Previous

N00236.002017
ALAMEDA POINT
SSIC NO. 5090.3

FIGURES

FINAL REMEDIAL INVESTIGATION REPORT
SITES 9, 13, 19, 22, AND 23
OPERABLE UNIT 2A (OU-2S)

DATED 01 APRIL 2005

Tetra Tech EM Inc.

CITY

HIGHWAY

COUNTY BORDER

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

FIGURE H.3-1
ALAMEDA POINT LOCATION MAP

Operable Unit 2A
Human Health Risk Assessment
Internal Draft Remedial Investigation Report

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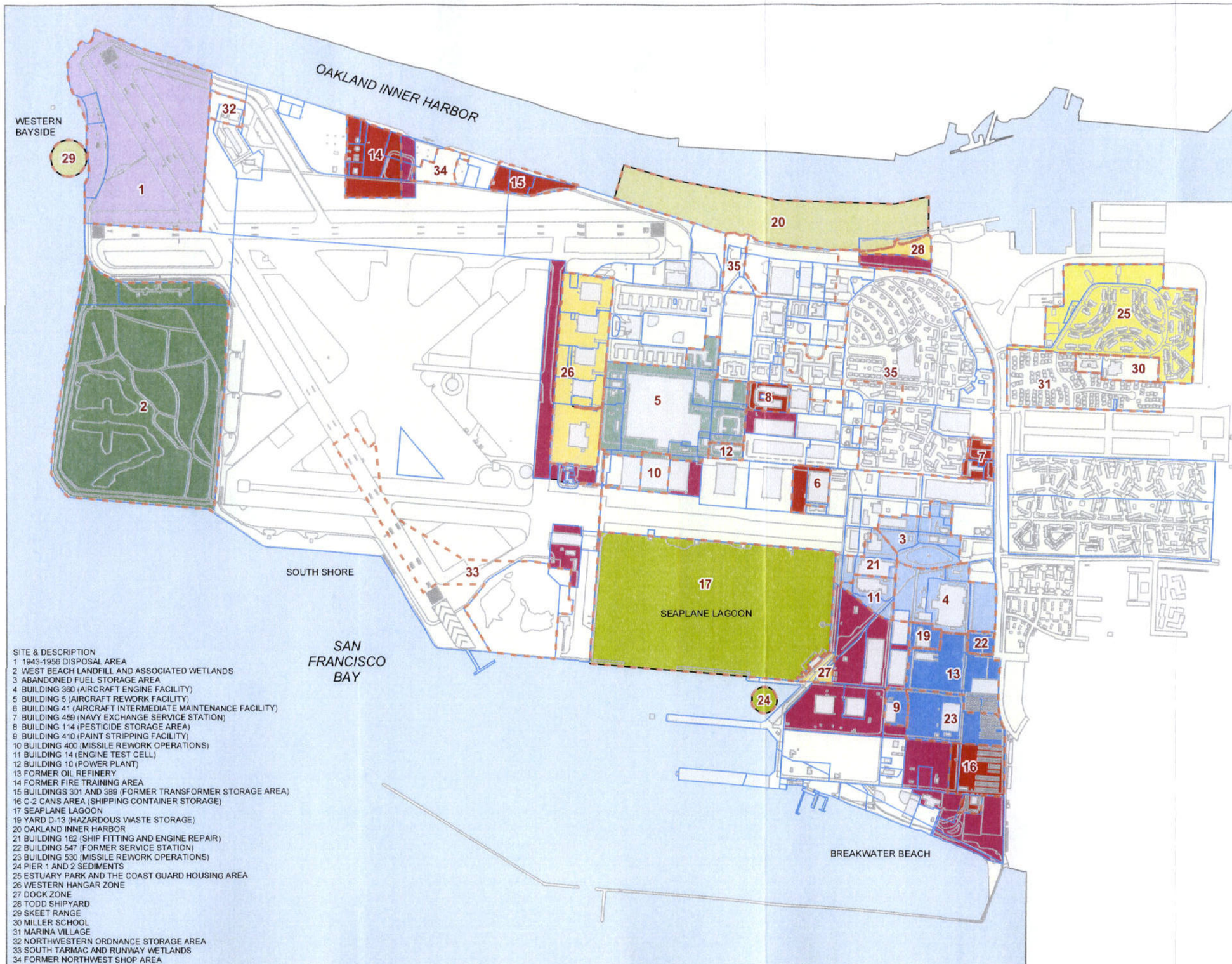

SITE & DESCRIPTION
1 1943-1956 DISPOSAL AREA
2 WEST BEACH LANDFILL AND ASSOCIATED WETLANDS
3 ABANDONED FUEL STORAGE AREA
4 BUILDING 360 (AIRCRAFT ENGINE FACILITY)
5 BUILDING 5 (AIRCRAFT REWORK FACILITY)
6 BUILDING 41 (AIRCRAFT INTERMEDIATE MAINTENANCE FACILITY)
7 BUILDING 459 (NAVY EXCHANGE SERVICE STATION)
8 BUILDING 114 (PESTICIDE STORAGE AREA)
9 BUILDING 410 (PAINT STRIPPING FACILITY)
10 BUILDING 400 (MISSILE REWORK OPERATIONS)
11 BUILDING 14 (ENGINE TEST CELL)
12 BUILDING 10 (POWER PLANT)
13 FORMER OIL REFINERY
14 FORMER FIRE TRAINING AREA
15 BUILDINGS 301 AND 389 (FORMER TRANSFORMER STORAGE AREA)
16 C-2 CANS AREA (SHIPPING CONTAINER STORAGE)
17 SEAPLANE LAGOON
19 YARD D-13 (HAZARDOUS WASTE STORAGE)
20 OAKLAND INNER HARBOR
21 BUILDING 162 (SHIP FITTING AND ENGINE REPAIR)
22 BUILDING 547 (FORMER SERVICE STATION)
23 BUILDING 530 (MISSILE REWORK OPERATIONS)
24 PIER 1 AND 2 SEDIMENTS
25 ESTUARY PARK AND THE COAST GUARD HOUSING AREA
26 WESTERN HANGAR ZONE
27 DOCK ZONE
28 TODD SHIPYARD
29 SKEET RANGE
30 MILLER SCHOOL
31 MARINA VILLAGE
32 NORTHWESTERN ORDNANCE STORAGE AREA
33 SOUTH TARMAC AND RUNWAY WETLANDS
34 FORMER NORTHWEST SHOP AREA
35 WEST HOUSING AREA

CERCLA SITE
BUFFER ZONE
OPERABLE UNIT 1
OPERABLE UNIT 2A
OPERABLE UNIT 2B
OPERABLE UNIT 2C
OPERABLE UNIT 3
OPERABLE UNIT 4A
OPERABLE UNIT 4B
OPERABLE UNIT 4C
OPERABLE UNIT 5
OPERABLE UNIT 6
BUILDING
LAND COVER
OPEN WATER

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

600 0 600 1200 Feet

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FIGURE H.3-2
OPERABLE UNITS, CERCLA SITES AND DISPOSAL PARCELS

Operable Unit 2A
Human Health Risk Assessment
Internal Draft Remedial Investigation Report

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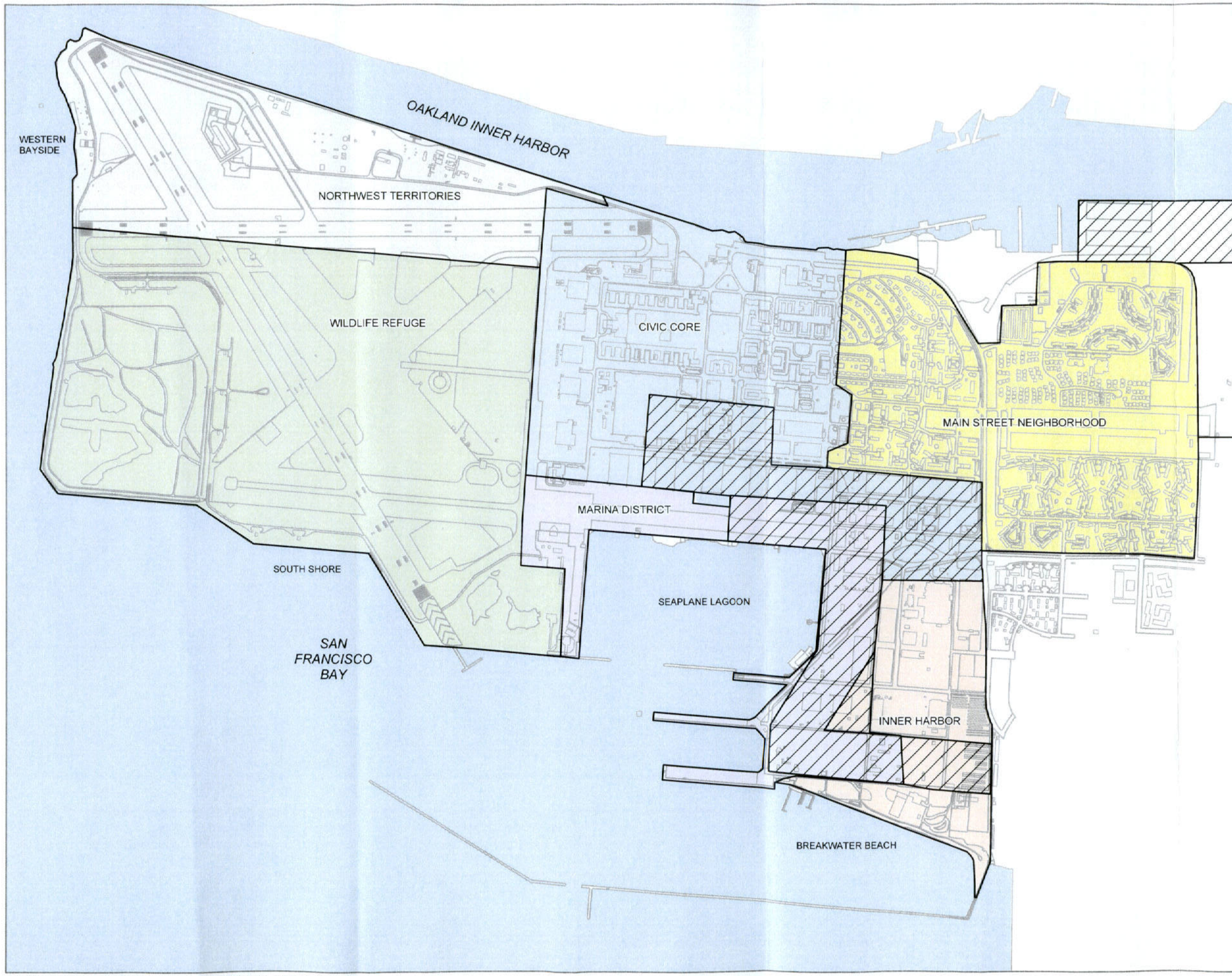

PLANNED REUSE

- Civic Core
- Inner Harbor
- Main Street Neighborhood
- Marina District
- Northwest Territories
- Wildlife Refuge
- HOUSING OPPORTUNITIES
- WATER

600 0 600 1200 Feet

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FIGURE H.3-3
PLANNED REUSE AREAS

Operable Unit 2A
Human Health Risk Assessment
Internal Draft Remedial Investigation Report

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SOIL SAMPLING LOCATION

- Direct-Push
- Geoprobe
- Soil Boring
- Soil Gas
- Soil Punch

KEY TO SAMPLING LOCATION INVESTIGATION

- Phase 1 & 2A (1991)
- Follow-On Investigation (1994)
- Data Gap Sampling (2001)
- PAH Investigation (2003)

CERCLA SITE BOUNDARY

LAND COVER

BUILDING

- Former
- Present

Notes:

Blue sampling location labels denote points not associated with featured site.

CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980
PAH = Polynuclear aromatic hydrocarbon

25 0 25 50 Feet

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FIGURE H.4-1
SITE 9
SOIL SAMPLING LOCATIONS

Operable Unit 2A
Human Health Risk Assessment
Internal Draft Remedial Investigation Report

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SOIL SAMPLING LOCATION

- Direct-Push
- Excavation
- Geoprobe
- Pipe
- Soil Boring
- Soil Gas

KEY TO SAMPLING LOCATION INVESTIGATION

- Intermediate Maintenance Facility Removal Action
- Total Petroleum Hydrocarbon Program
- Phase 1 & 2A (1991)
- Follow-On Investigation (1994)
- Data Gap Sampling (2001)
- PAH Investigation (2003)
- CERCLA SITE BOUNDARY
- EXCAVATION
- LAND COVER

BUILDING

- Former
- Present

Notes:

Blue sampling location labels denote points not associated with featured site.

CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980
PAH = Polynuclear aromatic hydrocarbon

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FIGURE H.4-2
SITE 13
SOIL SAMPLING LOCATIONS

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SOIL SAMPLING LOCATION

- Excavation
- Geoprobe
- Monitoring Well
- Soil Boring

KEY TO SAMPLING LOCATION INVESTIGATION

- Total Petroleum Hydrocarbon Program
- Phase 1 & 2A (1991)
- Follow-On Investigation (1994)
- PAH Investigation (2003)

CERCLA SITE BOUNDARY

EXCAVATION

LAND COVER

BUILDING

- Former
- Present

Notes:

Blue sampling location labels denote points not associated with featured site.

CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980
PAH = Polynuclear aromatic hydrocarbon

20 0 20 40 Feet

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FIGURE H.4-3
SITE 19
SOIL SAMPLING LOCATIONS

Operable Unit 2A
Human Health Risk Assessment
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SOIL SAMPLING LOCATION

- Excavation
- Geoprobe
- Pipe
- Soil Boring
- Soil Gas

KEY TO SAMPLING LOCATION INVESTIGATION

- Total Petroleum Hydrocarbon Program
- Phase 1 & 2A (1991)
- Follow-On Investigation (1994)
- Data Gap Sampling (2001)
- PAH Investigation (2003)

CERCLA SITE BOUNDARY

EXCAVATION

LAND COVER

BUILDING

- Former
- Present

Notes:

Blue sampling location labels denote points not associated with featured site.

CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980
PAH = Polynuclear aromatic hydrocarbon

N

20 0 20 40 Feet

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FIGURE H.4-4
SITE 22
SOIL SAMPLING LOCATIONS

Operable Unit 2A
Human Health Risk Assessment
Internal Draft Remedial Investigation Report

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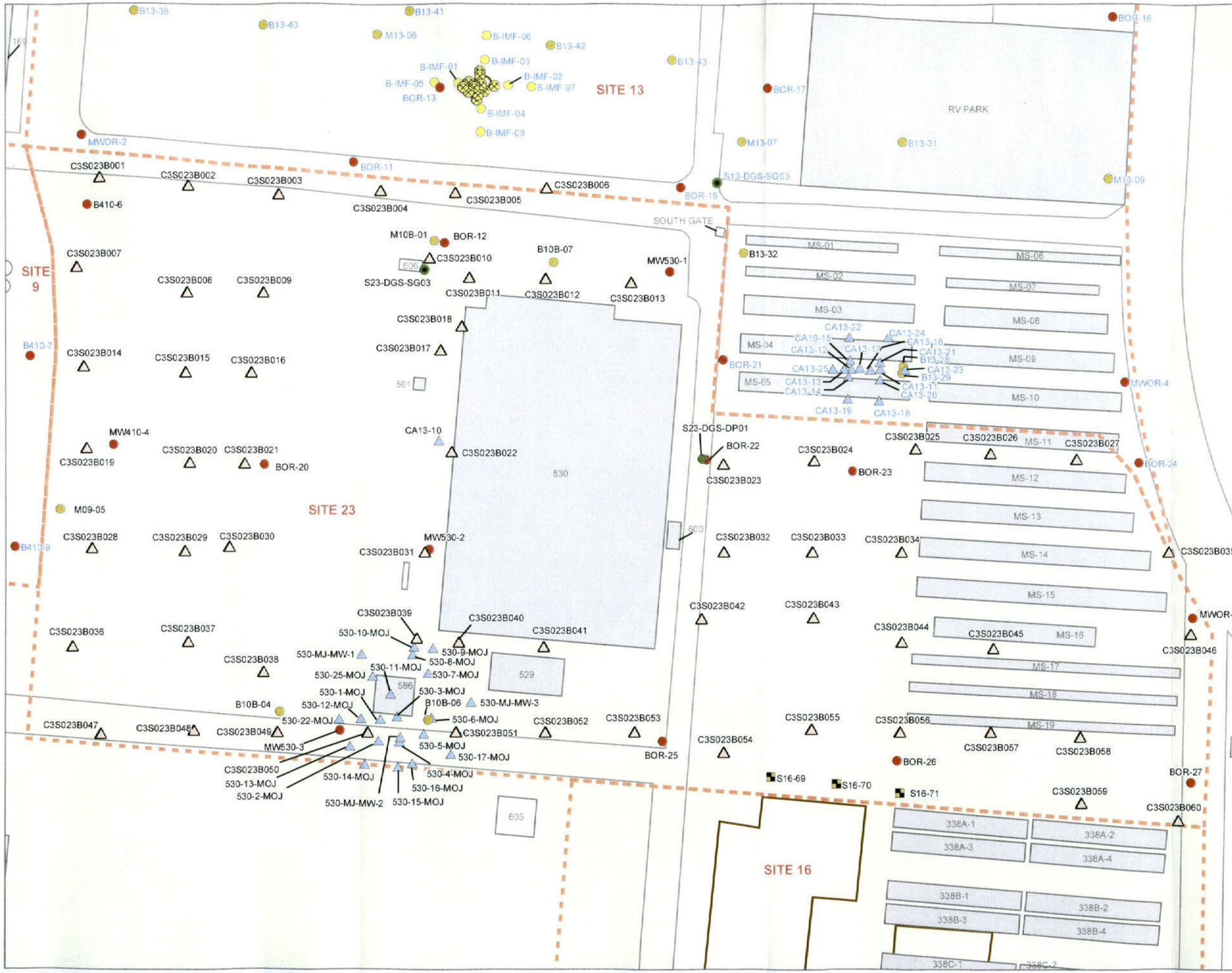

SOIL SAMPLING LOCATION

- Direct-Push
- Excavation
- Geoprobe
- Soil Boring
- Soil Gas
- Surface Location

KEY TO SAMPLING LOCATION INVESTIGATION

- Intermediate Maintenance Facility Removal Action
- Total Petroleum Hydrocarbon Program
- Phase 1 & 2A (1991)
- Follow-On Investigation (1994)
- Data Gap Sampling (2001)
- PAH Investigation (2003)
- CERCLA SITE BOUNDARY
- EXCAVATION
- LAND COVER

BUILDING

- Former
- Present

Notes:

Blue sampling location labels denote points not associated with featured site.

CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980
PAH = Polynuclear aromatic hydrocarbon

100 0 50 100 Feet

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FIGURE H.4-5
SITE 23
SOIL SAMPLING LOCATIONS

Operable Unit 2A
Human Health Risk Assessment
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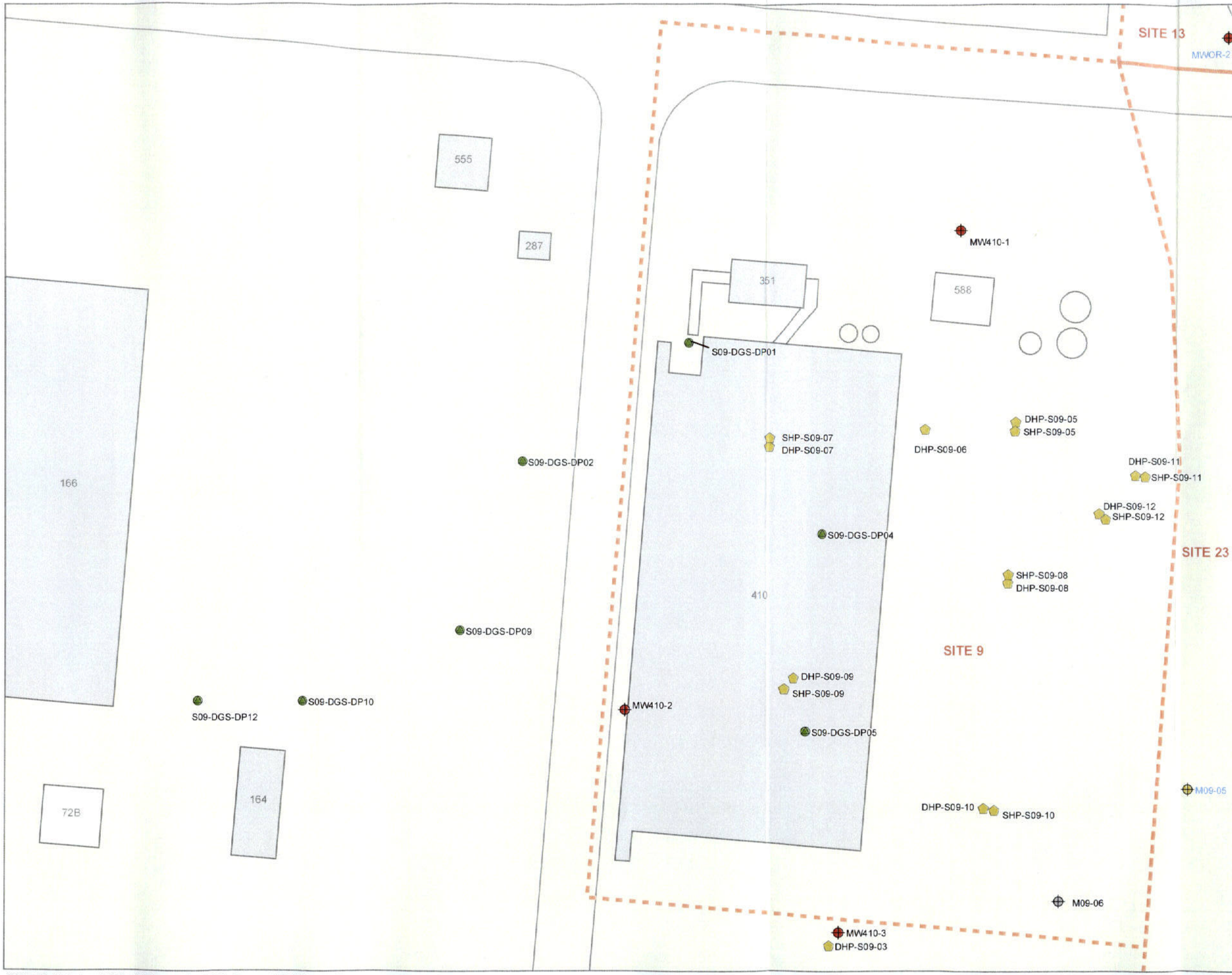

GROUNDWATER SAMPLING LOCATION

- Direct-Push
- Hydropunch
- Monitoring Well

KEY TO SAMPLING LOCATION INVESTIGATION

- Phase 1 & 2A (1991)
- Follow-On Investigation (1994)
- Follow-On Investigation (1998)
- Data Gap Sampling (2001)
- PAH Investigation (2003)

CERCLA SITE BOUNDARY

LAND COVER

BUILDING

- Former
- Present

Notes:

Blue sampling location labels denote points not associated with featured site.

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

25 0 25 50 Feet

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FIGURE H.4-6
SITE 9
GROUNDWATER SAMPLING LOCATIONS

Operable Unit 2A
Human Health Risk Assessment
Internal Draft Remedial Investigation Report

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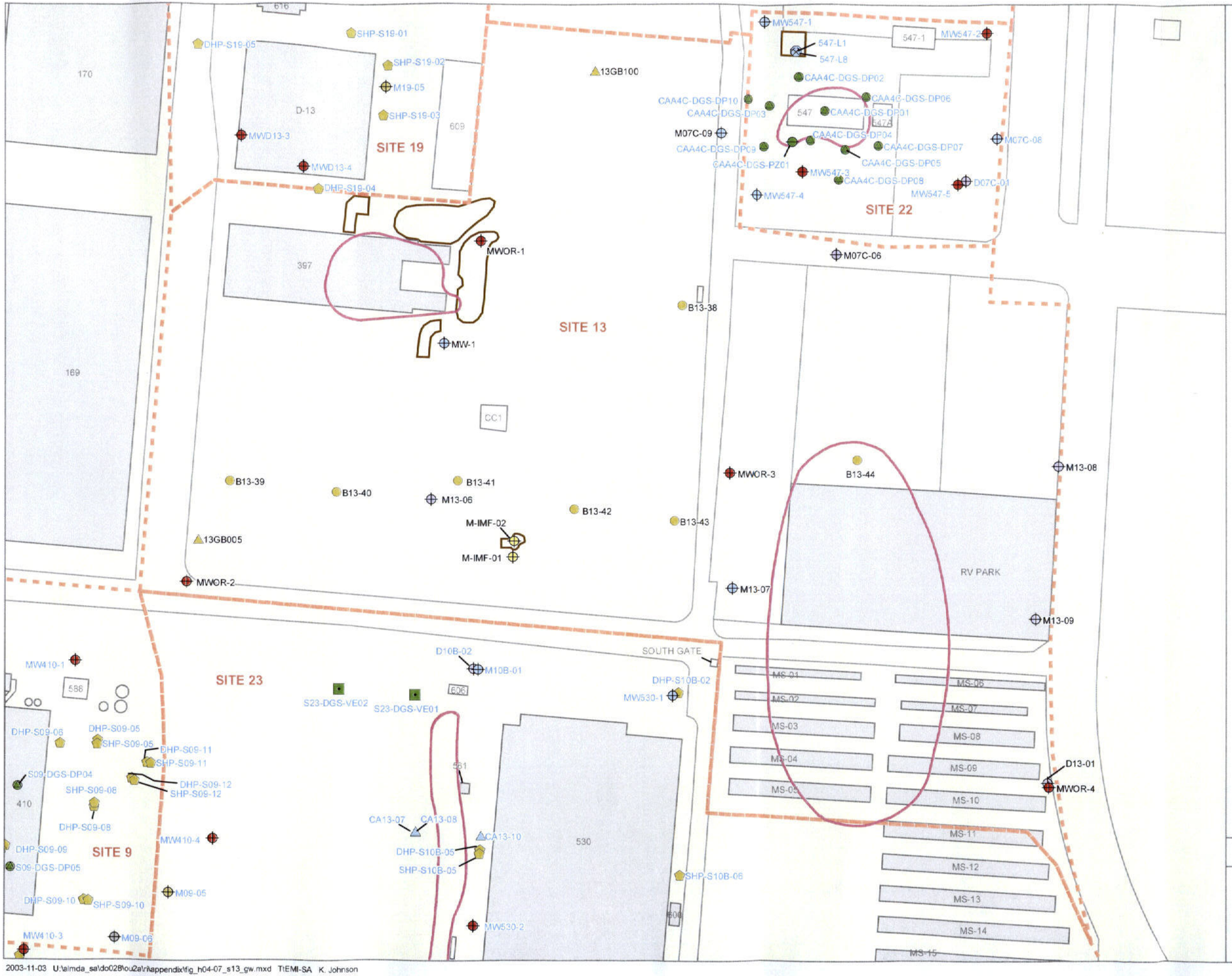

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FIGURE H.4-7
SITE 13
GROUNDWATER SAMPLING LOCATIONS

Operable Unit 2A
Human Health Risk Assessment
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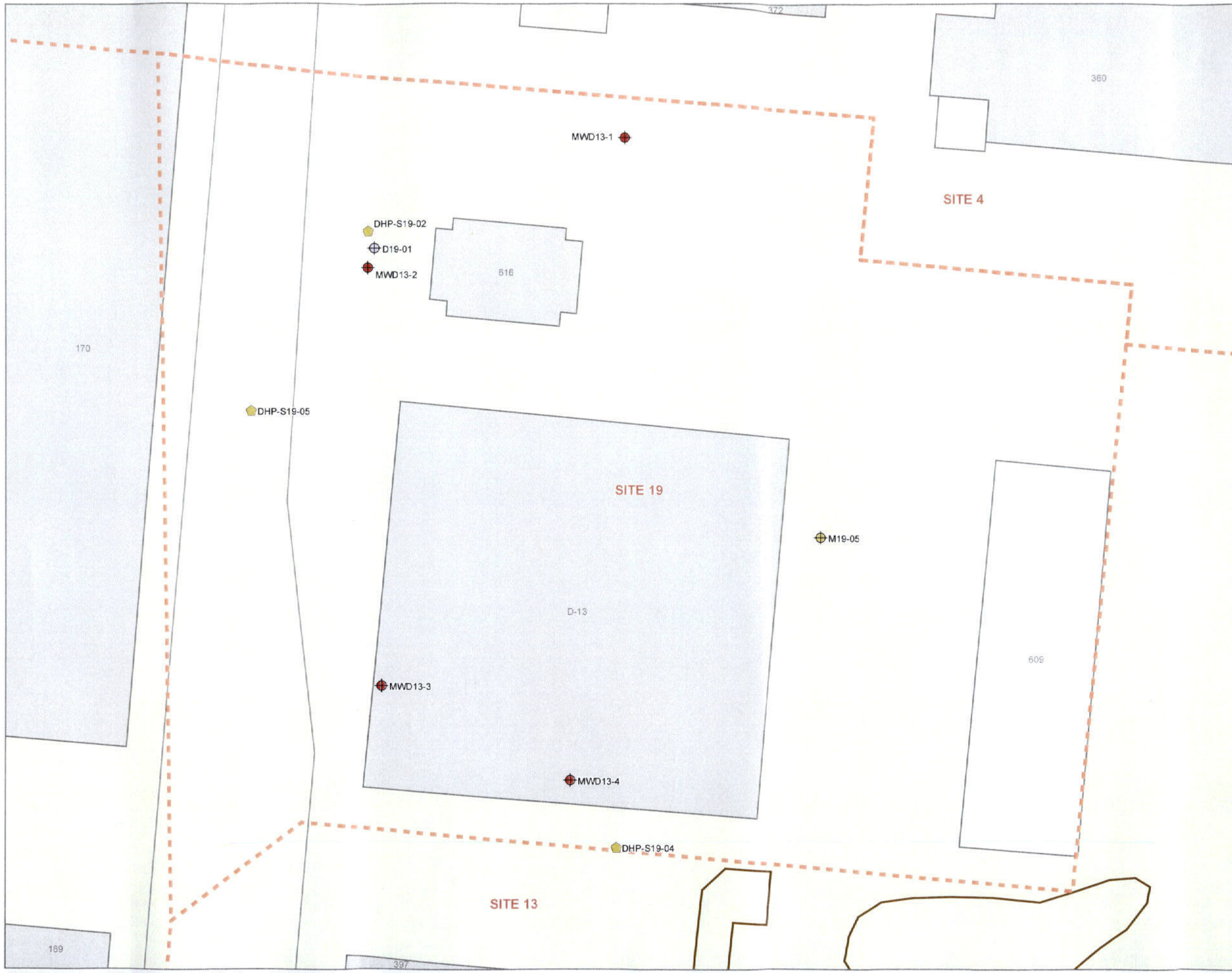

GROUNDWATER SAMPLING LOCATION

- Hydropunch
- Monitoring Well

KEY TO SAMPLING LOCATION INVESTIGATION

- Phase 1 & 2A (1991)
- Follow-On Investigation (1994)
- Groundwater Monitoring (2003)
- CERCLA SITE BOUNDARY
- EXCAVATION
- LAND COVER

BUILDING

- Former
- Present

Notes:

Blue sampling location labels denote points not associated with featured site.

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

N

20 0 20 40 Feet

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FIGURE H.4-8
SITE 19
GROUNDWATER SAMPLING LOCATIONS

Operable Unit 2A
Human Health Risk Assessment
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GROUNDWATER SAMPLING LOCATION

- Direct-Push
- Monitoring Well

KEY TO SAMPLING LOCATION INVESTIGATION

- Total Petroleum Hydrocarbon Program
- Phase 1 & 2A (1991)
- Data Gap Sampling (2001)
- Groundwater Monitoring (2003)
- EXTENT OF FREE PRODUCT
- CERCLA SITE BOUNDARY
- EXCAVATION
- LAND COVER

BUILDING

- Former
- Present

Notes:

Blue sampling location labels denote points not associated with featured site.

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

20 0 20 40 Feet

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Alameda Point
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FIGURE H.4-9
SITE 22
GROUNDWATER SAMPLING LOCATIONS

Operable Unit 2A
Human Health Risk Assessment
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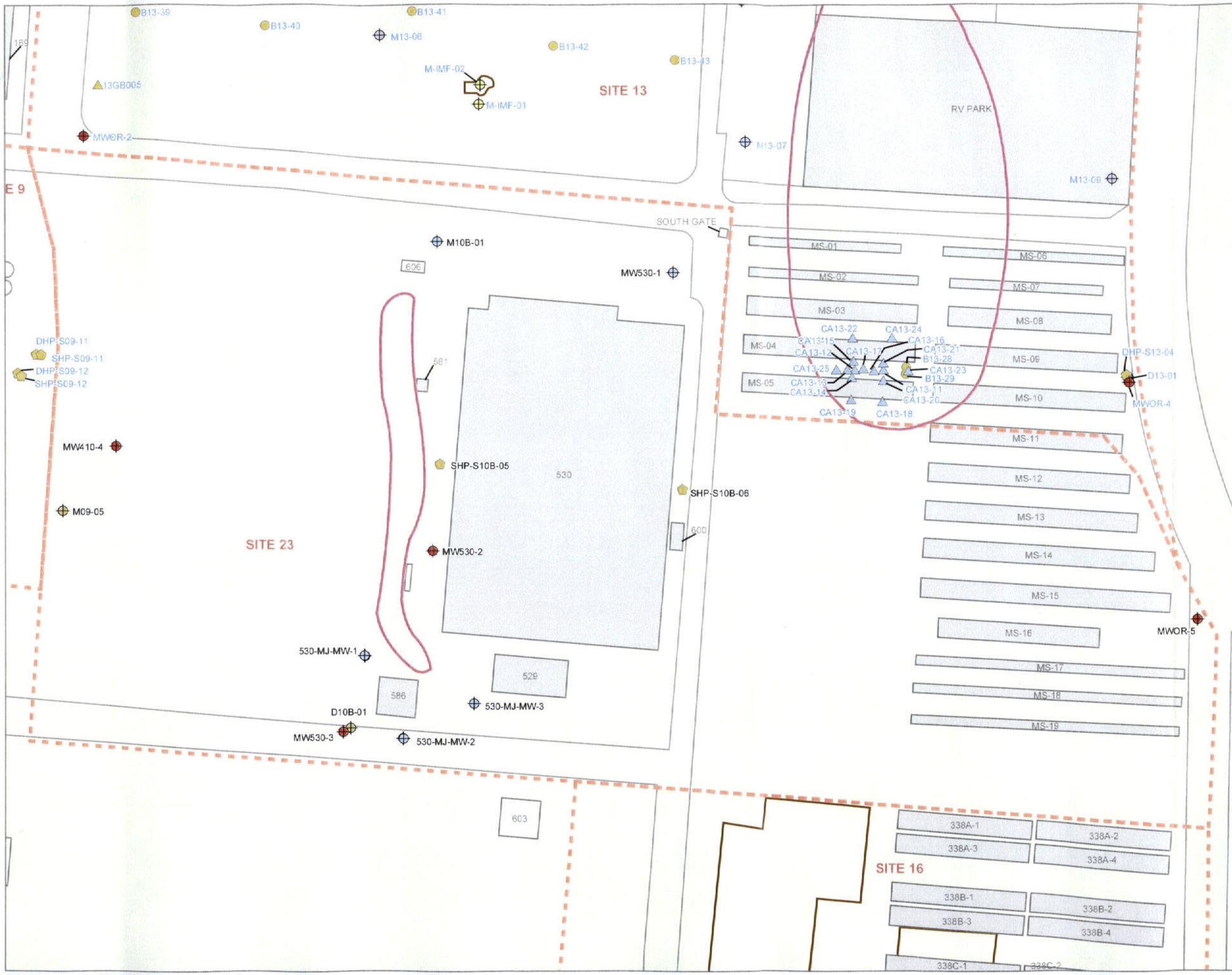

GROUNDWATER SAMPLING LOCATION

- Geoprobe
- Hydropunch
- Monitoring Well

KEY TO SAMPLING LOCATION INVESTIGATION

- Intermediate Maintenance Facility Removal Action
- Total Petroleum Hydrocarbon Program
- Phase 1 & 2A (1991)
- Follow-On Investigation (1994)
- Groundwater Monitoring (2003)
- EXTENT OF FREE PRODUCT
- CERCLA SITE BOUNDARY
- EXCAVATION
- LAND COVER

BUILDING

- Former
- Present

Notes:

Blue sampling location labels denote points not associated with featured site.

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

N

100 0 50 100 Feet

Tetra Tech EM Inc.

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

FIGURE H.4-10
SITE 23
GROUNDWATER SAMPLING LOCATIONS

Operable Unit 2A
Human Health Risk Assessment
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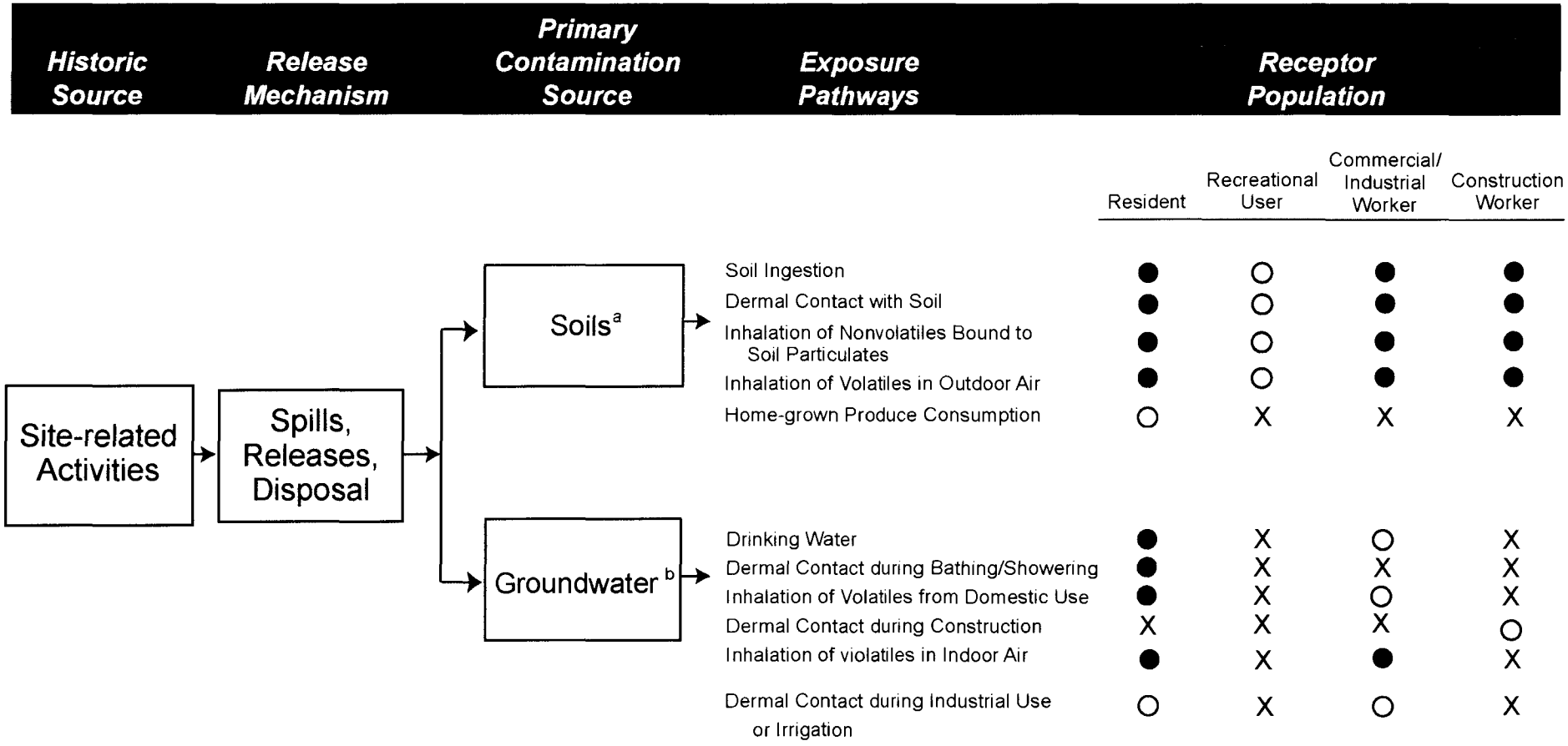

Notes

● Denotes a complete exposure pathway for that receptor.

○ Potentially complete, but negligible.

X *Incomplete pathway*

a Soils between 0 and 8 feet below ground surface (bgs) are evaluated for all four receptors; soils between 0 and 2 feet bgs are evaluated for resident and construction worker only.

b Groundwater assumed to be present at 8 feet bgs throughout base.

