVE system was installed on the east end of Building 397. The system began operation in 2002, and activities were suspended on September 17, 2003, after removing 1,148 pounds of TPH. The system operation was suspended because recovery of floating petroleum had reached an asymptotic rate (see Figure 6-11).

6.2.6 Treatability Studies

Several treatability studies have been conducted at Site 13 to determine the viability of different technologies for cleanup and assessment of contaminants at the site. These treatability studies include the Site Characterization and Analysis Penetrometer System (SCAPS) laser-induced fluorescence testing to delineate TPH contamination, intrinsic bioremediation to treat hydrocarbons, emulsion recycling to treat TPH- and metals-impacted soil, and terrain conductivity mapping to delineate the location of the TRW. Each treatability study is summarized below.

SCAPS, 1997. The Navy evaluated the effectiveness of SCAPS laser-induced fluorescence testing in delineating petroleum hydrocarbons at several locations at Alameda Point. The process uses ultraviolet light generated by the laser to induce PAHs present in petroleum products to fluoresce. A CPT rig drives a rod containing a fiberoptic cable into the ground to detect relative subsurface petroleum concentrations based on the response to the ultraviolet light. SCAPS testing was conducted at 11 locations approximately 70 feet south of Building 397 at Site 13. The testing suggested the presence of petroleum products near the water level in five of the test locations near the east end of Building 397. No confirmation samples were collected at Site 13, but confirmation sampling at other locations did not show a strong correlation between SCAPS results and the presence of petroleum products. The technology was not used after the initial study in 1997.

Intrinsic Bioremediation, 1998. The intrinsic bioremediation study was conducted in 1998 by the University of California at Berkeley (UCB), Lawrence Livermore National Laboratory, and Lawrence Berkeley National Laboratory (Berkley Environmental Restoration Center [BERC] 1998). The study objectives were to identify intrinsic bioremediation of hydrocarbons at Site 13 and to estimate the rate of bioremediation. Samples were collected in the field southeast of Building 397 and field and laboratory analyses were performed to accomplish the following objectives: (1) characterize the microbial populations present at each site (microcosms, microbial enrichment, and direct epifluorescent microscopy); (2) characterize the geochemical conditions at each site and identify the occurrence of metabolic substrates and products (field physical/chemical assays, soil gas, and isotopic assays); (3) evaluate the mechanisms responsible for degradation (soil gas and isotopic assays).

Analytical data indicated that although biodegradation of the hydrocarbons is occurring, the mode of degradation is dominated by a coupled process of methanogenesis and methane oxidation rather than by direct aerobic activity on the parent hydrocarbons. The contaminant degradation activity varies significantly over time and is much more pronounced following periods of high rainfall. Modeling results and field observations suggest that oxygen transport is hindered in the unsaturated soils above the hydrocarbons at Site 13, resulting in slow bioremediation rates. Results of this study indicated that to significantly accelerate the in situ bioremediation rate at the site, the permeability within the unsaturated subsurface above the zone of contamination must be increased to facilitate soil gas exchange. In addition, these results suggested that capping Site 13 with an impermeable surface without appropriate gas venting could result in the buildup of potentially hazardous methane gas.

Emulsion Recycling, 1999. During February 2000 a treatability study was conducted to demonstrate the capability of emulsion recycling to immobilize organic and inorganic chemical contaminants in soil at Site 13 to acceptable soluble concentrations, while producing an engineered construction product such as road base material (Tetra Tech and others 2000). TPH and lead in soils at Site 13 were the subject of the study.

Criteria used to evaluate whether the emulsion recycling process was a success included comparing the soluble threshold limit concentration (STLC) as measured by the waste extraction test (WET) to the regulatory limit of 5 mg/L for lead in soil to meet the State of California

regulations. A toxicity characteristic leaching procedure (TCLP) concentration of less than 0.75 mg/L for lead was used to meet federal regulations. In addition, the action level for extractable TPH in soil was selected as 500 mg/kg, excluding asphaltene range hydrocarbons.

During the treatability study, soil samples were collected from two locations at Site 13. One sample was collected near boring B13-30, and the other soil sample was collected near soil boring B13-41 (see Figure 6-3). One sample was characterized as silty sand with relatively high concentrations of lead and low concentrations of TPH. The second soil sample was characterized as poorly graded sand with low concentrations of lead and relatively high concentrations of TPH. Each sample was treated with three dosages of asphalt emulsion and three dosages of lime to determine the optimum mix design to yield the maximum strength when subject to a Marshall stability test (Tetra Tech and others 2000). The maximum strength samples were then subjected to the TCLP and WET extractions followed by analyses for lead and TPH, as described previously. Based on STLC criteria, the sample exhibiting the highest concentration of lead was not adequately immobilized. The optimum mix design for that soil was altered by substituting magnesium oxide for the lime. The substitution of magnesium oxide for lime resulted in acceptable WET concentrations that met the 5-mg/L STLC requirement for lead.

Results of the physical testing of the emulsion-treated product showed that both soils exceeded specifications for an aggregate base (Tetra Tech and others 2000). A construction cost estimate showed that this technology could be used at Site 13 for treatment of contaminated soils for less than the cost of transporting the soil to an appropriate off-site landfill. The study recommended the results of this treatability study be evaluated in the FS.

Terrain Conductivity Mapping, 2003. In June and August 2003, a pilot test was conducted to evaluate the effectiveness of this technology for mapping the TRW. This nonintrusive technology transmits an alternating electromagnetic current flow into the ground, which produces a secondary magnetic field. The instrument receiver senses the secondary magnetic field strength that is a function of terrain conductivity. The equipment measured the relative conductivity of the soil to determine whether the TRW affected the soil conductivity in two pilot test areas. After the sensor readings were plotted on a map and compared with boring logs that identified the refinery waste, it was evident that conductivity was not correlated with the presence of the refinery waste; therefore, the technology was considered not practical for mapping the refinery waste. Confirmation sampling was conducted to determine the chemical characteristics of the material. The samples were collected in seven areas (see Figures 6-5, 6-6, and 6-7) and tested for TPH-P, TPH-E, BTEX, PAHs, lead, and pH. The results, as shown in Table 6-11, indicated that the pH of the wastes are as low as 1.1 and that the waste contains elevated concentrations of TPH-g, TPH-d, TPH-mo, BTEX, PAHs, and lead.

6.3 INITIAL DATA EVALUATION

Based on the investigations described in Section 6.2, the Navy completed an initial data evaluation for Site 13. This evaluation included (1) a site-specific CSM, (2) a data quality

assessment, and (3) a background comparison. The complete background comparison is provided in Appendix A.

6.3.1 Site 13 CSM

The initial CSM was refined in an iterative process that involved conducting environmental investigations, identifying areas of known or potential releases of chemicals to the environment, and filling data gaps. This iterative process resulted in a CSM specific to Site 13. This site-specific CSM was used to support the nature and extent evaluations and risk assessments by identifying potential sources of contamination, media affected, exposure pathways, and future receptors. The CSM for Site 13 is described in the following text and presented in Figure 6-8.

Through environmental investigations and literature searches for Site 13, physical features and activities at Site 13 that might have generated hazardous waste or released chemicals to the environment were identified. The following physical features and activities were identified as potential sources of contamination:

- Oil refinery operations and disposal practices – Former location of the Pacific Coast Oil Works Company Refinery, which used an acid-sludge process for refining fresh crude oil; potential source of crude oil, kerosene, lubricating and fuel oils, and heavier-end hydrocarbons, including black TRW.
- Former ASTs 324 through 328 (AOC 009) – Located in the eastern portion of Site 13 in an area used for aircraft storage; capacities and contents of the tanks are unknown; potential source of petroleum products.
- Building 397 and associated OWSs 397A, 397B, 397C, and 397D – Located in the northwest portion of Site 13; aircraft overhaul plant services facility; potential source of petroleum products, halogenated and nonhalogenated solvents, and aircraft fuel (JP-5).
- NADEP GAP 62 – Nonpermitted RCRA GAP located in the west end of Building 397; temporary storage area for 30- to 55-gallon drums containing hazardous waste, including Mil-L-23699 lubrication and engine oil.
- Placement of dredged fill material used to build the island – Potential source of PAHs.

Former Building 298, former Building 401, former Structure 285, RV parking area, and a self-storage area were not considered potential sources. Former Building 298 was used as a weather station. Former Building 401 served as a bus shelter. The nature and use of former Structure 285 is not known. The self-storage area consists of Buildings MS-01 through MS-10.

The Phase I EBS concluded that NADEP GAP 62 did not require further investigation because the area was paved and site inspectors did not observe staining (ERM-West 1994). A letter from DTSC dated November 4, 1999, recommended NFA for this SWMU (DTSC 1999). The SWMU Evaluation Report recommends NFA for NADEP GAP 62 (Appendix G).

Of these potential sources, (1) former oil refinery activities; (2) ASTs 324 through 328; (3) Building 397 and associated OWSs 397A, 397B, 397D, and 397D; and (4) fill material containing PAHs were identified as likely sources of contaminants in soil and groundwater at Site 13. The exposure pathways and primary and secondary release mechanisms may include the following:

Direct release of petroleum products acids (such as sulphuric acid), PAHs, and possibly metals associated with oil refinery activities to soil.

Direct release of petroleum products to soil and groundwater from spills around former ASTs 324 through 328. No documented releases occurred from these ASTs, but they are a likely source of the free petroleum hydrocarbon product found in soil and groundwater located east of former ASTs 324 through 328.

Direct release of petroleum products to soil and groundwater from spills around Building 397 and associated OWSs 397A, 397B, 397C, and 397D. A spill occurred during which 3,500 to 17,000 gallons of JP-5 was released from a drain valve in the eastern end of the building to a floor drain connected to OWS 397A, 397B, and 397C, which in turn drained to the storm sewer system. The jet fuel at Building 397 is not considered a CERCLA waste.

- Placement of fill material that contained PAHs.
- Secondary release from soil to air through volatilization or resuspension of particulates.
- Secondary release from soil into the food chain from plant uptake.
- Secondary release from soil to groundwater through infiltration uptake.
- Secondary release from groundwater to air through volatilization.
- Secondary release from groundwater into domestic use through a well.