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

FIGURE H.5-1
CONCEPTUAL SITE MODEL
Operable Unit 2A
Human Health Risk Assessment
Remedial Investigation Report

N00236.002017
ALAMEDA POINT
SSIC NO. 5090.3

TABLES

FINAL REMEDIAL INVESTIGATION REPORT
SITES 9, 13, 19, 22, AND 23
OPERABLE UNIT 2A (OU-2S)

DATED 01 APRIL 2005

TABLE H-1.1: SELECTION OF EXPOSURE PATHWAYS

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Surface Soil (0-2 ft bgs)	Soil	Surface Soil	Resident	Adult	Incidental Ingestion	Quant.	Under a redevelopment scenario with minimal surface regrading, this exposure pathway would be complete
						Dermal Contact	Quant.	Under a redevelopment scenario with minimal surface regrading, this exposure pathway would be complete
					Child	Incidental Ingestion	Quant.	Under a redevelopment scenario with minimal surface regrading, this exposure pathway would be complete
						Dermal Contact	Quant.	Under a redevelopment scenario with minimal surface regrading, this exposure pathway would be complete
				Commercial/Industrial Worker	Adult	Incidental Ingestion	Quant.	Under a redevelopment scenario with minimal surface regrading, this exposure pathway would be complete
						Dermal Contact	Quant.	Under a redevelopment scenario with minimal surface regrading, this exposure pathway would be complete
				Construction Worker	Adult	Incidental Ingestion	Quant.	Under a redevelopment scenario with minimal surface regrading, this exposure pathway would be complete
						Dermal Contact	Quant.	Under a redevelopment scenario with minimal surface regrading, this exposure pathway would be complete
		Particulates	Respirable Particulates Suspended from Surface Soil	Resident	Adult	Inhalation	Quant.	Under a redevelopment scenario with minimal surface regrading, this exposure pathway would be complete
					Child	Inhalation	Quant.	Under a redevelopment scenario with minimal surface regrading, this exposure pathway would be complete
				Commercial/Industrial Worker	Adult	Inhalation	Quant.	Under a redevelopment scenario with minimal surface regrading, this exposure pathway would be complete
				Construction Worker	Adult	Inhalation	Quant.	Under a redevelopment scenario with minimal surface regrading, this exposure pathway would be complete
		Vapors	Vapors from Surface Soil to Indoor Air	Resident	Adult	Inhalation	None	Soil gas data are generally available only for depths between 2 and 8 feet bgs at Alameda Point; the vapor inhalation pathway will be based on soil gas results from the subsurface.
					Child	Inhalation	None	Soil gas data are generally available only for depths between 2 and 8 feet bgs at Alameda Point; the vapor inhalation pathway will be based on soil gas results from the subsurface.
				Commercial/Industrial Worker	Adult	Inhalation	None	Soil gas data are generally available only for depths between 2 and 8 feet bgs at Alameda Point; the vapor inhalation pathway will be based on soil gas results from the subsurface.
			Vapors from Surface Soil to Outdoor Air	Resident	Adult	Inhalation	None	VOC soil data are generally available only for depths between 2 and 8 feet bgs at Alameda Point.
					Child	Inhalation	None	VOC soil data are generally available only for depths between 2 and 8 feet bgs at Alameda Point.
				Commercial/Industrial Worker	Adult	Inhalation	None	VOC soil data are generally available only for depths between 2 and 8 feet bgs at Alameda Point.
				Construction Worker	Adult	Inhalation	None	VOC soil data are generally available only for depths between 2 and 8 feet bgs at Alameda Point.
		Homegrown Produce	Homegrown Produce	Resident	Adult	Ingestion	Quant.	Under a redevelopment scenario with minimal surface regrading, this exposure pathway would be complete
					Child	Ingestion	Quant.	Under a redevelopment scenario with minimal surface regrading, this exposure pathway would be complete

TABLE H-1.1: SELECTION OF EXPOSURE PATHWAYS

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
	Subsurface Soil (0 to 8 ft bgs)	Soil	Subsurface Soil	Resident	Adult	Incidental Ingestion	Quant.	Residential reuse of Alameda Point will be addressed and assumes disturbance of subsurface soils during development.
						Dermal Contact	Quant.	Residential reuse of Alameda Point will be addressed and assumes disturbance of subsurface soils during development.
					Child	Incidental Ingestion	Quant.	Residential reuse of Alameda Point will be addressed and assumes disturbance of subsurface soils during development.
						Dermal Contact	Quant.	Residential reuse of Alameda Point will be addressed and assumes disturbance of subsurface soils during development.
				Construction Worker	Adult	Incidental Ingestion	Quant.	Various potential reuses of Alameda Point are addressed and assume disturbance of subsurface soils during development.
						Dermal Contact	Quant.	Various potential reuses of Alameda Point are addressed and assume disturbance of subsurface soils during development.
		Particulates	Respirable Particulates Suspended from Subsurface Soil	Resident	Adult	Inhalation	Quant.	Residential reuse of Alameda Point will be addressed and assumes disturbance of subsurface soils during development.
					Child	Inhalation	Quant.	Residential reuse of Alameda Point will be addressed and assumes disturbance of subsurface soils during development.
				Construction Worker	Adult	Inhalation	Quant.	Various potential reuses of Alameda Point are addressed and assume disturbance of subsurface soils during development.
		Vapors	Vapors from Subsurface Soil to Outdoor Air	Resident	Adult	Inhalation	Quant.	VOC soil data are generally available only for depths between 2 and 8 feet bgs at Alameda Point, but they will be assessed as if brought to the surface during future redevelopment.
					Child	Inhalation	Quant.	VOC soil data are generally available only for depths between 2 and 8 feet bgs at Alameda Point, but they will be assessed as if brought to the surface during future redevelopment.
				Construction Worker	Adult	Inhalation	Quant.	Soil gas data are generally available only for depths between 2 and 8 feet bgs at Alameda Point; Pathways related to vapor inhalation by the construction worker are evaluated for the 0 to 8-foot bgs soil interval.
			Vapors from Subsurface Soil to Indoor Air	Resident	Adult	Inhalation	Quant.	Soil gas data are generally available only for depths between 2 and 8 feet bgs at Alameda Point; Pathways related to vapor inhalation by the resident are evaluated for the 0 to 8-foot bgs soil interval.
					Child	Inhalation	None	As explained in the HHRAP text, inhalation toxicity factors are developed for chronic exposures and dosimetry is not adjusted for children's inhalation rates.
		Homegrown Produce	Homegrown Produce	Resident	Adult	Ingestion	Quant.	Residential reuse of Alameda Point will be addressed and assumes disturbance of subsurface soils during development.
					Child	Ingestion	Quant.	Residential reuse of Alameda Point will be addressed and assumes disturbance of subsurface soils during development.

TABLE H-1.1: SELECTION OF EXPOSURE PATHWAYS

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future (Continued)	Groundwater	Groundwater	Tap Water from Shallow Groundwater	Resident	Adult	Ingestion	Quant.	Use of groundwater under hypothetical residential reuses of Alameda Point has not been ruled out; therefore, pathways associated with the use of groundwater from the site as tap water are considered potentially complete and will be evaluated on a case-by-case basis.
						Dermal Contact During Bathing or Showering	Quant.	Use of groundwater under hypothetical residential reuses of Alameda Point has not been ruled out; therefore, pathways associated with the use of groundwater from the site as tap water are considered potentially complete and will be evaluated on a case-by-case basis.
					Child	Ingestion	Quant.	Use of groundwater under hypothetical residential reuses of Alameda Point has not been ruled out; therefore, pathways associated with the use of groundwater from the site as tap water are considered to be potentially complete and will be evaluated on a case-by-case basis.
						Dermal Contact During Bathing or Showering	Quant.	Use of groundwater under hypothetical residential reuses of Alameda Point has not been ruled out; therefore, pathways associated with the use of groundwater from the site as tap water are considered to be potentially complete and will be evaluated on a case-by-case basis.
				Commercial/Industrial Worker	Adult	Ingestion	Quant.	Use of groundwater for hypothetical industrial reuses of Alameda Point has not been ruled out; therefore, pathways associated with the use of groundwater from the site for industrial purposes, process water, or for irrigation are considered potentially complete and will be evaluated on a case-by-case basis.
						Dermal Contact	Quant.	Use of groundwater for hypothetical industrial reuses of Alameda Point has not been ruled out; therefore, pathways associated with the use of groundwater from the site for industrial purposes, process water, or for irrigation are considered potentially complete and will be evaluated on a case-by-case basis.

TABLE H-1.1: SELECTION OF EXPOSURE PATHWAYS

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future (Continued)	Groundwater (Continued)	Groundwater (Continued)	Vapor Intrusion from Shallow Groundwater to Indoor Air	Resident	Adult	Inhalation	Quant.	The possibility exists for COPCs to migrate to indoor air on sites that overlie groundwater that contains NAPL or VOCs. The pathway will be evaluated on a case-by-case basis.
					Child	Inhalation	None	As explained in the HHRAP text, inhalation toxicity factors are developed for chronic exposures and dosimetry is not adjusted for children's inhalation rates.
				Commercial/Industrial Worker	Adult	Inhalation	Quant.	The possibility exists for COPCs to migrate to indoor air on parcels that overlie groundwater that contains NAPL or VOCs. The pathway will be evaluated on a case-by-case basis.
			Vapors from Use of Groundwater During Bath or Shower or Other Whole-House Use	Resident	Adult	Inhalation	Quant.	Use of groundwater under hypothetical residential reuses of Alameda Point has not been ruled out; therefore, pathways associated with the use of groundwater from the site as tap water are considered to be potentially complete and will be evaluated on a case-by-case basis.
					Child	Inhalation	Quant.	Use of groundwater under hypothetical residential reuses of Alameda Point has not been ruled out; therefore, pathways associated with the use of groundwater from the site as tap water are considered to be potentially complete and will be evaluated on a case-by-case basis.
			Groundwater Encountered During Construction	Construction Worker	Adult	Dermal Contact	None	The potential exists that construction workers could come into contact with groundwater during excavation, trenching, or constuction activities; however, this pathway is not evaluated because such contacts would be avoided and would be short in duration relative to other pathways.
			Vapors from Industrial or Irrigation Use of Groundwater	Commercial/Industrial Worker	Adult	Inhalation	Quant.	Use of groundwater under hypothetical residential reuses of Alameda Point has not been ruled out; therefore, pathways associated with the use of groundwater from the site as tap water are considered to be potentially complete and may be evaluated (in lieu of ingestion exposures) on a case-by-case basis.

Notes:

bgs	Feet below ground surface
COPC	Chemical of potential concern
EPA	U.S. Environmental Protection Agency
HHRAP	Human health risk assessment protocol
NAPL	Non-aqueous phase liquid
None	Risks contributed by this pathway will not be quantitatively assessed in the human health risk assessment
Quant.	Quantitative; this scenario will not be quantitatively assessed in the human health risk assessment
VOC	Volatile organic compounds

TABLE H-2.1: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 9 SURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe: Current/Future
Medium: Surface Soil (0-2 feet bgs) at Site 9
Exposure Medium: Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (5)
Site 9	540-59-0	1,2-DICHLOROETHENE (TOTAL)	0.001 J	0.13	MG/KG	280-S09-019	2 / 7	0.011 - 0.120	0.13	–	4.30E+01 [a] N	–	–	No	BSL
	91-57-6	2-METHYLNAPHTHALENE	0.00023 J	1.5	MG/KG	C3S009B009	17 / 32	0.00022 - 0.720	1.5	–	5.60E+01 [a] N	–	–	No	BSL
	83-32-9	ACENAPHTHENE	0.00045 J	0.14	MG/KG	C3S009B009	4 / 26	0.00022 - 0.026	0.14	–	3.68E+03 N	–	–	No	BSL
	208-96-8	ACENAPHTHYLENE	0.00021 J	0.0029 J	MG/KG	C3S009B003	6 / 26	0.00017 - 0.026	0.0029	–	3.68E+03 N	–	–	No	BSL
	7429-90-5	ALUMINUM	2,890	11,900	MG/KG	B410-9 [1.0-1.5]	13 / 13	NA	11,900	2,880 - 26,800	7.60E+04 N	–	–	No	BSL d
	120-12-7	ANTHRACENE	0.00023 J	0.043	MG/KG	C3S009B009	13 / 26	0.0002 - 0.026	0.043	–	2.19E+04 N	–	–	No	BSL
	7440-38-2	ARSENIC	0.85 J	5.9	MG/KG	B410-9 [1.0-1.5]	4 / 13	0.55 - 11	5.9	0.74 - 23	3.90E-01 C	–	–	Yes	ASL d
	7440-39-3	BARIUM	16.3 JB	198	MG/KG	B410-9 [1.0-1.5]	13 / 13	NA	198	0.3 - 198	5.40E+03 N	–	–	No	BSL c
	56-55-3	BENZ(A)ANTHRACENE	0.00018 J	0.019	MG/KG	C3S009B004	16 / 26	0.00014 - 0.026	0.019	–	6.21E-01 C	–	–	No	BSL
	50-32-8	BENZO(A)PYRENE	0.00023 J	0.039	MG/KG	C3S009B009	18 / 26	0.00015 - 0.026	0.039	–	6.21E-02 C	–	–	No	BSL
	205-99-2	BENZO(B)FLUORANTHENE	0.00021 J	0.054	MG/KG	C3S009B009	18 / 26	0.00015 - 0.026	0.054	–	6.21E-01 C	–	–	No	BSL
	191-24-2	BENZO(G,H,I)PERYLENE	0.00014 J	0.11	MG/KG	C3S009B004	22 / 26	0.00011 - 0.026	0.11	–	2.32E+03 [a] N	–	–	No	BSL
	207-08-9	BENZO(K)FLUORANTHENE	0.00021 J	0.011	MG/KG	C3S009B009	15 / 26	0.00016 - 0.026	0.011	–	3.78E-01 C	–	–	No	BSL
	7440-41-7	BERYLLIUM	0.09 B	0.92 J	MG/KG	280-S09-019	9 / 13	0.2 - 1.1	0.92	0.09 - 0.77	1.50E+02 N	–	–	No	BSL c
	7440-43-9	CADMIUM	0.11 J	0.49 J	MG/KG	280-S09-013	6 / 13	0.06 - 1.1	0.49	0.1 - 0.82	3.70E+01 N	–	–	No	BSL d
	7440-70-2	CALCIUM	1,680	12,700	MG/KG	B410-9 [1.0-1.5]	13 / 13	NA	12,700	1,360 - 19,200	NA	–	–	No	NUT
	7440-47-3	CHROMIUM	22.7	110	MG/KG	280-S09-010	13 / 13	NA	110	11.4 - 81.7	2.10E+02 C	–	–	No	BSL d
	218-01-9	CHRYSENE	0.00021 J	0.15	MG/KG	C3S009B009	18 / 26	0.00016 - 0.026	0.15	–	3.78E+00 C	–	–	No	BSL
	7440-48-4	COBALT	3.4 B	11.3 J	MG/KG	280-S09-010	6 / 13	5.1 - 6.5	11.3	1.9 - 14	9.00E+02 C	–	–	No	BSL d
	7440-50-8	COPPER	5.2 J	89.4	MG/KG	B410-9 [1.0-1.5]	12 / 13	5.5 - 5.5	89.4	4.2 - 89.4	3.10E+03 N	–	–	No	BSL d
	53-70-3	DIBENZ(A,H)ANTHRACENE	0.00033 J	0.034 J	MG/KG	C3S009B004	14 / 26	0.00019 - 0.026	0.034	–	6.21E-02 C	–	–	No	BSL
	100-41-4	ETHYLBENZENE	0.2	0.2	MG/KG	280-S09-019	1 / 7	0.011 - 0.120	0.2	–	8.90E+00 C	–	–	No	BSL
	206-44-0	FLUORANTHENE	0.0003 J	0.051	MG/KG	C3S009B009	19 / 26	0.00018 - 0.026	0.051	–	2.29E+03 N	–	–	No	BSL
	86-73-7	FLUORENE	0.00028 J	0.38	MG/KG	C3S009B009	11 / 26	0.00018 - 0.026	0.38	–	2.75E+03 N	–	–	No	BSL
	193-39-5	INDENO(1,2,3-CD)PYRENE	0.00031 J	0.016	MG/KG	C3S009B003	17 / 26	0.00016 - 0.026	0.016	–	6.21E-01 C	–	–	No	BSL
	7439-89-6	IRON	5,480	19,300	MG/KG	B410-9 [1.0-1.5]	13 / 13	NA	19,300	760 - 26,900	2.30E+04 N	–	–	No	BSL, NUT d
	7439-92-1	LEAD	1.3	9.1	MG/KG	B410-9 [1.0-1.5]	8 / 13	3.5 - 5.3	9.1	1.3 - 41	1.50E+02 N	–	–	No	BSL c
	7439-95-4	MAGNESIUM	1,700	5,860	MG/KG	B410-9 [1.0-1.5]	13 / 13	NA	5,860	1,510 - 42,400	NA	–	–	No	NUT
	7439-96-5	MANGANESE	68	1,050	MG/KG	B410-9 [1.0-1.5]	13 / 13	NA	1,050	50 - 1,060	1.80E+03 N	–	–	No	BSL d
	91-20-3	NAPHTHALENE	0.00026 J	0.38	MG/KG	C3S009B009	12 / 26	0.00022 - 0.026	0.38	–	5.59E+01 N	–	–	No	BSL
	86-30-6	N-NITROSODIPHENYLAMINE	0.042 JB	0.054 JB	MG/KG	MW410-1 [0.5-1.0]	2 / 6	0.340 - 0.720	0.054	–	9.90E+01 C	–	–	No	BSL
	7440-02-0	NICKEL	17.8	46.1	MG/KG	280-S09-010	13 / 13	NA	46.1	11.6 - 88.5	1.60E+03 N	–	–	No	BSL d
	85-01-8	PHENANTHRENE	0.0002 J	0.64	MG/KG	C3S009B009	22 / 26	0.00016 - 0.026	0.64	–	2.19E+04 [a] N	–	–	No	BSL
	129-00-0	PYRENE	0.00014 J	0.11	MG/KG	C3S009B009	21 / 26	0.00012 - 0.026	0.11	–	2.32E+03 N	–	–	No	BSL
	7440-09-7	POTASSIUM	390 B	2,400	MG/KG	B410-9 [1.0-1.5]	13 / 13	NA	2,400	310 - 6,382	NA	–	–	No	NUT
	7440-23-5	SODIUM	82.7 J	343	MG/KG	B410-9 [1.0-1.5]	11 / 13	520 - 530	343	88.1 - 3510	NA	–	–	No	NUT
	7440-32-6	TITANIUM	223	1,020	MG/KG	B410-9 [1.0-1.5]	6 / 6	NA	1,020	223 - 1,020	3.10E+05 [b] N	–	–	No	BSL d
	108-88-3	TOLUENE	0.049 J	0.049 J	MG/KG	280-S09-019	1 / 7	0.011 - 0.120	0.049	–	5.20E+02 sat	–	–	No	BSL
	7440-62-2	VANADIUM	13	35.4	MG/KG	280-S09-010	13 / 13	NA	35.4	12.8 - 62.3	5.50E+02 N	–	–	No	BSL d

TABLE H-2.1: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 9 SURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe: Current/Future
Medium: Surface Soil (0-2 feet bgs) at Site 9
Exposure Medium: Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (5)
Site 9	1330-20-7	XYLENE (TOTAL)	0.002 J	3.1	MG/KG	280-S09-019	2 / 7	0.011 - 0.120	3.1	–	2.70E+02 N	–	–	No	BSL
	7440-66-6	ZINC	17.9	80.6	MG/KG	B410-9 [1.0-1.5]	13 / 13	NA	80.6	14 - 84	2.30E+04 N	–	–	No	BSL d

Notes:

(1) Qualifier codes are as follows:

B	Blank contamination
J	Estimated concentration value
JB	Estimated value; blank contamination

(2) The "Concentration Used for Screening" is the maximum detected concentration.

(3) The "Background Value" is the range for the blue background area (Table D.4.2; Tetra Tech 2001), shown for comparison purposes *only. Background comparisons will be based on two-population tests as described in the Appendix H text.*

(4) Screening toxicity values are EPA Region 9 residential PRGs (EPA 2002a). California modified PRGs were used where available.

(5) Rationale for Selection or Deletion codes are as follows:

ASL	Above screening level
BSL	Below screening level
NUT	Essential nutrient

Acronyms:

–	No value available
ARAR/TBC	Applicable or relevant and appropriate requirement/to be considered
bgs	Below ground surface
C	Carcinogenic
CAS	Chemical Abstract Service
COPC	Contaminant of potential concern
MG/KG	Milligram per kilogram
N	Noncarcinogenic
NA	Not applicable
sat	*Saturated soil concentration*

a The screening toxicity value for 1,2-dichloroethene (total) is based on cis-1,2-dichloroethene; benzo(g,h,i)perylene is based on pyrene; phenanthrene is based on anthracene; 2-methylnaphthalene is based on naphthalene.

b Screening toxicity value for titanium was taken from EPA Region 3 Risk-based Concentration Table (2002b) and represents risk-based screening level for residential surface soil.

c Following the statistical background screening, this inorganic was found to be significantly greater than background.

d Following the statistical background screening, this inorganic was not found to be significantly greater than background.

References:

U.S. Environmental Protection Agency (EPA) 2002a. "EPA Region 9 Preliminary Remediation Goals Table." October 2. Available on-line at: http://www.epa.gov/region09/waste/sfund/prg/index.htm

U.S. Environmental Protection Agency (EPA) 2002b. "EPA Region 3 Risk-Based Concentration Table." April 2. Available on-line at: http://www.epa.gov/reg3hwmd/risk/rbc.pdf

TABLE H-2.2: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 9 SUBSURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe: Future
Medium: Subsurface Soil (0-8 feet bgs) at Site 9
Exposure Medium: Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (5)
	107-06-2	1,2-DICHLOROETHENE (TOTAL)	0.001 J	0.13	MG/KG	280-S09-019	4 / 36	0.005 - 0.120	0.13	--	4.30E+01 [a] N	--	--	No	BSL
	78-93-3	2-BUTANONE	0.009 BDJ	0.009 BDJ	MG/KG	B410-7 [2.5-3.0]	1 / 36	0.010 - 0.120	0.009	--	7.30E+03 [a] N	--	--	No	BSL
	91-57-6	2-METHYLNAPHTHALENE	0.00023 J	2.8	MG/KG	C3S009B005	26 / 52	0.00022 - 0.026	2.8	--	5.60E+01 [a] N	--	--	No	BSL
	59-50-7	4-CHLORO-3-METHYLPHENOL	0.043 J	0.043 J	MG/KG	B410-5 [5.0-5.5]	1 / 21	0.340 - 0.960	0.043	--	3.10E+03 [a] N	--	--	No	BSL
	7429-90-5	ALUMINUM	2,880	13,900 J	MG/KG	B410-8 [1.0-1.5]	40 / 40	NA	13,900	2,880 - 26,800	7.60E+04 N	--	--	No	BSL d
	7440-36-0	ANTIMONY	0.47 J	1.2 J	MG/KG	280-S09-021	2 / 40	0.48 - 7.2	1.2	0.89 - 1	3.10E+01 N	--	--	No	BSL d
	83-32-9	ACENAPHTHENE	0.00038 J	0.14	MG/KG	C3S009B009	9 / 52	0.00022 - 0.026	0.14	--	3.68E+03 N	--	--	No	BSL
	208-96-8	ACENAPHTHYLENE	0.00021 J	0.0029 J	MG/KG	C3S009B003	8 / 52	0.00017 - 0.026	0.0029	--	3.68E+03 [a] N	--	--	No	BSL
	120-12-7	ANTHRACENE	0.00023 J	0.043	MG/KG	C3S009B009	18 / 52	0.0002 - 0.026	0.043	--	2.19E+04 N	--	--	No	BSL
	7440-38-2	ARSENIC	0.85 J	5.9	MG/KG	B410-8 [2.5-3.0]	13 / 40	0.55 - 12	5.9	0.74 - 23	3.90E-01 C	--	--	Yes	ASL d
	7440-39-3	BARIUM	16.3 JB	266	MG/KG	280-S09-168	40 / 40	NA	266	0.3 - 198	5.40E+03 N	--	--	No	BSL c
	56-55-3	BENZ(A)ANTHRACENE	0.00018 J	0.019	MG/KG	C3S009B004	32 / 52	0.00014 - 0.026	0.019	--	6.21E-01 C	--	--	No	BSL
	56-55-3	BENZ(A)ANTHRACENE	0.00018 J	0.019	MG/KG	C3S009B009	32 / 52	0.00014 - 0.026	0.019	--	6.21E-01 C	--	--	No	BSL
	50-32-8	BENZO(A)PYRENE	0.00021 J	0.039	MG/KG	C3S009B009	40 / 52	0.00015 - 0.026	0.039	--	6.21E-02 C	--	--	No	BSL
	205-99-2	BENZO(B)FLUORANTHENE	0.00021 J	0.054	MG/KG	C3S009B009	38 / 52	0.00015 - 0.026	0.054	--	6.21E-01 C	--	--	No	BSL
	191-24-2	BENZO(G,H,I)PERYLENE	0.00014 J	0.11	MG/KG	C3S009B004	45 / 52	0.00011 - 0.026	0.11	--	2.32E+03 [a] N	--	--	No	BSL
	207-08-9	BENZO(K)FLUORANTHENE	0.00021 J	0.021	MG/KG	C3S009B007	28 / 52	0.00016 - 0.026	0.021	--	3.78E-01 C	--	--	No	BSL
	7440-41-7	BERYLLIUM	0.09 B	1.5	MG/KG	B410-8 [1.0-1.5]	23 / 40	0.2 - 1.2	1.5	0.09 - 0.77	1.50E+02 N	--	--	No	BSL c
	7440-43-9	CADMIUM	0.11 J	0.49 J	MG/KG	B410-5 [5.0-5.5]	11 / 40	0.06 - 1.2	0.49	0.1 - 0.82	3.70E+01 N	--	--	No	BSL d
Site 9	7440-70-2	CALCIUM	1,340	19,200	MG/KG	B410-8 [7.0-7.5]	40 / 40	NA	19,200	1,360 - 19,200	NA	--	--	No	NUT
	7440-47-3	CHROMIUM	19	178	MG/KG	B410-7 [1.0-1.5]	40 / 40	NA	178	11.4 - 81.7	2.10E+02 C	--	--	No	BSL d
	218-01-9	CHRYSENE	0.00021 J	0.15	MG/KG	C3S009B009	38 / 52	0.00016 - 0.026	0.15	--	3.78E+00 C	--	--	No	BSL
	7440-48-4	COBALT	2.9	23	MG/KG	280-S09-006	20 / 40	4.6 - 6.5	23	1.9 - 14	9.00E+02 C	--	--	No	BSL d
	7440-50-8	COPPER	4.1 J	89.4	MG/KG	B410-8 [2.5-3.0]	36 / 40	5.5 - 6.1	89.4	4.2 - 89.4	3.10E+03 N	--	--	No	BSL d
	53-70-3	DIBENZ(A,H)ANTHRACENE	0.00025 J	0.034 J	MG/KG	C3S009B004	26 / 52	0.00019 - 0.026	0.034	--	6.21E-02 C	--	--	No	BSL
	100-41-4	ETHYLBENZENE	0.002 J	0.2	MG/KG	280-S09-167	3 / 34	0.005 - 0.055	0.2	--	8.90E+00 C	--	--	No	BSL
	206-44-0	FLUORANTHENE	0.00023 J	0.06	MG/KG	C3S009B007	39 / 52	0.00018 - 0.026	0.06	--	2.29E+03 N	--	--	No	BSL
	86-73-7	FLUORENE	0.00023 J	0.38	MG/KG	C3S009B009	18 / 52	0.00018 - 0.026	0.38	--	2.75E+03 N	--	--	No	BSL
	193-39-5	INDENO(1,2,3-CD)PYRENE	0.00023 J	0.039	MG/KG	C3S009B007	36 / 52	0.00016 - 0.026	0.039	--	6.21E-01 C	--	--	No	BSL
	7439-89-6	IRON	5,090	21,500	MG/KG	B410-8 [1.0-1.5]	40 / 40	NA	21,500	760 - 26,900	2.30E+04 N	--	--	No	BSL, NUT d
	7439-92-1	LEAD	1.3	10.4	MG/KG	B410-8 [1.0-1.5]	17 / 40	2.1 - 6.3	10.4	1.3 - 41	1.50E+02 N	--	--	No	BSL c
	7439-95-4	MAGNESIUM	1,570	5,860	MG/KG	B410-8 [2.5-3.0]	39 / 40	520 - 520	5,860	1,510 - 42,400	NA	--	--	No	NUT
	7439-96-5	MANGANESE	62.5	1,050	MG/KG	B410-8 [2.5-3.0]	40 / 40	NA	1,050	50 - 1,060	1.80E+03 N	--	--	No	BSL d
	91-20-3	NAPHTHALENE	0.00025 J	4.3	MG/KG	C3S009B005	21 / 52	0.00022 - 0.026	4.3	--	5.59E+01 N	--	--	No	BSL
	62-75-9	N-NITROSODIPHENYLAMINE	0.038 JB	0.12 JB	MG/KG	MW410-1 [7.0-7.5]	10 / 21	0.340 - 0.730	0.12	--	9.90E+01 C	--	--	No	BSL
	7440-02-0	NICKEL	14.6	50.8	MG/KG	B410-8 [1.0-1.5]	40 / 40	NA	50.8	11.6 - 88.5	1.60E+03 N	--	--	No	BSL d
	87-86-5	PENTACHLOROPHENOL	0.43 JB	0.43 JB	MG/KG	B410-7 [2.5-3.0]	1 / 21	1.6 - 4.6	0.43	--	3.00E+00 C	--	--	No	BSL, IFD
	85-01-8	PHENANTHRENE	0.00017 J	0.64	MG/KG	C3S009B009	39 / 52	0.00016 - 0.026	0.64	--	2.19E+04 [a] N	--	--	No	BSL
	7440-09-7	POTASSIUM	310	2,400	MG/KG	B410-8 [2.5-3.0]	37 / 40	560 - 580	2,400	310 - 6,382	NA	--	--	No	NUT

TABLE H-2.2: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 9 SUBSURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe: Future
Medium: Subsurface Soil (0-8 feet bgs) at Site 9
Exposure Medium: Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (5)
Site 9	129-00-0	PYRENE	0.00014 J	0.11	MG/KG	C3S009B009	42 / 52	0.00012 - 0.026	0.11	–	2.32E+03 N	–	–	No	BSL
	7440-22-4	SILVER	0.44 B	0.44 B	MG/KG	280-S09-018	1 / 40	0.18 - 6	0.44	0.44 - 0.61	3.90E+02 N	–	–	No	BSL, IFD d
	7440-23-5	SODIUM	68 J	939	MG/KG	MW410-1 [7.0-7.5]	32 / 40	520 - 600	939	88.1 - 3,510	NA	–	–	No	NUT
	7440-32-6	TITANIUM	223	1,020	MG/KG	B410-8 [2.5-3.0]	23 / 23	NA	1,020	223 - 1,020	3.10E+05 [b] N	–	–	No	BSL d
	108-88-3	TOLUENE	0.003 J	0.73 D	MG/KG	MW410-1 [3.0-3.5]	20 / 34	0.011 - 0.055	0.73	–	5.20E+02 sat	–	–	No	BSL
	7440-62-2	VANADIUM	12.7	42.3	MG/KG	B410-8 [1.0-1.5]	40 / 40	NA	42.3	12.8 - 62.3	5.50E+02 N	–	–	No	BSL d
	1330-20-7	XYLENE (TOTAL)	0.029	3.1	MG/KG	280-S09-167	7 / 34	0.005 - 0.053	3.1	–	2.70E+02 N	–	–	No	BSL
	7440-66-6	ZINC	12	80.6	MG/KG	B410-8 [2.5-3.0]	40 / 40	NA	80.6	14 - 84	2.30E+04 N	–	–	No	BSL d

Notes:

(1) *Define the "(Qualifier)" codes used for the "Minimum Concentration" and "Maximum Concentration".*

B	Blank contamination
BDJ	Estimated value; blank contamination; reported in a diluted sample
D	Compound reported from a diluted sample
J	Estimated concentration value
JB	Estimated value; blank contamination

(2) The "Concentration Used for Screening" is the maximum detected concentration.

(3) The "Background Value" is the range for the blue background area (Table D.4.2; Tetra Tech 2001), shown for comparison purposes only. Background comparisons will be based on two-population tests as described in the Appendix H text.

(4) Screening toxicity values are EPA Region 9 residential PRGs (EPA 2002a). California modified PRGs were used where available.

(5) Rationale for Selection or Deletion

ASL	Above screening level
BSL	Below screening level
IFD	Infrequently detected
NUT	Essential nutrient

Acronyms:

–	No value available
ARAR/TBC	Applicable or relevant and appropriate requirement/to be considered
bgs	Below ground surface
C	Carcinogenic
CAS	Chemical Abstract Service
COPC	Contaminant of potential concern
MG/KG	Milligram per kilogram
N	Noncarcinogenic
NA	Not applicable
sat	Saturated soil concentration

a The screening toxicity value for 1,2-dichloroethene (total) is based on cis-1,2-dichloroethene; 2-butanone is based on methyl ethyl ketone; 4-chloro-3-methylphenol is based on 3-methylphenol; benzo(g,h,i)perylene is based on pyrene; phenanthrene is based on anthracene; acenaphthylene is based upon acenaphthene; 2-methylnaphthalene is based on naphthalene.

b Screening toxicity value was taken from EPA Region 3 Risk-based Concentration Table (2002) and represents risk-based screening level for residential surface soil.

c Following the statistical background screening, this inorganic was found to be significantly greater than background.

d Following the statistical background screening, this inorganic was not found to be significantly greater than background.

References:

U.S. Environmental Protection Agency (EPA) 2002a. "EPA Region 9 Preliminary Remediation Goals Table." October 2. Available on-line at: http://www.epa.gov/region09/waste/sfund/prg/index.htm

U.S. Environmental Protection Agency (EPA) 2002b. "EPA Region 3 Risk-Based Concentration Table." April 2. Available on-line at: http://www.epa.gov/reg3hwmd/risk/rbc.pdf

TABLE H-2.3: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 9 SOIL GAS

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe: Current/Future
Medium: Soil Gas (Air Samples) Collected from Site 9
Exposure Medium: Vadose Zone Soil (Migration to Indoor Air)

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (5)
Site 9	79-00-5	1,1,2-TRICHLOROETHANE	593	593	UG/M3	385-S09-040	1 / 2	69.86 - 69.86	593	--	1.50E+00 C	--	--	Yes	ASL
	75-34-3	1,1-DICHLOROETHANE	78.4	78.4	UG/M3	385-S09-040	1 / 2	51.82 - 51.82	78.4	--	5.00E+03 N	--	--	No	BSL
	71-43-2	BENZENE	123	1,202	UG/M3	385-S09-040	2 / 2	NA	1,202	--	3.10E+00 C	--	--	Yes	ASL
	100-41-4	ETHYLBENZENE	309	5,892	UG/M3	385-S09-040	2 / 2	NA	5,892	--	2.20E+01 C	--	--	Yes	ASL
	108-38-3	M-XYLENE	1,077	26,795	UG/M3	385-S09-040	2 / 2	NA	26,795	--	7.00E+04 [a] N	--	--	No	BSL
	95-47-6	O-XYLENE	182	5,262	UG/M3	385-S09-040	2 / 2	NA	5,262	--	7.00E+04 [a] N	--	--	No	BSL
	108-88-3	TOLUENE	487	8,786	UG/M3	385-S09-040	2 / 2	NA	8,786	--	4.00E+03 N	--	--	Yes	ASL

Notes:

(1) The "Concentration Used for Screening" is the maximum detected concentration.

(2) Background values are not available for soil gas comparisons.

(3) Screening toxicity values are target shallow soil gas concentrations (taken at less than 5 feet bgs) as shown in Table 2c (EPA 2002c).

(4) Rationale for Selection or Deletion

ASL Above screening level

BSL Below screening level

a The screening toxicity values for m- and o-xylenes are based on xylene (total).

Acronyms:

-- No value available

ARAR/TBC Applicable or relevant and appropriate requirement/to be considered

bgs Below ground surface

CAS Chemical Abstract Service

COPC Chemical of Potential Concern

N Noncarcinogenic

NA Not applicable

UG/M3 Microgram per cubic meter

References:

EPA 2002c. Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance). November. Available on-line at http://www.epa.gov/correctiveaction/eis/vapor.htm

TABLE H-2.4: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 9 VOCS IN GROUNDWATER

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Indoor Air (Vapor)

Exposure Point	CAS Number	Chemical (1)	Minimum Concentration (Qualifier) (1)		Maximum Concentration (Qualifier) (1)		Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (5)	Screening Toxicity Value (N/C) (1)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (3)
Water Vapor from Shallow Groundwater at Site 9	75-34-3	1,1-DICHLOROETHANE	0.7	J	110		UG/L	SHP-S09-09	13 / 44	0.5 - 100	110	--	2200	N	--	--	No	BSL
	75-35-4	1,1-DICHLOROETHENE	1	J	1	J	UG/L	S09-DGS-DP09	1 / 44	0.5 - 100	1.0	--	190	N	--	--	No	BSL
	96-18-4	1,2,3-TRICHLOROPROPANE	0.3	J	0.3	J	UG/L	MW410-2	1 / 9	0.5 - 5	0.3	--	290	N	--	--	No	BSL
	95-63-6	1,2,4-TRIMETHYLBENZENE	0.3	J	0.3	J	UG/L	MW410-2	2 / 9	0.5 - 5	0.3	--	24	N	--	--	No	BSL
	95-50-1	1,2-DICHLOROBENZENE	0.5	J	0.5	J	UG/L	MW410-1	1 / 58	0.5 - 8000	0.5	--	2600	N	--	--	No	BSL
	107-06-2	1,2-DICHLOROETHANE	0.5		0.6		UG/L	DHP-S09-09	2 / 44	0.5 - 50	0.6	--	2.3	C (4)	--	--	No	BSL
	540-59-0	1,2-DICHLOROETHENE (TOTAL)	1.0		2400		UG/L	SHP-S09-10	9 / 31	1 - 100	2400	--	180	N (10)	--	--	Yes	ASL
	78-87-5	1,2-DICHLOROPROPANE	2.0		2.0		UG/L	DHP-S09-09	1 / 44	0.5 - 100	2.0	--	35	N	--	--	No	BSL
	95-63-6	1,3,5-TRIMETHYLBENZENE	0.30	J	0.40	J	UG/L	MW410-2	2 / 9	0.5 - 5	0.4	--	25	N	--	--	No	BSL
	541-73-1	1,3-DICHLOROPROPANE	0.40	J	0.90		UG/L	MW410-2	4 / 9	0.5 - 5	0.90	--	830	N	--	--	No	BSL
	106-46-7	1,4-DICHLOROBENZENE	0.20	J	0.20	J	UG/L	MW410-1	1 / 58	0.5 - 8000	0.20	--	8200	N	--	--	No	BSL
	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	0.70	J	0.70	J	UG/L	MW410-3	1 / 38	10 - 16000	0.70	--	51	C	--	--	No	BSL
	78-93-3	2-BUTANONE	59	J	63	J	UG/L	SHP-S09-08	2 / 24	2 - 28	63	--	440000	N	--	--	No	BSL
	95-49-8	2-CHLOROTOLUENE	0.10	J	0.10	J	UG/L	MW410-2	1 / 9	0.5 - 5	0.10	--	490	N (7)	--	--	No	BSL
	91-57-6	2-METHYLNAPHTHALENE	7	J	6500	J	UG/L	SHP-S09-10	4 / 38	10 - 8000	6500	--	3300	N	--	--	Yes	ASL
	108-10-1	4-METHYL-2-PENTANONE	0.70	J	5	J	UG/L	SHP-S09-07	2 / 44	2 - 200	5.0	--	14000	N	--	--	No	BSL
	83-32-9	ACENAPHTHENE	0.90	J	0.90	J	UG/L	SHP-S09-09	1 / 38	10 - 16000	0.90	--	> SOL	N	--	--	No	BSL
	67-64-1	ACETONE	1.3	J	150	J	UG/L	SHP-S09-07	3 / 22	0.5 - 20	150	--	22000	N	--	--	No	BSL
	71-43-2	BENZENE	0.90		2.0		UG/L	S09-DGS-DP05	9 / 44	0.5 - 100	2.0	--	1.4	C (4)	--	--	Yes	ASL
	205-99-2	BENZO(B)FLUORANTHENE	2.0	J	2.0	J	UG/L	SHP-S09-05	2 / 38	10 - 16000	2.0	--	> SOL	C	--	--	No	BSL
	191-24-2	BENZO(G,H,I)PERYLENE	1.0	J	2.0	J	UG/L	SHP-S09-11	2 / 38	10 - 16000	2.0	--	> SOL	N (10)	--	--	No	BSL
	75-15-0	CARBON DISULFIDE	0.30	J	20	J	UG/L	SHP-S09-11	6 / 44	0.5 - 100	20	--	560	N	--	--	No	BSL
	108-90-7	CHLOROBENZENE	0.10	J	11		UG/L	SHP-S09-09	9 / 44	0.5 - 100	11	--	390	N	--	--	No	BSL
	75-00-3	CHLOROETHANE	0.50	J	5.0		UG/L	S09-DGS-DP05	2 / 44	1 - 200	5.0	--	28000	N	--	--	No	BSL
	218-01-9	CHRYSENE	0.80	J	1.0	J	UG/L	SHP-S09-11	2 / 38	10 - 16000	1.0	--	> SOL	C	--	--	No	BSL
	156-59-2	CIS-1,2-DICHLOROETHENE	7.4		9.9		UG/L	MW410-2	4 / 13	0.5 - 5	9.9	--	210	N	--	--	No	BSL
	108-20-3	DIISOPROPYL ETHER	0.80	J	1.8		UG/L	MW410-2	4 / 8	0.5 - 0.5	1.8	--	NV	(6)	--	--	No	BSL
	100-41-4	ETHYLBENZENE	0.30	J	120		UG/L	SHP-S09-10	12 / 44	0.5 - 100	120	--	6.9	C (4)	--	--	Yes	ASL
	86-73-7	FLUORENE	0.80	J	0.80	J	UG/L	SHP-S09-09	1 / 38	10 - 16000	0.80	--	> SOL	N	--	--	No	BSL
	98-82-8	ISOPROPYLBENZENE	0.30	J	2.8		UG/L	MW410-2	3 / 9	0.5 - 5	2.8	--	8.4	N	--	--	No	BSL
	NA	M,P-XYLENE	0.30	J	30		UG/L	MW410-2	3 / 9	0.5 - 5	30	--	22000	N (8)	--	--	No	BSL
	1634-04-4	METHYL-T-BUTYL ETHER	4.2		20		UG/L	MW410-2	5 / 16	0.5 - 5	20	--	120000	N	--	--	No	BSL
	91-20-3	NAPHTHALENE	0.30	J	29000		UG/L	SHP-S09-10	11 / 47	2 - 8000	29000	--	150	N	--	--	Yes	ASL
	103-65-1	N-PROPYLBENZENE	0.50		1.4		UG/L	MW410-2	3 / 9	0.5 - 5	1.4	--	320	N	--	--	No	BSL
	95-47-6	O-XYLENE	0.50	J	12		UG/L	MW410-2	3 / 9	0.5 - 5	12	--	33000	N	--	--	No	BSL
	129-00-0	PYRENE	0.50	J	4.0	J	UG/L	SHP-S09-08	4 / 38	10 - 16000	4.0	--	> SOL	N	--	--	No	BSL
	135-98-8	SEC-BUTYLBENZENE	0.50	J	1.9		UG/L	MW410-2	3 / 9	0.5 - 5	1.9	--	250	N	--	--	No	BSL
	98-06-6	TERT-BUTYLBENZENE	0.40	J	0.90		UG/L	MW410-2	4 / 9	0.5 - 5	0.90	--	290	N	--	--	No	BSL
	127-18-4	TETRACHLOROETHENE	0.70	J	3		UG/L	MW410-3	2 / 44	0.5 - 100	3.0	--	1.1	C (4)	--	--	Yes	ASL

TABLE H-2.4: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 9 VOCS IN GROUNDWATER

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Indoor Air (Vapor)

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)		Maximum Concentration (Qualifier) (1)		Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (5)	Screening Toxicity Value (N/C) (1)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (3)
Water Vapor from Shallow Groundwater at Site 9	108-88-3	TOLUENE	0.20	J	230		UG/L	DHP-S09-06	11 / 44	0.5 - 100	230	--	1500	N	--	--	No	BSL
	156-60-5	TRANS-1,2-DICHLOROETHENE	0.50		0.90		UG/L	MW410-2	4 / 13	0.5 - 5	0.90	--	180	N	--	--	No	BSL
	79-01-6	TRICHLOROETHENE	0.10	J	22		UG/L	SHP-S09-09	3 / 44	0.5 - 100	22	--	0.053	C (4) (9)	--	--	Yes	ASL
	75-01-4	VINYL CHLORIDE	9.6		220		UG/L	DHP-S09-06	7 / 44	0.5 - 50	220	--	0.25	C (4) (9)	--	--	Yes	ASL
	1330-20-7	XYLENE (TOTAL)	2		1200		UG/L	SHP-S09-10	7 / 35	1 - 100	1200	--	2200	N (10)	--	--	No	BSL

Notes:

(1) Groundwater screening values are risk-based screening levels from Table 2c of EPA (2002c) draft vapor intrusion screening guidance.