As shown in the CSM for Site 9 (see Figure 6-8), residential, commercial/industrial, and construction worker receptors were identified as potential human receptors. Exposure scenarios that include ingestion of homegrown produce and ingestion, dermal contact, and inhalation of soil and groundwater are evaluated in the HHRA (see Appendix H). Exposure of potential ecological receptors to contaminants through direct contact with soil and the food chain were also evaluated in the ERA (see Appendix I).

Exposure of potential ecological receptors to groundwater from migration to surface water was considered an incomplete pathway. Tidal influence studies indicated that only one well (MWOR-2) at Site 13 is tidally influenced (Tetra Tech 1997a). Groundwater contamination has not migrated to San Francisco Bay, and the storm sewer system at Site 13 is not considered a preferential pathway for contaminant migration to San Francisco Bay. In addition, samples collected from the storm drain bedding downstream at Site 13 did not contain VOCs at

concentrations greater than the detection limits, indicating that the bedding is not a migration pathway.

The storm sewer main line (sewer line J) runs through the eastern portion of Site 13 into Site 23 (see Figure 6-4). A storm drain lateral runs from Building 397 (manhole 5J-3) to the main line and was replaced with new PVC piping in 1991. Three additional lateral lines (originating at 6J-b, 6J-C and 6J-G) flow into the main line from the eastern portion of Site 13. The line from 6J-B to the main line was replaced with new PVC piping in 1991 (Tetra Tech 2000b). The line from 6J-C to the main line was cleaned in 1997, but has been identified as a high priority for repair. Additional line cleaning was conducted in 2003. The line from 6J-G to the mainline was cleaned in 1997 and was noted to be in good condition. The area where refinery waste is present intersects portions of this line. A second storm sewer line runs through the western portion of Site 13 (4J-1C to the southern border of Site 13). This line was cleaned and inspected in 1991 (see Figure 6-4) (Tetra Tech 2000b). Data collected from storm drain manhole 3J (downstream on Site 13) indicated that very low concentrations of VOCs are present in storm water (Tetra Tech 2000b). Samples collected from the storm drain bedding down stream at Site 13 did not contain VOCs at concentrations exceeding the detection limits, indicating that the bedding is a migration pathway.

6.3.2 Site 13 Data Quality Assessment

As discussed in Section 6.2, several environmental investigations were conducted at Site 13 as a part of the CERCLA and EBS Programs to identify and assess the extent of contamination in soil and groundwater and to determine risk. Data were collected over a period of approximately 13 years from 1990 through 2003 using a biased and phased sampling approach. Sampling focused on the following:

- Presence of the TRW in the central portion of Site 13
- TPH contamination around Building 397
- TPH contamination in the southeast portion of Site 13
- Industrial, sanitary, and storm sewers
- Fill material and native sediments to assess the presence of PAHs

These data, through an iterative process, were used to construct and refine the site-specific CSM presented in Section 6.3.1. They also were used to identify and fill data gaps until the quantity and quality of the data at Site 13 were judged to be adequate to complete the RI, as determined by applying the DQOs presented in Section 3.4.

Detection limits for some of the data used to evaluate Site 13 are elevated over residential PRGs (EPA 2002a); these elevated detection limits are the consequence of one or more of the following circumstances: (1) the evolution of lower detection limits as technology improves, (2) the revision of PRGs over time (which are not always technologically feasible), (3) and matrix interference. The first two of these circumstances generally do not result in significantly

elevated detection limits. However, matrix interferences sometimes cause significant elevations in the detection limits for a chemical contaminant, which leads to uncertainty as to whether that undetected compound could be present in significant concentrations at a site. Although some detection limits (SQL) were elevated above 2002 residential PRGs, detection limits for nondetected chemicals were typically sufficiently low to permit identification of potential health risks. However, because of elevated detection limits for SVOCs in soil and groundwater, further sampling and analysis of soil and groundwater may be needed to confirm these chemicals are not present. Additionally, sampling and analyses of soil for lead, PAHs, TPH, and pH to further define the boundaries of the TRW is also recommended.

Although soil and groundwater data gaps were identified, it was determined that the types and numbers of samples collected at Site 13 (see Figures 6-9A through 6-9N) and the analyses conducted were sufficient to characterize the site and to conduct risk assessments because data collection at Site 13 focused mainly on potential sources and was conducted in a phased approach. This phased approach afforded stakeholders opportunities to provide feedback on the suitability or adequacy of collected data and on the need to collect additional data to identify releases and complete the RI report. It is unlikely that the RI would recommend NFA if the site poses a potential significant risk to human health or the environment.

Both definitive and screening-level data were generated. Screening data were considered appropriate for use only in evaluations of nature and extent and fate and transport of chemicals. Section 3.4.2 provides further detail on the assessment of data quality and the use of definitive and screening-level data.

Data generated during the environmental investigations that were considered to be of sufficient quality for use in the RI report are presented in Appendix D and in the subsections below. Tables 6-15 through 6-17 summarize results of the CERCLA and EBS investigations for soil, groundwater, and soil gas. No data were collected at Site 9 under the TPH investigations. The summaries are organized according to analytical group and include the following: (1) the number and percent of detections of chemicals; (2) the average, minimum, and maximum detected concentrations; (3) minimum and maximum detection limits for nondetected samples; and (4) whether the maximum detected concentrations or detection limits exceed Region 9 residential PRGs or Cal-modified PRGs (EPA 2002a). Cal-modified PRGs are used for some chemicals if the California EPA PRG is more protective than the federal EPA value. PRGs and MCLs are provided in the tables for comparison only.

6.3.2.1 Soil

Soil samples collected at Site 13 were analyzed for VOCs, SVOCs, PAHs, pesticides and PCBs, metals, dioxins, as well as physical parameters (hardness, acidity, pH, anions, specific conductance, total dissolved solids, dissolved gases, sulfides, and biological and chemical oxygen demand) (see Table 6-1). Of the samples collected and analyzed, 178 samples for VOCs, 169 samples for SVOCs, 106 pesticides and PCBs, 256 samples for metals, and 1 sample for dioxins were considered acceptable for use in this RI report. During additional PAH sampling in 2003, 323 samples for PAHs were identified as acceptable for use in this RI report. PAH data

for soil samples collected during previous investigations were not evaluated because of the high detection limits associated with these data. Laboratory detection limits for other chemicals exceeded residential PRGs (EPA 2002a) and are noted in Table 6-15. Detection limits for a few of the nondetected VOCs, SVOCs, and pesticides and PCBs were also elevated above residential PRGs (EPA 2002a); however, most of the nondetected samples had detection limits below PRGs. Therefore, detection limits for VOCs, SVOCs, and pesticides and PCBs were sufficiently low to identify potential health risks except for the following SVOCs: 2-nitroaniline, bis(2-chloroethyl)ether, hexachlorobenzene, n-nitroso-di-n-propylamine, and n-nitrosodimethylamine. Nondetected arsenic and thallium in soil were also elevated above residential PRGs (EPA 2002a). However, Site 13 was not identified as a source of arsenic or thallium (see Section 6.3.1, CSM) and concentrations detected in soil are similar to concentrations detected in ambient soil at Site 13.

A subset of the soil data was selected for use in the risk assessments (see table below). Data were considered to be appropriate for use if they (1) were validated, (2) could be used to characterize CERCLA releases, and (3) reflected current site conditions. Only data collected under the IRP with the objective of characterizing CERCLA activities were used. Data were collected for screening purposes as part of the EBS, and inclusion of these data could add more uncertainty to the risk assessments. Soil samples collected from petroleum-saturated soil were not included in the risk assessments; therefore, the risk presented is underestimated. Petroleum-saturated soil was encountered in the center and southeast portions of Site 13, which were associated with oil refinery waste, and around Building 397, which was associated with the release of jet fuel. Risk from TPH was assessed separately (see Appendix F). Data from soils that are no longer present at Site 13 due to removal actions were not included because they do not reflect the current condition at the site.

Data for soil from each site were aggregated in depth intervals of 0 to 2, 0 to 4, and 0 to 8 feet bgs. The depth intervals evaluate potential exposures associated with site use. The 0-to-2-feet and 0-to-8-feet-bgs depth intervals evaluate potential human health exposures, and the 0-to-4-feet-bgs depth interval evaluates potential ecological exposures. The total number of samples for each analytical group included in the data set for each of these depth intervals is presented in the table below.

Number of Suitable Soil Data for Site 13 Risk Assessments (by depth interval)

Analytical Group	0 to 2 feet bgs	0 to 4 feet bgs	0 to 8 feet bgs
VOCs	10	45	96
SVOCs	22	54	86
PAHs	158	240	322
Pesticides and PCBs	17	38	54
Metals	33	81	147

The quantity of soil data was considered adequate to evaluate risk. In general, the highest concentrations of chemicals (except for TRW and TPH) are used in the HHRA. However,

further sampling and analyses of soil for PAHs, lead, TPH, and pH to further define the boundaries of the tarry refinery waste is recommended.

6.3.2.2 Groundwater

Groundwater samples collected at Site 13 were analyzed for VOCs, SVOCs, PAHs, pesticides and PCBs, and metals, as well as physical parameters (hardness, acidity, pH, anions, specific conductance, total dissolved solids, dissolved gases, sulphides, biological and chemical oxygen demand) (see Table 6-16). Of the samples collected and analyzed, 131 samples for VOCs, 71 samples for SVOCs, and 45 samples for pesticides and PCBs were considered acceptable for use in this RI report. Thirteen samples for PAHs and 86 samples for filtered metals also were considered acceptable. As with soil, laboratory detection limits for some chemicals exceeded residential PRGs (EPA 2002a) and are identified in Table 6-4. Detection limits for some of the nondetected PAHs, pesticides (aldrin, chlordane, dieldrin, heptachlor, heptachlor epoxide, and toxaphenene), and PCBs in groundwater had detection limits elevated over tap water PRGs (EPA 2002a); however, they were not significantly elevated and are due to the revision of PRGs over time and detection limits that are not always technologically feasible. Detection limits for PAHs were equivalent to MCLs. Detection limits for some VOCs and SVOCs that were nondetected or detected in groundwater at a low frequency were also elevated (see Table 6-17). Arsenic and thallium were detected at a low frequency, and detection limits for nondetected samples were also elevated.

A subset of the groundwater data was selected for use in the risk assessments (see table below). Data were considered to be appropriate for use if they (1) were validated, (2) could be used to characterize CERCLA releases, and (3) reflected current site conditions. Groundwater data for Site 13 were aggregated by contaminant plume rather than by site. Data for groundwater later replaced with more current data were not included because they do not reflect current conditions at Site 13. Only data collected under the IRP with the objective of characterizing CERCLA activities were used. Data collected as part of the EBS were not used to evaluate risk because they were collected with DQOs that differ from the CERCLA investigations. At least four quarters of groundwater data from monitoring wells were used. However, if data were lacking for an analytical group, older data were included for all analytical groups. Groundwater data included samples collected from April 1994 to September 2002. Field and screening-level data typically were not used; however, data obtained using direct-push methods were used because of a lack of data from monitoring wells in the concentrated plume areas.

Groundwater samples collected from floating product areas were not included in the risk assessments. Floating product encountered in the center and southeast portions of Site 13 was associated with refinery waste. Floating product encountered around Building 397 was associated with the release of jet fuel.

Number of Suitable Groundwater Data for Site 13		
Analytical Group	**Suitable for RI Report**	**Used in Risk Assessments**
VOCs	131	66
SVOCs	71	36
PAHs	13	13
Pesticides and PCBs	45	19
Metals	86	52

The quantity of groundwater data was considered adequate to evaluate risk.

6.3.2.3 Soil Gas

Soil gas data were collected to evaluate indoor air risk in the HHRA. Two soil gas samples were collected at Site 13 near the maximum concentrations of VOCs in groundwater at depths of 0.5 and 4 feet bgs; these samples were analyzed for VOCs. Detection limits for many of the nondetected VOCs exceeded ambient air PRGs; however, SQLs were not set to meet the PRGs.

6.3.3 Site 13 Background Comparison

A background comparison was conducted for Site 13 by comparing a background data set with analytical results for metals in samples representative of Site 13. This comparison was used to determine if metals in soil and groundwater are statistically similar to background and could be considered to be either naturally occurring (background) or potentially resulting from historical site activities. The complete approach is presented in Appendix A and is summarized in Section 3.4.3.

Metals that exceeded background in soil included antimony, arsenic, beryllium, iron, lead, mercury, selenium, and zinc.

The statistical evaluation determined that arsenic in soil at Site 13 is not background based on frequency of detection. For Site 13 soil, the detection frequency for arsenic in the background data set was too low to support a comparison of median concentrations using the Wilcoxon rank sum (WRS) test. However, sufficient data were detected to compare the right-hand tails using the quantile test, and results of the comparison clearly showed that arsenic concentrations at Site 13 were below background. That is, only three of the highest five concentrations in the pooled site and background data set came from Site 13. In order for site concentrations to be statistically higher than background at the 5-percent level of significance, all five of the highest measurements would have to come from the site population. Examination of outlier box plots and quantile tables (provided in Appendix A) also showed that the maximum detected concentration of arsenic in the background data set (23 mg/kg) exceeded the maximum detected concentration of arsenic in the site data set (20 mg/kg). Therefore, arsenic in soil at Site 13 is likely attributed to background.

The statistical evaluation of lead in soil determined that lead at Site 13 is not background. A review of the range of concentrations shows that lead concentrations in soil at Site 13 are well above background concentrations (see Appendix A). Background concentrations ranged from 1.3 to 41 mg/kg, while site concentrations ranged from 1.3 to 431 mg/kg. Lead concentrations detected in refinery waste at Site 13 were as high as 2,000 mg/kg. As a result, lead concentrations detected in soil at Site 13 are considered above the range of background for Alameda Point.

Antimony, barium, beryllium, chromium, iron, manganese, and selenium exceeded background in groundwater at Site 13.

6.4 NATURE AND EXTENT OF CHEMICALS IN SOIL AND GROUNDWATER

This section summarizes the nature and extent of contamination in soil and groundwater at Site 13. The nature and extent evaluation summarizes (1) TPH detected at the site, (2) types and concentrations of CERCLA chemicals that most likely were used at the site, and (3) CERCLA chemicals that demonstrate significant risk to human health or the environment (also known as "risk drivers"). Only chemicals that pose risk to human health or the environment (see Appendices H and I) or relate to past site activity are discussed in the sections below. Section 6.4.2, Chemicals Used at Site 13, assisted the Navy in determining whether contamination "hot spots" were present at Site 13. The nature and extent of risk drivers, excluding those that may occur naturally at the site, are evaluated in Section 6.4.3. Risk drivers are those chemicals that pose a cancer risk above 1E-06 or an HI above 1 to human receptors or pose significant risk to ecological receptors. The evaluation of risk drivers includes (1) site-specific figures to assess the spatial distribution and concentration patterns of risk drivers and (2) a review of the figures, data, and site hydrology to identify the boundaries of the contamination, the volume of the affected media, and, if possible, the suspected source of the risk drivers at the site.

6.4.1 TPH

Even though TPH is not a CERCLA contaminant, soil and groundwater were sampled at various locations across Site 13 for TTPH, which includes all TPH-fractions (TPH-d, TPH-g, jet fuel, or TPH-mo) and TPH-associated constituents (BTEX, lead, and MTBE) (see Figure 6-3). An evaluation of TPH in soil and groundwater at Site 13 was conducted based on the TPH strategy for Alameda Point (see Appendix F) to assess contamination and possible risk at the site. Based on the evaluation, further action is recommended for TTPH and TPH-associated chemicals present in soil and groundwater within Plume 1 of Site 13 under the TPH program. Further action is recommended for TTPH and TPH-associated chemicals present in soil and groundwater within Plume 2 of Site 13 under the CERCLA program for commingled contaminants.

The following potential sources of TPH contamination were identified at Site 13:

- A spill occurred in Building 397 during which 3,500 to 17,000 gallons of JP-5 were released from a drain valve in the eastern end of the building to a floor drain connected to OWSs 397A, 397B, and 397C, which in turn drained to the storm sewer system.
- OWSs 397A, 397B, 397C, and 397D, located on the eastern end of Building 397, were filled with petroleum product during the release of jet fuel. Subsequently, OWSs 397A, 397B, and 397C were pumped out and filled with concrete slurry; OWS 397D was removed in 1993 (Navy 1993).
- Original industrial waste treatment sewer lines transported waste from the JETCs at Building 397 to an off-site municipal treatment plant. The lines were no longer used after being plugged in 1989 and replaced with new PVC piping in 1991.
- An underground fuel line ran from Building 372 (located on Site 11 to the north) into Building 397 to support jet engine testing activities. The line was approximately 1,000 feet long and supplied JP-5 to Building 397. During a scheduled pressure test in 1991, the line lost approximately 15 psi of pressure from an initial 100 psi in about 20 minutes (PRC and JMM 1992). The fuel line was removed in October 1998 (Tetra Tech and R&M 2000).
- GAP 62, located in the west end of Building 397, served as a temporary storage area for 30- to 55-gallon drums containing hazardous waste, including Mil-L-23699 lubrication and engine oil within Building 397; GAP 62 is recommended for closure under the SWMU evaluation (see Appendix G).
- The oil refinery, located primarily in the southern portion of Site 13, is the source of the black tarry material; it is the result of disposal practices that may have occurred along the former shoreline and within the former refinery boundaries.
- ASTs 324 through 328, which were located on the eastern portion of Site 13 and were demolished before 1990, were likely used to store petroleum hydrocarbons. No documented releases occurred from these ASTs, but they are possibly a source of free petroleum hydrocarbon product found in soil and groundwater east of the former AST locations.

Two plumes contain floating product at Site 13 (see Figures 6-10 and 6-11). The first plume (Plume 1) is located near the western end of Building 397, runs approximately 360 feet north to south and 420 feet east to west, and is limited to the first FWBZ. Plume 1 is associated with the release of JP-5 within Building 397 that entered the OWSs and nearby piping. The release was stopped, and the OWSs were pumped out and removed or filled with concrete slurry. Excavation was conducted to address saturated soil around the former OWSs and associated piping. Storm drain piping was replaced with new PVC piping. The Navy operated a DVE system to address residual TPH remaining near Building 397. The second plume (Plume 2) is located along the southern and eastern end of Site 13, runs approximately 540 feet north to south and 420 feet east to west at its widest area, and is limited to the FWBZ.

Plume 1

Two soil borings, CA13-03 and CA13-06, were drilled within the boundary of Plume 1 and contained approximately 6 inches of floating product (see Figure 6-10). Samples from the borings were not analyzed for chemicals; however, floating product was noted in the boring logs. Four groundwater samples collected within the boundary of Plume 1 did not exhibit chemical concentrations exceeding floating product criteria. TPH-associated benzene was detected at concentrations exceeding the site-specific PRG in groundwater within Plume 1.

Plume 2

Samples, ranging in depth from 1 to 9.5 feet bgs, were collected from eight locations (B13-29, B13-30, B13-31, B13-41, CA13-17, CA13-20, CA13-21, and CA13-22) within the Plume 2 boundary and exhibited TTPH concentrations exceeding the floating product screening level of 14,000 mg/kg (see Figure 6-10). Concentrations in samples from the eight locations ranged from 14,900 to 297,320 mg/kg. The southern end of the plume also is commingled with TRW, which has been identified as a CERCLA waste at Site 13.

Soil samples collected from the TRW exhibited lead concentrations as high as 2,000 mg/kg. Lead in groundwater in the vicinity of the TRW was detected at a high concentration of 1,770 µg/L.

Elevated concentrations of both TPH-mo and TPH-g were detected at soil sampling locations B13-28, B13-29, CA13-11, CA13-15, CA13-16, CA13-17, CA13-20, and CA13-21, within the mini-storage area and the TRW area in the southern portion of Plume 2. Concentrations ranged from 7,400 to 69,200 mg/kg for TPH-mo and 1,300 mg/kg for TPH-g. Soil sampling locations are depicted on Figure 6-4.

Samples collected from 11 sampling locations (B13-28, B13-29, B13-30, CA13-11, CA13-12, CA13-13, CA13-15, CA13-17, CA13-20, CA13-22, and CA13-24) within the Plume 2 boundary exhibited TTPH concentrations exceeding the screening criterion for floating product of 20,000 µg/L (see Figure 6-11). Concentrations from the 11 sampling locations ranged from 24,620 to 1,091,000 µg/L. Groundwater sampling location B13-30 is located in the northern portion of Plume 2, and locations B13-28, B13-29, CA13-11, CA13-12, CA13-13, CA13-15, CA13-17, CA13-20, CA13-22, and CA13-24 are located within the mini-storage area and TRW area in the southern portion of Plume 2.