(2) Maximum detected concentration for all of the sampling events was used as screening value.

(3) Vapor intrusion from volatile chemicals in groundwater to indoor is the only complete or potentially complete pathway evaluated; therefore, only volatile chemicals present at concentrations above their respective screening toxicity values were considered COPCs. A volatile chemical was defined as having a molecular weight less than 200 grams per mole and a Henry's Law constant greater than 10-5 atmospheres per cubic meter per mole.

Rationale Codes

Deletion Reason: Below Screening Level (BSL)

Inclusion Reason: Above Screening Level (ASL)

(4) Screening Toxicity Values in EPA 2002c, were listed as the Maximum Contaminant Levels (MCLs). However, risk-based values, which were lower than the MCLs, were used in the COPC screen so that the analytes could be evaluated for potential cumulative effects from several analytes.

(5) Volatile organic compounds are not common in unimpacted groundwater, so no background evaluation will be conducted for this COPCs selection.

(6) Diisopropyl ether does not have a toxicity value and was not evaluated; however, it is not suspected to be associated with any former processes at the site.

(7) Screening Toxicity Values were developed using Appendix D of the EPA 2002c guidance. inhalation toxcity values from EPA 1997 and EPA 2003 were used. In the absence of inhalation toxicity values, oral toxicity values were used for the inhalation pathway in accordance with EPA 2002c.

(8) The lowest Screening Toxicity Value (p-xylenes) was used for this mixture of analytes.

(9) The Screening Toxicity Value is lower than the lowest detection limit; however, this analyte was detected so there is no effect of the COPC screen.

(10) The Screening Toxicity Value for benzo(g,h,i)perylene is based upon pyrene; xylenes (total) is based upon p-xylene; 1-2 dichloroethylene is based upon trans-1,2 dichloroethylene.

Definitions:

ARAR/TBC = Applicable or relevant and appropriate requirement/to be considered
COPC = Contaminant of potential concern
EPA = U.S. Environmental Protection Agency
J = Estimated value
C = Carcinogen
N = Noncancer
UG/L = Microgram per liter
-- = Not available
NA = Not Applicable
>SOL=Value is greater than solubility

Reference:

EPA 1997. "Health Effects Assessment Summary Tables." Office of Research and Development (ORD).

EPA 2002c. Draft Vapor Intrusion Guidance. November. Available on-line at http://www.epa.gov/correctiveaction/eis/vapor.htm

EPA 2003. Integrated Risk Information System. Online Database. Office of Research and Development, National Center for Environmental Assessment.
On Line Address: http://www.epa.gov/iris

TABLE H-2.5: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 9 GROUNDWATER

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe: Current/Future
Medium: Site 9 Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)		Maximum Concentration (Qualifier) (1)		Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (5)
Site 9 Future Tap Water	75-34-3	1,1-DICHLOROETHANE	0.7	J	110		UG/L	SHP-S09-09	13 / 44	0.5 - 100	110	--	2.0E+00	C	--	--	Yes	ASL
	75-35-4	1,1-DICHLOROETHENE	1	J	1	J	UG/L	S09-DGS-DP09	1 / 44	0.5 - 100	1.0	--	3.4E+02	N	--	--	No	BSL, IFD
	96-18-4	1,2,3-TRICHLOROPROPANE	0.3	J	0.3	J	UG/L	MW410-2	1 / 9	0.5 - 5	0.30	--	5.6E-03	C	--	--	Yes	ASL
	95-63-6	1,2,4-TRIMETHYLBENZENE	0.3	J	0.3	J	UG/L	MW410-2	2 / 9	0.5 - 5	0.30	--	1.2E+01	N	--	--	No	BSL
	95-50-1	1,2-DICHLOROBENZENE	0.5	J	0.5	J	UG/L	MW410-1	1 / 58	0.5 - 8000	0.50	--	3.7E+02	N	--	--	No	BSL, IFD
	107-06-2	1,2-DICHLOROETHANE	0.5		0.6		UG/L	DHP-S09-09	2 / 44	0.5 - 50	0.60	--	1.2E-01	C	--	--	Yes	ASL, IFD
	540-59-0	1,2-DICHLOROETHENE (TOTAL)	1		2,400		UG/L	SHP-S09-10	9 / 31	1 - 100	2,400	--	6.1E+01 [a]	N	--	--	Yes	ASL
	78-87-5	1,2-DICHLOROPROPANE	2		2		UG/L	DHP-S09-09	1 / 44	0.5 - 100	2.0	--	1.6E-01	C	--	--	Yes	ASL, IFD
	95-63-6	1,3,5-TRIMETHYLBENZENE	0.3	J	0.4	J	UG/L	MW410-2	2 / 9	0.5 - 5	0.40	--	1.2E+01	N	--	--	No	BSL
	541-73-1	1,3-DICHLOROPROPANE	0.4	J	0.9		UG/L	MW410-2	4 / 9	0.5 - 5	0.90	--	1.6E-01 [a]	C	--	--	Yes	ASL
	106-46-7	1,4-DICHLOROBENZENE	0.2	J	0.2	J	UG/L	MW410-1	1 / 58	0.5 - 8000	0.20	--	5.0E-01	N	--	--	No	BSL, IFD
	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	0.7	J	0.7	J	UG/L	MW410-3	1 / 38	10 - 16000	0.70	--	2.7E-01	C	--	--	Yes	ASL, IFD
	105-67-9	2,4-DIMETHYLPHENOL	2	J	140	J	UG/L	SHP-S09-07	5 / 38	10 - 16000	140	--	7.3E+02	N	--	--	No	BSL
	78-93-3	2-BUTANONE	59	J	63	J	UG/L	SHP-S09-08	2 / 24	2 - 28	63	--	1.9E+03	N	--	--	No	BSL
	95-49-8	2-CHLOROTOLUENE	0.1	J	0.1	J	UG/L	MW410-2	1 / 9	0.5 - 5	0.10	--	1.2E+02	N	--	--	No	BSL
	91-57-6	2-METHYLNAPHTHALENE	7	J	6500	J	UG/L	SHP-S09-10	4 / 38	10 - 8000	6,500	--	6.2E+00 [a]	N	--	--	Yes	ASL
	95-48-7	2-METHYLPHENOL	9	J	41	J	UG/L	SHP-S09-07	2 / 38	10 - 16000	41	--	1.8E+03	N	--	--	No	BSL
	534-52-1	4,6-DINITRO-2-METHYLPHENOL	25	J	25	J	UG/L	MW410-3	1 / 38	25 - 40000	25	--	1.8E+03 [a]	N	--	--	No	BSL, IFD
	108-10-1	4-METHYL-2-PENTANONE	0.7	J	5	J	UG/L	SHP-S09-07	2 / 44	2 - 200	5.0	--	1.6E+02	N	--	--	No	BSL, IFD
	106-44-5	4-METHYLPHENOL	1,200		1,200		UG/L	SHP-S09-07	1 / 38	10 - 16000	1,200	--	1.8E+02	N	--	--	Yes	ASL, IFD
	100-02-7	4-NITROPHENOL	6	J	6	J	UG/L	DHP-S09-08	1 / 38	25 - 40000	6.0	--	2.2E+04 [a]	N	--	--	No	BSL, IFD
	83-32-9	ACENAPHTHENE	0.9	J	0.9	J	UG/L	SHP-S09-09	1 / 38	10 - 16000	0.90	--	3.7E+02	N	--	--	No	BSL, IFD
	67-64-1	ACETONE	1.3	J	150	J	UG/L	SHP-S09-07	3 / 22	0.5 - 20	150	--	6.1E+02	N	--	--	No	BSL
	7429-90-5	ALUMINUM	88.2	J	17,400		UG/L	DHP-S09-03	6 / 31	5.4 - 100	17,400	--	3.6E+04	N	--	--	No	BSL d
	7440-36-0	ANTIMONY	0.12	J	37.5	J	UG/L	DHP-S09-05	4 / 31	0.12 - 50	38	--	1.5E+01	N	--	--	Yes	ASL e
	7440-38-2	ARSENIC	3	J	37		UG/L	MW410-2	18 / 31	0.8 - 10.3	37	--	4.5E-02	C	--	--	Yes	ASL e
	7440-39-3	BARIUM	19.2	J	785	J	UG/L	SHP-S09-09	30 / 31	0.05 - 100	785	--	2.6E+03	N	--	--	No	BSL d
	71-43-2	BENZENE	0.9		2		UG/L	S09-DGS-DP05	9 / 44	0.5 - 100	2.0	--	3.4E-01	C	--	--	Yes	ASL
	56-55-3	BENZO(A)ANTHRACENE	0.7	J	1	J	UG/L	SHP-S09-11	2 / 38	10 - 16000	1.0	--	9.2E-02	C	--	--	Yes	ASL
	50-32-8	BENZO(A)PYRENE	1	J	2	J	UG/L	SHP-S09-11	2 / 38	1.4 - 16000	2.0	--	9.2E-03	C	--	--	Yes	ASL
	205-99-2	BENZO(B)FLUORANTHENE	2	J	2	J	UG/L	SHP-S09-05	2 / 38	10 - 16000	2.0	--	9.2E-02	C	--	--	Yes	ASL
	191-24-2	BENZO(G,H,I)PERYLENE	1	J	2	J	UG/L	SHP-S09-11	2 / 38	10 - 16000	2.0	--	1.8E+02 [a]	N	--	--	No	BSL
	207-08-9	BENZO(K)FLUORANTHENE	0.8	J	0.8	J	UG/L	SHP-S09-11	1 / 38	10 - 16000	0.80	--	5.6E-02	C	--	--	Yes	ASL, IFD
	7440-41-7	BERYLLIUM	2.8	J	4.3	J	UG/L	SHP-S09-07	5 / 31	0.1 - 3.6	4.3	--	7.3E+01	N	--	--	No	BSL e
	7440-43-9	CADMIUM	0.055	J	13.5		UG/L	DHP-S09-05	6 / 31	0.15 - 5	14	--	1.8E+01	N	--	--	No	BSL d
	7440-70-2	CALCIUM	3540	J	104000		UG/L	SHP-S09-09	29 / 31	3.8 - 6340	104,000	--	NA		--	--	No	NUT

TABLE H-2.5: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 9 GROUNDWATER

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	*Current/Future*
Medium:	Site 9 Groundwater
Exposure Medium:	Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)		Maximum Concentration (Qualifier) (1)		Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (5)
Site 9 Future Tap Water	75-15-0	CARBON DISULFIDE	0.3	J	20	J	UG/L	SHP-S09-11	6 / 44	0.5 - 100	20	--	1.0E+03	N	--	--	No	BSL
	108-90-7	CHLOROBENZENE	0.1	J	11		UG/L	SHP-S09-09	9 / 44	0.5 - 100	11	--	1.1E+02	N	--	--	No	BSL
	75-00-3	CHLOROETHANE	0.5	J	5		UG/L	S09-DGS-DP05	2 / 44	1 - 200	5.0	--	4.6E+00	C	--	--	Yes	ASL, IFD
	7440-47-3	CHROMIUM	0.51	J	206	J	UG/L	SHP-S09-10	10 / 31	0.2 - 30.7	206	--	5.5E+04	N	--	--	No	BSL d
	218-01-9	CHRYSENE	0.8	J	1	J	UG/L	SHP-S09-11	2 / 38	10 - 16000	1.0	--	5.6E-01	C	--	--	Yes	ASL
	156-59-2	CIS-1,2-DICHLOROETHENE	7.4		9.9		UG/L	MW410-2	4 / 13	0.5 - 5	10	--	6.1E+01	N	--	--	No	BSL
	7440-48-4	COBALT	0.11	J	41.6	J	UG/L	DHP-S09-10	10 / 31	0.25 - 10.1	42	--	7.3E+02	N	--	--	No	BSL d
	7440-50-8	COPPER	0.59	J	28.1		UG/L	SHP-S09-10	9 / 31	0.65 - 46.5	28	--	1.5E+03	N	--	--	No	BSL d
	108-20-3	DIISOPROPYL ETHER	0.8	J	1.8		UG/L	MW410-2	4 / 8	0.5 - 0.5	1.8	--	-- [c]		--	--	No	NTX
	100-41-4	ETHYLBENZENE	0.3	J	120		UG/L	SHP-S09-10	12 / 44	0.5 - 100	120	--	2.9E+00	C	--	--	Yes	ASL
	206-44-0	FLUORANTHENE	2	J	3	J	UG/L	SHP-S09-11	3 / 38	10 - 16000	3.0	--	1.5E+03	N	--	--	No	BSL
	86-73-7	FLUORENE	0.8	J	0.8	J	UG/L	SHP-S09-09	1 / 38	10 - 16000	0.80	--	2.4E+02	N	--	--	No	BSL, IFD
	193-39-5	INDENO(1,2,3-CD)PYRENE	0.9	J	1	J	UG/L	SHP-S09-11	2 / 38	10 - 16000	1.0	--	9.2E-02	C	--	--	Yes	ASL
	7439-89-6	IRON	86.8	J	17,700	J	UG/L	DHP-S09-06	17 / 31	3.2 - 22500	17,700	--	1.1E+04	N	--	--	No	NUT d
	78-59-1	ISOPHORONE	1	J	1	J	UG/L	DHP-S09-03	1 / 38	10 - 16000	1.0	--	7.1E+01	C	--	--	No	BSL, IFD
	98-82-8	ISOPROPYLBENZENE	0.3	J	2.8		UG/L	MW410-2	3 / 9	0.5 - 5	2.8	--	6.6E+02	N	--	--	No	BSL
	7439-92-1	LEAD	0.043	J	28.9	J	UG/L	SHP-S09-10	4 / 31	0.37 - 3	29	--	1.5E+01	b	--	--	Yes	ASL e
	NA	M,P-XYLENE	0.3	J	30		UG/L	MW410-2	3 / 9	0.5 - 5	30	--	2.1E+02 [a]	N	--	--	No	BSL
	7439-95-4	MAGNESIUM	3540	J	175,000		UG/L	SHP-S09-11	30 / 31	3.8 - 8570	175,000	--	NA		--	--	No	NUT
	7439-96-5	MANGANESE	4.8	J	2,250		UG/L	DHP-S09-08	29 / 31	0.2 - 559	2,250	--	8.8E+02	N	--	--	Yes	ASL d
	1634-04-4	METHYL-T-BUTYL ETHER	4.2		20		UG/L	MW410-2	5 / 16	0.5 - 5	20	--	6.2E+00	C	--	--	Yes	ASL
	7439-98-7	MOLYBDENUM	0.49	J	48.2	J	UG/L	DHP-S09-07	6 / 31	0.25 - 48.2	48	--	1.8E+02	N	--	--	No	BSL e
	91-20-3	NAPHTHALENE	0.3	J	29000		UG/L	SHP-S09-10	11 / 47	2 - 8000	29,000	--	6.2E+00	N	--	--	Yes	ASL
	103-65-1	N-PROPYLBENZENE	0.5		1.4		UG/L	MW410-2	3 / 9	0.5 - 5	1.4	--	2.4E+02	N	--	--	No	BSL
	7440-02-0	NICKEL	0.76	J	157		UG/L	SHP-S09-07	13 / 31	0.3 - 139	157	--	7.3E+02	N	--	--	No	BSL d
	95-47-6	O-XYLENE	0.5	J	12		UG/L	MW410-2	3 / 9	0.5 - 5	12	--	2.1E+02 [a]	N	--	--	No	BSL
	87-86-5	PENTACHLOROPHENOL	1	J	2	J	UG/L	SHP-S09-09	2 / 38	25 - 40000	2.0	--	5.6E-01	C	--	--	Yes	ASL
	85-01-8	PHENANTHRENE	0.9	J	1200	J	UG/L	SHP-S09-10	3 / 38	10 - 8000	1,200	--	1.8E+03 [a]	N	--	--	No	BSL
	108-95-2	PHENOL	7	J	59		UG/L	S09-DGS-DP05	5 / 38	10 - 16000	59	--	2.2E+04	N	--	--	No	BSL
	7440-09-7	POTASSIUM	4,440		88,200		UG/L	DHP-S09-06	30 / 31	3.7 - 16100	88,200	--	NA		--	--	No	NUT
	129-00-0	PYRENE	1	J	4	J	UG/L	SHP-S09-08	4 / 38	10 - 16000	4.0	--	1.8E+02	N	--	--	No	BSL
	135-98-8	SEC-BUTYLBENZENE	0.5	J	1.9		UG/L	MW410-2	3 / 9	0.5 - 5	1.9	--	2.4E+02	N	--	--	No	BSL
	7782-49-2	SELENIUM	0.85	J	0.85	J	UG/L	MW410-1	1 / 31	0.85 - 5	0.9	--	1.8E+02	N	--	--	No	BSL d
	7440-23-5	SODIUM	15,000		2,380,000		UG/L	SHP-S09-11	31 / 31	7.2 - 10000	2,380,000	--	NA		--	--	No	NUT
	75-65-0	TERT-BUTANOL	15	J	25		UG/L	MW410-2	3 / 8	10 - 20	25	--	1.8E+03 [a]	N	--	--	No	BSL
	98-06-6	TERT-BUTYLBENZENE	0.4	J	0.9		UG/L	MW410-2	4 / 9	0.5 - 5	0.90	--	2.4E+02	N	--	--	No	BSL

TABLE H-2.5: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 9 GROUNDWATER

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Current/Future
Medium:	Site 9 Groundwater
Exposure Medium:	Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)		Maximum Concentration (Qualifier) (1)		Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (5)
te 9□Future Tap Wat	127-18-4	TETRACHLOROETHENE	0.7	J	3		UG/L	MW410-3	2 / 44	0.5 - 100	3.0	--	6.6E-01	C	--	--	Yes	ASL, IFD
	108-88-3	TOLUENE	0.2	J	230		UG/L	DHP-S09-06	11 / 44	0.5 - 100	230	--	7.2E+02	N	--	--	No	BSL
	156-60-5	TRANS-1,2-DICHLOROETHENE	0.5		0.9		UG/L	MW410-2	4 / 13	0.5 - 5	0.90	--	1.2E+02	N	--	--	No	BSL
	79-01-6	TRICHLOROETHENE	0.1	J	22		UG/L	SHP-S09-09	3 / 44	0.5 - 100	22	--	2.8E-02	C	--	--	Yes	ASL
	7440-62-2	VANADIUM	2.6	J	102	J	UG/L	SHP-S09-10	8 / 31	1.2 - 10	102	--	2.6E+02	N	--	--	No	BSL d
	75-01-4	VINYL CHLORIDE	9.6		220		UG/L	DHP-S09-06	7 / 44	0.5 - 50	220	--	2.0E-02	C	--	--	Yes	ASL
	1330-20-7	XYLENE (TOTAL)	2		1,200		UG/L	SHP-S09-10	7 / 35	1 - 100	1,200	--	2.1E+02	N	--	--	Yes	ASL
	7440-66-6	ZINC	1.4	J	144		UG/L	SHP-S09-07	13 / 31	0.75 - 46.6	144	--	1.1E+04	N	--	--	No	BSL e

Notes:

(1) Define the "(Qualifier)" codes used for the "Minimum Concentration" and "Maximum Concentration".

J Estimated concentration value

(2) The "Concentration Used for Screening" is the maximum detected concentration.

(3) The "Background Value" is not shown here; comparisons to background were completed with the base-wide ambient Alameda Point groundwater data set and were based on two-population tests as described in the Appendix G text.

(4) Screening toxicity values are EPA Region IX residential PRGs (EPA 2002a). California Modified PRGs were used where available.

(5) Rationale for Selection or Deletion

ASL Above screening level

BSL Below screening level

IFD Infrequently detected

NUT Essential nutrient

NTX No toxicity value

Acronyms:

-- No value available

ARAR/TBC Applicable or relevant and appropriate requirement/to be considered

bgs Below ground surface

C Carcinogenic

CAS Chemical Abstract Service

COPC Contaminant of potential concern

N Noncarcinogenic

NA Not applicable

UG/L Microgram per liter

a The screening toxicity value for total 1,2-dichloroethene is based on cis-1,2-dichloroethene; 1,3-dichloropropane is based on 1,2-dichloropropane; 2-methylnaphthalene is based on naphthalene; 4,6-dinitro-2-methylphenol is based on 2-methylphenol; 4-nitrophenol is based on phenol; m,p- and o-xylene are based on total xylene; benzo(g,h,i)perylene is based on pyrene; phenanthrene is based on anthracene; and tert-butanol is based on isobutanol.

b No EPA Region 9 Tap Water PRGs (EPA 2002a) is available for lead. U.S. EPA's Treatment Technique value (from U.S. EPA's National Primary Drinking Water Regulations (U.S. EPA, 2002c) value was used as the screening value in groundwater.

c Diisopropyl ether does not have a toxicity value and this chemical is not consistent with previous site operations; therefore, this chemical will not be carried through this assessment.

d Following the statistical background screening, this inorganic was found to be significantly greater than background.

e Following the statistical background screening, this inorganic was not found to be significantly greater than background.

References:

U.S. Environmental Protection Agency (EPA) 2002a. "EPA Region IX Preliminary Remediation Goals Table." October 2. Available on-line at: http://www.epa.gov/region09/waste/sfund/prg/index.htm

TABLE H-2.6: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 13 SURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe: Current/Future
Medium: Surface Soil (0-2 feet bgs) at Site 13
Exposure Medium: Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (5)
	91-57-6	2-METHYLNAPHTHALENE	0.00025 J	9	MG/KG	C3S013B080	77 / 162	0.00021 - 0.1	9.0	--	5.60E+01 [a] N	--	--	No	BSL
	72-55-9	4,4'-DDE	0.031	0.031	MG/KG	BOR-16 [0.5-1.0]	1 / 19	0.0021 - 0.160	0.031	--	1.70E+00 C	--	--	No	BSL
	50-29-3	4,4'-DDT	0.0021	0.16	MG/KG	BOR-16 [0.5-1.0]	2 / 19	0.0021 - 0.160	0.16	--	1.70E+00 C	--	--	No	BSL
	67-64-1	ACETONE	0.180 J	0.180 J	MG/KG	280-S13-011	1 / 9	0.010 - 0.110	0.18	--	1.60E+03 N	--	--	No	BSL
	83-32-9	ACENAPHTHENE	0.00029 J	0.1	MG/KG	C3S013B029	27 / 162	0.00022 - 0.5	0.10	--	3.68E+03 N	--	--	No	BSL
	208-96-8	ACENAPHTHYLENE	0.00018 J	0.37	MG/KG	C3S013B022	41 / 162	0.00017 - 0.5	0.37	--	3.68E+03 [a] N	--	--	No	BSL
	7429-90-5	ALUMINUM	47.9	18,200	MG/KG	BOR-15 [0.5-1.0]	34 / 34	NA	18,200	2,880 - 26,800	7.60E+04 N	--	--	No	BSL d
	7440-36-0	ANTIMONY	0.55 J	8.2	MG/KG	BOR-15 [0.5-1.0]	8 / 34	0.42 - 7.3	8.2	0.89 - 1	3.10E+01 N	--	--	No	BSL c
	120-12-7	ANTHRACENE	0.00027 J	0.45	MG/KG	C3S013B022	60 / 162	0.0002 - 0.5	0.45	--	2.19E+04 N	--	--	No	BSL
	7440-38-2	ARSENIC	1.4	20	MG/KG	BOR-18 [0.5-1.0]	22 / 34	1.2 - 11	20	0.74 - 23	3.90E-01 C	--	--	Yes	ASL c
	7440-39-3	BARIUM	11.6 J	376	MG/KG	280-S7C-095	32 / 34	21 - 21	376	0.3 - 198	5.40E+03 N	--	--	No	BSL d
	71-43-2	BENZENE	0.002 J	0.026	MG/KG	280-S13-004	2 / 10	0.010 - 0.012	0.026	--	6.00E-01 C	--	--	No	BSL
	56-55-3	BENZ(A)ANTHRACENE	0.00015 J	1.2	MG/KG	C3S013B022	96 / 162	0.00014 - 0.1	1.2	--	6.21E-01 C	--	--	Yes	ASL
	50-32-8	BENZO(A)PYRENE	0.00021 J	2.4	MG/KG	C3S013B022	90 / 162	0.00014 - 0.11	2.4	--	6.21E-02 C	--	--	Yes	ASL
	205-99-2	BENZO(B)FLUORANTHENE	0.00023 J	1.6	MG/KG	C3S013B022	90 / 162	0.00014 - 0.1	1.6	--	6.21E-01 C	--	--	Yes	ASL
	191-24-2	BENZO(G,H,I)PERYLENE	0.00035 J	1.5	MG/KG	C3S013B022	111 / 162	0.0001 - 0.1	1.5	--	2.32E+03 [a] N	--	--	No	BSL
	207-08-9	BENZO(K)FLUORANTHENE	0.0005 J	1.4	MG/KG	C3S013B022	69 / 162	0.00015 - 0.5	1.4	--	3.78E-01 C	--	--	Yes	ASL
	7440-41-7	BERYLLIUM	0.13 J	1.9	MG/KG	280-S7C-017	10 / 34	0.044 - 1.2	1.9	0.09 - 0.77	1.50E+02 N	--	--	No	BSL c
	7440-43-9	CADMIUM	0.05 J	18	MG/KG	280-S13-015	16 / 34	0.044 - 1.2	18	0.1 - 0.82	3.70E+01 N	--	--	No	BSL d
Site 13	7440-70-2	CALCIUM	1310	22,300	MG/KG	BOR-19 [0.5-1.0]	34 / 34	NA	22,300	1,360 - 19,200	NA	--	--	No	NUT
	75-15-0	CARBON DISULFIDE	0.002 J	0.002 J	MG/KG	280-S13-011	1 / 9	0.010 - 0.012	0.002	--	3.60E+02 N	--	--	No	BSL
	7440-47-3	CHROMIUM	10.7	337	MG/KG	280-S13-008	34 / 34	NA	337	11.4 - 81.7	2.10E+02 C	--	--	Yes	ASL d
	218-01-9	CHRYSENE	0.00019 J	3.4 J	MG/KG	C3S013B047	98 / 162	0.00015 - 0.1	3.4	--	3.78E+00 C	--	--	No	BSL
	7440-48-4	COBALT	2.6 J	15.2	MG/KG	BOR-15 [0.5-1.0]	26 / 34	5.1 - 6.5	15.2	1.9 - 14	9.00E+02 C	--	--	No	BSL d
	7440-50-8	COPPER	4.8 J	160	MG/KG	BOR-15 [0.5-1.0]	29 / 34	4.87 - 7	160	4.2 - 89.4	3.10E+03 N	--	--	No	BSL d
	53-70-3	DIBENZ(A,H)ANTHRACENE	0.00068 J	0.42	MG/KG	C3S013B022	61 / 162	0.00019 - 0.2	0.42	--	6.21E-02 C	--	--	Yes	ASL
	84-74-2	DI-N-BUTYLPHTHALATE	0.031 J	0.031 J	MG/KG	ALA13B38-1	1 / 22	0.340 - 34	0.031	--	6.10E+03 N	--	--	No	BSL, IFD
	100-41-4	ETHYLBENZENE	0.006 J	0.097	MG/KG	280-S13-004	2 / 10	0.010 - 0.012	0.097	--	8.90E+00 C	--	--	No	BSL
	206-44-0	FLUORANTHENE	0.00021 J	1.9	MG/KG	C3S013B022	89 / 162	0.00017 - 0.5	1.9	--	2.29E+03 N	--	--	No	BSL
	86-73-7	FLUORENE	0.00021 J	3.1 J	MG/KG	C3S013B047	49 / 162	0.00018 - 0.2	3.1	--	2.75E+03 N	--	--	No	BSL
	1024-57-3	HEPTACHLOR EPOXIDE	0.0054	0.0054	MG/KG	BOR-16 [0.5-1.0]	1 / 18	0.00033 - 0.082	0.0054	--	5.30E-02 C	--	--	No	BSL
	193-39-5	INDENO(1,2,3-CD)PYRENE	0.00028 J	1.6	MG/KG	C3S013B022	70 / 162	0.00015 - 0.5	1.6	--	6.21E-01 C	--	--	Yes	ASL
	7439-89-6	IRON	2,790	74,800	MG/KG	280-S13-015	34 / 34	NA	74,800	760 - 26,900	2.30E+04 N	--	--	No	NUT c
	7439-92-1	LEAD	1.3	431	MG/KG	280-S13-015	26 / 35	2.5 - 5.4	431	1.3 - 41	1.50E+02 N	--	--	Yes	ASL c
	7439-95-4	MAGNESIUM	157 J	12,000	MG/KG	BOR-15 [0.5-1.0]	34 / 34	NA	12,000	1,510 - 42,400	NA	--	--	No	NUT
	7439-96-5	MANGANESE	22.6	548	MG/KG	BOR-11 [0.5-1.0]	34 / 34	NA	548	50 - 1,060	1.80E+03 N	--	--	No	BSL d
	7439-97-6	MERCURY	0.01 J	0.4	MG/KG	280-S13-004	5 / 18	0.1 - 0.19	0.4	--	2.30E+01 N	--	--	No	BSL c
	7439-98-7	MOLYBDENUM	5.9 J	5.9 J	MG/KG	280-S13-008	1 / 34	0.15 - 6.1	5.9	--	3.90E+02 N	--	--	No	BSL, IFD d
	91-20-3	NAPHTHALENE	0.00026 J	2.7	MG/KG	C3S013B080	65 / 162	0.00022 - 0.11	2.7	--	5.59E+01 N	--	--	No	BSL

TABLE H-2.6: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 13 SURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe: Current/Future
Medium: Surface Soil (0-2 feet bgs) at Site 13
Exposure Medium: Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (5)
Site 13	7440-02-0	NICKEL	15.1	278	MG/KG	280-S13-008	32 / 34	13.8 - 15.8	278	11.6 - 88.5	1.60E+03 N	–	–	No	BSL d
	86-30-6	N-NITROSODIPHENYLAMINE	0.043 JB	1.2 JB	MG/KG	BOR-19 [0.5-1.0]	6 / 21	0.340 - 34	1.2	–	9.90E+01 C	–	–	No	BSL
	87-86-5	PENTACHLOROPHENOL	0.640 J	0.640 J	MG/KG	BOR-7 [0.5-1.0]	1 / 32	0.870 - 170	0.64	–	3.00E+00 C	–	–	No	BSL, IFD
	85-01-8	PHENANTHRENE	0.00022 J	9.1	MG/KG	C3S013B047	88 / 162	0.00015 - 0.1	9.1	–	2.19E+04 [a] N	–	–	No	BSL
	7440-09-7	POTASSIUM	432 J	2,700	MG/KG	BOR-16 [0.5-1.0]	27 / 34	170 - 654	2,700	310 - 6,382	NA	–	–	No	NUT
	129-00-0	PYRENE	0.0002 J	2.7	MG/KG	C3S013B022	89 / 162	0.00012 - 0.2	2.7	–	2.32E+03 N	–	–	No	BSL
	7782-49-2	SELENIUM	0.22 J	12	MG/KG	BOR-16 [0.5-1.0]	8 / 34	0.36 - 11	12	5.7 - 5.7	3.90E+02 N	–	–	No	BSL c
	7440-22-4	SILVER	1.6 J	1.6 J	MG/KG	BOR-18 [0.5-1.0]	1 / 34	0.088 - 6.1	1.6	0.44 - 0.61	3.90E+02 N	–	–	No	BSL, IFD d
	7440-23-5	SODIUM	69.6 J	590 J	MG/KG	280-S13-028	22 / 34	26.2 - 610	590	88.1 - 3,510	NA	–	–	No	NUT
	7440-28-0	THALLIUM	2.7	2.7	MG/KG	BOR-21 [0.5-1.0]	1 / 34	0.11 - 12	2.7	5.3 - 5.3	5.20E+00 N	–	–	No	BSL, IFD d
	7440-32-6	TITANIUM	209	567	MG/KG	BOR-16 [0.5-1.0]	16 / 16	NA	567	223 - 1,020	3.10E+05 [b] N	–	–	No	BSL d
	108-88-3	TOLUENE	0.002 J	0.009 J	MG/KG	280-S13-004	2 / 10	0.010 - 0.012	0.009	–	5.20E+02 sat	–	–	No	BSL
	7440-62-2	VANADIUM	10.1 J	76.8	MG/KG	BOR-15 [0.5-1.0]	34 / 34	NA	76.8	12.8 - 62.3	5.50E+02 N	–	–	No	BSL d
	1330-20-7	XYLENE (TOTAL)	0.02	0.24	MG/KG	280-S13-004	2 / 10	0.005 - 0.630	0.24	–	2.70E+02 N	–	–	No	BSL
	7440-66-6	ZINC	7	7,120	MG/KG	280-S13-015	34 / 34	NA	7,120	14 - 84	2.30E+04 N	–	–	No	BSL c

Notes:

(1) Define the "(Qualifier)" codes used for the "Minimum Concentration" and "Maximum Concentration".

J	Estimated concentration value
JB	Estimated value; blank contamination

(2) The "Concentration Used for Screening" is the maximum detected concentration.

(3) The "Background Value" is the range for the blue background area (Table D.4.2; Tetra Tech 2001), shown for comparison purposes only. Background comparisons will be based on two-population tests as described in the Appendix H text.

(4) Screening toxicity values are EPA Region 9 residential PRGs (EPA 2002a). California modified PRGs were used where available.

(5) Rationale for Selection or Deletion

ASL	Above screening level
BSL	Below screening level
IFD	Infrequently detected
NUT	Essential nutrient

Acronyms:

–	No value available		
ARAR/TBC	Applicable or relevant and appropriate requirement/to be considered		
bgs	Below ground surface		
C	Carcinogenic		
CAS	Chemical Abstract Service		
COPC	Contaminant of potential concern		
DDE	Dichlorodiphenyldichloroethene		
DDT	Dichlorodiphenyltrichloroethane		
MG/KG	Milligram per kilogram	NA	Not applicable
N	Noncarcinogenic	sat	Soil saturation concentration

a The screening toxicity value for benzo(g,h,i)perylene is based on pyrene; phenanthrene is based on anthracene; acenaphthylene is based upon acenaphthene; 2-methylnaphthalene is based on naphthalene.

b Screening toxicity value was taken from EPA Region 3 Risk-based Concentration Table (2002) and represents risk-based screening level for residential surface soil.

c Following the statistical background screening, this inorganic was found to be significantly greater than background.

d Following the statistical background screening, this inorganic was not found to be significantly greater than background.