Samples collected from 11 sampling locations (B13-29, CA13-11, CA13-12, CA13-13, CA13-14, CA13-15, CA13-16, CA13-17, CA13-22, CA13-23, and CA13-25) in the southern portion of Plume 2 exhibited benzene concentrations that ranged from 1.4 to 1,400 µg/L. Results indicate a benzene plume exists in this area. This portion of Plume 2 is commingled with the TRW.

6.4.2 Chemicals Used at Site 13

This section focuses on CERCLA chemicals detected in soil and groundwater that were used historically at Site 13. Chemicals that most likely were used at Site 13 and their breakdown products include TPH, BTEX, and solvents such as PCE within Building 397. Numerous releases of petroleum fuels, historical aircraft defueling, and overhaul activities were reported during interviews with personnel during the EBS (IT 2001). These chemical concentrations and a general description of their extent are presented below by medium. Most of the chemicals detected across Site 13 are consistent with historical activities known to occur at the site, which included the former oil refinery and aircraft storage, overhaul, and defueling. Statistical summaries of all results for soil, groundwater, and soil gas are presented in Tables 6-15 through 6-17.

Soil

The table below lists the chemicals that most likely were used at Site 13 (or their breakdown components), the residential PRG (EPA 2002a), the range of concentrations detected in soil at the site, and the sampling locations where the maximum concentration of each chemical was detected. It also lists chemicals not detected in soil but detected in groundwater at Site 13. Figure 6-3 shows the sampling locations.

Soil Analytical Results for Chemicals used at Site 13

Chemical	Residential PRG (mg/kg)	Range of Concentrations (mg/kg)	Sampling Location of Maximum Concentration
TPH-g (associated with TRW only)	NA	580 to 4,500	028-S123-004
TPH-d (associated with TRW only)	NA	5,000 to 140,000	028-S13-007
TPH-mo (associated with TRW only)	NA	440 to 110,000	028-S13-007
Benzene	0.6	0.0005 to 31	028-S13-002
Ethylbenzene	8.9	0.0002 to 81	028-S13-001
Toluene	520	0.0005 to 27	028-S13-001
Xylene	2,700	0.0003 to 31	028-S13-001
1,2,4-Trimethylbenzene	520	Not detected	Not applicable
1,3,5-Trimethylbenzene	210	Not detected	Not applicable
Naphthalene	56	Not detected	Not applicable
2-methylnaphthalene	NA	Not detected	Not applicable
TCE	1.5	Not detected	Not applicable
PAHs (represented as BaP Equivalent)	0.062	0.0017 to 7.198	C3S013B051
Lead	150*	1.9 to 2,000	028-S13-002

Note: Residential PRG is provided for reference only. Risks are quantified in the HHRA section of this document.

* Denotes California-modified PRG

Previous site activities associated with the operation of the former refinery at Site 13 were identified as a source of CERCLA contaminants. Based on the review of historical information and conjecture about operating practices typical of the era, refinery waste likely was disposed of on site or in the tidal lands. These wastes are tarry and contain elevated concentrations of TPH-g (3,000 mg/kg), TPH-d (140,000 mg/kg), TPH-mo (110,000 mg/kg), benzene (31mg/kg), toluene (130 mg/kg), ethylbenzene (81 mg/kg), xylenes (160 mg/kg), PAHs quantified as BaP equivalent (7.198 mg/kg), and lead (2,000 mg/kg). The wastes exhibit a pH as low as 1.1 (see Table 6-11). The material is black and globular in nature with strong hydrocarbon odors, and black and gray sand has been observed to be surrounding the waste. Samples from these stained sands contained elevated concentrations of TPH, xylene, ethylbenzene, and PAHs. These elevated concentrations indicate that chemicals present in the oil refinery waste have diffused into nearby soil.

Although the extent of the material in soil is not fully defined, the location of the material was determined by reviewing boring logs and by test pits completed in association with sampling activities during the pilot test for terrain conductivity mapping technology (see Figure 6-12). The TRW appears to be located along the former site shoreline and has been observed at the surface in several locations. More material appears to come to the surface in the summer, when the sun heats the soil. The material appears to move to the surface along preferential flow paths in between the original soil of the former shoreline and the fill material.

The TRW appears in various forms at Site 13, both in the asphaltic form seen in the test pits and as floating product in the southeast portion of Site 13. The historical refinery operation produced petroleum products with a range of molecular weights (heavier- to lighter-range hydrocarbons) that were likely disposed of within Site 13. The lighter-range hydrocarbons moved more freely, while the heavier-range hydrocarbons were more apt to sink and not migrate. Therefore, the heavier-range hydrocarbons are generally found in the area of the test pits, while the lighter-range material is found in the southeastern portion of Site 13.

The depth at which TRW has been observed is summarized in Table 6-5. In addition, locations and cross sections of test pits completed in August 2003 are included on Figures 6-5, 6-6, and 6-7. TRW ranges in depth from just below the ground surface to approximately 8 feet bgs. The stained sand around the TRW is identified from the former shoreline to the eastern portion of Site 13 in the footprint of the former refinery. Stained sand may indicate the presence of TRW and is also identified on Figure 6-12. The location of the former refinery, the shoreline, and the approximate location of the TRW observed in borings supports the historical information about disposal of the oil refinery wastes on site.

Benzene was detected in soil within the TRW (ranging in depth from just below the ground surface to approximately 8 feet bgs) in the southeast and central portions of Site 13 (see Figure 6-13). The concentrations of benzene in soil are presented in Table 6-15. Except for one sample (collected from BOR-9), all of the samples containing detectable concentrations of benzene in soil were collected from locations where TRW had been identified.

Lead was detected in soil across Site 13. Concentrations are elevated in locations where TRW and TPH contamination exist. Lead was detected in soil within TRW in the southeast and central portions of Site 13, ranging in depth from just below the ground surface to approximately 8 feet bgs (see Figure 6-14). The concentrations of lead in soil are presented in Table 6-15. All of the samples containing concentrations of lead above the California-modified PRG for residential soil (EPA 2002a), except for a sample collected from boring B13-30, were from borings or samples where TRW has been identified. A removal action was conducted at the site to remove soil with lead concentrations exceeding 13,000 mg/kg in soils (PRC and MW 1995a).

Petroleum fuels such as diesel fuel, aviation fuel, motor oil, and gasoline were likely stored in ASTs 324 through 328, just east of Skyhawk Street at Site 13 (see Figure 6-1). TPH-d, TPH-mo, and TPH-g were detected in soil at concentrations indicating the presence of free product just east of the tanks in AOC 009; therefore, the tanks are the most likely source of these contaminants. Petroleum in soil and groundwater at AOC 009 appears to be commingled with the TRW, which is considered a CERCLA waste. The maximum BaP equivalent concentration was detected at C3S013B051, in the vicinity of AOC 009. Table 6-10 lists the BaP equivalent data from the PAH sampling program.

Jet fuel was used on Site 13 at the jet engine rehabilitation and testing facility in the east end of Building 397. In addition, 3,500 to 17,000 gallons of jet fuel was released to the storm drain system on the east end of Building 397 in 1991. Immediate cleanup of the free product commenced, but not before some of the material entered soil and groundwater in the area. The presence of free product in soil and groundwater was confirmed during subsequent investigations, and the area of free product was designated AOC 397. In 2001, a pilot scale DVE system was installed to remove jet fuel from soil and groundwater in AOC 397. The system successfully removed jet fuel from soil and groundwater; as a result, it was upgraded to full-scale operation in 2002. As of December 2003, the system appears to have removed nearly all the free product. The data indicate that the jet fuel contamination likely is not commingled with any CERCLA chemicals.

Groundwater

The table below lists the chemicals that were most likely used at Site 13, the tap water PRGs (EPA 2002a), the range of concentrations detected in groundwater, and the sampling location of the maximum detected concentration. Figure 6-3 shows the groundwater sampling locations at Site 13.

Groundwater Analytical Results for Chemicals used at Site 13

Chemical	Tap Water PRG (µg/L)	Range of Concentrations (µg/L)	Sampling Location of Maximum Concentration
Benzene	0.34	0.5 to 1,400	CA13-17
Ethylbenzene	2.9	0.2 to 130	B13-28
Toluene	720	0.3 to 65	CA13-13
Xylene	210	0.3 to 530	B13-28

Groundwater Analytical Results for Chemicals used at Site 13

Chemical	Tap Water PRG (µg/L)	Range of Concentrations (µg/L)	Sampling Location of Maximum Concentration
1,2,4-Trimethylbenzene	12	0.5 to 40	CA13-12
1,3,5-Trimethylbenzene	12	0.5 to 16	CA13-12
Naphthalene	6.2	1.1 to 210	M13-07
2-Methylnaphthalene	NA	0.9 to 130	M13-07
TCE	0.03	0.2 to 1	M07C-09
Lead	15	0.13 to 1,770	B-IMF-09

Note: Residential PRGs are provided for reference only. Risks are quantified in the HHRA section of this document.

The oil refinery wastes, Building 397, and ASTs 324 through 328 (also called AOC 009) may have contributed chemicals to groundwater at Site 13 in the form of petroleum contamination as well as associated chemicals such as BTEX, 2-methylnaphthalene, naphthalene, trimethylbenzenes, and lead. In general, groundwater is impacted with these chemicals in the same area where TRW was identified, which is in the southeast portion of Site 13, near the mini-storage area.

TRW does not appear to be easily mobilized to groundwater unless unusual conditions are present. Benzene, ethylbenzene, and xylene are likely present in groundwater because TRW in the area intersects groundwater. Areas where low pH soil and lead are present do not show that lead is leaching to groundwater in large quantities. Commingling of TRW with refined petroleum may cause the TRW to dissolve and become mobile in groundwater. However, distinctions in the commingled material cannot be made because the TRW appears to have a similar composition to diesel fuel, motor oil, and gasoline and data are limited.

Ethylbenzene was detected in groundwater southeast of Building 397 (Plume 1) and in the southeastern portion of the site (Plume 2) (see Figure 6-11). In 1990, a sample collected from monitoring well MW-1 exhibited ethylbenzene at a concentration of 34 µg/L; however, ethylbenzene was not detected in samples collected in 1994, 1995, 2000, 2001, and 2002. Because MW-1 is close to Building 397, it is assumed that ethylbenzene detected at this location is from activities at Building 397 (Plume 1). Ethylbenzene in the southeastern portion of Site 13 is located near the TRW area. Ten of 16 groundwater samples collected near the TRW contained ethylbenzene concentrations ranging from 5.6 to 96 µg/L. Samples from locations CA13-12 and CA13-17 exhibited ethylbenzene at concentrations of 96 and 85 µg/L, respectively.

Xylene was detected in groundwater in the southeastern portion of Site 13 near the TRW area (Plume 2). In 1994, two samples collected from sampling locations B13-28 and B13-29 exhibited xylene at concentrations of 530 and 240 µg/L, respectively (see Figure 6-11). In 2000, six groundwater samples were collected and analyzed for total xylenes; one sample from location, CA13-12, exhibited xylene at a concentration of 450 µg/L. Groundwater samples were collected on all four sides of location CA13-12, and all the samples contained xylene concentrations less than the tap water PRG (EPA 2002a).

The maximum concentrations of naphthalene and 2-methylnaphthalene historically were detected in monitoring well M13-07, which is near ASTs 324 through 328 and the TRW. Elevated concentrations of naphthalene were detected only in locations where TRW is present or where the hydrocarbon plumes are present, specifically in monitoring wells M13-07 and MW-1. Naphthalene also was detected infrequently in monitoring well M13-09 (see Figure 6-11).

Lead in groundwater was detected in only one sample at an elevated concentration (1,770 µg/L); this sample was located in the same area as high lead concentrations in soil that was collocated with the asphaltic TRW (B-IMF-09). A groundwater sample from location M-IMF-01, located approximately 30 feet southwest and immediately downgradient of B-IMF-09, exhibited lead at a concentration of 1.5 µg/L. A sample from location M13-06, located approximately 80 feet west of location B-IMF-09, exhibited lead at a concentration less than 0.23 µg/L. The MCL for lead in groundwater is 15 µg/L. Based on the data observed at Site 13, significant mobilization of lead is not occurring. Although elevated lead in soil appears to be only in the TRW above the groundwater table and is not expected to move quickly, elevated lead in soil may dissolve and become mobile in groundwater.

6.4.3 Risk Drivers

Although numerous chemicals were detected at Site 13, most of these chemicals do not pose significant risk as defined by the risk assessments. As a result, the purpose of this section is to further characterize the nature and extent of CERCLA chemicals driving risk at Site 9 that are not background. Selection of these chemicals was based on the background comparison for metals and results of the HHRA and ERA. Based on the HHRA, arsenic and BaP were identified as soil risk drivers. Benzene, manganese, PCP, thallium, and TCE were identified as groundwater risk drivers. Zinc in soil was determined to pose risk to terrestrial ecological receptors. Arsenic and zinc in soil and thallium in groundwater are attributed to background, so the nature and extent of these metals was not evaluated further.

6.4.3.1 Risk Drivers in Soil

PAHs quantified as BaP equivalents were detected within TRW (ranging in depth from just below the ground surface to approximately 8 feet bgs) and in locations where stained soil was observed across Site 13 (see Figure 6-12). The elevated concentrations of BaP equivalents are most likely associated with the TRW at Site 13. The highest concentrations were detected in samples of the TRW.

6.4.3.2 Risk Drivers in Groundwater

The following discussions focus on the nature and extent of benzene, manganese, PCP, and TCE in groundwater.

Benzene

Benzene was historically detected in groundwater near Building 397 (Plume 1) and in the southeastern portion of Site 13 (Plume 2) (see Figure 6-3). Benzene concentrations in groundwater at Site 13 are presented in Table 6-16 and shown on Figure 6-16.

Although a sample collected at monitoring well MW-1 in 1989 exhibited benzene at a concentration of 440 µg/L, benzene was not detected in samples collected in 1995, 2000, 2001, and 2002. Because MW-1 is close to Building 397, it is assumed that benzene at this location is from activities at Building 397. Because benzene is no longer present in this location, it is not considered a concern in this area.

Benzene in the southeastern portion of Site 13 is under the mini-storage units. Sixteen samples were collected and analyzed for benzene in this area. Three of the sampling locations, CA13-12, CA13-15, and CA13-17, located at the center of the plume exhibited benzene concentrations of 1,100, 1,100, and 1,400 µg/L, respectively. Two sampling locations, CA13-19 and CA13-18, located on the south side of the plume exhibited benzene at concentrations below detection limits, and sampling locations on the north, east, and west side of the plume exhibited benzene concentrations less than 26 µg/L, indicating the extent of the benzene plume is defined. Benzene is a natural component of crude oil and has been detected in elevated concentrations within the TRW. Limited groundwater data are present in the area near ASTs 324 through 328, so it is unknown whether benzene in groundwater from the TRW and from potential releases at ASTs 324 through 328 is commingled. Benzene in groundwater is a concern in the southeastern portion of Site 13.

Manganese

The highest concentration of manganese in groundwater at Site 13 was 110 mg/L. There was no discernable pattern to the distribution of elevated manganese in groundwater, and manganese is not associated with known site activities. Elevated manganese concentrations may be attributable to reducing conditions associated with organic material present in the BSU, marsh crust, and refinery waste and saltwater intrusion. As discussed in Section 4.0, saltwater intrusion occurs in the SWBZ at Site 13, correlating with the elevated manganese concentrations.

The background comparison determined that manganese in Site 13 groundwater is not attributed to background. A review of the range of concentrations shows that concentrations of manganese at Site 13 are greater than manganese in the background data set. The highest concentration of manganese in groundwater in the background data was 2.48 mg/L.

PCP

PCP is a common wood preservative that likely arrived at Site 13 with preserved wood used to build docks. In February 1995, PCP was detected at a maximum concentration of 7 µg/L in a sample from monitoring well MWOR-3 on the eastern side of Site 13 (see Table 6-16). In

August 1995, PCP was detected at a concentration of 0.6 µg/L. The analytical detection limit for PCP was 25 µg/L for 63 of the 72 samples at Site 13; that limit is also the EPA contract laboratory program (CLP) SQL. Five samples collected in 1990 had detection limits of 50 µg/L, and one sample collected in 1994 had a detection limit of 250 µg/L based on matrix interference from petroleum products. The extent of PCP contamination below 25 µg/L at Site 13 cannot be determined.

TCE

TCE is an industrial solvent historically used at Alameda Point, and it is a breakdown component of other solvents. TCE was detected in 5 of 121 VOC samples at concentrations ranging from 0.2 to 1 µg/L (sampling location M07C-09). Of the 117 groundwater samples analyzed for TCE, 97 had detection limits of 1 µg/L or less, and 12 had detection limits of 2 µg/L (see Figure 6-17). All TCE data in groundwater are presented in Table 6-16. It is possible that TCE was erroneously identified in groundwater because of matrix interference from petroleum products. One location (M07C-09) in which TCE was detected is near the storm sewer corridor; this area is also downgradient of the groundwater contamination plume from the gasoline station (Site 22). TCE was detected at this location only during the 2002 sampling events. In addition, TCE was detected in samples collected from locations CA13-01 and MWOR-02 at a concentration of 0.6 µg/L in 2000 and 2001, respectively. The detection of TCE has been intermittent and does not exhibit a distribution pattern suggesting a source. It is possible that TCE infiltrates the storm sewer at Site 4 and occasionally enters the groundwater at Site 13 through leaks in the storm sewer piping. TCE in groundwater is a potential concern at Site 13, although TCE is not believed to be associated with site activities.

6.5 FATE AND TRANSPORT

The objective of this evaluation is to determine whether chemicals driving risk at Site 13 (1) have migrated or degraded, (2) are being released from a continuing source of contamination, and (3) are likely to be distributed by groundwater or along other potential pathways. Chemicals driving risk at Site 13 include PAHs in soil and benzene, manganese, PCP, and TCE in groundwater.

6.5.1 PAHs in Soil

The highest concentrations of PAHs, quantified as BaP equivalents, were detected within TRW and are most likely associated with TRW at Site 13. PAHs degrade extremely slowly in the environment and bind to organic matter in soil. In addition, they are mostly insoluble in water; therefore, they exhibit low potential for migration. The PAHs found at Site 13 likely will remain in their present state (ATSDR 1995a).

6.5.2 Benzene in Groundwater

Benzene is collocated with TRW and TPH contamination. In 1994, benzene was detected at sampling location B13-30, near ASTs 324 through 328. In 2000, concentrations detected in samples collected in the same area were lower.

The highest concentrations of benzene (1,400 µg/L at CA13-17, 100 µg/L at CA13-15, and 1,100 µg/L at CA13-12) are collocated with TRW. It is likely that benzene is absorbed onto the organic material in soil associated with TRW, and its movement in groundwater is limited. This hypothesis is further supported by the fact that the plumes appear to be limited in size and not migrating with groundwater.

6.5.3 Manganese in Groundwater

The transport and partitioning of manganese in groundwater is controlled by the solubility of the specific chemical form present, which is determined by pH, oxidation-reduction potential, and the characteristics of the available anions. Manganese (II) is the most soluble and most mobile form of manganese found in groundwater. Manganese (II) is predominant in most waters (pH 4 to 7) but may become oxidized at a pH greater than 8 or 9. The principal anion associated with manganese (II) in water is usually carbonate, and the concentration of manganese is limited by the relatively low solubility (65 mg/L) of manganese carbonate. In relatively oxidized water, the solubility of manganese (II) may also be controlled by manganese oxide equilibrium. In extremely reduced water, the fate of manganese tends to be controlled by formation of a poorly soluble sulfide.

Elevated manganese concentrations at Site 13 may be attributable to reducing conditions associated with organic material present in the BSU, marsh crust, and refinery waste and saltwater intrusion. As discussed in Section 4.0, saltwater intrusion occurs in the SWBZ at Site 13, correlating with the elevated manganese concentrations.

6.5.4 PCP in Groundwater

PCP was detected only in samples from well MWOR-3 and was detected at concentrations exceeding the tap water PRG of 0.56 µg/L (EPA 2002a). However, the detection limits for PCP were elevated at 25 µg/L or higher. The extent of PCP contamination below 25 µg/L cannot be determined at Site 13. Well MWOR-3 is located within the footprint of known TPH contamination. Corrective action taken to remove TPH will likely destroy any low-level PCP concentrations that exist at Site 13.

6.5.5 TCE in Groundwater

TCE was detected in 5 of 121 samples collected at Site 13 at concentrations at or below 1 µg/L. Based on these data, it is not clear if a significant quantity of TCE is present in groundwater.