References:

U.S. Environmental Protection Agency (EPA) 2002a. "EPA Region 9 Preliminary Remediation Goals Table." October 2. Available on-line at: http://www.epa.gov/region09/waste/sfund/prg/index.htm

U.S. Environmental Protection Agency (EPA) 2002b. "EPA Region 3 Risk-Based Concentration Table." April 2. Available on-line at: http://www.epa.gov/reg3hwmd/risk/rbc.pdf

TABLE H-2.7: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 13 SUBSURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe: Future
Medium: Subsurface Soil (0-8 feet bgs) at Site 13
Exposure Medium: Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (5)
	95-63-6	1,2,4-TRIMETHYLBENZENE	0.021	7.7	MG/KG	030-CAP-213	7 / 13	0.010 - 0.010	7.7	--	5.20E+01 N	--	--	No	BSL
	108-67-8	1,3,5-TRIMETHYLBENZENE	0.015	0.66	MG/KG	030-CAP-213	7 / 13	0.010 - 0.010	0.66	--	2.10E+01 N	--	--	No	BSL
	105-67-9	2,4-DIMETHYLPHENOL	0.140 J	12.0 J	MG/KG	ALA13B41-3	3 / 84	0.037 - 34.0	12	--	1.20E+03 N	--	--	No	BSL, IFD
	91-57-6	2-METHYLNAPHTHALENE	0.00024 J	160	MG/KG	ALA13B41-3	169 / 407	0.00021 - 34.0	160	--	5.60E+01 [a] N	--	--	Yes	ASL
	72-55-9	4,4'-DDE	0.0037	0.031	MG/KG	BOR-16 [0.5-1.0]	3 / 54	0.0021 - 0.160	0.031	--	1.70E+00 C	--	--	No	BSL
	50-29-3	4,4'-DDT	0.0021	0.16	MG/KG	BOR-16 [0.5-1.0]	4 / 54	0.0021 - 0.160	0.16	--	1.70E+00 C	--	--	No	BSL
	108-10-1	4-METHYL-2-PENTANONE	0.041 J	0.041 J	MG/KG	137-S13-009	1 / 73	0.005 - 1.3	0.041	--	7.90E+02 [a] N	--	--	No	BSL, IFD
	67-64-1	ACETONE	0.150 J	0.470 J	MG/KG	137-S13-009	5 / 73	0.010 - 1.4	0.47	--	1.60E+03 N	--	--	No	BSL
	83-32-9	ACENAPHTHENE	0.00026 J	0.77	MG/KG	C3S013B080	66 / 323	0.00022 - 0.5	0.77	--	3.68E+03 N	--	--	No	BSL
	208-96-8	ACENAPHTHYLENE	0.00018 J	0.87	MG/KG	C3S013B080	90 / 323	0.00017 - 0.5	0.87	--	3.68E+03 [a] N	--	--	No	BSL
	7429-90-5	ALUMINUM	45.8	18,200	MG/KG	BOR-15 [0.5-1.0]	108 / 108	NA	18,200	2,880 - 26,800	7.60E+04 N	--	--	No	BSL d
	7440-36-0	ANTIMONY	0.37 J	8.2	MG/KG	BOR-15 [0.5-1.0]	30 / 108	0.15 - 7.6	8.2	0.89 - 1	3.10E+01 N	--	--	No	BSL c
	120-12-7	ANTHRACENE	0.00025 J	12	MG/KG	C3S013B080	122 / 323	0.0002 - 0.5	12	--	2.19E+04 N	--	--	No	BSL
	7440-38-2	ARSENIC	1.1	20	MG/KG	BOR-18 [0.5-1.0]	67 / 108	1.2 - 13	20	0.74 - 23	3.90E-01 C	--	--	Yes	ASL c
	7440-39-3	BARIUM	11.6 J	376	MG/KG	280-S7C-095	103 / 108	21 - 24	376	0.3 - 198	5.40E+03 N	--	--	No	BSL d
	71-43-2	BENZENE	0.0004 J	1	MG/KG	BOR-9 [6.5-7.0]	26 / 114	0.005 - 0.630	1.0	0.09 - 0.77	6.00E-01 C	--	--	Yes	ASL
	56-55-3	BENZ(A)ANTHRACENE	0.00014 J	4.3	MG/KG	C3S013B051	194 / 323	0.00014 - 0.1	4.3	--	6.21E-01 C	--	--	Yes	ASL
	50-32-8	BENZO(A)PYRENE	0.00021 J	5.2	MG/KG	C3S013B051	187 / 323	0.00014 - 0.11	5.2	--	6.21E-02 C	--	--	Yes	ASL
	205-99-2	BENZO(B)FLUORANTHENE	0.00023 J	3.2	MG/KG	C3S013B051	182 / 323	0.00014 - 0.1	3.2	--	6.21E-01 C	--	--	Yes	ASL
	191-24-2	BENZO(G,H,I)PERYLENE	0.00032 J	2.9	MG/KG	C3S013B051	198 / 323	0.0001 - 0.1	2.9	--	2.32E+03 [a] N	--	--	No	BSL
Site 13	207-08-9	BENZO(K)FLUORANTHENE	0.00023 J	3.5	MG/KG	C3S013B051	146 / 323	0.00015 - 0.5	3.5	--	3.78E-01 C	--	--	Yes	ASL
	7440-41-7	BERYLLIUM	0.08 J	2	MG/KG	280-S13-013	37 / 108	0.044 - 1.3	2.0	--	1.50E+02 N	--	--	No	BSL c
	7440-43-9	CADMIUM	0.02 J	18	MG/KG	280-S13-015	44 / 108	0.02 - 2.4	18	0.1 - 0.82	3.70E+01 N	--	--	No	BSL d
	7440-70-2	CALCIUM	363	22,300	MG/KG	BOR-19 [0.5-1.0]	108 / 108	NA	22,300	1,360 - 19,200	NA	--	--	No	NUT
	86-74-8	CARBAZOLE	0.130 J	5.9 J	MG/KG	ALA13B41-3	4 / 29	0.037 - 12.0	5.9	--	2.40E+01 C	--	--	No	BSL
	75-15-0	CARBON DISULFIDE	0.001 J	0.002 J	MG/KG	280-S13-011, 280-S13-026	3 / 80	0.005 - 0.720	0.002	--	3.60E+02 N	--	--	No	BSL, IFD
	108-90-7	CHLOROBENZENE	0.002 J	0.002 J	MG/KG	280-S13-013	1 / 106	0.005 - 0.720	0.002	--	1.50E+02 N	--	--	No	BSL, IFD
	7440-47-3	CHROMIUM	3.4 J	337	MG/KG	280-S13-008	108 / 108	NA	337	11.4 - 81.7	2.10E+02 C	--	--	Yes	ASL d
	218-01-9	CHRYSENE	0.00016 J	4.9	MG/KG	C3S013B052	199 / 323	0.00015 - 0.1	4.9	--	3.78E+00 C	--	--	Yes	ASL
	7440-48-4	COBALT	2.6 J	15.2	MG/KG	ALA13B41-6	81 / 108	0.15 - 14.9	15.2	1.9 - 14	9.00E+02 C	--	--	No	BSL d
	7440-50-8	COPPER	1.2 J	160	MG/KG	BOR-15 [0.5-1.0]	93 / 108	4.8 - 9.4	160	4.2 - 89.4	3.10E+03 N	--	--	No	BSL d
	132-64-9	DIBENZOFURAN	0.220 J	6.9 J	MG/KG	ALA13B41-3	2 / 84	0.037 - 34.0	6.9	--	2.90E+02 N	--	--	No	BSL, IFD
	53-70-3	DIBENZ(A,H)ANTHRACENE	0.00026 J	1.3 J	MG/KG	C3S013B080	132 / 323	0.00019 - 0.2	1.3	--	6.21E-02 C	--	--	Yes	ASL
	84-74-2	DI-N-BUTYLPHTHALATE	0.031 J	0.031 J	MG/KG	ALA13B38-3	1 / 84	0.037 - 62.0	0.031	--	6.10E+03 N	--	--	No	BSL, IFD
	100-41-4	ETHYLBENZENE	0.00066 J	5.1	MG/KG	280-S13-010	34 / 114	0.00034 - 0.72	5.1	--	8.90E+00 C	--	--	No	BSL
	206-44-0	FLUORANTHENE	0.00019 J	7.4	MG/KG	C3S013B051	185 / 323	0.00017 - 0.5	7.4	--	2.29E+03 N	--	--	No	BSL
	86-73-7	FLUORENE	0.00021 J	9.1	MG/KG	C3S013B080	105 / 323	0.00018 - 0.2	9.1	--	2.75E+03 N	--	--	No	BSL
	1024-57-3	HEPTACHLOR EPOXIDE	0.0054	0.0054	MG/KG	BOR-16 [0.5-1.0]	1 / 51	0.00033 - 0.082	0.0054	--	5.30E-02 C	--	--	No	BSL, IFD
	193-39-5	INDENO(1,2,3-CD)PYRENE	0.00028 J	3.3	MG/KG	C3S013B051	149 / 323	0.00015 - 0.5	3.3	--	6.21E-01 C	--	--	Yes	ASL
	7439-89-6	IRON	1,110 J	74,800	MG/KG	280-S13-015	108 / 108	NA	74,800	760 - 26,900	2.30E+04 N	--	--	No	NUT c
	7439-92-1	LEAD	1	431	MG/KG	280-S13-015	104 / 150	2.5 - 21	431	1.3 - 41	1.50E+02 N	--	--	Yes	ASL c

TABLE H-2.7: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 13 SUBSURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe: Future
Medium: Subsurface Soil (0-8 feet bgs) at Site 13
Exposure Medium: Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (5)
Site 13	7439-95-4	MAGNESIUM	153 J	12,000	MG/KG	BOR-15 [0.5-1.0]	108 / 108	NA	12,000	1,510 - 42,400	NA	–	–	No	NUT
	7439-96-5	MANGANESE	7.5	702	MG/KG	MWOR-2 [2.0-2.5]	108 / 108	NA	702	50 - 1,060	1.80E+03 N	–	–	No	BSL d
	7439-97-6	MERCURY	0.01 J	0.4	MG/KG	280-S13-004	16 / 58	0.01 - 0.22	0.4	–	2.30E+01 N	–	–	No	BSL c
	7439-98-7	MOLYBDENUM	1.5 J	5.9 J	MG/KG	280-S13-008	2 / 108	0.15 - 6.3	5.9	–	3.90E+02 N	–	–	No	BSL, IFD d
	91-20-3	NAPHTHALENE	0.00023 J	10	MG/KG	C3S013B081	141 / 323	0.00022 - 0.11	10	–	5.59E+01 N	–	–	No	BSL
	7440-02-0	NICKEL	1.2 J	278	MG/KG	280-S13-008	106 / 108	13.8 - 15.8	278	11.6 - 88.5	1.60E+03 N	–	–	No	BSL d
	86-30-6	N-NITROSODIPHENYLAMINE	0.042 JB	1.2 JB	MG/KG	BOR-19 [0.5-1.0]	20 / 83	0.037 - 62.0	1.2	–	9.90E+01 C	–	–	No	BSL
	87-86-5	PENTACHLOROPHENOL	0.270 J	1.0 J	MG/KG	BOR-7 [4.0-4.5]	3 / 84	0.089 - 170.0	1.0	–	3.00E+00 C	–	–	No	BSL, IFD
	85-01-8	PHENANTHRENE	0.00022 J	9.6	MG/KG	C3S013B080	192 / 323	0.00015 - 0.1	9.6	–	2.19E+04 [a] N	–	–	No	BSL
	7440-09-7	POTASSIUM	270	3,220	MG/KG	280-S7C-096	97 / 108	170 - 654	3,220	310 - 6,382	NA	–	–	No	NUT
	129-00-0	PYRENE	0.0002 J	7.1	MG/KG	C3S013B051	187 / 323	0.00012 - 0.2	7.1	–	2.32E+03 N	–	–	No	BSL
	7782-49-2	SELENIUM	0.14 J	12	MG/KG	BOR-16 [0.5-1.0]	26 / 108	0.29 -13	12	5.7 - 5.7	3.90E+02 N	–	–	No	BSL c
	7440-22-4	SILVER	0.23 J	1.6 J	MG/KG	280-S13-015	4 / 108	0.088 - 6.3	1.6	0.44 - 0.61	3.90E+02 N	–	–	No	BSL, IFD d
	7440-23-5	SODIUM	69.6 J	2,690	MG/KG	137-S13-007	79 / 108	26.2 - 630	2,690	88.1 - 3,510	NA	–	–	No	NUT
	7440-28-0	THALLIUM	2.7	2.7	MG/KG	BOR-21 [0.5-1.0]	1 / 108	0.11 - 13	2.7	5.3 - 5.3	5.20E+00 N	–	–	No	BSL, IFD d
	7440-32-6	TITANIUM	139	632	MG/KG	MWOR-2 [2.0-2.5]	50 / 50	NA	632	223 - 1,020	3.10E+05 [b] N	–	–	No	BSL d
	108-88-3	TOLUENE	0.001 J	9.1 J	MG/KG	137-S13-009	56 / 114	0.005 - 0.061	9.1	–	5.20E+02 sat	–	–	No	BSL
	7440-62-2	VANADIUM	2 J	1,780	MG/KG	MWOR-4 [7.0-7.5]	108 / 108	NA	1,780	12.8 - 62.3	5.50E+02 N	–	–	Yes	ASL d
	1330-20-7	XYLENE (TOTAL)	0.0011 J	38	MG/KG	280-S13-010	34 / 114	0.005 - 1.7	38	–	2.70E+02 N	–	–	No	BSL
	7440-66-6	ZINC	5.6 J	7,120	MG/KG	280-S13-015	108 / 108	NA	7,120	14 - 84	2.30E+04 N	–	–	No	BSL c

Notes:

(1) Define the "(Qualifier)" codes used for the "Minimum Concentration" and "Maximum Concentration".

- J — Estimated concentration value
- JB — Estimated value; blank contamination

(2) The "Concentration Used for Screening" is the maximum detected concentration.

(3) The "Background Value" is the range for the blue background area (Table D.4.2; Tetra Tech 2001), shown for comparison purposes only. Background comparisons will be based on two-population tests as described in the Appendix H text.

(4) Screening toxicity values are EPA Region 9 residential PRGs (EPA 2002a). California modified PRGs were used where available.

(5) Rationale for Selection or Deletion

- ASL — Above screening level
- BSL — Below screening level
- IFD — Infrequently detected
- NUT — Essential nutrient

a The screening toxicity value for 2-methylnaphthalene is based on naphthalene; 4-methyl-2-pentanone is based on methyl isobutyl ketone; benzo(g,h,i)perylene is based on pyrene; phenanthrene is based on anthracene; and acenaphthylene is based upon acenaphthene.

b Screening toxicity value was taken from EPA Region 3 Risk-based Concentration Table (2002) and represents risk-based screening level for residential surface soil.

c Following the statistical background screening, this inorganic was found to be significantly greater than background.

d Following the statistical background screening, this inorganic was not found to be significantly greater than background.

Acronyms:

- – No value available
- ARAR/TBC — Applicable or relevant and appropriate requirement/to be considered
- bgs — Below ground surface
- C — Carcinogenic
- CAS — Chemical Abstract Service
- COPC — Contaminant of potential concern
- DDE — Dichlorodiphenyldichloroethene
- DDT — Dichlorodiphenyltrichloroethane
- MG/KG — Milligram per kilogram
- N — Noncarcinogenic
- NA — Not applicable
- sat — Soil saturation concentration

References:

U.S. Environmental Protection Agency (EPA) 2002a. "EPA Region 9 Preliminary Remediation Goals Table." October 2. Available on-line at: http://www.epa.gov/region09/waste/sfund/prg/index.htm

U.S. Enviro[illegible] Protection Agency (EPA) 2002b. "EPA Region 3 Risk-Based Concentration Table." April 2. Available on-line at: ht[illegible]w.epa.gov/reg3hwmd/risk/rbc.pdf

TABLE H-2.8: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 13 SOIL GAS

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe: Current/Future
Medium: Soil Gas (Air Samples) Collected from Site 13
Exposure Medium: Vadose Zone Soil (Migration to Indoor Air)

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (5)
Site 13	630-20-6	1,1,2,2-TETRACHLOROETHANE	70.8 J	70.8 J	UG/M3	385-S13-021	1 / 2	22.33 - 22.33	70.8	--	4.20E-01 C	--	--	Yes	ASL
	79-00-5	1,1,2-TRICHLOROETHANE	222 J	222 J	UG/M3	385-S13-021	1 / 2	17.75 - 17.75	222.7	--	1.50E+00 C	--	--	Yes	ASL
	107-06-2	1,2-DICHLOROETHANE	27.6 J	27.6 J	UG/M3	385-S13-021	1 / 2	13.16 - 13.16	27.6	--	9.40E-01 C	--	--	Yes	ASL
	71-43-2	BENZENE	30.7	52 J	UG/M3	385-S13-021	2 / 2	NA	52.0	--	3.10E+00 C	--	--	Yes	ASL
	100-41-4	ETHYLBENZENE	17.9	48.3 J	UG/M3	385-S13-021	2 / 2	NA	48.3	--	2.20E+01 C	--	--	Yes	ASL
	108-38-3	M-XYLENE	74.6	209.6 J	UG/M3	385-S13-021	2 / 2	NA	210	--	7.00E+04 [a] N	--	--	No	BSL
	95-47-6	O-XYLENE	14.8	35.6 J	UG/M3	385-S13-021	2 / 2	NA	35.6	--	7.00E+04 [a] N	--	--	No	BSL
	127-18-4	TETRACHLOROETHENE	28.8	33.9 J	UG/M3	385-S13-021	2 / 2	NA	33.9	--	8.10E+00 C	--	--	Yes	ASL
	108-88-3	TOLUENE	304.8	938.2 J	UG/M3	385-S13-021	2 / 2	NA	938	--	4.00E+03 N	--	--	No	BSL

Notes:

(1) Define the "(Qualifier)" codes used for the "Minimum Concentration" and "Maximum Concentration".

J *Estimated concentration value*

(2) The "Concentration Used for Screening" is the maximum detected concentration.

(3) Background values are not available for soil gas comparisons.

(4) Screening toxicity values are target shallow soil gas concentrations (taken at less than 5 feet bgs) *as shown in Table 2c (EPA 2002c).*

(5) Rationale for Selection or Deletion

ASL Above screening level

BSL Below screening level

NUT Essential nutrient

a The screening toxicity values for m- and o-xylenes are based on xylene (total).

Acronyms:

-- No value available

ARAR/TBC Applicable or relevant and appropriate requirement/to be considered

bgs Below ground surface

C Carcinogenic

CAS Chemical Abstract Service

COPC Chemical of Potential Concern

N Noncarcinogenic

NA *Not applicable*

UG/M3 Microgram per cubic meter

References:

EPA 2002c. Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance). November. Available on-line at http://www.epa.gov/correctiveaction/eis/vapor.htm

TABLE H-2.9: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 13 VOCS IN GROUNDWATER

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Indoor Air (Vapor)

Exposure Point	CAS Number	Chemical (1)	Minimum Concentration (Qualifier) (1)		Maximum Concentration (Qualifier) (1)		Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (5)	Screening Toxicity Value (N/C) (1)		Potential ARAR/TBC Value (10)	Potential ARAR/TBC Source (10)	COPC Flag (Y/N)	Rationale for Selection or Deletion (3)
Water Vapor from Shallow Groundwater at Site 13	71-55-6	1,1,1-TRICHLOROETHANE	1.0		1.0		UG/L	D13-01	1 / 65	0.5 - 4	1.0	--	3100	N	--	--	No	BSL
	95-63-6	1,2,4-TRIMETHYLBENZENE	2.1		2.1		UG/L	M13-09	1 / 22	0.5 - 0.5	2.1	--	24	N	--	--	No	BSL
	107-06-2	1,2-DICHLOROETHANE	0.80		1.0		UG/L	M07C-09	2 / 65	0.5 - 1	1.0	--	2.3	C (4)	--	--	No	BSL
	91-57-6	2-METHYLNAPHTHALENE	3.0	J	41		UG/L	M13-07	3 / 35	10 - 10	41	--	3300	N	--	--	No	BSL
	67-64-1	ACETONE	0.70	J	99	J	UG/L	M13-07	10 / 37	0.4 - 30	99	--	22000	N	--	--	No	BSL
	71-43-2	BENZENE	0.70		44		UG/L	M13-07	3 / 65	0.5 - 1	44	--	1.4	C (4)	--	--	Yes	ASL
	74-83-9	BROMOMETHANE	0.50	J	0.60	J	UG/L	MWOR-4	2 / 65	1 - 4	0.60	--	19	N (7)	--	--	No	BSL
	75-15-0	CARBON DISULFIDE	0.30	J	1.2		UG/L	M13-07	3 / 65	0.5 - 4	1.2	--	560	N	--	--	No	BSL
	108-90-7	CHLOROBENZENE	0.20	J	0.20	J	UG/L	M07C-09	1 / 65	0.5 - 4	0.20	--	390	N	--	--	No	BSL
	74-87-3	CHLOROMETHANE	0.30	J	0.30	J	UG/L	D13-01	1 / 65	1 - 4	0.30	--	28000	N	--	--	No	BSL
	108-20-3	DIISOPROPYL ETHER	0.80	J	0.80	J	UG/L	M13-07	1 / 22	0.5 - 0.5	0.80	--	NV	(6)	--	--	No	BSL
	100-41-4	ETHYLBENZENE	1.3		3.0		UG/L	M13-07	3 / 65	0.2 - 4	3.0	--	6.9	C (4)	--	--	No	BSL
	86-73-7	FLUORENE	0.80	J	1.0	J	UG/L	M13-07	2 / 35	10 - 10	1.0	--	> SOL	N	--	--	No	BSL
	98-82-8	ISOPROPYLBENZENE	0.30	J	3.0		UG/L	M13-07	4 / 22	0.5 - 0.5	3.0	--	8.4	N	--	--	No	BSL
	NA	M,P-XYLENE	1.6		1.6		UG/L	M13-09	1 / 22	0.5 - 0.5	1.6	--	22000	N (8)	--	--	No	BSL
	86-73-7	NAPHTHALENE	1.1	J	210		UG/L	M13-07	8 / 57	1.6 - 10	210	--	150	N	--	--	Yes	ASL
	103-65-1	N-PROPYLBENZENE	0.30	J	0.80		UG/L	M13-09	3 / 22	0.5 - 0.5	0.80	--	320	N	--	--	No	BSL
	95-47-6	O-XYLENE	0.20	J	0.20	J	UG/L	M13-07	1 / 22	0.5 - 0.5	0.20	--	33000	N	--	--	No	BSL
	99-87-6	P-ISOPROPYLTOLUENE	0.20	J	0.30	J	UG/L	M13-07	3 / 22	0.5 - 0.5	0.30	--	NV	(6)	--	--	No	BSL
	135-98-8	SEC-BUTYLBENZENE	0.20	J	1.4		UG/L	M13-07	3 / 22	0.5 - 0.5	1.4	--	250	N	--	--	No	BSL
	98-06-6	TERT-BUTYLBENZENE	0.50	J	0.80		UG/L	M13-07	2 / 22	0.5 - 0.5	0.80	--	290	N	--	--	No	BSL
	108-88-3	TOLUENE	0.90	J	0.90	J	UG/L	M13-08	1 / 65	0.5 - 4	0.90	--	1500	N	--	--	No	BSL
	79-01-6	TRICHLOROETHENE	0.20	J	1.0		UG/L	M07C-09	4 / 65	0.5 - 4	1.0	--	0.053	C (4) (9)	--	--	Yes	ASL (11)
	1330-20-7	XYLENE (TOTAL)	1		1.0		UG/L	M13-07	1 / 43	1 - 4	1.0	--	2200	N (10)	--	--	No	BSL

Notes:

(1) Groundwater screening values are risk-based screening levels from Table 2c of EPA (2002c) draft vapor intrusion screening guidance.

(2) Maximum detected concentration for all of the sampling events was used as screening value.

(3) Vapor intrusion from volatile chemicals in groundwater to indoor is the only complete or potentially complete pathway evaluated; therefore, only volatile chemicals present at concentrations above their respective screening toxicity values were considered COPCs. A volatile chemical was defined as having a molecular weight less than 200 grams per mole and a Henry's Law constant greater than 10-5 atmospheres per cubic meter per mole.

Rationale Codes

Deletion Reason: Below Screening Level (BSL)

Inclusion Reason: Above Screening Level (ASL)

(4) Screening Toxicity Values in EPA 2002c, were listed as the Maximum Contaminant Levels (MCLs). However, risk-based values, which were lower than the MCLs, were used in the COPC screen so that the analytes could be evaluated for potential cumulative effects from several analytes.

(5) Volatile organic compounds are not common in unimpacted groundwater, so no background evaluation will be conducted for this COPCs selection.

Definitions:

ARAR/TBC = Applicable or relevant and appropriate requirement/to be considered
COPC = Contaminant of potential concern
EPA = U.S. Environmental Protection Agency
J = Estimated value
C = Carcinogen
N = Noncancer
UG/L = Microgram per liter
-- = Not available
NA = Not Applicable
>SOL=Value is greater than solubility

TABLE H-2.9: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 13 VOCS IN GROUNDWATER

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

(6) Diisopropyl ether and p-isopropyltoluene do not have a toxicity values and were not evaluated; however, they are not suspected to be associated with any former processes at the site.

(7) Screening Toxicity Values were developed using Appendix D of the EPA 2002c guidance. inhalation toxcity values from EPA 1997 and EPA 2003 were used.
In the absence of inhalation toxicity values, oral toxicity values were used for the inhalation pathway in accordance with EPA 2002c.

(8) The lowest Screening Toxicity Value (p-xylenes) was used for this mixture of analytes.

(9) The Screening Toxicity Value is lower than the lowest detection limit; however, this analyte was detected so there is no effect of the COPC screen.

(10) The Screening Toxicity Value for xylenes (total) is based upon p-xylene.

(11) Please see text Section H.7.5.2.2. The detection of TCE and other chlorinated organics in Site 13 groundwater is spatially separated from the remaining detections of TPH-related VOCs and thus the source area for this maximum detected concentration will be addressed in the HHRA for the source area (Site 4 of OU-2B).

Reference:

EPA 1997. "Health Effects Assessment Summary Tables." Office of Research and Development (ORD).

EPA 2002c. Draft Vapor Intrusion Guidance. November. Available on-line at http://www.epa.gov/correctiveaction/eis/vapor.htm

EPA 2003. Integrated Risk Information System. Online Database. Office of Research and Development, National Center for Environmental Assessment.
On Line Address: http://www.epa.gov/iris

TABLE H-2.10: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 13 GROUNDWATER

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Current/Future
Medium:	Site 13 Groundwater
Exposure Medium:	Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)		Maximum Concentration (Qualifier) (1)		Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (5)
Site 13 Future Tap Water	71-55-6	1,1,1-TRICHLOROETHANE	1		1		UG/L	D13-01	1 / 65	0.5 - 4	1.0	--	3.2E+03 N	--	--	No	BSL, IFD
	95-63-6	1,2,4-TRIMETHYLBENZENE	2.1		2.1		UG/L	M13-09	1 / 22	0.5 - 0.5	2.1	--	1.2E+01 N	--	--	No	BSL, IFD
	107-06-2	1,2-DICHLOROETHANE	0.8		1		UG/L	M07C-09	2 / 65	0.5 - 1	1.0	--	1.2E-01 C	--	--	Yes	ASL, IFD
	120-83-2	2,4-DICHLOROPHENOL	7	J	7	J	UG/L	M13-07	1 / 35	10 - 10	7.0	--	1.1E+02 N	--	--	No	BSL, IFD
	91-57-6	2-METHYLNAPHTHALENE	3	J	41		UG/L	M13-07	3 / 35	10 - 10	41	--	6.2E+00 [a] N	--	--	Yes	ASL
	67-64-1	ACETONE	0.7	J	99	J	UG/L	M13-07	10 / 37	0.4 - 30	99	--	6.1E+02 N	--	--	No	BSL
	7429-90-5	ALUMINUM	4.6	J	297		UG/L	B13-42	19 / 52	7.2 - 207	297	--	3.6E+04 N	--	--	No	BSL e
	7440-36-0	ANTIMONY	0.051	J	0.54	J	UG/L	MW-1	13 / 45	0.093 - 50	0.54	--	1.5E+01 N	--	--	No	BSL d
	7440-38-2	ARSENIC	0.21	J	96		UG/L	M07C-06	23 / 45	0.8 - 13.6	96	--	4.5E-02 C	--	--	Yes	ASL e
	7440-39-3	BARIUM	7.6	J	530		UG/L	M07C-06	48 / 52	0.05 - 100	530	--	2.6E+03 N	--	--	No	BSL d
	71-43-2	BENZENE	0.7		44		UG/L	M13-07	3 / 65	0.5 - 1	44	--	3.4E-01 C	--	--	Yes	ASL, IFD
	7440-41-7	BERYLLIUM	0.14	J	0.14	J	UG/L	M13-07	1 / 45	0.1 - 2	0.14	--	7.3E+01 N	--	--	No	BSL, IFD d
	74-83-9	BROMOMETHANE	0.5	J	0.6	J	UG/L	MWOR-4	2 / 65	1 - 4	0.60	--	8.7E+00 N	--	--	No	BSL, IFD
	7440-43-9	CADMIUM	0.065	J	0.64	J	UG/L	M07C-09	6 / 45	0.069 - 5	0.64	--	1.8E+01 N	--	--	No	BSL e
	7440-70-2	CALCIUM	9,590		253,000		UG/L	B13-41	51 / 52	3.8 - 10000	253,000	--	NA	--	--	No	NUT
	75-15-0	CARBON DISULFIDE	0.3	J	1.2		UG/L	M13-07	3 / 65	0.5 - 4	1.2	--	1.0E+03 N	--	--	No	BSL, IFD
	108-90-7	CHLOROBENZENE	0.2	J	0.2	J	UG/L	M07C-09	1 / 65	0.5 - 4	0.20	--	1.1E+02 N	--	--	No	BSL, IFD
	74-87-3	CHLOROMETHANE	0.3	J	0.3	J	UG/L	D13-01	1 / 65	1 - 4	0.30	--	1.5E+00 C	--	--	No	BSL, IFD
	7440-47-3	CHROMIUM	0.09	J	7.2	J	UG/L	M13-07	20 / 45	0.35 - 10	7.2	--	5.5E+04 N	--	--	No	BSL d
	7440-48-4	COBALT	0.1	J	27		UG/L	MW-1	17 / 45	0.093 - 10	27	--	7.3E+02 N	--	--	No	BSL d
	7440-50-8	COPPER	0.57	J	21		UG/L	M13-07	17 / 52	0.7 - 42.5	21	--	1.5E+03 N	--	--	No	BSL e
	108-20-3	DIISOPROPYL ETHER	0.8	J	0.8	J	UG/L	M13-07	1 / 22	0.5 - 0.5	0.80	--	-- [c]	--	--	No	NTX, IFD
	100-41-4	ETHYLBENZENE	1.3		3		UG/L	M13-07	3 / 65	0.2 - 4	3.0	--	2.9E+00 C	--	--	Yes	ASL, IFD
	86-73-7	FLUORENE	0.8	J	1	J	UG/L	M13-07	2 / 35	10 - 10	1.0	--	2.4E+02 N	--	--	No	BSL
	7439-89-6	IRON	7.4	J	60,000		UG/L	MW-1	33 / 52	3.2 - 1000	60,000	--	1.1E+04 N	--	--	No	NUT d
	98-82-8	ISOPROPYLBENZENE	0.3	J	3		UG/L	M13-07	4 / 22	0.5 - 0.5	3.0	--	6.6E+02 N	--	--	No	BSL
	7439-92-1	LEAD	0.13	J	6.7		UG/L	MW-1	6 / 45	0.022 - 8.4	6.7	--	1.5E+01 b	--	--	No	BSL e
	NA	M,P-XYLENE	1.6		1.6		UG/L	M13-09	1 / 22	0.5 - 0.5	1.6	--	2.1E+02 [a] N	--	--	No	BSL, IFD
	7439-95-4	MAGNESIUM	110	J	177000	J	UG/L	B13-44	51 / 52	3.8 - 5000	177,000	--	NA	--	--	No	NUT
	7439-96-5	MANGANESE	1.4	J	7,800		UG/L	M07C-06	49 / 52	0.2 - 400	7,800	--	8.8E+02 N	--	--	Yes	ASL d
	7439-97-6	MERCURY	0.046	J	0.052	J	UG/L	M13-06	2 / 45	0.1 - 0.2	0.052	--	1.1E+01 N	--	--	No	BSL, IFD e
	7439-98-7	MOLYBDENUM	0.41	J	11.1	J	UG/L	MWOR-3	11 / 45	0.25 - 20	11	--	1.8E+02 N	--	--	No	BSL e
	86-73-7	NAPHTHALENE	1.1	J	210		UG/L	M13-07	8 / 57	1.6 - 10	210	--	6.2E+00 N	--	--	Yes	ASL
	103-65-1	N-PROPYLBENZENE	0.3	J	0.8		UG/L	M13-09	3 / 22	0.5 - 0.5	0.80	--	2.4E+02 N	--	--	No	BSL
	7440-02-0	NICKEL	1.6	J	8.2	J	UG/L	M07C-09	11 / 45	0.5 - 20	8.2	--	7.3E+02 N	--	--	No	BSL e
	95-47-6	O-XYLENE	0.2	J	0.2	J	UG/L	M13-07	1 / 22	0.5 - 0.5	0.20	--	2.1E+02 [a] N	--	--	No	BSL, IFD
	99-87-6	P-ISOPROPYLTOLUENE	0.2	J	0.3	J	UG/L	M13-07	3 / 22	0.5 - 0.5	0.30	--	7.2E+02 [a] N	--	--	No	BSL
	87-86-5	PENTACHLOROPHENOL	0.6	J	7	J	UG/L	MWOR-3	2 / 35	25 - 25	7.0	--	5.6E-01 C	--	--	Yes	ASL
	108-95-2	PHENOL	0.9	J	0.9	J	UG/L	M13-08	1 / 35	10 - 10	0.90	--	2.2E+04 N	--	--	No	BSL, IFD

TABLE H-2.10: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 13 GROUNDWATER

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Current/Future
Medium:	Site 13 Groundwater
Exposure Medium:	Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (5)
	7440-09-7	POTASSIUM	680	69,200	UG/L	B13-41	50 / 52	3.7 - 5000	69,200	--	NA	--	--	No	NUT
	135-98-8	SEC-BUTYLBENZENE	0.2 J	1.4	UG/L	M13-07	3 / 22	0.5 - 0.5	1.4	--	2.4E+02 N	--	--	No	BSL
	7782-49-2	SELENIUM	0.36 J	2.4 J	UG/L	D13-01	7 / 44	0.8 - 5	2.4	--	1.8E+02 N	--	--	No	BSL d
	7440-22-4	SILVER	0.037 J	0.68 J	UG/L	M13-09	4 / 45	0.1 - 5	0.68	--	1.8E+02 N	--	--	No	BSL e
	7440-23-5	SODIUM	351 J	#######	UG/L	B13-39	52 / 52	7.2 - 5000	1,560,000	--	NA	--	--	No	NUT
	75-65-0	TERT-BUTANOL	3.7 J	3.7 J	UG/L	MW-1	1 / 22	10 - 20	3.7	--	1.8E+03 [a] N	--	--	No	BSL, IFD
e 13□Future Tap Wa	98-06-6	TERT-BUTYLBENZENE	0.5 J	0.8	UG/L	M13-07	2 / 22	0.5 - 0.5	0.80	--	2.4E+02 N	--	--	No	BSL
	7440-28-0	THALLIUM	4 J	10 J	UG/L	M07C-06	2 / 45	0.037 - 6.8	10	--	2.4E+00 N	--	--	Yes	ASL e
	108-88-3	TOLUENE	0.9 J	0.9 J	UG/L	M13-08	1 / 65	0.5 - 4	0.90	--	7.2E+02 N	--	--	No	BSL, IFD
	79-01-6	TRICHLOROETHENE	0.2 J	1	UG/L	M07C-09	4 / 65	0.5 - 4	1.0	--	2.8E-02 C	--	--	Yes	ASL
	7440-62-2	VANADIUM	0.33 J	12.1 J	UG/L	MWOR-3	17 / 45	0.25 - 13.9	12	--	2.6E+02 N	--	--	No	BSL e
	1330-20-7	XYLENE (TOTAL)	1	1	UG/L	M13-07	1 / 43	1 - 4	1.0	--	2.1E+02 N	--	--	No	BSL, IFD
	7440-66-6	ZINC	0.84 J	118	UG/L	M13-09	18 / 52	0.3 - 22	118	--	1.1E+04 N	--	--	No	BSL e

Notes:

(1) Define the "(Qualifier)" codes used for the "Minimum Concentration" and "Maximum Concentration".

J Estimated concentration value

(2) The "Concentration Used for Screening" is the maximum detected concentration.

(3) The "Background Value" is not shown here; comparisons to background were completed with the base-wide ambient Alameda Point groundwater data set and were based on two-population tests as described in the Appendix G text.

(4) Screening toxicity values are EPA Region IX residential PRGs (EPA 2002a). California Modified PRGs were used where available.

(5) Rationale for Selection or Deletion

ASL Above screening level

BSL Below screening level

IFD Infrequently detected

NUT Essential nutrient

NTX No toxicity value

Acronyms:

-- No value available

ARAR/TBC Applicable or relevant and appropriate requirement/to be considered

bgs Below ground surface

C Carcinogenic

CAS *Chemical Abstract Service*

COPC Contaminant of potential concern

N Noncarcinogenic

NA Not applicable

UG/L Microgram per liter

a The screening toxicity value for 2-methylnaphthalene is based on naphthalene; 4-chloro-3-methylphenol is based on 3-methylphenol; m,p- and o-xylene are based on total xylene; p-isopropyltoluene is based on toluene; and tert-butanol is based on isobutanol.

b No EPA Region 9 Tap Water PRGs (EPA 2002a) is available for lead. U.S. EPA's Treatment Technique value (from U.S. EPA's National Primary Drinking Water Regulations (U.S. EPA, 2002c) value was used as the screening value in groundwater.

c Diisopropyl ether does not have a toxicity value and this chemical is not consistent with previous site operations; therefore, this chemical will not be carried through this assessment.

d Following the statistical background screening, this inorganic was found to be significantly greater than background.

e Following the statistical background screening, this inorganic was not found to be significantly greater than background.

References:

U.S. Environmental Protection Agency (EPA) 2002a. "EPA Region IX Preliminary Remediation Goals Table." October 2. Available on-line at: http://www.epa.gov/region09/waste/sfund/prg/index.htm

TABLE H-2.11: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 19 SURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe: *Current/Future*
Medium: Surface Soil (0-2 feet bgs) at Site 19
Exposure Medium: Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (5)
Site 19	541-73-1	1,3-DICHLOROBENZENE	0.590 DJ	0.590 DJ	MG/KG	MWD13-2 [1.5-2.0]	1 / 1	NA	0.59	--	1.60E+01 N	--	--	No	BSL
	95-57-8	2-CHLOROPHENOL	1.5 J	1.5 J	MG/KG	280-S19-001	1 / 17	0.035 - 1.7	1.5	--	6.30E+01 N	--	--	No	BSL
	91-57-6	2-METHYLNAPHTHALENE	0.00028 J	0.0061	MG/KG	C3S019B009	14 / 26	0.00022 - 0.05	0.0061	--	5.60E+01 [a] N	--	--	No	BSL
	59-50-7	4-CHLORO-3-METHYLPHENOL	1.5 J	1.5 J	MG/KG	280-S19-001	1 / 17	0.035 - 1.7	1.5	--	3.10E+03 [a] N	--	--	No	BSL
	83-32-9	ACENAPHTHENE	0.0003 J	0.0018 J	MG/KG	C3S019B001	6 / 26	0.00023 - 0.082	0.0018	--	3.68E+03 N	--	--	No	BSL
	208-96-8	ACENAPHTHYLENE	0.0002 J	0.019	MG/KG	C3S019B009	14 / 26	0.00017 - 0.082	0.019	--	3.68E+03 [a] N	--	--	No	BSL
	7429-90-5	ALUMINUM	3,120	9,940	MG/KG	MWD13-2 [0.5-1.0]	14 / 14	NA	9,940	2,880 - 26,800	7.60E+04 N	--	--	No	BSL d
	120-12-7	ANTHRACENE	0.00028 J	0.047	MG/KG	C3S019B009	15 / 26	0.0002 - 0.05	0.05	--	2.19E+04 N	--	--	No	BSL
	7440-38-2	ARSENIC	1.4 J	9.5	MG/KG	MWD13-2 [0.5-1.0]	3 / 14	1.3 - 10	9.5	0.74 - 23	3.90E-01 C	--	--	Yes	ASL d
	7440-39-3	BARIUM	18.2	140	MG/KG	MWD13-2 [0.5-1.0]	12 / 14	21 - 22.3	140	0.3 - 198	5.40E+03 N	--	--	No	BSL d
	56-55-3	BENZ(A)ANTHRACENE	0.00024 J	0.32	MG/KG	C3S019B009	19 / 26	0.00014 - 0.026	0.32	--	6.21E-01 C	--	--	No	BSL
	50-32-8	BENZO(A)PYRENE	0.00023 J	0.52	MG/KG	C3S019B009	18 / 26	0.00015 - 0.026	0.52	--	6.21E-02 C	--	--	Yes	ASL
	205-99-2	BENZO(B)FLUORANTHENE	0.00034 J	0.28	MG/KG	C3S019B009	19 / 26	0.00015 - 0.026	0.28	--	6.21E-01 C	--	--	No	BSL
	191-24-2	BENZO(G,H,I)PERYLENE	0.0002 J	0.4	MG/KG	C3S019B009	22 / 26	0.00011 - 0.026	0.4	--	2.32E+03 [a] N	--	--	No	BSL
	207-08-9	BENZO(K)FLUORANTHENE	0.0002 J	0.33	MG/KG	C3S019B009	16 / 26	0.00016 - 0.05	0.33	--	3.78E-01 C	--	--	No	BSL
	7440-41-7	BERYLLIUM	0.4	0.4	MG/KG	MWD13-2 [0.5-1.0]	1 / 14	0.023 - 1	0.4	0.09 - 0.77	1.50E+02 N	--	--	No	BSL d
	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	0.89	0.89	MG/KG	MWD13-2 [1.5-2.0]	1 / 17	0.014 - 11.0	0.89	--	3.50E+01 C	--	--	No	BSL
	7440-43-9	CADMIUM	0.2	7.4	MG/KG	MWD13-2 [0.5-1.0]	4 / 14	0.044 - 1	7.4	0.1 - 0.82	3.70E+01 N	--	--	No	BSL d
	7440-70-2	CALCIUM	1,980	7,480	MG/KG	MWD13-2 [0.5-1.0]	14 / 14	NA	7,480	1,360 - 19,200	NA	--	--	No	NUT
	7440-47-3	CHROMIUM	20.9	32.8	MG/KG	MWD13-3 [0.5-1.0]	14 / 14	NA	32.8	11.4 - 81.7	2.10E+02 C	--	--	No	BSL d
	218-01-9	CHRYSENE	0.00021 J	0.42	MG/KG	C3S019B009	23 / 26	0.00016 - 0.026	0.42	--	3.78E+00 C	--	--	No	BSL
	7440-48-4	COBALT	3.5	9.7	MG/KG	MWD13-2 [0.5-1.0]	6 / 14	4.2 - 5.3	9.7	1.9 - 14	9.00E+02 C	--	--	No	BSL d
	7440-50-8	COPPER	5.9	138	MG/KG	MWD13-2 [0.5-1.0]	12 / 14	5 - 5.2	138	4.2 - 89.4	3.10E+03 N	--	--	No	BSL c
	57-12-5	CYANIDE	0.59	0.59	MG/KG	MWD13-1 [0.5-1.0]	1 / 16	0.5 - 1	0.59	--	1.20E+03 [a] N	--	--	No	BSL
	53-70-3	DIBENZ(A,H)ANTHRACENE	0.0003 J	0.04	MG/KG	C3S019B009	13 / 26	0.00019 - 0.05	0.04	--	6.21E-02 C	--	--	No	BSL
	84-66-2	DIETHYLPHTHALATE	6.2	7.7	MG/KG	MWD13-3 [0.5-1.0]	2 / 17	0.035 - 11.0	7.7	--	4.90E+04 N	--	--	No	BSL
	84-74-2	DI-N-BUTYLPHTHALATE	7.3	7.3	MG/KG	BD13-7 [1.5-2.0]	1 / 17	0.035 - 11.0	7.3	--	6.10E+03 N	--	--	No	BSL
	206-44-0	FLUORANTHENE	0.00035 J	0.64	MG/KG	C3S019B009	23 / 26	0.00018 - 0.026	0.64	--	2.29E+03 N	--	--	No	BSL
	86-73-7	FLUORENE	0.00024 J	0.0064	MG/KG	C3S019B009	12 / 26	0.00018 - 0.05	0.0064	--	2.75E+03 N	--	--	No	BSL
	193-39-5	INDENO(1,2,3-CD)PYRENE	0.00029 J	0.47	MG/KG	C3S019B009	20 / 26	0.00016 - 0.026	0.47	--	6.21E-01 C	--	--	No	BSL
	7439-89-6	IRON	5,440	30,500	MG/KG	MWD13-2 [0.5-1.0]	14 / 14	NA	30,500	760 - 26,900	2.30E+04 N	--	--	No	NUT c
	7439-92-1	LEAD	3.1 J	28.4	MG/KG	MWD13-2 [0.5-1.0]	3 / 14	3.5 - 5.3	28.4	1.3 - 41	1.50E+02 N	--	--	No	BSL c
	7439-95-4	MAGNESIUM	1,390	4,870	MG/KG	MWD13-2 [0.5-1.0]	14 / 14	NA	4,870	1,510 - 42,400	NA	--	--	No	NUT
	7439-96-5	MANGANESE	72	830	MG/KG	MWD13-2 [0.5-1.0]	14 / 14	NA	830	50 - 1,060	1.80E+03 N	--	--	No	BSL d
	91-20-3	NAPHTHALENE	0.00027 J	0.025	MG/KG	C3S019B009	20 / 26	0.00022 - 0.05	0.025	--	5.59E+01 N	--	--	No	BSL
	7440-02-0	NICKEL	20	30	MG/KG	BD13-8 [0.5-1.0]	14 / 14	NA	30	11.6 - 88.5	1.60E+03 N	--	--	No	BSL d
	86-30-6	N-NITROSODIPHENYLAMINE	0.078 BJ	0.082 JB	MG/KG	MWD13-3 [0.5-1.0]	3 / 17	0.035 - 11.0	0.082	--	9.90E+01 C	--	--	No	BSL
	87-86-5	PENTACHLOROPHENOL	0.410 J	1.6 J	MG/KG	BD13-16 [1.5-2.0]	3 / 17	0.085 - 27	1.6	--	3.00E+00 C	--	--	No	BSL

TABLE H-2.11: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 19 SURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe: Current/Future
Medium: Surface Soil (0-2 feet bgs) at Site 19
Exposure Medium: Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (5)
Site 19	85-01-8	PHENANTHRENE	0.00037 J	0.17	MG/KG	C3S019B009	20 / 26	0.00016 - 0.05	0.17	--	2.19E+04 [a] N	--	--	No	BSL
	7440-09-7	POTASSIUM	231 J	1,020	MG/KG	MWD13-2 [0.5-1.0]	13 / 14	520 - 520	1,020	310 - 6,382	NA	--	--	No	NUT
	129-00-0	PYRENE	0.00024 J	0.71	MG/KG	C3S019B009	24 / 26	0.00012 - 0.026	0.7	--	2.32E+03 N	--	--	No	BSL
	7440-22-4	SILVER	0.055	0.7	MG/KG	MWD13-2 [0.5-1.0]	1 / 14	0.055 - 5.3	0.7	0.44 - 0.61	3.90E+02 N	--	--	No	BSL d
	7440-23-5	SODIUM	153	359	MG/KG	MWD13-2 [0.5-1.0]	5 / 14	49 - 530	359	88.1 - 3,510	NA	--	--	No	NUT
	7440-28-0	THALLIUM	3.3 B	3.3 B	MG/KG	MWD13-1 [0.5-1.0]	1 / 14	0.27 - 10	3.3	5.3 - 5.3	5.20E+00 N	--	--	No	BSL d
	7440-32-6	TITANIUM	260	535	MG/KG	BD13-6 [0.5-1.0]	12 / 12	NA	535	223 - 1,020	3.10E+05 [b] N	--	--	No	BSL d
	108-88-3	TOLUENE	0.058	1.0 D	MG/KG	MWD13-2 [1.5-2.0]	2 / 5	0.011 - 0.011	1.0	--	5.20E+02 sat	--	--	No	BSL
	7440-62-2	VANADIUM	14	41.5	MG/KG	MWD13-2 [0.5-1.0]	14 / 14	NA	41.5	12.8 - 62.3	5.50E+02 N	--	--	No	BSL d
	1330-20-7	XYLENE (TOTAL)	0.190 DJ	0.190 DJ	MG/KG	MWD13-2 [1.5-2.0]	1 / 5	0.0062 - 0.011	0.19	--	2.70E+02 N	--	--	No	BSL
	7440-66-6	ZINC	13.8	192	MG/KG	MWD13-2 [0.5-1.0]	14 / 14	NA	192	14 - 84	2.30E+04 N	--	--	No	BSL c

Notes:

(1) Define the "(Qualifier)" codes used for the "Minimum Concentration" and "Maximum Concentration".

B	Blank contamination
BJ	Estimated value; blank contamination
D	Compound reported in a diluted sample
DJ	*Estimated value reported in a diluted sample*
J	Estimated concentration value
JB	Estimated value; blank contamination

(2) The "Concentration Used for Screening" is the maximum detected concentration.

(3) The "Background Value" is the range for the blue background area (Table D.4.2; Tetra Tech 2001), shown for comparison purposes only. Background comparisons will be based on two-population tests as described in the Appendix H text.

(4) Screening toxicity values are EPA Region 9 residential PRGs (EPA 2002a). California modified PRGs were used where available.

(5) *Rationale for Selection or Deletion*

ASL	Above screening level
BSL	Below screening level
NUT	Essential nutrient

a The screening toxicity value for 4-chloro-3-methylphenol is based on 3-methylphenol; cyanide is based on cyanide (free); benzo(g,h,i)perylene is based on pyrene; phenanthrene is based on anthracene; acenaphthylene is based upon acenaphthene; 2-methylnaphthalene is based on naphthalene..

b Screening toxicity value was taken from EPA Region 3 Risk-based Concentration Table (2002) and represents risk-based screening level for residential surface soil.

c *Following the statistical background screening, this inorganic was found to be significantly greater than background.*

d Following the statistical background screening, this inorganic was not found to be significantly greater than background.

Acronyms:

--	No value available
ARAR/TBC	Applicable or relevant and appropriate requirement/to be considered
bgs	Below ground surface
C	Carcinogenic
CAS	Chemical Abstract Service
COPC	Contaminant of potential concern
MG/KG	Milligram per kilogram
N	Noncarcinogenic
NA	Not applicable
sat	Soil saturation concentration

References:

U.S. Environmental Protection Agency (EPA) 2002a. "EPA Region 9 Preliminary Remediation Goals Table." October 2. Available on-line at: http://www.epa.gov/region09/waste/sfund/prg/index.htm

U.S. Environmental Protection Agency (EPA) 2002b. "EPA Region 3 Risk-Based Concentration Table." April 2. Available on-line at: http://www.epa.gov/reg3hwmd/risk/rbc.pdf

TABLE H-2.12: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 19 SUBSURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe: Future
Medium: Subsurface Soil (0-8 feet bgs) at Site 19
Exposure Medium: Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (5)
Site 19	71-55-6	1,1,1-TRICHLOROETHANE	0.001 J	0.003 J	MG/KG	BD13-16 [6.0-6.5]	2 / 38	0.005 - 0.680	0.003	–	1.20E+03 sat	–	–	No	BSL
	541-73-1	1,3-DICHLOROBENZENE	0.590 DJ	0.590 DJ	MG/KG	MWD13-2 [1.5-2.0]	1 / 18	0.005 - 0.520	0.59	–	1.60E+01 N	–	–	No	BSL
	95-57-8	2-CHLOROPHENOL	1.5 J	1.5 J	MG/KG	280-S19-001	1 / 41	0.035 - 6.8	1.5	–	6.30E+01 N	–	–	No	BSL, IFD
	91-57-6	2-METHYLNAPHTHALENE	0.00026 J	0.0077	MG/KG	C3S019B006	28 / 52	0.00022 - 0.05	0.0077	–	5.60E+01 [a] N	–	–	No	BSL
	59-50-7	4-CHLORO-3-METHYLPHENOL	1.5 J	1.5 J	MG/KG	280-S19-001	1 / 41	0.035 - 6.8	1.5	–	3.10E+03 [a] N	–	–	No	BSL, IFD
	83-32-9	ACENAPHTHENE	0.00029 J	0.002 J	MG/KG	C3S019B001	13 / 52	0.00023 - 0.082	0.002	–	3.68E+03 N	–	–	No	BSL
	208-96-8	ACENAPHTHYLENE	0.0002 J	0.019	MG/KG	C3S019B009	31 / 52	0.00017 - 0.082	0.019	–	3.68E+03 [a] N	–	–	No	BSL
	67-64-1	ACETONE	0.004 BJ	0.031	MG/KG	MWD13-2 [5.0-5.5]	3 / 37	0.010 - 1.4	0.031	–	1.60E+03 N	–	–	No	BSL
	7429-90-5	ALUMINUM	2,840	10,900	MG/KG	BD13-7 [2.0-2.5]	33 / 33	NA	10,900	2,880 - 26,800	7.60E+04 N	–	–	No	BSL d
	120-12-7	ANTHRACENE	0.00027 J	0.047	MG/KG	C3S019B009	33 / 52	0.0002 - 0.05	0.047	–	2.19E+04 N	–	–	No	BSL
	7440-38-2	ARSENIC	1.4 J	9.5	MG/KG	MWD13-2 [0.5-1.0]	7 / 33	1.3 - 13	9.5	0.74 - 23	3.90E-01 C	–	–	Yes	ASL d
	7440-39-3	BARIUM	15.3	570	MG/KG	BD13-10 [3.0-3.5]	30 / 33	21 - 22.3	570	0.3 - 198	5.40E+03 N	–	–	No	BSL d
	56-55-3	BENZ(A)ANTHRACENE	0.00024 J	0.32	MG/KG	C3S019B009	44 / 52	0.00014 - 0.026	0.32	–	6.21E-01 C	–	–	No	BSL
	50-32-8	BENZO(A)PYRENE	0.00023 J	0.52	MG/KG	C3S019B009	42 / 52	0.00015 - 0.03	0.52	–	6.21E-02 C	–	–	Yes	ASL
	205-99-2	BENZO(B)FLUORANTHENE	0.00034 J	0.28	MG/KG	C3S019B009	43 / 52	0.00015 - 0.03	0.28	–	6.21E-01 C	–	–	No	BSL
	191-24-2	BENZO(G,H,I)PERYLENE	0.0002 J	0.4	MG/KG	C3S019B009	46 / 52	0.00011 - 0.03	0.4	–	2.32E+03 [a] N	–	–	No	BSL
	207-08-9	BENZO(K)FLUORANTHENE	0.0002 J	0.33	MG/KG	C3S019B009	36 / 52	0.00016 - 0.05	0.33	–	3.78E-01 C	–	–	No	BSL
	7440-41-7	BERYLLIUM	0.21 B	0.4	MG/KG	MWD13-2 [0.5-1.0]	4 / 33	0.023 - 1.3	0.4	0.09 - 0.77	1.50E+02 N	–	–	No	BSL d
	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	0.110 J	0.89	MG/KG	MWD13-2 [1.5-2.0]	2 / 41	0.014 - 11.0	0.89	–	3.50E+01 C	–	–	No	BSL, IFD
	7440-43-9	CADMIUM	0.2	7.4	MG/KG	MWD13-2 [0.5-1.0]	8 / 33	0.044 - 1.3	7.4	0.1 - 0.82	3.70E+01 N	–	–	No	BSL d
	7440-70-2	CALCIUM	1,400	84,900	MG/KG	BD13-10 [3.0-3.5]	33 / 33	NA	84,900	1,360 - 19,200	NA	–	–	No	NUT
	7440-47-3	CHROMIUM	5.8	67	MG/KG	BD13-7 [2.0-2.5]	32 / 33	30.7 - 30.7	67	11.4 - 81.7	2.10E+02 C	–	–	No	BSL d
	218-01-9	CHRYSENE	0.0002 J	0.42	MG/KG	C3S019B009	48 / 52	0.00016 - 0.026	0.42	–	3.78E+00 C	–	–	No	BSL
	7440-48-4	COBALT	3.4	9.7	MG/KG	MWD13-2 [0.5-1.0]	14 / 33	4.2 - 6.2	9.7	1.9 - 14	9.00E+02 C	–	–	No	BSL d
	7440-50-8	COPPER	5.9	138	MG/KG	MWD13-2 [0.5-1.0]	29 / 33	5 - 5.3	138	4.2 - 89.4	3.10E+03 N	–	–	No	BSL c
	57-12-5	CYANIDE	0.59	0.64	MG/KG	MWD13-1 [7.0-7.5]	2 / 45	0.49 - 1.3	0.64	–	1.20E+03 [a] N	–	–	No	BSL, IFD
	53-70-3	DIBENZ(A,H)ANTHRACENE	0.0003 J	0.04	MG/KG	C3S019B009	26 / 52	0.00019 - 0.05	0.04	–	6.21E-02 C	–	–	No	BSL
	84-66-2	DIETHYLPHTHALATE	6.2	7.7	MG/KG	MWD13-3 [0.5-1.0]	2 / 41	0.035 - 11.0	7.7	–	4.90E+04 N	–	–	No	BSL, IFD
	84-74-2	DI-N-BUTYLPHTHALATE	5.2	7.3	MG/KG	BD13-7 [1.5-2.0]	2 / 41	0.035 - 11.0	7.3	–	6.10E+03 N	–	–	No	BSL, IFD
	206-44-0	FLUORANTHENE	0.00035 J	0.64	MG/KG	C3S019B009	47 / 52	0.00018 - 0.03	0.64	–	2.29E+03 N	–	–	No	BSL
	86-73-7	FLUORENE	0.00019 J	0.0064	MG/KG	C3S019B009	22 / 52	0.00018 - 0.05	0.0064	–	2.75E+03 N	–	–	No	BSL
	193-39-5	INDENO(1,2,3-CD)PYRENE	0.00029 J	0.47	MG/KG	C3S019B009	44 / 52	0.00016 - 0.03	0.47	–	6.21E-01 C	–	–	No	BSL
	7439-89-6	IRON	4,670	32,300	MG/KG	BD13-7 [2.0-2.5]	33 / 33	NA	32,300	760 - 26,900	2.30E+04 N	–	–	No	NUT c
	7439-92-1	LEAD	3.1 J	303	MG/KG	BD13-13 [2.0-2.5]	10 / 33	3.5 - 6.2	303	1.3 - 41	1.50E+02 N	–	–	Yes	ASL c
	7439-95-4	MAGNESIUM	1,200	13,000	MG/KG	BD13-10 [3.0-3.5]	32 / 33	5.1 - 5.1	13,000	1,510 - 42,400	NA	–	–	No	NUT
	7439-96-5	MANGANESE	72	897	MG/KG	MWD13-2 [2.0-2.5]	33 / 33	NA	897	50 - 1,060	1.80E+03 N	–	–	No	BSL d
	75-09-2	METHYLENE CHLORIDE	0.011	0.030 B	MG/KG	BD13-10 [2.0-2.5]	3 / 37	0.008 - 1.4	0.030	–	9.10E+00 C	–	–	No	BSL
	7439-98-7	MOLYBDENUM	1.6	1.6	MG/KG	BD13-15 [2.0-2.5]	1 / 33	0.11 - 6.4	1.6	–	3.90E+02 N	–	–	No	BSL, IFD d
	91-20-3	NAPHTHALENE	0.00027 J	0.025	MG/KG	C3S019B009	42 / 52	0.00022 - 0.05	0.025	–	5.59E+01 N	–	–	No	BSL
	7440-02-0	NICKEL	5.5	64	MG/KG	BD13-7 [2.0-2.5]	32 / 33	18.3 - 18.3	64	11.6 - 88.5	1.60E+03 N	–	–	No	BSL d

TABLE H-2.12: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 19 SUBSURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe: Future
Medium: Subsurface Soil (0-8 feet bgs) at Site 19
Exposure Medium: Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (5)
Site 19	86-30-6	N-NITROSODIPHENYLAMINE	0.048 JB	0.900 JB	MG/KG	BD13-15 [2.0-2.5]	9 / 41	0.035 - 11.0	0.90	–	9.90E+01 C	–	–	No	BSL
	87-86-5	PENTACHLOROPHENOL	0.410 J	1.6 J	MG/KG	BD13-16 [1.5-2.0]	4 / 41	0.085 - 33.0	1.6	–	3.00E+00 C	–	–	No	BSL
	85-01-8	PHENANTHRENE	0.00029 J	0.17	MG/KG	C3S019B009	42 / 52	0.00016 - 0.05	0.17	–	2.19E+04 [a] N	–	–	No	BSL
	7440-09-7	POTASSIUM	231 J	1,400	MG/KG	BD13-7 [2.0-2.5]	31 / 33	520 - 540	1,400	310 - 6,382	NA	–	–	No	NUT
	129-00-0	PYRENE	0.00016 J	0.71	MG/KG	C3S019B009	50 / 52	0.00012 - 0.026	0.71	–	2.32E+03 N	–	–	No	BSL
	7440-22-4	SILVER	0.43	0.7	MG/KG	MWD13-2 [0.5-1.0]	2 / 33	0.055 - 6.4	0.70	0.44 - 0.61	3.90E+02 N	–	–	No	BSL d
	7440-23-5	SODIUM	153	727	MG/KG	BD13-16 [5.0-5.5]	12 / 33	49 - 640	727	88.1 - 3,510	NA	–	–	No	NUT
	127-18-4	TETRACHLOROETHENE	0.002 J	0.004 J	MG/KG	BD13-10 [2.0-2.5]	2 / 38	0.005 - 0.680	0.004	–	1.50E+00 C	–	–	No	BSL
	7440-28-0	THALLIUM	3.3 B	3.3 B	MG/KG	MWD13-1 [0.5-1.0]	1 / 33	0.27 - 13	3.3	5.3 - 5.3	5.20E+00 N	–	–	No	BSL, IFD d
	7440-32-6	TITANIUM	220	819	MG/KG	BD13-15 [2.0-2.5]	31 / 31	NA	819	223 - 1,020	3.10E+05 [b] N	–	–	No	BSL d
	108-88-3	TOLUENE	0.002 J	1.0 D	MG/KG	MWD13-2 [1.5-2.0]	27 / 38	0.010 - 0.012	1.0	–	5.20E+02 sat	–	–	No	BSL
	79-01-6	TRICHLOROETHENE	0.004 J	0.004 J	MG/KG	BD13-10 [2.0-2.5]	1 / 38	0.005 - 0.680	0.0040	–	5.30E-02 C	–	–	No	BSL, IFD
	7440-62-2	VANADIUM	12	41.5	MG/KG	MWD13-2 [0.5-1.0]	33 / 33	NA	41.5	12.8 - 62.3	5.50E+02 N	–	–	No	BSL d
	1330-20-7	XYLENE (TOTAL)	0.003 J	0.190 DJ	MG/KG	MWD13-2 [1.5-2.0]	3 / 38	0.005 - 0.012	0.19	–	2.70E+02 N	–	–	No	BSL
	7440-66-6	ZINC	13.8	292	MG/KG	BD13-13 [2.0-2.5]	33 / 33	NA	292	14 - 84	2.30E+04 N	–	–	No	BSL c

Notes:

(1) Define the "(Qualifier)" codes used for the "Minimum Concentration" and "Maximum Concentration".

B	Blank contamination
D	Compound reported in a diluted sample
DJ	Estimated value reported in a diluted sample.
J	Estimated concentration value
JB	Estimated value; blank contamination

(2) The "Concentration Used for Screening" is the maximum detected concentration.

(3) The "Background Value" is the range for the blue background area (Table D.4.2; Tetra Tech 2001), shown for comparison purposes only. Background comparisons will be based on two-population tests as described in the Appendix H text.

(4) Screening toxicity values are EPA Region 9 residential PRGs (EPA 2002a). California modified PRGs were used where available.

(5) Rationale for Selection or Deletion

ASL	Above screening level
BSL	Below screening level
IFD	Infrequently detected
NUT	Essential nutrient

a The screening toxicity value for 4-chloro-3-methylphenol is based on 3-methylphenol; cyanide is based on cyanide (free); benzo(g,h,i)perylene is based on pyrene; phenanthrene is based on anthracene; acenaphthylene is based upon acenaphthene; 2-methylnaphthalene is based on naphthalene.

b Screening toxicity value was taken from EPA Region 3 Risk-based Concentration Table (2002) and represents risk-based screening level for residential surface soil.

c Following the statistical background screening, this inorganic was found to be significantly greater than background.

d Following the statistical background screening, this inorganic was not found to be significantly greater than background.

Acronyms:

–	No value available
ARAR/TBC	Applicable or relevant and appropriate requirement/to be considered
bgs	Below ground surface
C	Carcinogenic
CAS	Chemical Abstract Service
COPC	Contaminant of potential concern
MG/KG	Milligram per kilogram
N	Noncarcinogenic
NA	Not applicable
sat	Soil saturation concentration

References:

U.S. Environmental Protection Agency (EPA) 2002a. "EPA Region 9 Preliminary Remediation Goals Table." October 2. Available on-line at: http://www.epa.gov/region09/waste/sfund/prg/index.htm

U.S. Environmental Protection Agency (EPA) 2002b. "EPA Region 3 Risk-Based Concentration Table." April 2. Available on-line at: http://www.epa.gov/reg3hwmd/risk/rbc.pdf

TABLE H-2.13: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 19 VOCS IN GROUNDWATER

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Indoor Air (Vapor)

Exposure Point	CAS Number	Chemical (1)	Minimum Concentration (Qualifier) (1)		Maximum Concentration (Qualifier) (1)		Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (6)	Screening Toxicity Value (N/C) (1)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (3)
Water Vapor from Shallow Groundwater at Site 19	71-55-6	1,1,1-TRICHLOROETHANE	0.60	J	3.2		UG/L	MWD13-4	9 / 28	0.5 - 2	3.2	--	3100	N	--	--	No	BSL
	75-34-3	1,1-DICHLOROETHANE	0.50	J	27		UG/L	DHP-S19-02	23 / 28	0.5 - 1	27	--	2200	N	--	--	No	BSL
	75-35-4	1,1-DICHLOROETHENE	0.20	J	2.0		UG/L	DHP-S19-02	6 / 28	0.5 - 2	2.0	--	190	N	--	--	No	BSL
	95-63-6	1,2,4-TRICHLOROBENZENE	0.10	J	0.10	J	UG/L	MWD13-4	1 / 28	0.5 - 10	0.10	--	24	N	--	--	No	BSL
	107-06-2	1,2-DICHLOROETHANE	0.70		0.70		UG/L	DHP-S19-04	1 / 28	0.5 - 0.5	0.70	--	2.3	C (4)	--	--	No	BSL
	540-59-0	1,2-DICHLOROETHENE (TOTAL)	0.30	J	8.0		UG/L	MWD13-1	9 / 16	1 - 2	8.0	--	180	N (5)	--	--	No	BSL
	78-87-5	1,2-DICHLOROPROPANE	2.0		2.0		UG/L	M19-05	1 / 28	0.5 - 2	2.0	--	35	N	--	--	No	BSL
	78-93-3	2-BUTANONE	0.70	J	0.70	J	UG/L	MWD13-1	1 / 11	2 - 10	0.70	--	440000	N	--	--	No	BSL
	67-64-1	ACETONE	1.4	J	38	J	UG/L	DHP-S19-04	2 / 12	0.5 - 10	38	--	22000	N	--	--	No	BSL
	71-43-2	BENZENE	0.20	J	1.0		UG/L	MWD13-4	6 / 28	0.3 - 1	1.0	--	1.4	C (4)	--	--	No	BSL
	75-15-0	CARBON DISULFIDE	0.40	J	4.4		UG/L	MWD13-3	2 / 28	0.5 - 2	4.4	--	560	N	--	--	No	BSL
	67-66-3	CHLOROFORM	0.20	J	0.20	J	UG/L	MWD13-4	1 / 28	0.5 - 2	0.20	--	0.70	C (4)	--	--	No	BSL
	156-59-2	CIS-1,2-DICHLOROETHENE	0.20	J	3.4		UG/L	MWD13-4	5 / 12	0.5 - 1	3.4	--	210	N	--	--	No	BSL
	100-41-4	ETHYLBENZENE	0.10	J	0.10	J	UG/L	MWD13-4	1 / 28	0.5 - 2	0.10	--	6.9	C (4)	--	--	No	BSL
	NA	M,P-XYLENE	0.40	J	0.40	J	UG/L	MWD13-4	1 / 6	0.5 - 0.5	0.40	--	22000	N (8)	--	--	No	BSL
	1634-04-4	METHYL-T-BUTYL ETHER	0.30	J	0.30	J	UG/L	MWD13-3	1 / 11	0.2 - 5	0.30	--	120000	N	--	--	No	BSL
	91-20-3	NAPHTHALENE	1.8	J	2.2		UG/L	MWD13-4	4 / 22	2 - 10	2.2	--	150	N	--	--	No	BSL
	95-47-6	O-XYLENE	0.10	J	0.10	J	UG/L	MWD13-4	1 / 6	0.5 - 0.5	0.10	--	33000	N	--	--	No	BSL
	127-18-4	TETRACHLOROETHENE	0.40	J	22		UG/L	MWD13-4	10 / 28	0.5 - 2	22	--	1.1	C (4)	--	--	Yes	ASL
	108-88-3	TOLUENE	0.40	J	0.40	J	UG/L	MWD13-4	1 / 28	0.5 - 2	0.40	--	1500	N	--	--	No	BSL
	156-60-5	TRANS-1,2-DICHLOROETHENE	0.10	J	0.10	J	UG/L	MWD13-4	1 / 12	0.5 - 1	0.10	--	180	N	--	--	No	BSL
	79-01-6	TRICHLOROETHENE	0.60		4.2		UG/L	MWD13-4	10 / 28	0.5 - 2	4.2	--	0.053	C (4) (9)	--	--	Yes	ASL

Notes:

(1) Groundwater screening values are risk-based screening levels from Table 2c of EPA (2002c) draft vapor intrusion screening guidance.

(2) Maximum detected concentration for all of the sampling events was used as screening value.

(3) Vapor intrusion from volatile chemicals in groundwater to indoor is the only complete or potentially complete pathway evaluated; therefore, only volatile chemicals present at concentrations above their respective screening toxicity values were considered COPCs. A volatile chemical was defined as having a molecular weight less than 200 grams per mole and a Henry's Law constant greater than 10-5 atmospheres per cubic meter per mole.

Rationale Codes

Deletion Reason: Below Screening Level (BSL)

Inclusion Reason: Above Screening Level (ASL)

(4) Screening Toxicity Values in EPA 2002c, were listed as the Maximum Contaminant Levels (MCLs). However, risk-based values, which were lower than the MCLs, were used in the COPC screen so that the analytes could be evaluated for potential cumulative effects from several analytes.

(5) The Screening Toxicity Value for 1-2 dichloroethylene is based upon trans-1,2 dichloroethylene.

(6) Volatile organic compounds are not common in unimpacted groundwater, so no background evaluation will be conducted for this COPCs selection.

(7) Screening Toxicity Values were developed using Appendix D of the EPA 2002c guidance. inhalation toxcity values from EPA 1997 and EPA 2003 were used. In the absence of inhalation toxicity values, oral toxicity values were used for the inhalation pathway in accordance with EPA 2002c.

Definitions:

ARAR/TBC = Applicable or relevant and appropriate requirement/to be considered
COPC = Contaminant of potential concern
EPA = U.S. Environmental Protection Agency
J = Estimated value
C = Carcinogen
N = Noncancer
UG/L = Microgram per liter
-- = Not available
NA = Not Applicable

TABLE H-2.13: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 19 VOCS IN GROUNDWATER

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

(8) *The lowest Screening Toxicity Value (p-xylenes) was used for this mixture of analytes.*

(9) The Screening Toxicity Value is lower than the lowest detection limit; however, this analyte was detected so there is no effect of the COPC screen.

Reference:

EPA 1997. "Health Effects Assessment Summary Tables." Office of Research and Development (ORD).

EPA 2002c. Draft Vapor Intrusion Guidance. November. Available on-line at http://www.epa.gov/correctiveaction/eis/vapor.htm

EPA 2003. Integrated Risk Information System. Online Database. Office of Research and Development, National Center for Environmental Assessment.
On Line Address: http://www.epa.gov/iris

TABLE H-2.14: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 19 GROUNDWATER

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe: Current/Future
Medium: Site 19 Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)		Maximum Concentration (Qualifier) (1)		Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (5)
Site 19 Future Tap Water	71-55-6	1,1,1-TRICHLOROETHANE	0.6	J	3.2		UG/L	MWD13-4	9 / 28	0.5 - 2	3.2	--	3.2E+03	N	--	--	No	BSL
	75-34-3	1,1-DICHLOROETHANE	0.5	J	27		UG/L	DHP-S19-02	23 / 28	0.5 - 1	27	--	2.0E+00	C	--	--	Yes	ASL
	75-35-4	1,1-DICHLOROETHENE	0.2	J	2		UG/L	DHP-S19-02	6 / 28	0.5 - 2	2.0	--	3.4E+02	N	--	--	No	BSL
	95-63-6	1,2,4-TRICHLOROBENZENE	0.1	J	0.1	J	UG/L	MWD13-4	1 / 28	0.5 - 10	0.10	--	1.2E+01	N	--	--	No	BSL, IFD
	107-06-2	1,2-DICHLOROETHANE	0.7		0.7		UG/L	DHP-S19-04	1 / 28	0.5 - 0.5	0.70	--	1.2E-01	C	--	--	Yes	ASL, IFD
	540-59-0	1,2-DICHLOROETHENE (TOTAL)	0.3	J	8		UG/L	MWD13-1	9 / 16	1 - 2	8.0	--	6.1E+01 [a]	N	--	--	No	BSL
	78-87-5	1,2-DICHLOROPROPANE	2		2		UG/L	M19-05	1 / 28	0.5 - 2	2.0	--	1.6E-01	C	--	--	Yes	ASL, IFD
	78-93-3	2-BUTANONE	0.7	J	0.7	J	UG/L	MWD13-1	1 / 11	2 - 10	0.70	--	1.9E+03	N	--	--	No	BSL
	67-64-1	ACETONE	1.4	J	38	J	UG/L	DHP-S19-04	2 / 12	0.5 - 10	38	--	6.1E+02	N	--	--	No	BSL
	7429-90-5	ALUMINUM	9.8	J	429		UG/L	MWD13-4	7 / 19	7.2 - 200	429	--	3.6E+04	N	--	--	No	BSL d
	7440-36-0	ANTIMONY	0.57	J	12.6	J	UG/L	DHP-S19-04	4 / 19	0.085 - 50	13	--	1.5E+01	N	--	--	No	BSL c
	7440-38-2	ARSENIC	0.64	J	11.1		UG/L	MWD13-1	5 / 19	1 - 25	11	--	4.5E-02	C	--	--	Yes	ASL c
	7440-39-3	BARIUM	9.3	J	265		UG/L	MWD13-3	16 / 19	0.05 - 266	265	--	2.6E+03	N	--	--	No	BSL d
	71-43-2	BENZENE	0.2	J	1		UG/L	MWD13-4	6 / 28	0.3 - 1	1.0	--	3.4E-01	C	--	--	Yes	ASL
	7440-41-7	BERYLLIUM	1.3	J	1.3	J	UG/L	M19-05	1 / 19	0.1 - 2	1.3	--	7.3E+01	N	--	--	No	BSL c
	7440-43-9	CADMIUM	0.2	J	2.4	J	UG/L	M19-05	5 / 19	0.15 - 5	2.4	--	1.8E+01	N	--	--	No	BSL d
	7440-70-2	CALCIUM	16,000		213,000		UG/L	M19-05	18 / 19	3.8 - 16600	213,000	--	NA		--	--	No	NUT
	75-15-0	CARBON DISULFIDE	0.4	J	4.4		UG/L	MWD13-3	2 / 28	0.5 - 2	4.4	--	1.0E+03	N	--	--	No	BSL
	67-66-3	CHLOROFORM	0.2	J	0.2	J	UG/L	MWD13-4	1 / 28	0.5 - 2	0.20	--	5.3E-01	C	--	--	No	BSL, IFD
	7440-47-3	CHROMIUM	0.22	J	2	J	UG/L	M19-05	8 / 19	0.2 - 10	1.5	--	5.5E+04	N	--	--	No	BSL d
	156-59-2	CIS-1,2-DICHLOROETHENE	0.2	J	3.4		UG/L	MWD13-4	5 / 12	0.5 - 1	3.4	--	6.1E+01	N	--	--	No	BSL
	7440-48-4	COBALT	0.046	J	13.9	J	UG/L	M19-05	4 / 19	0.046 - 11.2	14	--	7.3E+02	N	--	--	No	BSL d
	7440-50-8	COPPER	0.31	J	7.2	J	UG/L	DHP-S19-02	5 / 19	0.35 - 15.1	7.2	--	1.5E+03	N	--	--	No	BSL d
	100-41-4	ETHYLBENZENE	0.1	J	0.1	J	UG/L	MWD13-4	1 / 28	0.5 - 2	0.10	--	2.9E+00	C	--	--	No	BSL, IFD
	7439-89-6	IRON	36	J	572		UG/L	MWD13-1	7 / 19	3.2 - 130	572	--	1.1E+04	N	--	--	No	BSL, NUT d
	7439-92-1	LEAD	0.2	J	5.3		UG/L	M19-05	2 / 19	0.12 - 6.9	5.3	--	1.5E+01	b	--	--	No	BSL d
	NA	M,P-XYLENE	0.4	J	0.4	J	UG/L	MWD13-4	1 / 6	0.5 - 0.5	0.40	--	2.1E+02 [a]	N	--	--	No	BSL
	7439-95-4	MAGNESIUM	14	J	248,000		UG/L	M19-05	14 / 19	4.5 - 6090	248,000	--	NA		--	--	No	NUT
	7439-96-5	MANGANESE	0.23	J	5,170		UG/L	M19-05	16 / 19	0.2 - 10	5,170	--	8.8E+02	N	--	--	Yes	ASL d
	1634-04-4	METHYL-T-BUTYL ETHER	0.3	J	0.3	J	UG/L	MWD13-3	1 / 11	0.2 - 5	0.30	--	6.2E+00	C	--	--	No	BSL
	7439-98-7	MOLYBDENUM	1.5	J	8.2	J	UG/L	MWD13-4	4 / 19	0.5 - 20	8.2	--	1.8E+02	N	--	--	No	BSL c
	91-20-3	NAPHTHALENE	1.8	J	2.2		UG/L	MWD13-4	4 / 22	2 - 10	2.2	--	6.2E+00	N	--	--	No	BSL
	7440-02-0	NICKEL	1.4	J	27	J	UG/L	DHP-S19-02	10 / 19	0.3 - 27.7	27	--	7.3E+02	N	--	--	No	BSL d
	95-47-6	O-XYLENE	0.1	J	0.1	J	UG/L	MWD13-4	1 / 6	0.5 - 0.5	0.10	--	2.1E+02 [a]	N	--	--	No	BSL
	85-01-8	PHENANTHRENE	0.5	J	0.5	J	UG/L	MWD13-4	1 / 16	10 - 10	0.50	--	1.8E+03 [a]	N	--	--	No	BSL
	7440-09-7	POTASSIUM	2600	J	20,800		UG/L	MWD13-1	18 / 19	3.7 - 2210	20,800	--	NA		--	--	No	NUT
	7782-49-2	SELENIUM	0.85	J	2.7	J	UG/L	M19-05	3 / 17	0.9 - 13.5	2.7	--	1.8E+02	N	--	--	No	BSL d
	7440-22-4	SILVER	0.43	J	0.43	J	UG/L	MWD13-2	1 / 19	0.15 - 10	0.43	--	1.8E+02	N	--	--	No	BSL c
	7440-23-5	SODIUM	14,900		783,000		UG/L	DHP-S19-04	19 / 19	7.2 - 5000	783,000	--	NA		--	--	No	NUT

TABLE H-2.14: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 19 GROUNDWATER

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Current/Future
Medium:	Site 19 Groundwater
Exposure Medium:	Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)		Maximum Concentration (Qualifier) (1)		Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (5)
Site 19 Future Tap Water	127-18-4	TETRACHLOROETHENE	0.4	J	22		UG/L	MWD13-4	10 / 28	0.5 - 2	22	–	6.6E-01	C	–	–	Yes	ASL
	108-88-3	TOLUENE	0.4	J	0.4	J	UG/L	MWD13-4	1 / 28	0.5 - 2	0.40	–	7.2E+02	N	–	–	No	BSL, IFD
	156-60-5	TRANS-1,2-DICHLOROETHENE	0.1	J	0.1	J	UG/L	MWD13-4	1 / 12	0.5 - 1	0.10	–	1.2E+02	N	–	–	No	BSL
	79-01-6	TRICHLOROETHENE	0.6		4.2		UG/L	MWD13-4	10 / 28	0.5 - 2	4.2	–	2.8E-02	C	–	–	Yes	ASL
	7440-62-2	VANADIUM	1.5	J	19		UG/L	MWD13-4	5 / 19	0.57 - 18.2	19	–	2.6E+02	N	–	–	No	BSL d
	7440-66-6	ZINC	0.7	J	587		UG/L	DHP-S19-02	6 / 19	0.75 - 83.9	587	–	1.1E+04	N	–	–	No	BSL d

Notes:

(1) Define the "(Qualifier)" codes used for the "Minimum Concentration" and "Maximum Concentration".

J Estimated concentration value

(2) The "Concentration Used for Screening" is the maximum detected concentration.

(3) The "Background Value" is not shown here; comparisons to background were completed with the base-wide ambient Alameda Point groundwater data set and were based on two-population tests as described in the Appendix G text.

(4) Screening toxicity values are EPA Region IX residential PRGs (EPA 2002a). California Modified PRGs were used where available.

(5) Rationale for Selection or Deletion

ASL Above screening level

BSL Below screening level

IFD Infrequently detected

NUT Essential nutrient

Acronyms:

– No value available

ARAR/TBC Applicable or relevant and appropriate requirement/to be considered

bgs Below ground surface

C Carcinogenic

CAS Chemical Abstract Service

COPC Contaminant of potential concern

N Noncarcinogenic

NA Not applicable

UG/L Microgram per liter

a The screening toxicity value for total 1,2-dichloroethene is based on cis-1,2-dichloroethene; phenanthrene is based on anthracene; and m,p- and o-xylene are based on total xylene.

b No EPA Region 9 Tap Water PRGs (EPA 2002a) is available for lead. U.S. EPA's Treatment Technique value (from U.S. EPA's National Primary Drinking Water Regulations (U.S. EPA, 2002c) value was used as the screening value in groundwater.

c Following the statistical background screening, this inorganic was not found to be significantly greater than background.

d Following the statistical background screening, this inorganic was found to be significantly greater than background.