Natural attenuation processes of reductive dechlorination, dilution, and volatilization will most likely degrade the low concentrations of TCE in groundwater at Site 13.

6.6 HHRA

A summary of the HHRA methodology is presented in Section 3.4.6. The summary includes details pertaining to selection of the data set, selection of COPCs, the exposure assessment, the toxicity assessment, and the risk characterization. Additional detailed information is provided in the HHRA (see Appendix H).

Soil and groundwater data representing saturated soils and groundwater with product sheen (that is, a nonaqueous layer) were collected and analyzed at Site 13. These data are problematic for a risk assessment because they are not representative of site-wide baseline conditions but rather represent a hot spot of contamination. Several of these areas are being addressed by operating remediation systems under the TPH program. Therefore, these hot spot data are not included in the HHRA. In addition, soil saturated with TRW was not included in the HHRA. The pH of the TRW is low enough to present an acute toxicity hazard, and it is considered to be a continuing source of elevated concentrations of PAHs, benzene, and lead throughout Site 13. Risks and hazards presented in this section are based on "fringe" product concentrations.

Noncancer health hazards and cancer risks calculated for Site 13 media are summarized in this section on a media-by-media basis, including surface soil, subsurface soil, soil gas and groundwater (vapor intrusion pathways), and groundwater (domestic use pathways). As noted in Section 3.4.6, the following receptors were evaluated in the HHRA: current/future commercial/industrial worker, future construction worker, future hypothetical resident, future construction worker intrusive exposure scenario (deep soil 0 to 8 feet bgs), and future hypothetical resident intrusive exposure scenario.

The total RME carcinogenic risks and noncancer HIs for Site 13 are summarized in Table 6-18. The total CTE carcinogenic risks and noncancer HIs for Site 13 are summarized in Table 6-19. Risk for each media and pathway is presented in these tables.

6.6.1 Risks from Soil

Commercial/industrial and construction worker scenarios are considered the most likely exposure scenarios. For soil, the highest total RME carcinogenic risk (including background) based on the industrial worker scenario is **7E-06**,; this risk is within the risk management range of 1E-06 to 1E-04. The total RME HI (including background) based on the construction worker scenario is below **0.1** , which is less than the risk management HI of 1 for noncarcinogens. RME risk results are summarized on Table 6-18 and detailed in Appendix H. For soil, the highest total CTE carcinogenic risk (including background) based on the industrial worker scenario is below **3E-07**, which is less than the risk management range of 1E-06 to 1E-04. The total CTE HI (including background) based the industrial worker scenario is below **0.008**, which is less than

the risk management HI of 1. The CTE risk results are summarized in Table 6-19 and detailed in Appendix H.

Most carcinogenic risk in soil (**6E-06**) is associated with incidental ingestion and dermal contact with arsenic. Also, arsenic is the only analyte that had an exposure medium total (adding all exposure pathways) greater than the 1E-06 for carcinogens. As discussed in Section 6.3.3, concentrations of arsenic at Site 13 are considered background.

The residential scenario is considered the most conservative estimate of risk. Soil data were aggregated in depth intervals of 0 to 2 feet bgs (surface soil) and 0 to 8 feet bgs (subsurface soil). For surface soil, the total RME carcinogenic risk (including background) based on the residential scenario is **6E-05**, which is within the risk management range. The total RME HI (including background) is **0.6**, which is less than the risk management HI of 1 (see Table 6-18). Arsenic, BaP, and dibenzo(a,h)anthracene were identified as carcinogenic risk drivers. No noncancer risk drivers were identified for surface soil under the residential scenario.

For surface soil, the total CTE carcinogenic risk (including background) based on the residential scenario is **7E-06**, which is within the risk management range. The total CTE HI (including background) based on the residential scenario is **0.1**, which is less than the risk management HI of 1 (see Table 6-19).

For subsurface soil (0 to 8 feet bgs), the total RME carcinogenic risk (including background) based on the residential scenario is **4E-05**, which is within the risk management range of 1E-06 to 1E-04. The total RME HI (including background) is **0.7**, which is less than the risk management HI of 1. Similar to surface soil, arsenic, BaP, and dibenzo(a,h)anthracene were identified as carcinogenic risk drivers. No noncancer risk drivers were identified for subsurface soil under the residential scenario.

The total CTE carcinogenic risk (including background) based on the residential scenario for subsurface soil is **6E-06**, which is within the risk management range of 1E-06 to 1E-04. The total CTE HI (including background) is **0.1**, which is less than the risk management HI of 1. Tables 6-18 and 6-19 present the RME and CTE risks for each subsurface soil pathway.

Although arsenic concentrations are considered greater than background at Site 13 (see Appendix A), a review of the distribution of concentrations of arsenic at Site 13 and the background data shows that they are similar.

Although lead was selected as a COPC, the EPC for lead (139 mg/kg in surface soil and 54.7 mg/kg in subsurface soil) did not exceed the California-modified residential PRG (EPA 2002a). This nonexceedance suggests that no receptor would have unacceptable blood lead levels due to exposure to soils (that is, there is a low potential for unacceptable effects).

6.6.2 Risks from Groundwater

The groundwater pathway for construction worker receptors was not considered complete; therefore, groundwater was not evaluated for this scenario. Groundwater was evaluated for the commercial/industrial and residential scenarios.

Only inhalation of vapors from groundwater in indoor air was evaluated for the commercial/industrial scenario. Estimated risks for the commercial/industrial worker were below the risk management range.

For groundwater, using the residential scenario, the total RME carcinogenic risk (including background) is **7E-04**, which exceeds the risk management range. The HI from exposure to groundwater is **31**, which is greater than an HI of 1 for noncarcinogens. The following carcinogenic and noncancer risk drivers were identified for groundwater at Site 13:

- Arsenic
- Benzene
- Manganese
- PCP
- Thallium
- TCE

The total CTE carcinogenic risk (including background) based on the residential scenario is **1E-04**, which exceeds the risk management range. The total CTE HI (including background) based on the residential scenario is **24**, which exceeds the risk management HI of 1.

Table 6-18 identifies the specific RME risk attributed to each groundwater pathway. Most carcinogenic risk from groundwater (6E-04) is associated with ingestion of arsenic in groundwater, which was not considered significantly greater than background for Site 13. The total carcinogenic risk not attributable to arsenic concentrations is approximately **5E-05**, which is within the risk management range.

These risks are highly uncertain because of the contribution of PCP, which was detected in only 2 of the 35 groundwater samples. Carcinogenic risk from dermal contact with PCP may be overestimated because the predicted dermal permeability constant (0.39 centimeter per hour) for PCP, which was adopted from EPA draft RAGS Part E (EPA 2001), was determined by EPA to be outside the effective prediction domain for predicting permeability constants. In addition, detection of PCP through standard EPA methodology can be highly variable, as noted in EPA's introduction to the SW-846 methods manual for Method 8270 (EPA 1996).

Most of the HI (30) is associated with ingestion of arsenic, manganese, and thallium. Arsenic and thallium in groundwater were attributed to background by the background comparison. Only manganese was considered significantly greater than background; however, it may have increased solubility as a result of reducing conditions caused by natural attenuation of organics in groundwater. The HI associated with exposure to groundwater not related to these four

inorganics is approximately 1.3, which is slightly greater than the risk management HI of 1 for noncarcinogens.

6.6.3 HHRA Conclusions

Commercial/industrial and construction worker scenarios are considered the most likely exposure scenarios. The most conservative cancer risk for soil for these two scenarios is within the risk management range. The most conservative HI was less than 1.0 for soil. The pathway for exposure to groundwater within the commercial/industrial was evaluated and risk was less than 1E-06.

The tables below summarize HHRA results for carcinogens and noncancer risks under the residential scenario. The tables also list the risk drivers and their relative contributions to carcinogenic risk and the noncancer HI for soil and groundwater exposures under the residential exposure RME scenario.

Site 13 Cancer Risk, Residential Scenario
Receptor: Potential Future Adult/Child

Medium	Risk Drivers	RME Cancer Risk
Surface Soil	Arsenic[a]	6E-05
	BaP	4E-06
	Dibenz(a,h)anthracene	1E-05
Groundwater Domestic Use	Arsenic[a]	6E-04
	PCP	4E-05
	TCE	7E-06
	Benzene	5E-06
Subtotal Risk (risk drivers only[b]):		**7E-04**
Total Site Risk (all chemicals):		**7E-04**

Site 13 Noncancer Risk, Residential Scenario
Receptor: Potential Future Child

Medium	Risk Drivers	Noncancer HI
Soil	None	0.6
Groundwater	Manganese	21
	Arsenic[a]	6
	Thallium	3
Subtotal Risk (risk drivers only[b]):		**30**
Total Site Noncancer Risk:		**31**

Notes:

a Background, as discussed in Section 6.3.3 and Appendix A

b Risk drivers are chemicals that individually pose risk greater than 1E-06 or have HI values greater than 1.0

The HHRA indicated that carcinogenic risk from exposure to soil is within the risk management range and noncancer risk from soil is less than 1; furthermore, risk in soil is attributable to background concentrations of arsenic. The carcinogenic and noncancer risks for groundwater exceed the risk management range.

6.7 ERA

This section summarizes results of the modified screening-level ERA conducted for Site 13 (see Appendix I). The modified screening-level ERA was conducted because this site has limited habitat and because site-specific ecological sampling to support a baseline ERA is not feasible. This ERA is intended to be a conservative estimate, using more realistic exposure parameters for the ecological endpoints defined than would typically be used for a screening-level ERA.

The process used to conduct the modified screening-level ERA comprises the following components:

- Screening for COPECs
- Problem formulation
- Exposure estimates and risk evaluation
- Evaluation of assessment results

These components are summarized in the following sections.

6.7.1 Screening for COPECs

COPECs are organic and inorganic chemicals that are defined as potentially related to site activity and potentially causing adverse effects to ecological receptors. Evaluating site-specific data is the first step in quantifying risks and identifying potential hazards at each site. Data for the ERA were selected using the approach described in Section 3.4.7. Soil data for each site were aggregated at a depth interval of 0 to 4 feet bgs. Summaries of the soil data used for Site 13 are presented in Appendix I.

Groundwater at Site 13 was not assessed because (1) groundwater does not discharge to surface water and (2) groundwater occurs at depths such that exposure to burrowing animals is expected to be minimal. For aquatic receptors, it is unlikely that chemicals in groundwater at Site 13 will reach surface water and affect ecological receptors because the site is more than 1,000 feet from the Bay and the Seaplane Lagoon. Therefore, an exposure pathway for aquatic receptors was not considered complete.

Table 6-20 presents the data used to develop COPECs for Site 13. Chemicals detected in soil were subjected to a screening process to focus the ERA on chemicals that are related to site

activity and that pose the greatest potential risk to ecological receptors. The screening was a sequential process that considered factors such as frequency of detection, spatial distribution of detected chemicals, statistical comparison to background concentrations for inorganic chemicals, and chemical properties such as bioaccumulation and toxicity. The COPEC approach is described in further detail in Section 3.4.7.

6.7.2 Problem Formulation

Problem formulation represents the stage of the ERA process where the goals, breadth, and focus of the assessment are determined. The major goal of the problem formulation component is to develop an ecological CSM.

Current and reasonable future uses of Site 13 were evaluated to determine the presence and potential future formation of habitat and to identify complete exposure pathways that might exist at the site. Currently ecological habitat capable of supporting significant wildlife is not present at Site 13; therefore, exposure pathways for terrestrial receptors were considered complete to provide a conservative estimate of risk. Using a fully exposed soil scenario, the following complete exposure pathways for Site 13 were evaluated:

- Direct exposure to soil
- Food chain exposure

An exposure pathway for aquatic receptors was not considered complete, because groundwater from Site 13 is not likely to reach the Bay (including the Seaplane Lagoon).

Selected assessment and measurement endpoints for soil are presented in Section 3.4.7.

6.7.3 Exposure Estimates and Risk Evaluation

The exposure estimate and risk calculation step results in a conservative estimate of potential risk to the selected measurement endpoints. Using risk calculations, soil doses were compared to TRVs or ERVs to evaluate potential risks to each ecological receptor, and an HQ (a ratio that is indicative of potential risks to ecological receptors) was derived. HQ results for soil for Site 13, using high and low TRVs, are presented in Table 6-21.

6.7.4 Evaluation of ERA Results

High and low TRVs were used to provide a bounding estimate of risk to each endpoint. The high TRV represents an upper bounding limit, which is the lowest concentration where adverse effects are known to occur. The low TRV represents the lower bounding limit, which is the highest concentration an endpoint can be exposed to where adverse effects are known not to occur. If both HQ values for a chemical in soil were below 1.0, then the chemical is not considered to pose a potential risk to ecological receptors. Metals with one or both bounding

limit HQs exceeding 1.0 were further compared to calculated background HQs for metals in soil (see Table 6-22). Chemicals with HQs above 1.0 and above background concentrations were further evaluated based on each chemical's frequency of detection and distribution at the site, the range of concentrations detected, and its absorption potential and toxicity to each ecological receptor. This type of analysis provides additional weight-of-evidence data to support risk management decisions for Site 13.

6.7.4.1 Risk to Small Mammals

All soil COPECs were evaluated at Site 13 for small mammal populations (California ground squirrel is the measurement endpoint). Literature data were not adequate to develop an ERV for carbazole, carbon disulfide, and ethylbenzene for small mammals; therefore, these chemicals were evaluated qualitatively. All other COPECs evaluated at Site 13 were determined to pose no significant risk based on an HQ less than 1.0, using both the low and high TRVs; however, TRW was not included in the ERA. The pH of the TRW is low enough to present an acute toxicity hazard to burrowing animals and it is considered to be a continuing source of elevated concentrations of PAHs, benzene, and lead throughout Site 13. This section briefly discusses the evaluation of risk to small mammals from COPECs that exceeded HQs of 1.0 as well as those that were qualitatively evaluated.

COPECs with HQs above 1.0 included lead, selenium, zinc, PCP, and xylene. The low TRV HQ values for lead, selenium, and zinc were above 1.0. These ecological COPECs were further considered in a weight-of-evidence approach. After background concentrations, the absorption potential of the chemical, the frequency of detection, and the concentrations detected at Site 13 were evaluated, lead and selenium were determined to pose no significant potential for risk to small mammals, while the potential for risk from zinc cannot be dismissed.

PCP and xylene had HQs above 1.0 using both the high and low TRVs. The high TRV HQ and low TRV HQ values for PCP were 23.5 and 235, respectively. For xylene, the high TRV HQ and low TRV HQ values were 1.93 and 2.37, respectively. PCP was detected in only 3 of 54 samples with an EPC of 1 mg/kg, which was below the maximum laboratory reporting limit of 170 mg/kg. Xylene was detected in 13 of 48 samples with an EPC of 0.3 mg/kg, which was more than 2 times below the maximum laboratory reporting limit of 0.63 mg/kg. The toxicity of these chemicals are generally seen only when receptors are exposed to high concentrations over a short time period. Long-term exposure to low concentrations is not well studied. The relatively high HQ values for these chemicals are directly attributable to the conservative $BCF_{soil\text{-}to\text{-}invertebrate}$ (EPA 1999d) values of 1,034 and 29.84 for PCP and xylene, respectively. The BCFs were calculated using the K_{ow} coefficient, which is a conservative method of calculating BCFs (EPA 1999d). Although the ecological risk of PCP and xylenes to small mammals cannot be discounted, it is expected to be low based on the low frequency of detection and low concentration of chemicals in soils at Site 13.

The qualitative evaluation of risk to small mammals from exposure to carbazole, carbon disulfide, and ethylbenzene involved assessing the weight-of-evidence parameters discussed in Section 3.4.7. Based on the low detection of frequency, the relatively low concentrations

detected at Site 13, and that SVOCs and VOCs will generally only have toxic effects at higher doses, carbazole, carbon disulfide, and ethylbenzene are postulated to pose low risk to small mammals at Site 13.

6.7.4.2 Risks to Passerines

All soil COPECs were evaluated at Site 13 for passerine populations (Alameda song sparrow and the American robin are the measurement endpoints). Literature data were not adequate to develop avian ERVs for HMW and LMW PAHs, carbazole, n-nitroso-diphenylamine, PCP, acetone, benzene, carbon disulfide, ethylbenzene, toluene, and xylene. This section briefly discusses the evaluation of risk to passerines from COPECs with HQs above 1.0 as well as those that were qualitatively evaluated.

COPECs with HQs above 1.0 included lead and di-n-butylphthalate. HQs for the Alameda song sparrow and the American robin using the high TRV for lead were below 1.0. The low HQs for these receptors were 30 and 101, which exceeded the background HQs of 2.71 and 9.07, respectively. This HQ value may be driven by the overly conservative low TRV, as described previously in Section 6.7.4. Using the allometrically converted TRVs for the passerines, reevaluation of the low TRV HQs for lead were below 1.0 for both the song sparrow and the robin. Based on this information, lead at Site 13 poses no significant potential for risk to passerines.

The HQ value for di-n-butylphthalate using the high TRV for the Alameda song sparrow was less than 1 and 2.06 for the American robin. The low TRV HQs were 6.66 and 20.6, respectively. Di-n-butylphthalate was detected in only 1 of 54 samples at a concentration of 0.031 mg/kg, which was below the maximum laboratory reporting limit of 34 mg/kg. The relatively high HQ values were directly attributable to the conservative $BCF_{soil\text{-}to\text{-}invertebrate}$ value of 736.4, which is based on the K_{ow} value of 4.9. Based on these factors, the risk of di-n-butylphthalate to passerines cannot be discounted; it is, however, expected to be low.

The qualitative evaluation of risk to passerines from exposure to HMW and LMW PAHs, carbazole, n-nitroso-diphenylamine, PCP, acetone, benzene, carbon disulfide, ethylbenzene, toluene, and xylene involved assessing the weight-of-evidence parameters discussed previously in Section 6.7.4. Studies indicated that PAH chemicals do not appear to bioaccumulate in mammals and birds (Eisler 1987a). Additionally, based on the relatively low frequency of detection and low concentration of PAHs and SVOCs (carbazole, n-nitroso-diphenylamine, and PCP), risk posed to passerines from these ecological COPECs is postulated to be low. Residual levels of acetone, benzene, carbon disulfide, ethylbenzene, toluene, and xylene are present in soils at Site 13. Mammals and birds generally metabolize VOCs quickly; therefore, the risk posed to passerines from such residual levels of VOCs is postulated to be low.

6.7.4.3 Risk to Raptors

All soil COPECs were evaluated at Site 13 for raptor populations (red-tailed hawk is the measurement endpoint). Literature data were not adequate to develop avian ERVs for HMW and LMW PAHs, carbazole, n-nitroso-diphenylamine, PCP, acetone, benzene, carbon disulfide, ethylbenzene, toluene, and xylene. All other COPECs evaluated at Site 13 were determined to pose no significant risk based on an HQ less than 1.0, using both the low and high TRVs. This section briefly discusses the evaluation of risk to raptors from COPECs with HQs above 1.0 as well as those that were qualitatively evaluated.

COPECs with HQs above 1.0 included lead; di-n-butylphthalate; and total 4,4'-dichlordiphenyldichloroethane (DDD), 4,4'-dichlorodiphenyldichloroethene (DDE), and 4,4'-DDT (DDT). Only the low TRV HQs for lead and DDT exceeded 1.0. These COPECs were further considered in a weight-of-evidence approach, as described previously in Section 6.7.4. After the consideration of use of an alternate TRV for lead background concentrations at Alameda Point, the absorption potential of lead, the frequency of detection, and the concentrations detected at Site 13 were evaluated, lead was determined to pose no significant risk to raptors.

The HQ value for di-n-butylphthalate using the high TRV for the raptor was 1.54, while the low TRV HQ was 366. Di-n-butylphthalate was detected in only 1 of 54 samples at a concentration of 0.031 mg/kg, which was below the maximum laboratory reporting limit of 34 mg/kg. The relatively high HQ values were directly attributable to the conservative $BCF_{soil\text{-}to\text{-}invertebrate}$ value of 736.4, which is based on the K_{ow} value of 4.9. Based on these factors, the ecological risk of di-n-butylphthalate to raptors cannot be discounted; however, it is expected to be low.