References:

U.S. Environmental Protection Agency (EPA) 2002a. "EPA Region IX Preliminary Remediation Goals Table." October 2. Available on-line at: http://www.epa.gov/region09/waste/sfund/prg/index.htm

TABLE H-2.15: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 22 SURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe: Current/Future
Medium: Surface Soil (0-2 feet bgs) at Site 22
Exposure Medium: Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (5)
Site 22	91-57-6	2-METHYLNAPHTHALENE	0.00026 J	3.8	MG/KG	C3S022B012	38 / 59	0.00022 - 14.0	3.8	--	5.60E+01 [a] N	--	--	Yes	ASL
	72-54-8	4,4'-DDD	0.0024	0.009 JX	MG/KG	MW547-5 [0.5-1.0]	2 / 9	0.0021 - 0.160	0.009	--	2.40E+00 C	--	--	No	BSL
	72-55-9	4,4'-DDE	0.0061	0.023 JX	MG/KG	MW547-5 [0.5-1.0]	4 / 9	0.0021 - 0.160	0.023	--	1.70E+00 C	--	--	No	BSL
	50-29-3	4,4'-DDT	0.01	0.053 JX	MG/KG	MW547-5 [0.5-1.0]	2 / 9	0.0021 - 0.160	0.053	--	1.70E+00 C	--	--	No	BSL
	83-32-9	ACENAPHTHENE	0.00029 J	0.035	MG/KG	C3S022B019	17 / 35	0.00022 - 0.055	0.035	--	3.68E+03 N	--	--	No	BSL
	208-96-8	ACENAPHTHYLENE	0.00035 J	0.02	MG/KG	C3S022B012	20 / 44	0.00017 - 0.055	0.02	--	3.68E+03 [a] N	--	--	No	BSL
	5103-71-9	ALPHA-CHLORDANE	0.027 JX	0.027 JX	MG/KG	MW547-5 [0.5-1.0]	1 / 5	0.082 - 0.820	0.027	--	1.60E+00 [a] C	--	--	No	BSL
	7429-90-5	ALUMINUM	3,700	26,800	MG/KG	MW547-1 [0.5-1.0]	15 / 15	NA	26,800	2,880 - 26,800	7.60E+04 N	--	--	No	BSL d
	120-12-7	ANTHRACENE	0.00041 J	0.027	MG/KG	C3S022B007	24 / 35	0.0002 - 0.055	0.027	--	2.19E+04 N	--	--	No	BSL
	7440-38-2	ARSENIC	1.4 J	18	MG/KG	B547-10 [0.5-1.0]	7 / 15	2 - 11	18	0.74 - 23	3.90E-01 C	--	--	Yes	ASL d
	7440-39-3	BARIUM	42.7 J	140	MG/KG	B547-10 [0.5-1.0]	15 / 15	NA	140	0.3 - 198	5.40E+03 N	--	--	No	BSL c
	56-55-3	BENZ(A)ANTHRACENE	0.00028 J	0.11 J	MG/KG	C3S022B015	35 / 38	0.00014 - 0.055	0.11	--	6.21E-01 C	--	--	No	BSL
	50-32-8	BENZO(A)PYRENE	0.00043 J	0.19 J	MG/KG	C3S022B015	36 / 37	0.00015 - 0.0073	0.19	--	6.21E-02 C	--	--	Yes	ASL
	205-99-2	BENZO(B)FLUORANTHENE	0.00028 J	0.17 J	MG/KG	C3S022B015	39 / 40	0.00015 - 0.007	0.17	--	6.21E-01 C	--	--	No	BSL
	191-24-2	BENZO(G,H,I)PERYLENE	0.00022 J	0.2 J	MG/KG	C3S022B015	36 / 40	0.00011 - 0.055	0.2	--	2.32E+03 [a] N	--	--	No	BSL
	207-08-9	BENZO(K)FLUORANTHENE	0.00024 J	0.085	MG/KG	C3S022B009	34 / 37	0.00016 - 0.0097	0.085	--	3.78E-01 C	--	--	No	BSL
	7440-41-7	BERYLLIUM	0.2	1.8	MG/KG	280-S7C-007	9 / 15	0.2 - 1.1	1.8	0.09 - 0.77	1.50E+02 N	--	--	No	BSL c
	7440-43-9	CADMIUM	0.12 J	4.3	MG/KG	280-S7C-007	8 / 15	0.09 - 1.1	4.3	0.1 - 0.82	3.70E+01 N	--	--	No	BSL d
	7440-70-2	CALCIUM	2,120	15,500	MG/KG	MW547-1 [0.5-1.0]	15 / 15	NA	15,500	1,360 - 19,200	NA	--	--	No	NUT
	86-74-8	CARBAZOLE	0.018 J	0.018 J	MG/KG	280-S7C-024	1 / 6	0.340 - 0.360	0.018	--	2.40E+01 C	--	--	No	BSL
	7440-47-3	CHROMIUM	11.4	50.8	MG/KG	MW547-5 [0.5-1.0]	15 / 15	NA	50.8	11.4 - 81.7	2.10E+02 C	--	--	No	BSL d
	218-01-9	CHRYSENE	0.00023 J	0.14 J	MG/KG	C3S022B015	40 / 40	0.00016 - 0.0092	0.14	--	3.78E+00 C	--	--	No	BSL
	7440-48-4	COBALT	4.1	10.4	MG/KG	MW547-1 [0.5-1.0]	11 / 15	5.3 - 6.8	10.4	1.9 - 14	9.00E+02 C	--	--	No	BSL d
	7440-50-8	COPPER	7.4	86.2	MG/KG	MW547-1 [0.5-1.0]	15 / 15	NA	86.2	4.2 - 89.4	3.10E+03 N	--	--	No	BSL d
	53-70-3	DIBENZ(A,H)ANTHRACENE	0.00035 J	0.038	MG/KG	C3S022B015	26 / 44	0.00019 - 0.055	0.038	--	6.21E-02 C	--	--	No	BSL
	100-41-4	ETHYLBENZENE	0.082 J	0.120 J	MG/KG	280-S7C-011	2 / 4	0.011 - 0.011	0.12	--	8.90E+00 C	--	--	No	BSL
	206-44-0	FLUORANTHENE	0.0004 J	0.35 J	MG/KG	C3S022B015	37 / 40	0.00018 - 0.076	0.35	--	2.29E+03 N	--	--	No	BSL
	86-73-7	FLUORENE	0.0003 J	0.053	MG/KG	C3S022B019	18 / 36	0.00018 - 0.055	0.053	--	2.75E+03 N	--	--	No	BSL
	5103-74-2	GAMMA-CHLORDANE	0.022 JX	0.022 JX	MG/KG	MW547-5 [0.5-1.0]	1 / 5	0.082 - 0.820	0.022	--	1.60E+00 [a] C	--	--	No	BSL
	193-39-5	INDENO(1,2,3-CD)PYRENE	0.0007 J	0.13 J	MG/KG	C3S022B015	32 / 37	0.00016 - 0.055	0.13	--	6.21E-01 C	--	--	No	BSL
	7439-89-6	IRON	760	21,400	MG/KG	MW547-1 [0.5-1.0]	15 / 15	NA	21,400	760 - 26,900	2.30E+04 N	--	--	No	BSL, NUT d
	7439-92-1	LEAD	2.7 J	9,890	MG/KG	MW547-5 [0.5-1.0]	27 / 29	5.2 - 5.2	9,890	1.3 - 41	1.50E+02 N	--	--	Yes	ASL c
	7439-95-4	MAGNESIUM	1,800	6,800	MG/KG	MW547-1 [0.5-1.0]	15 / 15	NA	6,800	1,510 - 42,400	NA	--	--	No	NUT
	7439-96-5	MANGANESE	93.4	352	MG/KG	MW547-1 [0.5-1.0]	15 / 15	NA	352	50 - 1,060	1.80E+03 N	--	--	No	BSL c
	91-20-3	NAPHTHALENE	0.00027 J	2.5	MG/KG	C3S022B007	35 / 44	0.00022 - 0.026	2.5	--	5.59E+01 N	--	--	No	BSL
	7440-02-0	NICKEL	11.6	47	MG/KG	B547-10 [0.5-1.0]	15 / 15	NA	47	11.6 - 88.5	1.60E+03 N	--	--	No	BSL d
	85-01-8	PHENANTHRENE	0.00086 J	0.17	MG/KG	C3S022B019	34 / 37	0.00016 - 0.055	0.17	--	2.19E+04 [a] N	--	--	No	BSL
	7440-09-7	POTASSIUM	577 J	2,000	MG/KG	B547-10 [0.5-1.0]	14 / 15	530 - 530	2,000	310 - 6,382	NA	--	--	No	NUT
	129-00-0	PYRENE	0.0019 J	0.33 J	MG/KG	C3S022B015	38 / 41	0.00012 - 0.0087	0.33	--	2.32E+03 N	--	--	No	BSL
	7782-49-2	SELENIUM	0.73 J	0.74 J	MG/KG	280-S7C-014	2 / 15	0.57 - 11	0.74	5.7 - 5.7	3.90E+02 N	--	--	No	BSL c

TABLE H-2.15: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 22 SURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe: Current/Future
Medium: Surface Soil (0-2 feet bgs) at Site 22
Exposure Medium: Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (5)
Site 22	7440-22-4	SILVER	1.2	1.2	MG/KG	MW547-5 [0.5-1.0]	1 / 15	0.19 - 5.6	1.2	0.44 - 0.61	3.90E+02 N	--	--	No	BSL d
	7440-23-5	SODIUM	74.6 J	1,810	MG/KG	MW547-1 [0.5-1.0]	11 / 15	530 - 560	1,810	88.1 - 3,510	NA	--	--	No	NUT
	7440-32-6	TITANIUM	300	500	MG/KG	B547-6 [2.0-2.5]	9 / 9	NA	500	223 - 1,020	3.10E+05 [b] N	--	--	No	BSL d
	7440-62-2	VANADIUM	16	62.3	MG/KG	MW547-1 [0.5-1.0]	15 / 15	NA	62.3	12.8 - 62.3	5.50E+02 N	--	--	No	BSL c
	1330-20-7	XYLENE (TOTAL)	0.840 J	0.840 J	MG/KG	280-S7C-011	1 / 4	0.011 - 0.027	0.84	--	2.70E+02 N	--	--	No	BSL
	7440-66-6	ZINC	20.6	151	MG/KG	MW547-5 [0.5-1.0]	15 / 15	NA	151	14 - 84	2.30E+04 N	--	--	No	BSL c

Notes:

(1) Define the "(Qualifier)" codes used for the "Minimum Concentration" and "Maximum Concentration".

- J — Estimated concentration value
- JX — Estimated; other QC problem that the lab identified and summarized in the data summary package

(2) The "Concentration Used for Screening" is the maximum detected concentration.

(3) The "Background Value" is the range for the blue background area (Table D.4.2; Tetra Tech 2001), shown for comparison purposes only. Background comparisons will be based on two-population tests as described in the Appendix H text.

(4) Screening toxicity values are EPA Region 9 residential PRGs (EPA 2002a). California modified PRGs were used where available.

(5) Rationale for Selection or Deletion

- ASL — Above screening level
- BSL — Below screening level
- NUT — Essential nutrient

a The screening toxicity value for 2-methylnaphthalene is based on naphthalene; alpha- and gamma-chlordane are based on chlordane; benzo(g,h,i)perylene is based on pyrene; phenanthrene is based on anthracene; acenaphthylene is based upon acenaphthene.

b Screening toxicity value was taken from EPA Region 3 Risk-based Concentration Table (2002) and represents risk-based screening level for residential surface soil.

c Following the statistical background screening, this inorganic was found to be significantly greater than background.

d Following the statistical background screening, this inorganic was not found to be significantly greater than background.

Acronyms:

--	No value available		
ARAR/TBC	Applicable or relevant and appropriate requirement/to be considered		
bgs	Below ground surface		
C	Carcinogenic		
CAS	Chemical Abstract Service		
COPC	Contaminant of potential concern		
DDD	Dichlorodiphenyldichloroethane		
DDE	Dichlorodiphenyldichloroethene		
DDT	Dichlorodiphenyltrichloroethane		
MG/KG	Milligram per kilogram	NA	Not applicable
N	Noncarcinogenic	sat	Soil saturation concentration

References:

U.S. Environmental Protection Agency (EPA) 2002a. "EPA Region 9 Preliminary Remediation Goals Table." October 2. Available on-line at: http://www.epa.gov/region09/waste/sfund/prg/index.htm

U.S. Environmental Protection Agency (EPA) 2002b. "EPA Region 3 Risk-Based Concentration Table." April 2. Available on-line at: http://www.epa.gov/reg3hwmd/risk/rbc.pdf

TABLE H-2.16: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 22 SUBSURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe: Future
Medium: Subsurface Soil (0-8 feet bgs) at Site 22
Exposure Medium: Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (5)
	120-82-1	1,2,4-TRICHLOROBENZENE	2.0 J	2.0 J	MG/KG	280-S7C-013	1 / 47	0.330 - 14.0	2.0	–	6.50E+02 N	–	–	No	BSL, IFD
	95-57-8	2-CHLOROPHENOL	3.1 J	3.1 J	MG/KG	280-S7C-013	1 / 47	0.330 - 14.0	3.1	–	6.30E+01 N	–	–	No	BSL, IFD
	91-57-6	2-METHYLNAPHTHALENE	0.00026 J	110 J	MG/KG	280-S7C-013	83 / 135	0.00022 - 14.0	110	–	5.60E+01 [a] N	–	–	Yes	ASL
	59-50-7	4-CHLORO-3-METHYLPHENOL	5.7 J	5.7 J	MG/KG	280-S7C-013	1 / 47	0.330 - 14.0	5.7	–	3.10E+03 [a] N	–	–	No	BSL, IFD
	108-10-1	4-METHYL-2-PENTANONE	72	72	MG/KG	MW547-3 [3.5-4.0]	1 / 26	0.0058 - 140.0	72	–	7.90E+02 [a] N	–	–	No	BSL, IFD
	72-54-8	4,4'-DDD	0.0024	0.009 JX	MG/KG	MW547-5 [0.5-1.0]	2 / 31	0.0021 - 0.20	0.009	–	2.40E+00 C	–	–	No	BSL
	72-55-9	4,4'-DDE	0.0061	0.023 JX	MG/KG	MW547-5 [0.5-1.0]	4 / 31	0.0021 - 0.20	0.023	–	1.70E+00 C	–	–	No	BSL
	50-29-3	4,4'-DDT	0.0027 JX	0.053 JX	MG/KG	MW547-5 [0.5-1.0]	3 / 31	0.0021 - 0.20	0.053	–	1.70E+00 C	–	–	No	BSL
	83-32-9	ACENAPHTHENE	0.00029 J	0.13 J	MG/KG	C3S022B006	31 / 74	0.00022 - 0.055	0.13	–	3.68E+03 N	–	–	No	BSL
	208-96-8	ACENAPHTHYLENE	0.00035 J	0.056 J	MG/KG	C3S022B006	38 / 88	0.00017 - 0.055	0.056	–	3.68E+03 [a] N	–	–	No	BSL
	5103-71-9	ALPHA-CHLORDANE	0.0009 JX	0.027 JX	MG/KG	MW547-5 [0.5-1.0]	2 / 16	0.082 - 0.990	0.027	–	1.60E+00 [a] C	–	–	No	BSL
	7429-90-5	ALUMINUM	3,120	26,800	MG/KG	MW547-1 [0.5-1.0]	47 / 47	NA	26,800	2,880 - 26,800	7.60E+04 N	–	–	No	BSL d
	120-12-7	ANTHRACENE	0.00025 J	0.094	MG/KG	C3S022B019	45 / 74	0.0002 - 0.055	0.094	–	2.19E+04 N	–	–	No	BSL
	7440-38-2	ARSENIC	1.4 J	24	MG/KG	MW547-3 [5.5-6.0]	17 / 47	0.59 - 13	24	0.74 - 23	3.90E-01 C	–	–	Yes	ASL d
	7440-39-3	BARIUM	0.3	140	MG/KG	B547-10 [0.5-1.0]	47 / 47	NA	140	0.3 - 198	5.40E+03 N	–	–	No	BSL c
	71-43-2	BENZENE	0.006 J	3.3	MG/KG	280-S7C-006	3 / 28	0.005 - 140	3.3	–	6.00E-01 C	–	–	Yes	ASL
	56-55-3	BENZ(A)ANTHRACENE	0.00028 J	0.32 J	MG/KG	C3S022B019	68 / 79	0.00014 - 0.055	0.32	–	6.21E-01 C	–	–	No	BSL
	50-32-8	BENZO(A)PYRENE	0.00017 J	0.56 J	MG/KG	C3S022B019	72 / 79	0.00015 - 0.0213	0.56	–	6.21E-02 C	–	–	Yes	ASL
	205-99-2	BENZO(B)FLUORANTHENE	0.00025 J	0.55 J	MG/KG	C3S022B019	74 / 82	0.00015 - 0.0198	0.55	–	6.21E-01 C	–	–	No	BSL
Site 22	191-24-2	BENZO(G,H,I)PERYLENE	0.0002 J	0.48 J	MG/KG	C3S022B019	71 / 81	0.00011 - 0.055	0.48	–	2.32E+03 [a] N	–	–	No	BSL
	207-08-9	BENZO(K)FLUORANTHENE	0.0002 J	0.24	MG/KG	C3S022B009	67 / 78	0.00016 - 0.0274	0.24	–	3.78E-01 C	–	–	No	BSL
	7440-41-7	BERYLLIUM	0.2	1.8	MG/KG	280-S7C-007	21 / 47	0.2 - 1.7	1.8	0.09 - 0.77	1.50E+02 N	–	–	No	BSL c
	7440-43-9	CADMIUM	0.1 J	4.3	MG/KG	280-S7C-007	20 / 47	0.08 - 1.7	4.3	0.1 - 0.82	3.70E+01 N	–	–	No	BSL d
	7440-70-2	CALCIUM	574	15,500	MG/KG	MW547-1 [0.5-1.0]	47 / 47	NA	15,500	1,360 - 19,200	NA	–	–	No	NUT
	86-74-8	CARBAZOLE	0.018 J	0.024 J	MG/KG	280-S7C-006	2 / 16	0.340 - 24.0	0.024	–	2.40E+01 C	–	–	No	BSL
	7440-47-3	CHROMIUM	11.4	67	MG/KG	MW547-3 [5.5-6.0]	47 / 47	NA	67	11.4 - 81.7	2.10E+02 C	–	–	No	BSL d
	218-01-9	CHRYSENE	0.00022 J	0.36 J	MG/KG	C3S022B019	74 / 81	0.00016 - 0.0259	0.36	–	3.78E+00 C	–	–	No	BSL
	7440-48-4	COBALT	3.6	17	MG/KG	MW547-3 [5.5-6.0]	30 / 47	5.1 - 7.9	17	1.9 - 14	9.00E+02 C	–	–	No	BSL d
	7440-50-8	COPPER	5.6	86.2	MG/KG	MW547-1 [0.5-1.0]	47 / 47	NA	86.2	4.2 - 89.4	3.10E+03 N	–	–	No	BSL d
	53-70-3	DIBENZ(A,H)ANTHRACENE	0.00035 J	0.056 J	MG/KG	C3S022B019	47 / 88	0.00019 - 0.055	0.056	–	6.21E-02 C	–	–	No	BSL
	100-41-4	ETHYLBENZENE	0.012	570	MG/KG	280-S7C-013	10 / 28	0.005 - 6.6	570	–	8.90E+00 C	–	–	Yes	ASL
	206-44-0	FLUORANTHENE	0.0004 J	1.3 J	MG/KG	C3S022B019	74 / 82	0.00018 - 0.076	1.3	–	2.29E+03 N	–	–	No	BSL
	86-73-7	FLUORENE	0.0003 J	0.091 J	MG/KG	C3S022B006	33 / 74	0.00018 - 0.055	0.091	–	2.75E+03 N	–	–	No	BSL
	5103-74-2	GAMMA-CHLORDANE	0.0014 JX	0.022 JX	MG/KG	MW547-5 [0.5-1.0]	2 / 16	0.082 - 0.990	0.022	–	1.60E+00 [a] C	–	–	No	BSL
	193-39-5	INDENO(1,2,3-CD)PYRENE	0.00017 J	0.35 J	MG/KG	C3S022B019	63 / 76	0.00016 - 0.055	0.35	–	6.21E-01 C	–	–	No	BSL
	7439-89-6	IRON	760	29,600	MG/KG	MW547-3 [5.5-6.0]	47 / 47	NA	29,600	760 - 26,900	2.30E+04 N	–	–	No	NUT d
	7439-92-1	LEAD	2.1 J	9,890	MG/KG	MW547-5 [0.5-1.0]	31 / 47	2.5 - 6.3	9,890	1.3 - 41	1.50E+02 N	–	–	Yes	ASL c
	7439-95-4	MAGNESIUM	1,510	7,100	MG/KG	MW547-3 [5.5-6.0]	47 / 47	NA	7,100	1,510 - 42,400	NA	–	–	No	NUT
	7439-96-5	MANGANESE	72.4	440	MG/KG	MW547-3 [5.5-6.0]	47 / 47	NA	440	50 - 1,060	1.80E+03 N	–	–	No	BSL c

TABLE H-2.16: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 22 SUBSURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe: Future
Medium: Subsurface Soil (0-8 feet bgs) at Site 22
Exposure Medium: Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (5)
Site 22	7439-97-6	MERCURY	0.46	0.46	MG/KG	280-S7C-005	1 / 16	0.15 - 0.19	0.46	–	2.30E+01 N	–	–	No	BSL d
	72-43-5	METHOXYCHLOR	0.011	0.02	MG/KG	MW547-3 [5.5-6.0]	2 / 31	0.0053 - 0.990	0.020	–	3.10E+02 N	–	–	No	BSL
	91-20-3	NAPHTHALENE	0.00027 J	34	MG/KG	C3S022B006	69 / 88	0.00022 - 0.18	34	–	5.59E+01 N	–	–	No	BSL
	7440-02-0	NICKEL	11.6	89	MG/KG	MW547-3 [5.5-6.0]	45 / 47	17.1 - 18.7	89	11.6 - 88.5	1.60E+03 N	–	–	No	BSL d
	85-01-8	PHENANTHRENE	0.00045 J	0.54 J	MG/KG	C3S022B007	66 / 78	0.00016 - 0.19	0.54	–	2.19E+04 [a] N	–	–	No	BSL
	108-95-2	PHENOL	0.3 J	0.3 J	MG/KG	B547-7 [5.0-5.5]	1 / 47	0.330 - 24.0	0.3	–	3.70E+04 N	–	–	No	BSL, IFD
	7440-09-7	POTASSIUM	497	2,300	MG/KG	MW547-3 [5.5-6.0]	45 / 47	530 - 540	2,300	310 - 6,382	NA	–	–	No	NUT
	129-00-0	PYRENE	0.00059 J	1.5 J	MG/KG	C3S022B019	71 / 83	0.00012 - 0.0244	1.5	–	2.32E+03 N	–	–	No	BSL
	7782-49-2	SELENIUM	0.66 J	1 J	MG/KG	280-S7C-010	5 / 47	0.54 - 17	1.0	5.7 - 5.7	3.90E+02 N	–	–	No	BSL c
	7440-22-4	SILVER	1.2	1.2	MG/KG	MW547-5 [0.5-1.0]	1 / 47	0.18 - 8.4	1.2	0.44 - 0.61	3.90E+02 N	–	–	No	BSL, IFD d
	7440-23-5	SODIUM	74.6 J	1,810	MG/KG	MW547-1 [0.5-1.0]	33 / 47	520 - 630	1,810	88.1 - 3,510	NA	–	–	No	NUT
	7440-32-6	TITANIUM	258	704	MG/KG	MW547-2 [6.5-7.0]	31 / 31	NA	704	223 - 1,020	3.10E+05 [b] N	–	–	No	BSL d
	108-88-3	TOLUENE	0.002 DJ	840	MG/KG	280-S7C-013	21 / 32	0.0061 - 0.160	840	–	5.20E+02 sat	–	–	Yes	ASL
	7440-62-2	VANADIUM	13.9	62.3	MG/KG	MW547-1 [0.5-1.0]	47 / 47	NA	62.3	12.8 - 62.3	5.50E+02 N	–	–	No	BSL c
	1330-20-7	XYLENE (TOTAL)	0.017	2,600	MG/KG	280-S7C-013	11 / 28	0.005 - 0.027	2,600	–	2.70E+02 N	–	–	Yes	ASL
	7440-66-6	ZINC	14	151	MG/KG	MW547-5 [0.5-1.0]	47 / 47	NA	151	14 - 84	2.30E+04 N	–	–	No	BSL c

Notes:

(1) Define the "(Qualifier)" codes used for the "Minimum Concentration" and "Maximum Concentration".

J	Estimated concentration value
JX	Estimated; other QC problem that the lab identified and summarized in the data summary package

(2) The "Concentration Used for Screening" is the maximum detected concentration.

(3) *The "Background Value" is the range for the blue background area (Table D.4.2; Tetra Tech 2001), shown for comparison purposes only.* Background comparisons will be based on two-population tests as described in the Appendix H text.

(4) Screening toxicity values are EPA Region 9 residential PRGs (EPA 2002a). California modified PRGs were used where available.

(5) *Rationale for Selection or Deletion*

ASL	Above screening level
BSL	Below screening level
IFD	Infrequently detected
NUT	Essential nutrient

Acronyms:

–	No value available		
ARAR/TBC	Applicable or relevant and appropriate requirement/to be considered		
bgs	Below ground surface		
C	Carcinogenic		
CAS	Chemical Abstract Service		
COPC	Contaminant of potential concern		
DDD	Dichlorodiphenyldichloroethane		
DDE	Dichlorodiphenyldichloroethene		
DDT	Dichlorodiphenyltrichloroethane		
MG/KG	Milligram per kilogram	NA	Not applicable
N	Noncarcinogenic	sat	Soil saturation concentration

a The screening toxicity value for 2-methylnaphthalene is based on naphthalene; alpha- and gamma-chlordane are based on chlordane; 4-chloro-3-methylphenol is based on 3-methylphenol; 4-methyl-2-pentanone is based on methyl isobutyl ketone; benzo(g,h,i)perylene is based on pyrene; phenanthrene is based on anthracene; acenaphthylene is based upon acenaphthene.

b Screening toxicity value was taken from EPA Region 3 Risk-based Concentration Table (2002) and represents risk-based screening level for residential surface soil.

c Following the statistical background screening, this inorganic was found to be significantly greater than background.

d Following the statistical background screening, this inorganic was not found to be significantly greater than background.

References:

U.S. Environmental Protection Agency (EPA) 2002a. "EPA Region 9 Preliminary Remediation Goals Table." October 2. Available on-line at: http://www.epa.gov/region09/waste/sfund/prg/index.htm

U.S. Environmental Protection Agency (EPA) 2002b. "EPA Region 3 Risk-Based Concentration Table." April 2. Available on-line at: http://www.epa.gov/reg3hwmd/risk/rbc.pdf

TABLE H-2.17: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 22 SOIL GAS

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe: *Current/Future*
Medium: Soil Gas (Air Samples) Collected from Site 22
Exposure Medium: Vadose Zone Soil (Migration to Indoor Air)

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (5)
Site 22	71-43-2	BENZENE	10.8	106,688.8 J	UG/M3	385-S22-014	3 / 4	10.06 - 10.06	106,689	--	3.1E+00 C	--	--	Yes	ASL
	74-87-3	CHLOROMETHANE	240 J	1,672 J	UG/M3	385-S22-014	2 / 4	6.5 - 6.77	1,672	--	2.4E+01 C	--	--	No	ASL (6)
	100-41-4	ETHYLBENZENE	10,073 J	146,015 J	UG/M3	385-S22-014	2 / 4	13.67 - 14.24	146,016	--	2.2E+01 C	--	--	Yes	ASL
	108-38-3	M-XYLENE	34.2	389,523 J	UG/M3	385-S22-014	4 / 4	NA	389,524	--	7.00E+04 [a] N	--	--	Yes	ASL
	95-47-6	O-XYLENE	4,140 J	75,145 J	UG/M3	385-S22-014	2 / 4	13.67 - 14.24	75,145	--	7.00E+04 [a] N	--	--	Yes	ASL
	108-88-3	TOLUENE	35.78	247,283 J	UG/M3	385-S22-014	4 / 4	NA	247,284	--	4.0E+03 N	--	--	Yes	ASL

Notes:

(1) Define the "(Qualifier)" codes used for the "Minimum Concentration" and "Maximum Concentration".

J Estimated concentration value

(2) The "Concentration Used for Screening" is the maximum detected concentration.

(3) Background values are not available for soil gas comparisons.

(4) Screening toxicity values are target shallow soil gas concentrations (taken at less than 5 feet bgs) as shown in Table 2c (EPA 2002c).

(5) Rationale for Selection or Deletion

ASL Above screening level

BSL Below screening level

NUT Essential nutrient

(6) See Table H1-4 for detailed assessment of the vapor pathway and completed advanced Tier 1 screening.

a The screening toxicity values for m- and o-xylenes are based on xylene (total).

Acronyms:

-- No value available

ARAR/TBC Applicable or relevant and appropriate requirement/to be considered

bgs Below ground surface

C Carcinogenic

CAS Chemical Abstract Service

COPC Chemical of Potential Concern

N Noncarcinogenic

NA Not applicable

UG/M3 Microgram per cubic meter

References:

EPA 2002c. Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance). November. Available on-line at http://www.epa.gov/correctiveaction/eis/vapor.htm

TABLE H-2.18: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 22 VOCS IN GROUNDWATER

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Indoor Air (Vapor)

Exposure Point	CAS Number	(1) Chemical	Minimum Concentration (Qualifier) (1)		Maximum Concentration (Qualifier) (1)		Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	(2) Concentration Used for Screening	(5) Background Value	(1) Screening Toxicity Value (N/C)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	(3) Rationale for Selection or Deletion
Water Vapor from Shallow Groundwater at Site 22	71-55-6	1,1,1-TRICHLOROETHANE	0.70	J	3.0		UG/L	D07C-01	2 / 48	0.5 - 100	3.0	--	3100	N	--	--	No	BSL
	95-50-1	1,2-DICHLOROBENZENE	0.80	J	3.0	J	UG/L	M07C-08	3 / 45	0.5 - 100	3.0	--	2600	N	--	--	No	BSL
	107-06-2	1,2-DICHLOROETHANE	0.80		38		UG/L	CAA4C-DGS-DP05	4 / 48	0.5 - 25	38	--	2.3	C (4)	--	--	Yes	ASL
	91-57-6	2-METHYLNAPHTHALENE	1	J	60		UG/L	MW547-3	3 / 15	10 - 10	60	--	3300	N	--	--	No	BSL
	67-64-1	ACETONE	1.3	J	8.4	J	UG/L	MW547-3	2 / 19	0.9 - 170	8.4	--	22000	N	--	--	No	BSL
	71-43-2	BENZENE	0.30	J	8300		UG/L	CAA4C-DGS-DP03	22 / 55	0.5 - 100	8300	--	1.4	C (4)	--	--	Yes	ASL
	74-83-9	BROMOMETHANE	0.60	J	0.60	J	UG/L	MW547-3	1 / 48	1 - 100	0.60	--	19	N (7)	--	--	No	BSL
	67-66-3	CHLOROFORM	19		19		UG/L	MW547-3	1 / 48	0.5 - 100	19	--	0.70	C (4)	--	--	Yes	ASL
	74-87-3	CHLOROMETHANE	0.20	J	0.20	J	UG/L	M07C-08	1 / 48	1 - 100	0.20	--	28000	N	--	--	No	BSL
	108-20-3	DIISOPROPYL ETHER	0.30	J	0.30	J	UG/L	MW547-3	1 / 8	0.5 - 8.3	0.30	--	NA	(6)	--	--	No	NUT
	100-41-4	ETHYLBENZENE	0.70	J	3830	J	UG/L	CAA4C-DGS-DP06	20 / 55	0.5 - 400	3830	--	6.9	C (4)	--	--	Yes	ASL
	98-82-8	ISOPROPYLBENZENE	100		120		UG/L	MW547-3	4 / 8	0.5 - 8.3	120	--	8.4	N	--	--	Yes	ASL
	NA	M,P-XYLENE	1.5		7.9	J	UG/L	MW547-3	3 / 8	0.5 - 8.3	7.9	--	22000	N (8)	--	--	No	BSL
	1634-04-4	METHYL-T-BUTYL ETHER	0.70	J	5.0	J	UG/L	CAA4C-DGS-DP04	5 / 21	0.5 - 1000	5.0	--	120000	N	--	--	No	BSL
	91-20-3	NAPHTHALENE	15		380		UG/L	MW547-3	8 / 23	2 - 33	380	--	150	N	--	--	Yes	ASL
	104-51-8	N-BUTYLBENZENE	18		21		UG/L	MW547-3	4 / 8	0.5 - 8.3	21	--	260	N	--	--	No	BSL
	103-65-1	N-PROPYLBENZENE	260		280		UG/L	MW547-3	4 / 8	0.5 - 8.3	280	--	320	N	--	--	No	BSL
	95-47-6	O-XYLENE	0.70		0.70		UG/L	MW547-3	1 / 8	0.5 - 8.3	0.70	--	33000	N	--	--	No	BSL
	135-98-8	SEC-BUTYLBENZENE	2.8	J	18		UG/L	MW547-3	4 / 8	0.5 - 8.3	18	--	250	N	--	--	No	BSL
	127-18-4	TETRACHLOROETHENE	2.6	J	2.6	J	UG/L	MW547-3	1 / 48	0.5 - 100	2.6	--	1.1	C (4)	--	--	Yes	ASL
	108-88-3	TOLUENE	0.30	J	15300	J	UG/L	CAA4C-DGS-DP06	13 / 55	0.5 - 400	15300	--	1500	N	--	--	Yes	ASL
	79-01-6	TRICHLOROETHENE	1.9	J	20	J	UG/L	M07C-08	2 / 48	0.5 - 100	20	--	0.053	C (4) (9)	--	--	Yes	ASL
	1330-20-7	XYLENE (TOTAL)	1.0		17000	J	UG/L	CAA4C-DGS-DP06	12 / 47	1 - 400	17000	--	2200	N (10)	--	--	Yes	ASL

Notes:

(1) Groundwater screening values are risk-based screening levels from Table 2c of EPA (2002c) draft vapor intrusion screening guidance.

(2) Maximum detected concentration for all of the sampling events was used as screening value.

(3) Vapor intrusion from volatile chemicals in groundwater to indoor is the only complete or potentially complete pathway evaluated; therefore, only volatile chemicals present at concentrations above their respective screening toxicity values were considered COPCs. A volatile chemical was defined as having a molecular weight less than 200 grams per mole and a Henry's Law constant greater than 10-5 atmospheres per cubic meter per mole.

Rationale Codes

Deletion Reason: Below Screening Level (BSL)

Inclusion Reason: Above Screening Level (ASL)

(4) *Screening Toxicity Values in EPA 2002c, were listed as the Maximum Contaminant Levels (MCLs). However, risk-based values, which were lower than the MCLs,* were used in the COPC screen so that the analytes could be evaluated for potential cumulative effects from several analytes.

(5) Volatile organic compounds are not common in unimpacted groundwater, so no background evaluation will be conducted for this COPCs selection.

(6) *Diisopropyl ether does not have a toxicity value and was not evaluated; however, it is not suspected to be associated with any former processes at the site.*

(7) Screening Toxicity Values were developed using Appendix D of the EPA 2002c guidance. Inhalation toxcity values from EPA 1997 and EPA 2003 were used. In the absence of inhalation toxicity values, oral toxicity values were used for the inhalation pathway in accordance with EPA 2002c.

(8) The lowest Screening Toxicity Value (p-xylenes) was used for this mixture of analytes.

(9) The Screening Toxicity Value is lower than the lowest detection limit; however, this analyte was detected so there is no effect of the COPC screen.

Definitions:

ARAR/TBC = Applicable or relevant and appropriate requirement/to be considered
COPC = Contaminant of potential concern
EPA = U.S. Environmental Protection Agency
J = Estimated value
C = Carcinogen
N = Noncancer
UG/L = Microgram per liter
-- = Not available
NA = Not Applicable

TABLE H-2.18: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 22 VOCS IN GROUNDWATER

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

(10) The Screening Toxicity Value for xylenes (total) is based upon p-xylene.

Reference:

EPA 1997. "Health Effects Assessment Summary Tables." Office of Research and Development (ORD).

EPA 2002c. Draft Vapor Intrusion Guidance. November. Available on-line at http://www.epa.gov/correctiveaction/eis/vapor.htm

EPA 2003. Integrated Risk Information System. Online Database. Office of Research and Development, National Center for Environmental Assessment.

On Line Address: http://www.epa.gov/iris

TABLE H-2.19: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 22 GROUNDWATER

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Current/Future
Medium:	Site 22 Groundwater
Exposure Medium:	Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)		Maximum Concentration (Qualifier) (1)		Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (5)
Site 22 Future Tap Water	71-55-6	1,1,1-TRICHLOROETHANE	0.7	J	3		UG/L	D07C-01	2 / 48	0.5 - 100	3.0	--	3.2E+03	N	--	--	No	BSL, IFD
	95-50-1	1,2-DICHLOROBENZENE	0.8	J	3	J	UG/L	M07C-08	3 / 45	0.5 - 100	3.0	--	3.7E+02	N	--	--	No	BSL
	107-06-2	1,2-DICHLOROETHANE	0.8		38		UG/L	CAA4C-DGS-DP05	4 / 48	0.5 - 25	38	--	1.2E-01	C	--	--	Yes	ASL
	91-57-6	2-METHYLNAPHTHALENE	1	J	60		UG/L	MW547-3	3 / 15	10 - 10	60	--	6.2E+00 [a]	N	--	--	Yes	ASL
	67-64-1	ACETONE	1.3	J	8.4	J	UG/L	MW547-3	2 / 19	0.9 - 170	8.4	--	6.1E+02	N	--	--	No	BSL
	7429-90-5	ALUMINUM	3.5	J	2,600		UG/L	M07C-08	9 / 33	7.2 - 100	2,600	--	3.6E+04	N	--	--	No	BSL d
	7440-36-0	ANTIMONY	0.079	J	3.2	J	UG/L	M07C-08	5 / 33	0.7 - 60	3.2	--	1.5E+01	N	--	--	No	BSL e
	7440-38-2	ARSENIC	0.96	J	41		UG/L	MW547-3	24 / 33	0.8 - 5	41	--	4.5E-02	C	--	--	Yes	ASL d
	7440-39-3	BARIUM	17.4	J	490	J	UG/L	MW547-3	32 / 33	0.05 - 10	490	--	2.6E+03	N	--	--	No	BSL d
	71-43-2	BENZENE	0.3	J	8,300		UG/L	CAA4C-DGS-DP03	22 / 55	0.5 - 100	8,300	--	3.4E-01	C	--	--	Yes	ASL
	7440-41-7	BERYLLIUM	0.75	J	1.4	J	UG/L	MW547-2	2 / 33	0.1 - 2	1.4	--	7.3E+01	N	--	--	No	BSL e
	74-83-9	BROMOMETHANE	0.6	J	0.6	J	UG/L	MW547-3	1 / 48	1 - 100	0.60	--	8.7E+00	N	--	--	No	BSL, IFD
	7440-43-9	CADMIUM	0.18	J	3.1	J	UG/L	MW547-2	10 / 33	0.11 - 5	3.1	--	1.8E+01	N	--	--	No	BSL e
	7440-70-2	CALCIUM	7,170		132,000		UG/L	MW547-5	33 / 33	3.8 - 500	132,000	--	NA		--	--	No	NUT
	67-66-3	CHLOROFORM	19		19		UG/L	MW547-3	1 / 48	0.5 - 100	19	--	5.3E-01	C	--	--	Yes	ASL, IFD
	74-87-3	CHLOROMETHANE	0.2	J	0.2	J	UG/L	M07C-08	1 / 48	1 - 100	0.20	--	1.5E+00	C	--	--	No	BSL, IFD
	7440-47-3	CHROMIUM	0.23	J	10		UG/L	M07C-08	5 / 33	0.2 - 10	10	--	5.5E+04	N	--	--	No	BSL d
	7440-48-4	COBALT	0.34	J	6.3	J	UG/L	MW547-3	12 / 33	0.25 - 20	6.3	--	7.3E+02	N	--	--	No	BSL d
	7440-50-8	COPPER	0.62	J	38		UG/L	M07C-08	9 / 33	0.35 - 21.5	38	--	1.5E+03	N	--	--	No	BSL d
	108-20-3	DIISOPROPYL ETHER	0.3	J	0.3	J	UG/L	MW547-3	1 / 8	0.5 - 8.3	0.30	--	-- [c]		--	--	No	NTX
	100-41-4	ETHYLBENZENE	0.7	J	3,830	J	UG/L	CAA4C-DGS-DP06	20 / 55	0.5 - 400	3,830	--	2.9E+00	C	--	--	Yes	ASL
	7439-89-6	IRON	46	J	26,000		UG/L	MW547-3	15 / 33	3.2 - 211	26,000	--	1.1E+04	N	--	--	No	NUT d
	98-82-8	ISOPROPYLBENZENE	100		120		UG/L	MW547-3	4 / 8	0.5 - 8.3	120	--	6.6E+02	N	--	--	No	BSL
	7439-92-1	LEAD	0.33	J	0.33	J	UG/L	MW547-3	1 / 33	0.25 - 3.6	0.33	--	1.5E+01	b	--	--	No	BSL, IFD d
	NA	M,P-XYLENE	1.5		7.9	J	UG/L	MW547-3	3 / 8	0.5 - 8.3	7.9	--	2.1E+02 [a]	N	--	--	No	BSL
	7439-95-4	MAGNESIUM	4,770		132,000		UG/L	D07C-01	33 / 33	3.8 - 500	132,000	--	NA		--	--	No	NUT
	7439-96-5	MANGANESE	2.1	J	11,000		UG/L	MW547-3	32 / 33	0.2 - 10	11,000	--	8.8E+02	N	--	--	Yes	ASL d
	7439-97-6	MERCURY	0.15	J	0.15	J	UG/L	M07C-08	1 / 33	0.1 - 0.2	0.15	--	1.1E+01	N	--	--	No	BSL, IFD e
	1634-04-4	METHYL-T-BUTYL ETHER	0.7	J	5	J	UG/L	CAA4C-DGS-DP04	5 / 21	0.5 - 1000	5.0	--	6.2E+00	C	--	--	No	BSL
	7439-98-7	MOLYBDENUM	0.3	J	14	J	UG/L	MW547-5	10 / 33	0.25 - 20	14	--	1.8E+02	N	--	--	No	BSL d
	91-20-3	NAPHTHALENE	15		380		UG/L	MW547-3	8 / 23	2 - 33	380	--	6.2E+00	N	--	--	Yes	ASL
	104-51-8	N-BUTYLBENZENE	18		21		UG/L	MW547-3	4 / 8	0.5 - 8.3	21	--	2.4E+02	N	--	--	No	BSL
	7440-02-0	NICKEL	1.3	J	29		UG/L	M07C-08	14 / 33	0.3 - 23	29	--	7.3E+02	N	--	--	No	BSL d
	103-65-1	N-PROPYLBENZENE	260		280		UG/L	MW547-3	4 / 8	0.5 - 8.3	280	--	2.4E+02	N	--	--	Yes	ASL
	95-47-6	O-XYLENE	0.7		0.7		UG/L	MW547-3	1 / 8	0.5 - 8.3	0.70	--	2.1E+02 [a]	N	--	--	No	BSL

TABLE H-2.19: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 22 GROUNDWATER

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Current/Future
Medium:	Site 22 Groundwater
Exposure Medium:	Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)		Maximum Concentration (Qualifier) (1)		Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (5)
Site 22 Future Tap Water	108-95-2	PHENOL	42		54		UG/L	MW547-3	2 / 15	10 - 10	54	--	2.2E+04	N	--	--	No	BSL
	7440-09-7	POTASSIUM	1,200		32,600		UG/L	M07C-08	31 / 33	3.7 - 5000	32,600	--	NA		--	--	No	NUT
	135-98-8	SEC-BUTYLBENZENE	2.8	J	18		UG/L	MW547-3	4 / 8	0.5 - 8.3	18	--	2.4E+02	N	--	--	No	BSL
	7782-49-2	SELENIUM	0.38	J	2.2	J	UG/L	D07C-01	4 / 30	1 - 5	2.2	--	1.8E+02	N	--	--	No	BSL d
	7440-22-4	SILVER	0.21	J	0.21	J	UG/L	MW547-4	1 / 32	0.15 - 5	0.21	--	1.8E+02	N	--	--	No	BSL, IFD d
	7440-23-5	SODIUM	8300	J	240,000		UG/L	MW547-3	33 / 33	7.2 - 500	240,000	--	NA		--	--	No	NUT
	75-65-0	TERT-BUTANOL	110	J	210		UG/L	MW547-3	3 / 8	10 - 330	210	--	1.8E+03 [a]	N	--	--	No	BSL
	127-18-4	TETRACHLOROETHENE	2.6	J	2.6	J	UG/L	MW547-3	1 / 48	0.5 - 100	2.6	--	6.6E-01	C	--	--	Yes	ASL, IFD
	7440-28-0	THALLIUM	4.2	J	10		UG/L	MW547-4	4 / 33	0.056 - 5	10	--	2.4E+00	N	--	--	Yes	ASL d
	108-88-3	TOLUENE	0.3	J	15,300	J	UG/L	CAA4C-DGS-DP06	13 / 55	0.5 - 400	15,300	--	7.2E+02	N	--	--	Yes	ASL
	79-01-6	TRICHLOROETHENE	1.9	J	20	J	UG/L	M07C-08	2 / 48	0.5 - 100	20	--	2.8E-02	C	--	--	Yes	ASL, IFD
	7440-62-2	VANADIUM	3.4	J	12	J	UG/L	M07C-08	6 / 33	0.25 - 11.9	12	--	2.6E+02	N	--	--	No	BSL d
	1330-20-7	XYLENE (TOTAL)	1		17,000	J	UG/L	CAA4C-DGS-DP06	12 / 47	1 - 400	17,000	--	2.1E+02	N	--	--	Yes	ASL
	7440-66-6	ZINC	4.1	J	105		UG/L	D07C-01	11 / 33	0.3 - 27	105	--	1.1E+04	N	--	--	No	BSL d

Notes:

(1) Define the "(Qualifier)" codes used for the "Minimum Concentration" and "Maximum Concentration".