The high HQ value for DDTt was less than 1.0. The low HQ value was 1.41. DDT is an insecticide, and DDE is a breakdown product of DDT. These chemicals are known to biomagnify in food chains and can cause reproductive effects in raptors. DDT and DDE were detected in 3 of 38 samples at concentrations ranging from 0.0021 to 0.16 mg/kg. The HQs for DDTt were conservatively calculated assuming that 100 percent of the organism's diet came from Site 13, which is only 17.5 acres. Raptors, such as the red-tailed hawk, can have extensive foraging ranges, up to 200 acres. Although impacts to the raptor population from residual chlorinated pesticides present at Site 13 cannot be discounted, they are expected to be low.

The qualitative evaluation of risk to raptors from exposure to HMW and LMW PAHs, carbazole, n-nitroso-diphenylamine, PCP, acetone, benzene, carbon disulfide, ethylbenzene, toluene, and xylene involved assessing the weight-of-evidence parameters discussed in Section 6.7.4. Studies indicated that PAHs do not appear to bioaccumulate in mammals and birds (Eisler 1987a). Additionally, based on the relatively low frequency of detection and low concentration of PAHs and SVOCs (carbazole, n-nitroso-diphenylamine, and PCP), risk posed to raptors from these COPECs is expected to be low. Only residual levels of acetone, benzene, carbon disulfide, ethylbenzene, toluene, and xylene are present in soils at Site 13. Mammals and birds generally metabolize VOCs quickly; therefore, the risk posed to raptors from such residual levels of VOCs is expected to be low.

6.7.5 Uncertainty

The screening-level ERA process involves a large number of uncertainties and extrapolations to evaluate potential risk to ecological receptors. Many of the assumptions in the screening-level ERA process are conservative and result in overestimated site-specific parameters. Uncertainties associated with the ERA are identified in Section 3.4.7.5.

6.7.6 ERA Conclusions

Results of the HQ calculations and qualitative evaluations indicated potential risk to small mammals from zinc. No significant risk is posed to passerines and raptors from exposure to Site 13 soils. Based on the lack of habitat at Site 13 and the planned future use of the site, no risks to ecological receptors were identified that require further evaluation or mitigation.

6.8 CONCLUSIONS AND RECOMMENDATIONS

The conclusions of the evaluations conducted in support of the CERCLA risk management process are presented in Sections 6.8.1 (nature and extent) and 6.8.2 (risk assessments), and the overall recommendations for Site 13 are presented in Section 6.8.3.

6.8.1 Nature and Extent Conclusions

The nature and extent evaluation concluded that most chemicals detected at Site 13 are consistent with historical activities known to occur at the site, which included the former oil refinery and aircraft storage, overhaul, and defueling. Physical features of Site 13, along with specific details on the hazardous waste generated and past disposal and storage practices associated with these wastes, were used to identify potential sources of CERCLA chemicals. Environmental investigations were conducted in these areas to identify and assess the extent of CERCLA chemicals in soil and groundwater, and the analytical results from these investigations were evaluated. Of the potential sources, the following physical features and site activities were considered likely sources at Site 13:

- Former oil refinery activities
- ASTs 324 through 328
- Building 397 and associated OWSs 397A, 397B, 397D, and 397D
- Fill material containing PAHs

Most of the maximum detected concentrations of those chemicals related to operation of the former refinery (TPH, benzene, toluene, ethylbenzene, xylene, PAHs, and lead) were located within TRW. The material is black and globular in nature with strong hydrocarbon odors, and black and gray sand has been observed to be surrounding the waste. TRW has been observed in borings, test pits, and seeping onto the ground surface at several locations at Site 13 and contains

elevated concentrations of TPH-g (3,000 mg/kg), TPH-d (140,000 mg/kg), TPH-mo (110,000 mg/kg), benzene (31 mg/kg), toluene (130 mg/kg), ethylbenzene (81 mg/kg), xylenes (160 mg/kg), PAHs quantified as BaP equivalent (7.198 mg/kg), and lead (2,000 mg/kg). The wastes exhibited a pH as low as 1.1. Samples from stained sands contained elevated concentrations of TPH, xylene, ethylbenzene, and PAHs, indicating that chemicals present in TRW have diffused into nearby soil.

TRW does not appear to be easily mobilized to groundwater unless unusual conditions are present. Benzene, ethylbenzene, and xylene are likely present in groundwater because TRW in the area intersects groundwater. Areas where low pH soil and lead are present do not show that lead is leaching to groundwater in large quantities. Commingling of TRW with refined petroleum may cause the TRW to dissolve and become mobile in groundwater. However, distinctions in the commingled material cannot be made because TRW appears to have a similar composition to diesel fuel, motor oil, and gasoline and data are limited.

Petroleum fuels such as diesel fuel, aviation fuel, motor oil, and gasoline were likely stored in ASTs 324 through 328. TPH was detected in soil at concentrations indicating the presence of free product just east of the tanks in AOC 009; therefore, the tanks are the most likely source of these contaminants. Petroleum in soil and groundwater at AOC 009 appears to be commingled with TRW, which is considered a CERCLA waste. In addition, the maximum BaP concentration was detected at location C3S013B051, in the vicinity of AOC 009.

Jet fuel was used on Site 13 at the jet engine rehabilitation and testing facility in the east end of Building 397. In addition, 3,500 to 17,000 gallons of jet fuel was released to the storm drain system on the east end of Building 397 in 1991. Cleanup of the free product began immediately, but not before some of the material entered soil and groundwater in the area. The presence of free product in soil and groundwater was confirmed during subsequent investigations, and this area was designated AOC 397. In 2000, a pilot scale DVE system was installed to remove jet fuel from soil and groundwater. The system was successful; as a result, it was upgraded to full-scale operation in 2002. As of December 2003, the system appears to have removed nearly all free product at Site 13. The data indicate that the jet fuel contamination likely is not commingled with any CERCLA chemicals.

Although numerous chemicals were detected at Site 13, some of these chemicals do not pose significant risk as defined by the risk assessments. Significant risk to human health is potentially posed by arsenic and BaP in soil and benzene, manganese, PCP, thallium, and TCE in groundwater. Zinc was determined to pose risk to terrestrial ecological receptors. Arsenic and zinc in soil and thallium in groundwater are attributed to background concentrations that exist in the environment.

Data gaps for soil and groundwater at Site 13 were also identified. Further sampling and analyses of soil for TPH, lead, pH, and PAHs to further define the boundaries of the TRW is recommended. Because of elevated detection limits for SVOCs in soil and groundwater, further sampling and analysis of soil and groundwater may be needed to confirm these chemicals are not present at elevated concentrations.

Although these data gaps were identified, it was determined that the types and numbers of samples collected at Site 13 and the analytical suite were adequate to characterize the site and to conduct risk assessments because data collection at the site focused mainly on potential sources and was conducted in phases. This phased approach afforded stakeholders opportunities to provide feedback on the suitability or adequacy of the data collected and the need for additional data to identify releases and complete the RI report. There is a low potential that any source at Site 13 was not adequately evaluated or that NFA would be recommended if it poses a potential risk to human health or the environment.

6.8.2 Risk Assessment Conclusions

An HHRA and modified screening-level ERA were conducted to evaluate risk from chemicals detected at Site 13. The sections below present the conclusions for the HHRA and ERA, respectively.

6.8.2.1 HHRA Conclusions

According to reuse plans for Alameda Point (EDAW 1996), commercial/industrial and construction worker exposures are the most likely future exposures at Site 13. Human health risk was evaluated for commercial/industrial and construction worker exposures, along with residential exposures. The residential exposure scenario was evaluated to allow for flexibility in implementing the reuse plan (or modifications thereto) at Alameda Point, and because EPA risk assessment guidance (EPA 1989) includes a strong preference for evaluation of the residential pathway.

For the commercial/industrial and construction worker scenarios, the most conservative cancer risks for soil and groundwater are within the risk management range. The most conservative HIs were less than 1 for soil and groundwater.

The tables in Section 6.6.3 summarized the HHRA results for carcinogenic and noncancer risks under the residential scenario. Those tables also list risk drivers and their relative contributions to carcinogenic risk and the noncancer HI for exposure to soil and groundwater under the RME residential exposure scenario. For the residential scenario, the HHRA indicated that carcinogenic risk from exposure to soil is within the risk management range and that noncancer risk from soil is less than 1; furthermore, risk from soil is attributable to PAHs and background concentrations of arsenic. The carcinogenic and noncancer risks for groundwater exceed the risk management range and are attributable to the following:

- Arsenic
- Benzene
- PCP
- Manganese
- TCE
- Thallium

Although lead was selected as a COPC, the EPCs for lead (139 mg/kg in surface soil and 54.7 mg/kg in subsurface soil) did not exceed the California-modified residential PRG (EPA 2002a). This suggests that no receptor would have unacceptable blood lead levels due to exposure to soils (that is, there is a low potential for unacceptable effects).

6.8.2.2 ERA Conclusions

A site-specific ERA was conducted for Site 13 to estimate potential risks to the environment. Currently, ecological habitat capable of supporting significant wildlife is not present at Site 13; therefore, exposure pathways for terrestrial receptors were considered potentially complete to provide a conservative estimate of risk. Risk to marine receptors was not evaluated because exposure pathways for aquatic receptors were considered incomplete. Assessment endpoints include small mammals, passerines, and raptors.

Results of the HQ calculations and qualitative evaluations indicate potential risk to small mammals from zinc. No significant risk to passerines and raptors occurs from exposure to Site 13 soils. However, based on the lack of habitat at Site 13 and the planned future use of the site, no risks to ecological receptors have been identified that require further evaluation or mitigation.

6.8.3 Recommendations

Based on the data and risks discussed previously, soil and groundwater at Site 13 are recommended for further evaluation in an FS, as defined under CERCLA, to address risks to residential receptors under the unrestricted reuse scenario. Total site risk to residential receptors (including background) is above the risk management range. BaP is identified as the only COC for soil. Arsenic in soil was identified as a risk driver, but is attributed to background. COCs identified for groundwater are benzene, manganese, PCP, and TCE. Although thallium was identified as a risk driver, it is attributed to background.

An evaluation of TPH in soil and groundwater also was conducted based on the TPH strategy for Alameda Point (Navy 2001a) (see Appendix F). Based on this evaluation, further action is recommended for TTPH and TPH-associated chemicals present in soil and groundwater within Plume 1 of Site 13 under the TPH program. Further action is recommended for TTPH and TPH-associated chemicals present in soil and groundwater within Plume 2 of Site 13 under the CERCLA program for commingled contaminants.