J Estimated concentration value

(2) The "Concentration Used for Screening" is the maximum detected concentration.

(3) The "Background Value" is not shown here; comparisons to background were completed with the base-wide ambient Alameda Point groundwater data set and were based on two-population tests as described in the Appendix G text.

(4) Screening toxicity values are EPA Region IX residential PRGs (EPA 2002a). California Modified PRGs were used where available.

(5) Rationale for Selection or Deletion

ASL Above screening level
BSL Below screening level
IFD Infrequently detected
NUT Essential nutrient
NTX No toxicity value

Acronyms:

-- No value available
ARAR/TBC Applicable or relevant and appropriate requirement/to be considered
bgs Below ground surface
C Carcinogenic
CAS Chemical Abstract Service
COPC Contaminant of potential concern
N Noncarcinogenic
NA Not applicable
UG/L Microgram per liter

a The screening toxicity value for 2-methylnaphthalene is based on naphthalene; m,p- and o-xylene are based on total xylene; and tert-butanol is based on isobutanol.

b No EPA Region 9 Tap Water PRGs (EPA 2002a) is available for lead. U.S. EPA's Treatment Technique value (from U.S. EPA's National Primary Drinking Water Regulations (U.S. EPA, 2002c) value was used as the screening value in groundwater.

c Diisopropyl ether does not have a toxicity value and this chemical is not consistent with previous site operations; therefore, this chemical will not be carried through this assessment.

d Following the statistical background screening, this inorganic was found to be significantly greater than background.

e Following the statistical background screening, this inorganic was not found to be significantly greater than background.

References:

U.S. Environmental Protection Agency (EPA) 2002a. "EPA Region IX Preliminary Remediation Goals Table." October 2. Available on-line at: http://www.epa.gov/region09/waste/sfund/prg/index.htm

TABLE H-2.20: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 23 SURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe: Current/Future
Medium: Surface Soil (0-2 feet bgs) at Site 23
Exposure Medium: Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (5)
	105-67-9	2,4-DIMETHYLPHENOL	0.052 J	0.052 J	MG/KG	280-S16-016	1 / 19	0.340 - 7.0	0.052	--	1.20E+03 N	--	--	No	BSL
	91-57-6	2-METHYLNAPHTHALENE	0.00024 J	0.031 J	MG/KG	C3S023B042	45 / 120	0.00022 - 0.26	0.031	--	5.60E+01 [a] N	--	--	No	BSL
	95-48-7	2-METHYLPHENOL	0.021 J	0.021 J	MG/KG	280-S16-016	1 / 19	0.340 - 7.0	0.021	--	3.10E+03 N	--	--	No	BSL
	106-44-5	4-METHYLPHENOL	0.048 J	0.048 J	MG/KG	280-S16-016	1 / 19	0.340 - 7.0	0.048	--	3.10E+02 N	--	--	No	BSL
	72-54-8	4,4'-DDT	0.0054 J	0.0054 J	MG/KG	280-S16-016	1 / 10	0.0021 - 0.085	0.0054	--	1.70E+00 C	--	--	No	BSL
	83-32-9	ACENAPHTHENE	0.00028 J	0.072	MG/KG	C3S023B016	8 / 120	0.00022 - 0.26	0.072	--	3.68E+03 N	--	--	No	BSL
	208-96-8	ACENAPHTHYLENE	0.00021 J	0.037	MG/KG	C3S023B026	28 / 120	0.00017 - 0.26	0.037	--	3.68E+03 [a] N	--	--	No	BSL
	7429-90-5	ALUMINUM	3,080	21,900	MG/KG	MWOR-5 [1.0-1.5]	16 / 16	NA	21,900	2,880 - 26,800	7.60E+04 N	--	--	No	BSL d
	120-12-7	ANTHRACENE	0.00021 J	0.43	MG/KG	C3S023B016	35 / 120	0.0002 - 0.26	0.43	--	2.19E+04 N	--	--	No	BSL
	7440-36-0	ANTIMONY	2.4	4.8	MG/KG	BOR-12 [0.5-1.0]	3 / 16	0.52 - 6.9	4.8	0.89 - 1	3.10E+01 N	--	--	No	BSL c
	11096-82-5	AROCLOR-1260	0.038 J	0.038 J	MG/KG	280-S16-016	1 / 10	0.034 - 0.170	0.038	--	2.20E-01 C	--	--	No	BSL
	7440-38-2	ARSENIC	0.84 J	4.2	MG/KG	B410-6 [0.5-1.0]	3 / 16	0.96 - 12	4.2	0.74 - 23	3.90E-01 C	--	--	Yes	ASL c
	7440-39-3	BARIUM	20.6	200	MG/KG	BOR-22 [0.5-1.0]	14 / 14	NA	200	0.3 - 198	5.40E+03 N	--	--	No	BSL d
	56-55-3	BENZ(A)ANTHRACENE	0.00024 J	2.1	MG/KG	C3S023B016	67 / 120	0.00014 - 0.26	2.1	--	6.21E-01 C	--	--	Yes	ASL
	50-32-8	BENZO(A)PYRENE	0.00027 J	2	MG/KG	C3S023B016	69 / 120	0.00015 - 0.26	2.0	--	6.21E-02 C	--	--	Yes	ASL
	205-99-2	BENZO(B)FLUORANTHENE	0.00039 J	2	MG/KG	C3S023B016	71 / 120	0.00015 - 0.26	2.0	--	6.21E-01 C	--	--	Yes	ASL
	191-24-2	BENZO(G,H,I)PERYLENE	0.00032 J	1.3	MG/KG	C3S023B016	79 / 120	0.00011 - 0.26	1.3	--	2.32E+03 [a] N	--	--	No	BSL
	207-08-9	BENZO(K)FLUORANTHENE	0.0003 J	1.6	MG/KG	C3S023B016	52 / 120	0.00016 - 0.26	1.6	--	3.78E-01 C	--	--	Yes	ASL
	7440-41-7	BERYLLIUM	0.17 B	0.22 J	MG/KG	280-S09-001	2 / 16	0.2 - 1.2	0.22	0.09 - 0.77	1.50E+02 N	--	--	No	BSL d
Site 23	7440-43-9	CADMIUM	0.18 J	10	MG/KG	280-S16-016	8 / 16	0.07 - 1.2	10	0.1 - 0.82	3.70E+01 N	--	--	No	BSL d
	7440-70-2	CALCIUM	1,720	14,800	MG/KG	MWOR-5 [1.0-1.5]	16 / 16	NA	14,800	1,360 - 19,200	NA	--	--	No	NUT
	7440-47-3	CHROMIUM	7.3	76.9	MG/KG	385-S23-001	17 / 17	NA	76.9	11.4 - 81.7	2.10E+02 C	--	--	No	BSL d
	218-01-9	CHRYSENE	0.00034 J	2.3	MG/KG	C3S023B016	75 / 120	0.00016 - 0.26	2.3	--	3.78E+00 C	--	--	No	BSL
	7440-48-4	COBALT	2.8	13.3	MG/KG	MWOR-5 [1.0-1.5]	10 / 16	3.7 - 5.3	13.3	1.9 - 14	9.00E+02 C	--	--	No	BSL d
	7440-50-8	COPPER	5 J	113	MG/KG	MWOR-5 [1.0-1.5]	12 / 16	5.3 - 12.5	113	4.2 - 89.4	3.10E+03 N	--	--	No	BSL c
	53-70-3	DIBENZ(A,H)ANTHRACENE	0.00024 J	0.39	MG/KG	C3S023B016	57 / 119	0.00019 - 0.26	0.39	--	6.21E-02 C	--	--	Yes	ASL
	206-44-0	FLUORANTHENE	0.00028 J	3.4	MG/KG	C3S023B016	64 / 120	0.00018 - 0.26	3.4	--	2.29E+03 N	--	--	No	BSL
	86-73-7	FLUORENE	0.00018 J	0.059	MG/KG	C3S023B016	25 / 120	0.00018 - 0.26	0.059	--	2.75E+03 N	--	--	No	BSL
	193-39-5	INDENO(1,2,3-CD)PYRENE	0.0002 J	1.4	MG/KG	C3S023B016	64 / 120	0.00016 - 0.26	1.4	--	6.21E-01 C	--	--	Yes	ASL
	7439-89-6	IRON	5,600	25,900	MG/KG	MWOR-5 [1.0-1.5]	16 / 16	NA	25,900	760 - 26,900	2.30E+04 N	--	--	No	NUT d
	7439-92-1	LEAD	1.3	85.8 J	MG/KG	280-S16-016	9 / 17	3.5 - 5.3	85.8	1.3 - 41	1.50E+02 N	--	--	No	BSL c
	7439-95-4	MAGNESIUM	26.6	9,730	MG/KG	MWOR-5 [1.0-1.5]	16 / 16	NA	9,730	1,510 - 42,400	NA	--	--	No	NUT
	7439-96-5	MANGANESE	74.1	414	MG/KG	MWOR-5 [1.0-1.5]	16 / 16	NA	414	50 - 1,060	1.80E+03 N	--	--	No	BSL d
	91-20-3	NAPHTHALENE	0.00024 J	0.037 J	MG/KG	C3S023B042	47 / 120	0.00022 - 0.26	0.037	--	5.59E+01 N	--	--	No	BSL
	7440-02-0	NICKEL	4.7	25.9	MG/KG	BOR-12 [0.5-1.0]	16 / 16	NA	25.9	11.6 - 88.5	1.60E+03 N	--	--	No	BSL d
	86-30-6	N-NITROSODIPHENYLAMINE	0.046 JB	0.22 JB	MG/KG	BOR-12 [0.5-1.0]	3 / 19	0.340 - 7.0	0.22	--	9.90E+01 C	--	--	No	BSL
	85-01-8	PHENANTHRENE	0.00033 J	1.5	MG/KG	C3S023B016	63 / 118	0.00016 - 0.26	1.5	--	2.19E+04 [a] N	--	--	No	BSL
	7440-09-7	POTASSIUM	390	2,400	MG/KG	BOR-22 [0.5-1.0]	12 / 16	425 - 620	2,400	310 - 6,382	NA	--	--	No	NUT
	129-00-0	PYRENE	0.0003 J	2.7	MG/KG	C3S023B016	74 / 120	0.00012 - 0.26	2.7	--	2.32E+03 N	--	--	No	BSL

TABLE H-2.20: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 23 SURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe: Current/Future
Medium: Surface Soil (0-2 feet bgs) at Site 23
Exposure Medium: Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (5)
Site 23	7440-22-4	SILVER	0.38 B	0.38 B	MG/KG	B410-6 [0.5-1.0]	1 / 16	0.18 - 5.8	0.38	0.44 - 0.61	3.90E+02 N	–	–	No	BSL d
	7440-23-5	SODIUM	130	1,830	MG/KG	MWOR-5 [1.0-1.5]	9 / 16	69 - 580	1,830	88.1 - 3,510	NA	–	–	No	NUT
	7440-32-6	TITANIUM	256	879	MG/KG	BOR-22 [0.5-1.0]	12 / 12	NA	879	223 - 1,020	3.10E+05 [b] N	–	–	No	BSL d
	7440-62-2	VANADIUM	13.8	82	MG/KG	MWOR-5 [1.0-1.5]	16 / 16	NA	82	12.8 - 62.3	5.50E+02 N	–	–	No	BSL d
	7440-66-6	ZINC	17	79	MG/KG	MW530-1 [1.0-1.5]	15 / 16	16.6 - 16.6	79	14 - 84	2.30E+04 N	–	–	No	BSL d

Notes:

(1) Define the "(Qualifier)" codes used for the "Minimum Concentration" and "Maximum Concentration".

B	Blank contamination
J	Estimated concentration value
JB	Estimated value; blank contamination

(2) The "Concentration Used for Screening" is the maximum detected concentration.

(3) The "Background Value" is the range for the blue background area (Table D.4.2; Tetra Tech 2001), shown for comparison purposes only. Background comparisons will be based on two-population tests as described in the Appendix H text.

(4) Screening toxicity values are EPA Region 9 residential PRGs (EPA 2002a). California modified PRGs were used where available.

(5) Rationale for Selection or Deletion

ASL	Above screening level
BSL	Below screening level
NUT	Essential nutrient

Acronyms:

–	No value available
ARAR/TBC	Applicable or relevant and appropriate requirement/to be considered
bgs	Below ground surface
C	Carcinogenic
CAS	Chemical Abstract Service
COPC	Contaminant of potential concern
DDT	Dichlorodiphenyltrichloroethane
MG/KG	Milligram per kilogram
N	Noncarcinogenic
NA	Not applicable
sat	Soil saturation concentration

a The screening toxicity value for 2-methylnaphthalene is based on naphthalene; benzo(g,h,i)perylene is based on pyrene; phenanthrene is based on anthracene; acenaphthylene is based upon acenaphthene.

b Screening toxicity value was taken from EPA Region 3 Risk-based Concentration Table (2002) and represents risk-based screening level for residential surface soil.

c Following the statistical background screening, this inorganic was found to be significantly greater than background.

d Following the statistical background screening, this inorganic was not found to be significantly greater than background.

References:

U.S. Environmental Protection Agency (EPA) 2002a. "EPA Region 9 Preliminary Remediation Goals Table." October 2. Available on-line at: http://www.epa.gov/region09/waste/sfund/prg/index.htm

U.S. Environmental Protection Agency (EPA) 2002b. "EPA Region 3 Risk-Based Concentration Table." April 2. Available on-line at: http://www.epa.gov/reg3hwmd/risk/rbc.pdf

TABLE H-2.21: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 23 SUBSURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe: Future
Medium: Subsurface Soil (0-8 feet bgs) at Site 23
Exposure Medium: Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (5)
	105-67-9	2,4-DIMETHYLPHENOL	0.052 J	0.052 J	MG/KG	280-S16-016	1 / 52	0.340 - 7.0	0.052	–	1.20E+03 N	–	–	No	BSL, IFD
	91-57-6	2-METHYLNAPHTHALENE	0.00024 J	11	MG/KG	C3S023B043	70 / 292	0.00022 - 7.0	11	–	5.60E+01 [a] N	–	–	Yes	ASL
	95-48-7	2-METHYLPHENOL	0.021 J	0.021 J	MG/KG	280-S16-016	1 / 52	0.340 - 8.5	0.021	–	3.10E+03 N	–	–	No	BSL, IFD
	106-44-5	4-METHYLPHENOL	0.048 J	0.048 J	MG/KG	280-S16-016	1 / 52	0.340 - 7.0	0.048	–	3.10E+02 N	–	–	No	BSL, IFD
	72-54-8	4,4'-DDT	0.0028	0.0054 J	MG/KG	280-S16-016	2 / 21	0.0021 - 0.094	0.0054	–	1.70E+00 C	–	–	No	BSL
	83-32-9	ACENAPHTHENE	0.00024 J	0.093 J	MG/KG	C3S023B043	22 / 240	0.00022 - 0.26	0.093	–	3.68E+03 N	–	–	No	BSL
	208-96-8	ACENAPHTHYLENE	0.00021 J	0.066 J	MG/KG	C3S023B043	48 / 240	0.00017 - 0.26	0.066	–	3.68E+03 [a] N	–	–	No	BSL
	7429-90-5	ALUMINUM	2,880	21,900	MG/KG	MWOR-5 [1.0-1.5]	42 / 42	NA	21,900	2,880 - 26,800	7.60E+04 N	–	–	No	BSL d
	120-12-7	ANTHRACENE	0.00021 J	0.43	MG/KG	C3S023B016	60 / 240	0.0002 - 0.28	0.43	–	2.19E+04 N	–	–	No	BSL
	7440-36-0	ANTIMONY	0.89 J	4.8	MG/KG	BOR-20 [7.0-7.5]	9 / 42	0.52 - 8	4.8	0.89 - 1	3.10E+01 N	–	–	No	BSL c
	11096-82-5	AROCLOR-1260	0.038 J	0.038 J	MG/KG	280-S16-016	1 / 21	0.017 - 0.940	0.038	–	2.20E-01 C	–	–	No	BSL, IFD
	7440-38-2	ARSENIC	0.84 J	4.3	MG/KG	B410-6 [3.5-4.0]	9 / 42	0.71 - 13	4.3	0.74 - 23	3.90E-01 C	–	–	Yes	ASL d
	7440-39-3	BARIUM	18.8 JB	300	MG/KG	MW530-2 [2.5-3.0]	35 / 38	21 - 24	300	0.3 - 198	5.40E+03 N	–	–	No	BSL d
	56-55-3	BENZ(A)ANTHRACENE	0.00016 J	2.1	MG/KG	C3S023B016	133 / 240	0.00014 - 0.26	2.1	–	6.21E-01 C	–	–	Yes	ASL
	50-32-8	BENZO(A)PYRENE	0.00023 J	2	MG/KG	C3S023B016	128 / 240	0.00015 - 0.26	2.0	–	6.21E-02 C	–	–	Yes	ASL
	205-99-2	BENZO(B)FLUORANTHENE	0.00038 J	2	MG/KG	C3S023B016	130 / 240	0.00015 - 0.26	2.0	–	6.21E-01 C	–	–	Yes	ASL
	191-24-2	BENZO(G,H,I)PERYLENE	0.00016 J	1.3	MG/KG	C3S023B016	148 / 240	0.00011 - 0.26	1.3	–	2.32E+03 [a] N	–	–	No	BSL
	207-08-9	BENZO(K)FLUORANTHENE	0.00021 J	1.6	MG/KG	C3S023B016	103 / 240	0.00016 - 0.26	1.6	–	3.78E-01 C	–	–	Yes	ASL
	7440-41-7	BERYLLIUM	0.13 B	0.22 J	MG/KG	280-S09-001	4 / 42	0.2 - 1.3	0.22	0.09 - 0.77	1.50E+02 N	–	–	No	BSL d
Site 23	7440-43-9	CADMIUM	0.18 J	10	MG/KG	280-S16-016	18 / 42	0.06 - 1.3	10	0.1 - 0.82	3.70E+01 N	–	–	No	BSL d
	7440-70-2	CALCIUM	1,720	28,800	MG/KG	BOR-23 [3.5-4.0]	41 / 42	10 - 10	28,800	1,360 - 19,200	NA	–	–	No	NUT
	7440-47-3	CHROMIUM	7.3	76.9	MG/KG	385-S23-001	43 / 43	NA	76.9	11.4 - 81.7	2.10E+02 C	–	–	No	BSL d
	218-01-9	CHRYSENE	0.00019 J	2.3	MG/KG	C3S023B016	140 / 240	0.00016 - 0.26	2.3	–	3.78E+00 C	–	–	No	BSL
	7440-48-4	COBALT	2.8	13.3	MG/KG	MWOR-5 [1.0-1.5]	25 / 42	3.7 - 6.6	13.3	1.9 - 14	9.00E+02 C	–	–	No	BSL d
	7440-50-8	COPPER	4.5 B	113	MG/KG	MWOR-5 [1.0-1.5]	38 / 42	5.3 - 12.5	113	4.2 - 89.4	3.10E+03 N	–	–	No	BSL c
	53-70-3	DIBENZ(A,H)ANTHRACENE	0.00023 J	0.39	MG/KG	C3S023B016	98 / 238	0.00019 - 0.28	0.39	–	6.21E-02 C	–	–	Yes	ASL
	206-44-0	FLUORANTHENE	0.00022 J	3.4	MG/KG	C3S023B016	132 / 240	0.00018 - 0.26	3.4	–	2.29E+03 N	–	–	No	BSL
	86-73-7	FLUORENE	0.00018 J	0.29	MG/KG	C3S023B043	36 / 240	0.00018 - 0.26	0.29	–	2.75E+03 N	–	–	No	BSL
	193-39-5	INDENO(1,2,3-CD)PYRENE	0.0002 J	1.4	MG/KG	C3S023B016	120 / 240	0.00016 - 0.26	1.4	–	6.21E-01 C	–	–	Yes	ASL
	7439-89-6	IRON	4,690	25,900	MG/KG	MWOR-5 [1.0-1.5]	42 / 42	NA	25,900	760 - 26,900	2.30E+04 N	–	–	No	NUT d
	7439-92-1	LEAD	1.3	120	MG/KG	BOR-26 [2.5-3.0]	17 / 45	3.5 - 12	120	1.3 - 41	1.50E+02 N	–	–	No	BSL c
	7439-95-4	MAGNESIUM	26.6	9,730	MG/KG	MWOR-5 [1.0-1.5]	42 / 42	NA	9,730	1,510 - 42,400	NA	–	–	No	NUT
	7439-96-5	MANGANESE	69.8	414	MG/KG	MWOR-5 [1.0-1.5]	42 / 42	NA	414	50 - 1,060	1.80E+03 N	–	–	No	BSL d
	91-20-3	NAPHTHALENE	0.00023 J	12	MG/KG	C3S023B043	86 / 240	0.00022 - 0.26	12	–	5.59E+01 N	–	–	No	BSL
	7440-02-0	NICKEL	4.7	38	MG/KG	MW530-1 [6.5-7.0]	42 / 42	NA	38	11.6 - 88.5	1.60E+03 N	–	–	No	BSL d
	86-30-6	N-NITROSODIPHENYLAMINE	0.046 JB	0.220 JB	MG/KG	BOR-12 [0.5-1.0]	6 / 52	0.340 - 7.0	0.22	–	9.90E+01 C	–	–	No	BSL
	85-01-8	PHENANTHRENE	0.00019 J	1.5	MG/KG	C3S023B016	122 / 237	0.00016 - 0.26	1.5	–	2.19E+04 [a] N	–	–	No	BSL
	7440-09-7	POTASSIUM	390	2,400	MG/KG	BOR-22 [0.5-1.0]	34 / 42	425 - 620	2,400	310 - 6,382	NA	–	–	No	NUT
	129-00-0	PYRENE	0.00019 J	2.7	MG/KG	C3S023B016	141 / 240	0.00012 - 0.26	2.7	–	2.32E+03 N	–	–	No	BSL

TABLE H-2.21: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 23 SUBSURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe: Future
Medium: Subsurface Soil (0-8 feet bgs) at Site 23
Exposure Medium: Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (5)
Site 23	7440-22-4	SILVER	0.38 B	0.38 B	MG/KG	B410-6 [0.5-1.0]	1 / 42	0.18 - 6.6	0.38	0.44 - 0.61	3.90E+02 N	–	–	No	BSL, IFD d
	7440-23-5	SODIUM	130	1,830	MG/KG	MWOR-5 [1.0-1.5]	26 / 42	69 - 660	1,830	88.1 - 3,510	NA	–	–	No	NUT
	7440-28-0	THALLIUM	2.9	3.3 B	MG/KG	B410-6 [3.5-4.0]	2 / 42	0.4 - 13	3.3	5.3 - 5.3	5.20E+00 N	–	–	No	BSL, IFD d
	7440-32-6	TITANIUM	234	879	MG/KG	BOR-22 [0.5-1.0]	36 / 36	NA	879	223 - 1,020	3.10E+05 [b] N	–	–	No	BSL d
	108-88-3	TOLUENE	0.004 J	1.1	MG/KG	MW530-3 [2.0-2.5]	21 / 40	0.005 - 0.012	1.1	–	5.20E+02 sat	–	–	No	BSL
	8001-35-2	TOXAPHENE	1.4	1.4	MG/KG	BOR-26 [6.0-6.5]	1 / 21	0.053 - 0.940	1.4	–	4.40E-01 C	–	–	No	IFD e
	7440-62-2	VANADIUM	12	82	MG/KG	MWOR-5 [1.0-1.5]	42 / 42	NA	82	12.8 - 62.3	5.50E+02 N	–	–	No	BSL d
	7440-66-6	ZINC	17	79	MG/KG	MW530-1 [1.0-1.5]	41 / 42	16.6 - 16.6	79	14 - 84	2.30E+04 N	–	–	No	BSL d

Notes:

(1) *Define the "(Qualifier)" codes used for the "Minimum Concentration" and "Maximum Concentration".*

- B — Blank contamination
- J — Estimated concentration value
- JB — Estimated value; blank contamination

(2) The "Concentration Used for Screening" is the maximum detected concentration.

(3) The "Background Value" is the range for the blue background area (Table D.4.2; Tetra Tech 2001), shown for comparison purposes only. Background comparisons will be based on two-population tests as described in the Appendix H text.

(4) Screening toxicity values are EPA Region 9 residential PRGs (EPA 2002a). California modified PRGs were used where available.

(5) Rationale for Selection or Deletion

- ASL — Above screening level
- BSL — Below screening level
- IFD — Infrequently detected
- NUT — Essential nutrient

Acronyms:

- -- — No value available
- ARAR/TBC — Applicable or relevant and appropriate requirement/to be considered
- bgs — Below ground surface
- C — Carcinogenic
- CAS — Chemical Abstract Service
- COPC — Contaminant of potential concern
- DDT — Dichlorodiphenyltrichloroethane
- MG/KG — Milligram per kilogram
- N — Noncarcinogenic
- NA — Not applicable
- sat — Soil saturation concentration

a The screening toxicity value for 2-methylnaphthalene is based on naphthalene; benzo(g,h,i)perylene is based on pyrene; phenanthrene is based on anthracene; acenaphthylene is based upon acenaphthene.

b Screening toxicity value was taken from EPA Region 3 Risk-based Concentration Table (2002) and represents risk-based screening level for residential surface soil.

c Following the statistical background screening, this inorganic was found to be significantly greater than background.

d Following the statistical background screening, this inorganic was not found to be significantly greater than background.

e *Although toxaphene was detected in a single sample (from 21 total) it was not considered to be related to historical processess at the site but is likely a remnant of historical pesticide use.*

References:

U.S. Environmental Protection Agency (EPA) 2002a. "EPA Region 9 Preliminary Remediation Goals Table." October 2. Available on-line at: http://www.epa.gov/region09/waste/sfund/prg/index.htm

U.S. Environmental Protection Agency (EPA) 2002b. "EPA Region 3 Risk-Based Concentration Table." April 2. *Available on-line at: http://www.epa.gov/reg3hwmd/risk/rbc.pdf*

TABLE H-2.22: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 23 SOIL GAS

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe: Current/Future
Medium: Soil Gas (Air Samples) Collected from Site 23
Exposure Medium: Vadose Zone Soil (Migration to Indoor Air)

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (N/C) (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (4)
Site 23	71-43-2	BENZENE	79.16	103.5	UG/M3	385-S23-019	2 / 5	0.002 - 0.002	104	--	3.10E+00 C	--	--	Yes	ASL
	100-41-4	ETHYLBENZENE	359.51	540.1	UG/M3	385-S23-955	2 / 5	0.002 - 0.002	540	--	2.20E+01 C	--	--	Yes	ASL
	108-38-3	M-XYLENE	1,257.26	2,046	UG/M3	385-S23-955	2 / 2	NA	2046	--	7.00E+04 [a] N	--	--	No	BSL
	95-47-6	O-XYLENE	270.99	513.3	UG/M3	385-S23-955	2 / 5	0.002 - 0.002	513	--	7.00E+04 [a] N	--	--	No	BSL
	127-18-4	TETRACHLOROETHENE	103.18	103.2	UG/M3	385-S23-955	1 / 5	0.002 - 42.98	103	--	8.10E+00 C	--	--	Yes	ASL
	108-88-3	TOLUENE	715.48	833.2	UG/M3	385-S23-955	2 / 5	0.002 - 0.002	833	--	4.00E+03 N	--	--	No	BSL

Notes:

(1) The "Concentration Used for Screening" is the maximum detected concentration.

(2) Background values are not available for soil gas comparisons.

(3) Screening toxicity values are target shallow soil gas concentrations (taken at less than 5 feet bgs) as shown in Table 2c (EPA 2002c).

(4) Rationale for Selection or Deletion

ASL	Above screening level
BSL	Below screening level
NUT	Essential nutrient

a The screening toxicity values for m- and o-xylenes are based on xylene (total).

Acronyms:

--	No value available
ARAR/TBC	Applicable or relevant and appropriate requirement/to be considered
bgs	Below ground surface
CAS	Chemical Abstract Service
COPC	Chemical of Potential Concern
N	Noncarcinogenic
NA	Not applicable
UG/M3	Microgram per cubic meter

References:

EPA 2002c. Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance). November. Available on-line at http://www.epa.gov/correctiveaction/eis/vapor.htm

TABLE H-2.23: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 23 VOCS IN GROUNDWATER

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Indoor Air (Vapor)

Exposure Point	CAS Number	Chemical (1)	Minimum Concentration (Qualifier) (1)		Maximum Concentration (Qualifier) (1)		Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (5)	Screening Toxicity Value (N/C) (1)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (3)
Water Vapor from Shallow Groundwater at Site 23	96-18-4	1,2,3-TRICHLOROBENZENE	1.1		1.1		UG/L	MW530-3	1 / 14	0.5 - 1300	1.1	--	3400	N (6)	--	--	No	BSL
	95-63-6	1,2,4-TRIMETHYLBENZENE	860	J	860	J	UG/L	530-MJ-MW-1	1 / 14	0.5 - 1300	860	--	24	N	--	--	Yes	ASL
	95-50-1	1,2-DICHLOROBENZENE	0.10	J	0.10	J	UG/L	MW410-4	1 / 48	0.5 - 1300	0.10	--	2600	N	--	--	No	BSL
	540-59-0	1,2-DICHLOROETHENE (TOTAL)	1.0	J	1.0	J	UG/L	530-MJ-MW-3	1 / 20	1 - 200	1.0	--	180	N (6)	--	--	No	BSL
	78-93-3	2-BUTANONE	4200	J	4200	J	UG/L	SHP-S10B-05	1 / 20	2 - 300	4200	--	440000	N	--	--	No	BSL
	591-78-6	2-HEXANONE	2.0	J	2.0	J	UG/L	M09-05	1 / 33	2 - 200	2.0	--	2.9	N (6)	--	--	No	BSL
	91-57-6	2-METHYLNAPHTHALENE	8.0	J	51		UG/L	MW530-1	3 / 20	10 - 30	51	--	3300	N	--	--	No	BSL
	108-10-1	4-METHYL-2-PENTANONE	2.0	J	2.0	J	UG/L	M09-05	1 / 41	2 - 13000	2.0	--	14000	N	--	--	No	BSL
	83-32-9	ACENAPHTHENE	0.80	J	1.0	J	UG/L	MW530-1	2 / 20	10 - 30	1.0	--	> SOL	N	--	--	No	BSL
	67-64-1	ACETONE	0.40	J	1.6	J	UG/L	M10B-01	5 / 19	0.5 - 33	1.6	--	22000	N	--	--	No	BSL
	71-43-2	BENZENE	0.20	J	1.0		UG/L	MW530-1	5 / 41	0.5 - 1300	1.0	--	1.4	C (4)	--	--	No	BSL
	205-99-2	BENZO(B)FLUORANTHENE	0.80	J	0.80	J	UG/L	SHP-S10B-05	1 / 20	10 - 30	0.80	--	> SOL	C	--	--	No	BSL
	75-15-0	CARBON DISULFIDE	0.30	J	170	J	UG/L	SHP-S10B-06	2 / 41	0.5 - 1300	170	--	560	N	--	--	No	BSL
	218-01-9	CHRYSENE	0.90	J	0.90	J	UG/L	SHP-S10B-05	1 / 20	10 - 30	0.90	--	> SOL	C	--	--	No	BSL
	100-41-4	ETHYLBENZENE	3.0	J	15		UG/L	MW530-1	4 / 41	0.5 - 1300	15	--	6.9	C (4)	--	--	Yes	ASL
	86-73-7	FLUORENE	3.0	J	5.0	J	UG/L	MW530-1	3 / 20	10 - 30	5.0	--	> SOL	N	--	--	No	BSL
	98-82-8	ISOPROPYLBENZENE	1000	J	1000	J	UG/L	530-MJ-MW-1	1 / 14	0.5 - 1300	1000	--	8.4	N	--	--	Yes	ASL
	91-20-3	NAPHTHALENE	12		1100	J	UG/L	530-MJ-MW-1	3 / 34	1.8 - 1300	1100	--	150	N	--	--	Yes	ASL
	129-00-0	PYRENE	1.0	J	1.0	J	UG/L	SHP-S10B-05	1 / 20	10 - 30	1.0	--	> SOL	N	--	--	No	BSL
	135-98-8	SEC-BUTYLBENZENE	0.20	J	1000	J	UG/L	530-MJ-MW-1	2 / 14	0.5 - 1300	1000	--	250	N	--	--	Yes	ASL
	108-88-3	TOLUENE	3.0	J	5.0		UG/L	MW530-1	3 / 41	0.5 - 1300	5.0	--	1500	N	--	--	No	BSL
	1330-20-7	XYLENE (TOTAL)	7.0		660	J	UG/L	530-MJ-MW-1	5 / 29	1 - 1300	660	--	2200	N (6)	--	--	No	BSL

Notes:

(1) Groundwater screening values are risk-based screening levels from Table 2c of EPA (2002c) draft vapor intrusion screening guidance.

(2) Maximum detected concentration for all of the sampling events was used as screening value.

(3) Vapor intrusion from volatile chemicals in groundwater to indoor is the only complete or potentially complete pathway evaluated; therefore, only volatile chemicals present at concentrations above their respective screening toxicity values were considered COPCs. A volatile chemical was defined as having a molecular weight less than 200 grams per mole and a Henry's Law constant greater than 10-5 atmospheres per cubic meter per mole.

Rationale Codes

Deletion Reason: Below Screening Level (BSL)

Inclusion Reason: Above Screening Level (ASL)

(4) Screening Toxicity Values in EPA 2002c, were listed as the Maximum Contaminant Levels (MCLs). However, risk-based values, which were lower than the MCLs, were used in the COPC screen so that the analytes could be evaluated for potential cumulative effects from several analytes.

(5) Volatile organic compounds are not common in unimpacted groundwater, so no background evaluation will be conducted for this COPCs selection.

(6) The Screening Toxicity Value for xylenes (total) is based upon p-xylene; 1-2 dichloroethylene is based upon trans-1,2 dichloroethylene; 1,2,4-Trichlorobenzene was used as a surrogate for 1,2,3-Trichlorobenzene; hexane was used as a surrogate for 2-hexanone.

Definitions:

ARAR/TBC = Applicable or relevant and appropriate requirement/to be considered
COPC = Contaminant of potential concern
EPA = U.S. Environmental Protection Agency
J = Estimated value
C = Carcinogen
N = Noncancer
UG/L = Microgram per liter
-- = Not available
NA = Not Applicable
>SOL=Value is greater than solubility

Reference:

EPA 1997. "Health Effects Assessment Summary Tables." Office of Research and Development (ORD).

EPA 2002c. Draft Vapor Intrusion Guidance. November. Available on-line at http://www.epa.gov/correctiveaction/eis/vapor.htm

EPA 2003. Integrated Risk Information System. Online Database. Office of Research and Development, National Center for Environmental Assessment.

On Line Address: http://www.epa.gov/iris

TABLE H-2.24: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 23 GROUNDWATER

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe: Current/Future
Medium: Site 23 Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)		Maximum Concentration (Qualifier) (1)		Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (5)
Site 23 Future Tap Water	96-18-4	1,2,3-TRICHLOROBENZENE	1.1		1.1		UG/L	MW530-3	1 / 14	0.5 - 1300	1.1	–	1.9E+02 [a] N	–	–	No	BSL
	95-63-6	1,2,4-TRIMETHYLBENZENE	860	J	860	J	UG/L	530-MJ-MW-1	1 / 14	0.5 - 1300	860	–	1.2E+01 N	–	–	Yes	ASL
	95-50-1	1,2-DICHLOROBENZENE	0.1	J	0.1	J	UG/L	MW410-4	1 / 48	0.5 - 1300	0.10	–	3.7E+02 N	–	–	No	BSL, IFD
	540-59-0	1,2-DICHLOROETHENE (TOTAL)	1	J	1	J	UG/L	530-MJ-MW-3	1 / 20	1 - 200	1.0	–	6.1E+01 [a] N	–	–	No	BSL, IFD
	120-83-2	2,4-DICHLOROPHENOL	0.5	J	0.5	J	UG/L	SHP-S10B-05	1 / 20	10 - 30	0.50	–	1.1E+02 N	–	–	No	BSL, IFD
	78-93-3	2-BUTANONE	4200	J	4200	J	UG/L	SHP-S10B-05	1 / 20	2 - 300	4,200	–	1.9E+03 N	–	–	Yes	ASL, IFD
	591-78-6	2-HEXANONE	2	J	2	J	UG/L	M09-05	1 / 33	2 - 200	2.0	–	3.5E+02 [a] N	–	–	No	BSL, IFD
	91-57-6	2-METHYLNAPHTHALENE	8	J	51		UG/L	MW530-1	3 / 20	10 - 30	51	–	6.2E+00 [a] N	–	–	Yes	ASL
	108-10-1	4-METHYL-2-PENTANONE	2	J	2	J	UG/L	M09-05	1 / 41	2 - 13000	2.0	–	1.6E+02 N	–	–	No	BSL, IFD
	83-32-9	ACENAPHTHENE	0.8	J	1	J	UG/L	MW530-1	2 / 20	10 - 30	1.0	–	3.7E+02 N	–	–	No	BSL
	67-64-1	ACETONE	0.4	J	1.6	J	UG/L	M10B-01	5 / 19	0.5 - 33	1.6	–	6.1E+02 N	–	–	No	BSL
	7429-90-5	ALUMINUM	36.7	J	3,830		UG/L	MWOR-5	5 / 26	6 - 236	3,830	–	3.6E+04 N	–	–	No	BSL d
	7440-36-0	ANTIMONY	0.1	J	0.22	J	UG/L	M10B-01	3 / 26	0.063 - 50	0.22	–	1.5E+01 N	–	–	No	BSL c
	7440-38-2	ARSENIC	2.4	J	18		UG/L	MW530-3	12 / 26	0.8 - 14.9	18	–	4.5E-02 C	–	–	Yes	ASL c
	7440-39-3	BARIUM	15.1	J	388		UG/L	MWOR-5	23 / 26	0.05 - 29.1	388	–	2.6E+03 N	–	–	No	BSL d
	71-43-2	BENZENE	0.2	J	1		UG/L	MW530-1	5 / 41	0.5 - 1300	1.0	–	3.4E-01 C	–	–	Yes	ASL
	50-32-8	BENZO(A)PYRENE	0.6	J	0.6	J	UG/L	SHP-S10B-05	1 / 20	1.4 - 30	0.60	–	9.2E-03 C	–	–	Yes	ASL, IFD
	205-99-2	BENZO(B)FLUORANTHENE	0.8	J	0.8	J	UG/L	SHP-S10B-05	1 / 20	10 - 30	0.80	–	9.2E-02 C	–	–	Yes	ASL, IFD
	7440-41-7	BERYLLIUM	1.4	J	1.4	J	UG/L	MW530-1	1 / 26	0.1 - 2	1.4	–	7.3E+01 N	–	–	No	BSL, IFD c
	75-25-2	BROMOFORM	0.2	J	0.2	J	UG/L	MW410-4	1 / 41	1 - 1300	0.20	–	8.5E+00 C	–	–	No	BSL, IFD
	7440-43-9	CADMIUM	0.066	J	0.49	J	UG/L	M09-05	4 / 26	0.15 - 5	0.49	–	1.8E+01 N	–	–	No	BSL c
	7440-70-2	CALCIUM	6,980		116,000		UG/L	MW530-1	26 / 26	3.8 - 5000	116,000	–	NA	–	–	No	NUT
	75-15-0	CARBON DISULFIDE	0.3	J	170	J	UG/L	SHP-S10B-06	2 / 41	0.5 - 1300	170	–	1.0E+03 N	–	–	No	BSL, IFD
	7440-47-3	CHROMIUM	0.75	J	11.4		UG/L	MWOR-5	11 / 26	0.35 - 10	11	–	5.5E+04 N	–	–	No	BSL d
	218-01-9	CHRYSENE	0.9	J	0.9	J	UG/L	SHP-S10B-05	1 / 20	10 - 30	0.90	–	5.6E-01 C	–	–	Yes	ASL, IFD
	7440-48-4	COBALT	0.033	J	4.5	J	UG/L	MWOR-5	11 / 26	0.3 - 10	4.5	–	7.3E+02 N	–	–	No	BSL d
	7440-50-8	COPPER	0.31	J	16.3	J	UG/L	SHP-S10B-06	11 / 26	0.35 - 14	16	–	1.5E+03 N	–	–	No	BSL d
	100-41-4	ETHYLBENZENE	3	J	15		UG/L	MW530-1	4 / 41	0.5 - 1300	15	–	2.9E+00 C	–	–	Yes	ASL
	206-44-0	FLUORANTHENE	1	J	1	J	UG/L	SHP-S10B-05	1 / 20	10 - 30	1.0	–	1.5E+03 N	–	–	No	BSL, IFD
	86-73-7	FLUORENE	3	J	5	J	UG/L	MW530-1	3 / 20	10 - 30	5	–	2.4E+02 N	–	–	No	BSL
	7439-89-6	IRON	54	J	4,390		UG/L	MWOR-5	12 / 26	3.2 - 154	4,390	–	1.1E+04 N	–	–	No	BSL, NUT d
	98-82-8	ISOPROPYLBENZENE	1000	J	1000	J	UG/L	530-MJ-MW-1	1 / 14	0.5 - 1300	1,000	–	6.6E+02 N	–	–	Yes	ASL
	7439-92-1	LEAD	0.029	J	0.31	J	UG/L	M10B-01	3 / 26	0.24 - 3	0.31	–	1.5E+01 b	–	–	No	BSL c
	7439-95-4	MAGNESIUM	2740	J	80,000		UG/L	M10B-01	26 / 26	3.8 - 5000	80,000	–	NA	–	–	No	NUT
	7439-96-5	MANGANESE	6.6	J	532		UG/L	M10B-01	21 / 26	0.2 - 100	532	–	8.8E+02 N	–	–	No	BSL d
	7439-97-6	MERCURY	0.12	J	1.7		UG/L	M10B-01	2 / 26	0.1 - 0.2	1.7	–	1.1E+01 N	–	–	No	BSL c
	7439-98-7	MOLYBDENUM	0.85	J	4.4	J	UG/L	M10B-01	8 / 26	0.25 - 20	4.4	–	1.8E+02 N	–	–	No	BSL c
	91-20-3	NAPHTHALENE	12		1100	J	UG/L	530-MJ-MW-1	3 / 34	1.8 - 1300	1,100.0	–	6.2E+00 N	–	–	Yes	ASL
	7440-02-0	NICKEL	0.42	J	22.3		UG/L	MWOR-5	7 / 26	0.3 - 20	22	–	7.3E+02 N	–	–	No	BSL d

TABLE H-2.24: OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN, SITE 23 GROUNDWATER

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe: Current/Future
Medium: Site 23 Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)		Maximum Concentration (Qualifier) (1)		Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (5)
Site 23 Future Tap Water	85-01-8	PHENANTHRENE	0.8	J	5	J	UG/L	MW530-1	3 / 20	10 - 30	5.0	--	1.8E+03 [a]	N	--	--	No	BSL
	7440-09-7	POTASSIUM	3140	J	42,700		UG/L	M10B-01	26 / 26	3.7 - 5000	42,700	--	NA		--	--	No	NUT
	129-00-0	PYRENE	1	J	1	J	UG/L	SHP-S10B-05	1 / 20	10 - 30	1.0	--	1.8E+02	N	--	--	No	BSL, IFD
	135-98-8	SEC-BUTYLBENZENE	0.2	J	1000	J	UG/L	530-MJ-MW-1	2 / 14	0.5 - 1300	1,000	--	2.4E+02	N	--	--	Yes	ASL
	7782-49-2	SELENIUM	0.49	J	3.2	J	UG/L	M10B-01	4 / 24	0.8 - 5	3.2	--	1.8E+02	N	--	--	No	BSL d
	7440-22-4	SILVER	0.019	J	0.019	J	UG/L	M10B-01	1 / 26	0.15 - 5	0.019	--	1.8E+02	N	--	--	No	BSL, IFD c
	7440-23-5	SODIUM	12,700		1,050,000		UG/L	M10B-01	26 / 26	7.2 - 25000	1,050,000	--	NA		--	--	No	NUT
	7440-28-0	THALLIUM	3.7	J	3.7	J	UG/L	M10B-01	1 / 26	0.26 - 7.6	3.7	--	2.4E+00	N	--	--	Yes	ASL, IFD c
	108-88-3	TOLUENE	3	J	5		UG/L	MW530-1	3 / 41	0.5 - 1300	5.0	--	7.2E+02	N	--	--	No	BSL
	7440-62-2	VANADIUM	0.93	J	30		UG/L	M10B-01	8 / 26	0.25 - 34.4	30	--	2.6E+02	N	--	--	No	BSL d
	1330-20-7	XYLENE (TOTAL)	7		660	J	UG/L	530-MJ-MW-1	5 / 29	1 - 1300	660	--	2.1E+02	N	--	--	Yes	ASL
	7440-66-6	ZINC	1.7	J	141		UG/L	MWOR-5	12 / 26	0.45 - 24.8	141	--	1.1E+04	N	--	--	No	BSL d

Notes:

(1) Define the "(Qualifier)" codes used for the "Minimum Concentration" and "Maximum Concentration".

J Estimated concentration value

(2) The "Concentration Used for Screening" is the maximum detected concentration.

(3) The "Background Value" is not shown here; comparisons to background were completed with the base-wide ambient Alameda Point groundwater data set and were based on two-population tests as described in the Appendix G text.

(4) Screening toxicity values are EPA Region IX residential PRGs (EPA 2002a). California Modified PRGs were used where available.

(5) Rationale for Selection or Deletion

ASL Above screening level
BSL Below screening level
IFD Infrequently detected
NUT Essential nutrient

Acronyms:

-- No value available
ARAR/TBC Applicable or relevant and appropriate requirement/to be considered
bgs *Below ground surface*
C Carcinogenic
CAS Chemical Abstract Service
COPC Contaminant of potential concern
N Noncarcinogenic
NA Not applicable
UG/L Microgram per liter

a The screening toxicity value for 1,2,3-trichlorobenzene is based on 1,2,4-trichlorobenzene; total 1,2-dichloroethene is based on cis-1,2-dichloroethene; 2,6-dinitrotoluene is based on toluene; 2-hexanone is based on 2-hexane; 2-methylnaphthalene is based on naphthalene; phenanthrene is based on anthracene; and 4,6-dinitro-2-methylphenol is based on 2-methylphenol.

b No EPA Region 9 Tap Water PRGs (EPA 2002a) is available for lead. U.S. EPA's Treatment Technique value (from U.S. EPA's National Primary Drinking Water Regulations (U.S. EPA, 2002c) value was used as the screening value in groundwater.

c Following the statistical background screening, this inorganic was not found to be significantly greater than background.

d Following the statistical background screening, this inorganic was found to be significantly greater than background.

References:

U.S. Environmental Protection Agency (EPA) 2002a. "EPA Region IX Preliminary Remediation Goals Table." October 2. Available on-line at: http://www.epa.gov/region09/waste/sfund/prg/index.htm

TABLE H-3.1: EXPOSURE POINT CONCENTRATION SUMMARY, REASONABLE MAXIMUM EXPOSURE, SITE 9 SURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Current
Medium:	Site 9 Surface Soil (0-2 feet bgs)
Exposure Medium:	Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale[a]
Site 9	Arsenic	MG/KG	2.45E+00	6.70E+00 NT	5.9E+00	5.90E+00	MG/KG	MAX	(1)

Notes:

See Appendix G for a description of the statistical methods used.

a The lesser of the 95% UCL and maximum detected concentration was used as the exposure point concentration (EPC).

For chemicals detected in at least 85% of the samples censored data were replaced with one-half of the reported concentration. For detection frequencies less than 85% censored measurements were treated as random variables that could assume any value between zero and the reported concentration (see note under NP).

feet bgs	Feet below ground surface
MAX	Maximum detected concentration
MG/KG	Milligram per kilogram
NT	Distribution was not tested if the sample size was less than five or the frequency of detection was less than 50 percent. Distribution defaults to lognormal.
(1)	Detection frequency less than 50%, distribution not tested. 95% UCL estimated using the bounding approach from EPA (2002).

Gilbert, R. O. 1987. *Statistical Methods for Environmental Pollution Monitoring*. John Wiley & Sons, Inc., New York, NY.

U.S. Environmental Protection Agency (EPA). 2002. "Calculating Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Washington, D.C. December.

TABLE H-3.2: EXPOSURE POINT CONCENTRATION SUMMARY, CENTRAL TENDENCY EXPOSURE, SITE 9 SURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Current
Medium:	Site 9 Surface Soil (0-2 feet bgs)
Exposure Medium:	Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)	Exposure Point Concentration			
							Value	Units	Statistic	Rationale[a]
Site 9	Arsenic	MG/KG	2.45E+00	6.70E+00	NT	5.9E+00	2.45E+00	MG/KG	Mean- NP	(1)

Notes:

See Appendix G for a description of the statistical methods used.

a The lesser of the mean and maximum detected concentration was used as the exposure point concentration (EPC).

For chemicals detected in at least 85% of the samples censored data were replaced with one-half of the reported concentration. For detection frequencies less than 85% censored measurements were treated as random variables that could assume any value between zero and the reported concentration (see note under NP).

feet bgs	Feet below ground surface
MG/KG	Milligram per kilogram
NP	Non-parametric method*. Calculations based on stochastic modeling following the "bounding" approach in EPA (2002). 2,000 iterations of a Monte Carlo model performed for each estimate. For lognormal distributions the mean is the minimum variance unbiased estimator (MVU) following equation 13.3 in Gilbert (1987). For normal distributions the arithmetic mean is used. For both distributions, the median value from the distribution of 2,000 calculations was used as the final estimate for the mean. Censored (non-detected) data were treated as random variables that could assume any value between zero and the reported concentration. *This is not a non-parametric approach in cases where the distribution is normal, but NP is used for consistency with the RAGS guidelines for preparing summary tables for exposure point concentrations.
NT	Distribution was not tested if the sample size was less than five or the frequency of detection was less than 50 percent. Distribution defaults to lognormal.
RAGS	Risk assessment guidance for Superfund
(1)	Detection frequency less than 50%, distribution not tested. A lognormal assumption was used to calculate the mean using stochastic modeling as described under the note for NP.

Gilbert, R. O. 1987. *Statistical Methods for Environmental Pollution Monitoring*. John Wiley & Sons, Inc., New York, NY.

U.S. Environmental Protection Agency (EPA). 2002. "Calculating Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Washington, D.C. December.

TABLE H-3.3: EXPOSURE POINT CONCENTRATION SUMMARY, REASONABLE MAXIMUM EXPOSURE, SITE 9 SUBSURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Future
Medium:	Site 9 Subsurface Soil (0-8 feet bgs)
Exposure Medium:	Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale[a]
Site 9	Arsenic	MG/KG	2.78E+00	4.52E+00 NT	5.9E+00	4.52E+00	MG/KG	95% UCL- NP	(1)

Notes:

See Appendix G for a description of the statistical methods used.

a The lesser of the 95% UCL and maximum detected concentration was used as the exposure point concentration (EPC).

For chemicals detected in at least 85% of the samples censored data were replaced with one-half of the reported concentration. For detection frequencies less than 85% censored measurements were treated as random variables that could assume any value between zero and the reported concentration (see note under NP).

95% UCL — One-sided 95 percent upper confidence limit of the mean

feet bgs — *Feet below ground surface*

MG/KG — Milligram per kilogram

NP — Non-parametric method*. Calculations based on stochastic modeling following the "bounding" approach in EPA (2002). 2,000 iterations of a Monte Carlo model performed for each estimate. For lognormal distributions the 95% UCL was determined using the non-parametric Chebyshev inequality. For normal distributions the 95% UCL was calculated using the t statistic. For both distributions, the 95th percentile value from the distribution of 2,000 calculations was used as the final estimate for the 95% UCL. Censored (non-detected) data were treated as random variables that could assume any value between zero and the reported concentration. *This is not a non-parametric approach in cases where the distribution is normal, but NP is used for consistency with the RAGS guidelines for preparing summary tables for exposure point concentrations.

NT — Distribution was not tested if the sample size was less than five or the frequency of detection was less than 50 percent. Distribution defaults to lognormal.

RAGS — Risk assessment guidance for Superfund

(1) — Detection frequency less than 50%, distribution not tested. 95% UCL estimated using the bounding approach from EPA (2002).

Gilbert, R. O. 1987. *Statistical Methods for Environmental Pollution Monitoring*. John Wiley & Sons, Inc., New York, NY.

U.S. Environmental Protection Agency (EPA). 2002. "Calculating Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Washington, D.C. December.

TABLE H-3.4: EXPOSURE POINT CONCENTRATION SUMMARY, CENTRAL TENDENCY EXPOSURE, SITE 9 SUBSURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Future
Medium:	Site 9 Subsurface Soil (0-8 feet bgs)
Exposure Medium:	Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)	Exposure Point Concentration			
							Value	Units	Statistic	Rationale[a]
Site 9	Arsenic	MG/KG	2.78E+00	4.52E+00	NT	5.9E+00	2.78E+00	MG/KG	Mean- NP	(1)

Notes:

See Appendix G for a description of the statistical methods used.

a The lesser of the mean and maximum detected concentration was used as the exposure point concentration (EPC).

For chemicals detected in at least 85% of the samples censored data were replaced with one-half of the reported concentration. For detection frequencies less than 85% censored measurements were treated as random variables that could assume any value between zero and the reported concentration (see note under NP).

feet bgs	Feet below ground surface
MG/KG	Milligram per kilogram
NP	Non-parametric method*. Calculations based on stochastic modeling following the "bounding" approach in EPA (2002). 2,000 iterations of a Monte Carlo model performed for each estimate. For lognormal distributions the mean is the minimum variance unbiased estimator (MVU) following equation 13.3 in Gilbert (1987). For normal distributions the arithmetic mean is used. For both distributions, the median value from the distribution of 2,000 calculations was used as the final estimate for the mean. Censored (non-detected) data were treated as random variables that could assume any value between zero and the reported concentration. *This is not a non-parametric approach in cases where the distribution is normal, but NP is used for consistency with the RAGS guidelines for preparing summary tables for exposure point concentrations.
NT	Distribution was not tested if the sample size was less than five or the frequency of detection was less than 50 percent. Distribution defaults to lognormal.
RAGS	Risk assessment guidance for Superfund
(1)	Detection frequency less than 50%, distribution not tested. A lognormal assumption was used to calculate the mean using stochastic modeling as described under the note for NP.

Gilbert, R. O. 1987. *Statistical Methods for Environmental Pollution Monitoring*. John Wiley & Sons, Inc., New York, NY.

U.S. Environmental Protection Agency (EPA). 2002. "Calculating Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Washington, D.C. December.

TABLE H-3.5: EXPOSURE POINT CONCENTRATION SUMMARY, REASONABLE MAXIMUM EXPOSURE, SITE 9 GROUNDWATER

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Point	Chemical	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale[a]
Site 9	1,1-Dichloroethane	MG/L	5.06E-03	2.03E-02	NT	1.10E-01		2.03E-02	MG/L	95% UCL- NP	(1)
	1,2-Dichloroethane	MG/L	9.99E-04	6.21E-03	NT	6.00E-04		6.00E-04	MG/L	MAX	(1)
	1,2-Dichloroethene (Total)	MG/L	9.47E-02	4.34E-01	NT	2.40E+00		4.34E-01	MG/L	95% UCL- NP	(1)
	1,2-Dichloropropane	MG/L	2.04E-03	1.26E-02	NT	2.00E-03		2.00E-03	MG/L	MAX	(1)
	1,2,3-Trichloropropane	MG/L	5.06E-04	2.95E-03	NT	3.00E-04	J	3.00E-04	MG/L	MAX	(1)
	1,3-Dichloropropane	MG/L	6.72E-04	3.07E-03	NT	9.00E-04		9.00E-04	MG/L	MAX	(1)
	2,2-Oxybis(1-chloropropane)	MG/L	2.18E-01	2.16E+00	NT	7.00E-04	J	7.00E-04	MG/L	MAX	(1)
	2-Methylnaphthalene	MG/L	1.80E-01	9.28E-01	NT	6.50E+00	J	9.28E-01	MG/L	95% UCL- NP	(1)
	4-Methylphenol	MG/L	2.38E-01	2.20E+00	NT	1.20E+00		1.20E+00	MG/L	MAX	(1)
	Antimony	MG/L	4.17E-03	1.05E-02	NT	3.75E-02		1.05E-02	MG/L	95% UCL- NP	(1)
	Arsenic	MG/L	1.32E-02	6.54E-01	T	3.70E-02		3.70E-02	MG/L	MAX	(3)
	Benzene	MG/L	1.89E-03	1.24E-02	NT	2.00E-03		2.00E-03	MG/L	MAX	(1)
	Benz(a)anthracene	MG/L	2.15E-01	2.14E+00	NT	1.00E-03	J	1.00E-03	MG/L	MAX	(1)
	Benzo(a)pyrene	MG/L	2.12E-01	2.14E+00	NT	2.00E-03	J	2.00E-03	MG/L	MAX	(1)
	Benzo(b)fluoranthene	MG/L	2.11E-01	2.12E+00	NT	2.00E-03	J	2.00E-03	MG/L	MAX	(1)
	Benzo(k)fluoranthene	MG/L	2.18E-01	2.16E+00	NT	8.00E-04	J	8.00E-04	MG/L	MAX	(1)
	Chloroethane	MG/L	3.70E-03	2.48E-02	NT	5.00E-03		5.00E-03	MG/L	MAX	(1)
	Chrysene	MG/L	2.22E-01	2.13E+00	NT	1.00E-03	J	1.00E-03	MG/L	MAX	(1)
	Ethylbenzene	MG/L	6.57E-03	2.11E-02	NT	1.20E-01		2.11E-02	MG/L	95% UCL- NP	(1)
	Indeno(1,2,3-cd)pyrene	MG/L	2.27E-01	2.15E+00	NT	1.00E-03	J	1.00E-03	MG/L	MAX	(1)
	Lead	MG/L	1.67E-03	5.80E-03	NT	2.89E-02	J	5.80E-03	MG/L	95% UCL- NP	(1)
	Manganese	MG/L	1.23E+00	6.23E+00	O(T)	2.25E+00		2.25E+00	MG/L	MAX	(2)
	Methyl-t-butyl ether	MG/L	4.76E-03	1.13E-02	NT	2.00E-02		1.13E-02	MG/L	95% UCL- NP	(1)
	Naphthalene	MG/L	6.32E-01	3.32E+00	NT	2.90E+01		3.32E+00	MG/L	95% UCL- NP	(1)
	Pentachlorophenol	MG/L	5.66E-01	5.43E+00	NT	2.00E-03	J	2.00E-03	MG/L	MAX	(1)
	Tetrachloroethene	MG/L	1.98E-03	1.24E-02	NT	3.00E-03		3.00E-03	MG/L	MAX	(1)
	Trichloroethene	MG/L	2.37E-03	1.29E-02	NT	2.20E-02		1.29E-02	MG/L	95% UCL- NP	(1)
	Vinyl chloride	MG/L	7.74E-03	3.04E-02	NT	2.20E-01		3.04E-02	MG/L	95% UCL- NP	(1)
	Xylene (Total)	MG/L	5.18E-02	2.06E-01	NT	1.20E+00		2.06E-01	MG/L	95% UCL- NP	(1)

Notes:

See Appendix G for a description of the statistical methods used.

a The lesser of the 95% UCL and maximum detected concentration was used as the exposure point concentration (EPC).

For chemicals detected in at least 85% of the samples censored data were replaced with one-half of the reported concentration. For detection frequencies less than 85% censored measurements were treated as random variables that could assume any value between zero and the reported concentration (see note under NP).

95% UCL	One-sided 95 percent upper confidence limit of the mean
feet bgs	Feet below ground surface
J	Estimated value

TABLE H-3.5: EXPOSURE POINT CONCENTRATION SUMMARY, REASONABLE MAXIMUM EXPOSURE, SITE 9 GROUNDWATER

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Point	Chemical	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale[a]

MAX Maximum detected concentration

MG/L Milligram per liter

MVUE *Minimum variance unbiased estimator*

NP Non-parametric method*. Calculations based on stochastic modeling following the "bounding" approach in EPA (2002). 2,000 iterations of a Monte Carlo model performed for each estimate. For confirmed or assumed lognormal distributions the 95% UCL was determined using the MVUE Chebyshev inequality. For normal distributions the 95% UCL was calculated using the t statistic. For distributions listed as NT, the 95% UCL was calculated using the nonparametric Chebyshev inequality. For all distributions, the 95th percentile value from the distribution of 2,000 calculations was used as the final estimate for the 95% UCL. Censored (non-detected) data were treated as random variables that could assume any value between zero and the reported concentration.
*This is not a nonparametric approach in cases where the UCL is calculated using the t statistic or the MVUE Chebyshev inequality, but NP is used for consistency with the nomenclature used in the RAGS guidelines for preparing summary tables for exposure point concentrations.

NT Distribution was not tested if the sample size was less than five or the frequency of detection was less than 50 percent. Distribution defaults to nonparametric.

O(T) Other distribution (unknown); assumed to be lognormal based on examination of probability plots, box plots, and frequency histograms.

RAGS Risk assessment guidance for Superfund

T Transformed (lognormal) distribution confirmed using the Shapiro-Wilk W test (alpha= 0.05).

(1) Detection frequency less than 50%, distribution not tested. 95% UCL estimated using the bounding approach from EPA (2002).

(2) Detection frequency greater than or equal to 85%, distribution confirmed or assumed lognormal. 95% UCL calculated using Land's method

(3) Detection frequency between 50 and 85 percent, distribution confirmed or assumed lognormal. 95% UCL estimated using the bounding approach from EPA (2002).

Gilbert, R. O. 1987. *Statistical Methods for Environmental Pollution Monitoring*. John Wiley & Sons, Inc., New York, NY.

U.S. Environmental Protection Agency (EPA). 2002. "Calculating Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Washington, D.C. December.

TABLE H-3.6: EXPOSURE POINT CONCENTRATION SUMMARY, CENTRAL TENDENCY EXPOSURE, SITE 9 GROUNDWATER

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Point	Chemical	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale[a]
Site 9	1,1-Dichloroethane	MG/L	5.06E-03	2.03E-02	NT	1.10E-01		5.06E-03	MG/L	Mean- NP	(1)
	1,2-Dichloroethane	MG/L	9.99E-04	6.21E-03	NT	6.00E-04		6.00E-04	MG/L	MAX	(1)
	1,2-Dichloroethene (Total)	MG/L	9.47E-02	4.34E-01	NT	2.40E+00		9.47E-02	MG/L	Mean- NP	(1)
	1,2-Dichloropropane	MG/L	2.04E-03	1.26E-02	NT	2.00E-03		2.00E-03	MG/L	MAX	(1)
	1,2,3-Trichloropropane	MG/L	5.06E-04	2.95E-03	NT	3.00E-04	J	3.00E-04	MG/L	MAX	(1)
	1,3-Dichloropropane	MG/L	6.72E-04	3.07E-03	NT	9.00E-04		6.72E-04	MG/L	Mean- NP	(1)
	2,2-Oxybis(1-chloropropane)	MG/L	2.18E-01	2.16E+00	NT	7.00E-04	J	7.00E-04	MG/L	MAX	(1)
	2-Methylnaphthalene	MG/L	1.80E-01	9.28E-01	NT	6.50E+00	J	1.80E-01	MG/L	Mean- NP	(1)
	4-Methylphenol	MG/L	2.38E-01	2.20E+00	NT	1.20E+00		2.38E-01	MG/L	Mean- NP	(1)
	Antimony	MG/L	4.17E-03	1.05E-02	NT	3.75E-02		4.17E-03	MG/L	Mean- NP	(1)
	Arsenic	MG/L	1.32E-02	6.54E-01	T	3.70E-02		1.32E-02	MG/L	Mean- NP	(3)
	Benzene	MG/L	1.89E-03	1.24E-02	NT	2.00E-03		1.89E-03	MG/L	Mean- NP	(1)
	Benz(a)anthracene	MG/L	2.15E-01	2.14E+00	NT	1.00E-03	J	1.00E-03	MG/L	MAX	(1)
	Benzo(a)pyrene	MG/L	2.12E-01	2.14E+00	NT	2.00E-03	J	2.00E-03	MG/L	MAX	(1)
	Benzo(b)fluoranthene	MG/L	2.11E-01	2.12E+00	NT	2.00E-03	J	2.00E-03	MG/L	MAX	(1)
	Benzo(k)fluoranthene	MG/L	2.18E-01	2.16E+00	NT	8.00E-04	J	8.00E-04	MG/L	MAX	(1)
	Chloroethane	MG/L	3.70E-03	2.48E-02	NT	5.00E-03		3.70E-03	MG/L	Mean- NP	(1)
	Chrysene	MG/L	2.22E-01	2.13E+00	NT	1.00E-03	J	1.00E-03	MG/L	MAX	(1)
	Ethylbenzene	MG/L	6.57E-03	2.11E-02	NT	1.20E-01		6.57E-03	MG/L	Mean- NP	(1)
	Indeno(1,2,3-cd)pyrene	MG/L	2.27E-01	2.15E+00	NT	1.00E-03	J	1.00E-03	MG/L	MAX	(1)
	Lead	MG/L	1.67E-03	5.80E-03	NT	2.89E-02	J	1.67E-03	MG/L	Mean- NP	(1)
	Manganese	MG/L	1.23E+00	6.23E+00	O(T)	2.25E+00		1.23E+00	MG/L	Mean- O(T)	(2)
	Methyl-t-butyl ether	MG/L	4.76E-03	1.13E-02	NT	2.00E-02		4.76E-03	MG/L	Mean- NP	(1)
	Naphthalene	MG/L	6.32E-01	3.32E+00	NT	2.90E+01		6.32E-01	MG/L	Mean- NP	(1)
	Pentachlorophenol	MG/L	5.66E-01	5.43E+00	NT	2.00E-03	J	2.00E-03	MG/L	MAX	(1)
	Tetrachloroethene	MG/L	1.98E-03	1.24E-02	NT	3.00E-03		1.98E-03	MG/L	Mean- NP	(1)
	Trichloroethene	MG/L	2.37E-03	1.29E-02	NT	2.20E-02		2.37E-03	MG/L	Mean- NP	(1)
	Vinyl chloride	MG/L	7.74E-03	3.04E-02	NT	2.20E-01		7.74E-03	MG/L	Mean- NP	(1)
	Xylene (Total)	MG/L	5.18E-02	2.06E-01	NT	1.20E+00		5.18E-02	MG/L	Mean- NP	(1)

Notes:

See Appendix G for a description of the statistical methods used.

a The lesser of the mean and maximum detected concentration was used as the exposure point concentration (EPC).

For chemicals detected in at least 85% of the samples censored data were replaced with one-half of the reported concentration. For detection frequencies less than 85% censored measurements were treated as random variables that could assume any value between zero and the reported concentration (see note under NP).

feet bgs	Feet below ground surface
J	Estimated value
MAX	Maximum detected concentration

TABLE H-3.6: EXPOSURE POINT CONCENTRATION SUMMARY, CENTRAL TENDENCY EXPOSURE, SITE 9 GROUNDWATER

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Point	Chemical	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale[a]

MG/L Milligram per liter

MVUE Minimum variance unbiased estimator

NP Non-parametric method*. Calculations based on stochastic modeling following the "bounding" approach in EPA (2002). 2,000 iterations of a Monte Carlo model performed for each estimate. For confirmed or assumed lognormal distributions the mean is the MVUE following equation 13.3 in Gilbert (1987). For normal and distributions listed as NT the arithmetic mean is used. For all distributions, the median value from the distribution of 2,000 calculations was used as the final estimate for the mean. Censored (non-detected) data were treated as random variables that could assume any value between zero and the reported concentration. *This is not a non-parametric approach in cases where the distribution is normal or lognormal, but NP is used for consistency with the nomenclature used in the RAGS guidelines for preparing summary tables for exposure point concentrations.

NT Distribution was not tested if the sample size was less than five or the frequency of detection was less than 50 percent. Distribution defaults to nonparametric.

O(T) Other distribution (unknown); assumed to be lognormal based on examination of probability plots, box plots, and frequency histograms.

RAGS Risk assessment guidance for Superfund

T Transformed (lognormal) distribution confirmed using the Shapiro-Wilk W test (alpha= 0.05).

(1) Detection frequency less than 50%, distribution not tested. A nonparametric assumption was used to calculate the mean using stochastic modeling as described under the note for NP.

(2) Detection frequency greater than or equal to 85%, distribution confirmed or assumed lognormal. The MVU estimate of the mean of a lognormal distribution was calculated.

(3) Detection frequency between 50 and 85 percent, distribution confirmed or assumed lognormal. Mean calculated using stochastic modeling as described under the note for NP.

Gilbert, R. O. 1987. *Statistical Methods for Environmental Pollution Monitoring*. John Wiley & Sons, Inc., New York, NY.

U.S. Environmental Protection Agency (EPA). 2002. "Calculating Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Washington, D.C. December.

TABLE H-3.7: EXPOSURE POINT CONCENTRATION SUMMARY, REASONABLE MAXIMUM EXPOSURE, SITE 13 SURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Current
Medium:	Site 13 Surface Soil (0-2 feet bgs)
Exposure Medium:	Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)	Exposure Point Concentration			
							Value	Units	Statistic	Rationale[a]
Site 13	Arsenic	MG/KG	5.40E+00	9.62E+00	O(T)	2.0E+01	9.62E+00	MG/KG	95% UCL- NP	(3)
	Benz(a)anthracene	MG/KG	4.57E-02	1.46E-01	O(T)	1.2E+00	1.46E-01	MG/KG	95% UCL - NP	(3)
	Benzo(a)pyrene	MG/KG	4.23E-02	1.32E-01	O(T)	2.4E+00	1.32E-01	MG/KG	95% UCL - NP	(3)
	Benzo(b)fluoranthene	MG/KG	4.24E-02	1.29E-01	O(T)	1.6E+00	1.29E-01	MG/KG	95% UCL - NP	(3)
	Benzo(k)fluoranthene	MG/KG	3.30E-02	7.96E-02	NT	1.4E+00	7.96E-02	MG/KG	95%UCL - NP	(1)
	Chromium	MG/KG	3.47E+01	4.21E+01	O(T)	3.4E+02	4.21E+01	MG/KG	95% UCL- O(T)	(2)
	Dibenz(a,h)anthracene	MG/KG	2.04E-02	4.05E-02	NT	4.2E-01	4.05E-02	MG/KG	95% UCL - NP	(1)
	Indeno(1,2,3-cd)pyrene	MG/KG	3.43E-02	8.30E-02	NT	1.6E+00	8.30E-02	MG/KG	95% UCL - NP	(1)
	Lead	MG/KG	5.39E+01	1.39E+02	O(T)	4.3E+02	1.39E+02	MG/KG	95% UCL- NP	(3)

Notes:

See Appendix G for a description of the statistical methods used.

a The lesser of the 95% UCL and maximum detected concentration was used as the exposure point concentration (EPC).

For chemicals detected in at least 85% of the samples censored data were replaced with one-half of the reported concentration. For detection frequencies less than 85% censored measurements were treated as random variables that could assume any value between zero and the reported concentration (see note under NP).

95% UCL	One-sided 95 percent upper confidence limit of the mean
feet bgs	Feet below ground surface
MG/KG	Milligram per kilogram
NP	Non-parametric method*. Calculations based on stochastic modeling following the "bounding" approach in EPA (2002). 2,000 iterations of a Monte Carlo model performed for each estimate. For lognormal distributions the 95% UCL was determined using the non-parametric Chebyshev inequality. For normal distributions the 95% UCL was calculated using the t statistic. For both distributions, the 95th percentile value from the distribution of 2,000 calculations was used as the final estimate for the 95% UCL. Censored (non-detected) data were treated as random variables that could assume any value between zero and the reported concentration. *This is not a non-parametric approach in cases where the distribution is normal, but NP is used for consistency with the RAGS guidelines for preparing summary tables for exposure point concentrations.
NT	Distribution was not tested if the sample size was less than five or the frequency of detection was less than 50 percent. Distribution defaults to lognormal.
O(T)	Other distribution (unknown); assumed to be lognormal based on examination of probability plots, box plots, and frequency histograms.
RAGS	Risk assessment guidance for Superfund
(1)	Detection frequency less than 50%, distribution not tested. 95% UCL estimated using the bounding approach from EPA (2002).
(2)	Detection frequency greater than or equal to 85%, distribution confirmed or assumed lognormal. 95% UCL calculated using Land's method
(3)	Detection frequency between 50 and 85 percent, distribution confirmed or assumed lognormal. 95% UCL estimated using the bounding approach from EPA (2002).

Gilbert, R. O. 1987. *Statistical Methods for Environmental Pollution Monitoring*. John Wiley & Sons, Inc., New York, NY.

U.S. Environmental Protection Agency (EPA). 2002. "Calculating Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Washington, D.C. December.

TABLE H-3.8: EXPOSURE POINT CONCENTRATION SUMMARY, CENTRAL TENDENCY EXPOSURE, SITE 13 SURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Current
Medium:	Site 13 Surface Soil (0-2 feet bgs)
Exposure Medium:	Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)	Exposure Point Concentration			
							Value	Units	Statistic	Rationale[a]
Site 13	Arsenic	MG/KG	5.40E+00	9.62E+00	O(T)	2.0E+01	5.40E+00	MG/KG	Mean- NP	(3)
	Benz(a)anthracene	MG/KG	4.57E-02	1.46E-01	O(T)	1.2E+00	4.57E-02	MG/KG	Mean - NP	(3)
	Benzo(a)pyrene	MG/KG	4.23E-02	1.32E-01	O(T)	2.4E+00	4.23E-02	MG/KG	Mean - NP	(3)
	Benzo(b)fluoranthene	MG/KG	4.24E-02	1.29E-01	O(T)	1.6E+00	4.24E-02	MG/KG	Mean - NP	(3)
	Benzo(k)fluoranthene	MG/KG	3.30E-02	7.96E-02	NT	1.4E+00	3.30E-02	MG/KG	Mean - NP	(1)
	Chromium	MG/KG	3.47E+01	4.21E+01	O(T)	3.4E+02	3.47E+01	MG/KG	Mean- O(T)	(2)
	Dibenz(a,h)anthracene	MG/KG	2.04E-02	4.05E-02	NT	4.2E-01	2.04E-02	MG/KG	Mean - NP	(1)
	Indeno(1,2,3-cd)pyrene	MG/KG	3.43E-02	8.30E-02	NT	1.6E+00	3.43E-02	MG/KG	Mean - NP	(1)
	Lead	MG/KG	5.39E+01	1.39E+02	O(T)	4.3E+02	5.39E+01	MG/KG	Mean- NP	(3)

Notes:

See Appendix G for a description of the statistical methods used.

a The lesser of the mean and maximum detected concentration was used as the exposure point concentration (EPC).

For chemicals detected in at least 85% of the samples censored data were replaced with one-half of the reported concentration. For detection frequencies less than 85% censored measurements were treated as random variables that could assume any value between zero and the reported concentration (see note under NP).

feet bgs	Feet below ground surface
MG/KG	Milligram per kilogram
NP	Non-parametric method*. Calculations based on stochastic modeling following the "bounding" approach in EPA (2002). 2,000 iterations of a Monte Carlo model performed for each estimate. For lognormal distributions the mean is the minimum variance unbiased estimator (MVU) following equation 13.3 in Gilbert (1987). For normal distributions the arithmetic mean is used. For both distributions, the median value from the distribution of 2,000 calculations was used as the final estimate for the mean. Censored (non-detected) data were treated as random variables that could assume any value between zero and the reported concentration. *This is not a non-parametric approach in cases where the distribution is normal, but NP is used for consistency with the RAGS guidelines for preparing summary tables for exposure point concentrations.
NT	Distribution was not tested if the sample size was less than five or the frequency of detection was less than 50 percent. Distribution defaults to lognormal.
O(T)	Other distribution (unknown); assumed to be lognormal based on examination of probability plots, box plots, and frequency histograms.
RAGS	Risk assessment guidance for Superfund
(1)	Detection frequency less than 50%, distribution not tested. A lognormal assumption was used to calculate the mean using stochastic modeling as described under the note for NP.
(2)	Detection frequency greater than or equal to 85%, distribution confirmed or assumed lognormal. The MVU estimate of the mean of a lognormal distribution was calculated.
(3)	Detection frequency between 50 and 85 percent, distribution confirmed or assumed lognormal. Mean calculated using stochastic modeling as described under the note for NP.

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U.S. Environmental Protection Agency (EPA). 2002. "Calculating Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Washington, D.C. December.

TABLE H-3.9: EXPOSURE POINT CONCENTRATION SUMMARY, REASONABLE MAXIMUM EXPOSURE, SITE 13 SUBSURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Future
Medium:	Site 13 Subsurface Soil (0-8 feet bgs)
Exposure Medium:	Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale[a]
Site 13	2-Methylnaphthalene	MG/KG	8.62E-01	1.14E+01	NT	1.6E+02		1.14E+01	MG/KG	95% UCL- NP	(1)
	Arsenic	MG/KG	4.45E+00	6.16E+00	O(T)	2.0E+01		6.16E+00	MG/KG	95% UCL- NP	(3)
	Benzene	MG/KG	2.10E-02	8.97E-02	NT	1.0E+00		8.97E-02	MG/KG	95% UCL- NP	(1)
	Benz(a)anthracene	MG/KG	5.34E-02	1.62E-01	O(T)	4.3E+00		1.62E-01	MG/KG	95% UCL- NP	(3)
	Benzo(a)pyrene	MG/KG	4.88E-02	1.39E-01	O(T)	5.2E+00		1.39E-01	MG/KG	95% UCL- NP	(3)
	Benzo(b)fluoranthene	MG/KG	4.63E-02	1.31E-01	O(T)	3.2E+00		1.31E-01	MG/KG	95% UCL- NP	(3)
	Benzo(k)fluoranthene	MG/KG	4.80E-02	9.57E-02	NT	3.5E+00		9.57E-02	MG/KG	95% UCL- NP	(1)
	Chromium	MG/KG	3.37E+01	3.69E+01	O(T)	3.4E+02		3.69E+01	MG/KG	95% UCL- O(T)	(2)
	Chrysene	MG/KG	8.48E-02	2.79E-01	O(T)	4.9E+00		2.79E-01	MG/KG	95% UCL - NP	(3)
	Dibenz(a,h)anthracene	MG/KG	2.41E-02	4.83E-02	NT	1.3E+00	J	4.83E-02	MG/KG	95% UCL - NP	(1)
	Indeno(1,2,3-cd)pyrene	MG/KG	4.06E-02	9.28E-02	NT	3.3E+00		9.28E-02	MG/KG	95% UCL - NP	(1)
	Lead	MG/KG	2.49E+01	5.47E+01	O(T)	4.3E+02		5.47E+01	MG/KG	95% UCL- NP	(3)
	Vanadium	MG/KG	2.66E+01	2.98E+01	O(T)	1.8E+03		2.98E+01	MG/KG	95% UCL- O(T)	(2)

Notes:

See Appendix G for a description of the statistical methods used.

a The lesser of the 95% UCL and maximum detected concentration was used as the exposure point concentration (EPC).

For chemicals detected in at least 85% of the samples censored data were replaced with one-half of the reported concentration. For detection frequencies less than 85% censored measurements were treated as random variables that could assume any value between zero and the reported concentration (see note under NP).

95% UCL	One-sided 95 percent upper confidence limit of the mean
feet bgs	Feet below ground surface
J	Estimated value
MG/KG	Milligram per kilogram
NP	Non-parametric method*. Calculations based on stochastic modeling following the "bounding" approach in EPA (2002). 2,000 iterations of a Monte Carlo model performed for each estimate. For lognormal distributions the 95% UCL was determined using the non-parametric Chebyshev inequality. For normal distributions the 95% UCL was calculated using the t statistic. For both distributions, the 95th percentile value from the distribution of 2,000 calculations was used as the final estimate for the 95% UCL. Censored (non-detected) data were treated as random variables that could assume any value between zero and the reported concentration. *This is not a non-parametric approach in cases where the distribution is normal, but NP is used for consistency with the RAGS guidelines for preparing summary tables for exposure point concentrations.
NT	Distribution was not tested if the sample size was less than five or the frequency of detection was less than 50 percent. Distribution defaults to lognormal.
O(T)	Other distribution (unknown); assumed to be lognormal based on examination of probability plots, box plots, and frequency histograms.
RAGS	Risk assessment guidance for Superfund
(1)	Detection frequency less than 50%, distribution not tested. 95% UCL estimated using the bounding approach from EPA (2002).
(2)	Detection frequency greater than or equal to 85%, distribution confirmed or assumed lognormal. 95% UCL calculated using Land's method
(3)	Detection frequency between 50 and 85 percent, distribution confirmed or assumed lognormal. 95% UCL estimated using the bounding approach from EPA (2002).

TABLE H-3.9: EXPOSURE POINT CONCENTRATION SUMMARY, REASONABLE MAXIMUM EXPOSURE, SITE 13 SUBSURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Future
Medium:	Site 13 Subsurface Soil (0-8 feet bgs)
Exposure Medium:	Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale[a]

Gilbert, R. O. 1987. *Statistical Methods for Environmental Pollution Monitoring*. John Wiley & Sons, Inc., New York, NY.

U.S. Environmental Protection Agency (EPA). 2002. "Calculating Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Washington, D.C. December

TABLE H-3.10: EXPOSURE POINT CONCENTRATION SUMMARY, CENTRAL TENDENCY EXPOSURE, SITE 13 SUBSURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Future
Medium:	Site 13 Subsurface Soil (0-8 feet bgs)
Exposure Medium:	Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale[a]
Site 13	2-Methylnaphthalene	MG/KG	8.62E-01	1.14E+01	NT	1.6E+02		8.62E-01	MG/KG	Mean- NP	(1)
	Arsenic	MG/KG	4.45E+00	6.16E+00	O(T)	2.0E+01		4.45E+00	MG/KG	Mean- NP	(3)
	Benzene	MG/KG	2.10E-02	8.97E-02	NT	1.0E+00		2.10E-02	MG/KG	Mean- NP	(1)
	Benz(a)anthracene	MG/KG	5.34E-02	1.62E-01	O(T)	4.3E+00		5.34E-02	MG/KG	Mean- NP	(3)
	Benzo(a)pyrene	MG/KG	4.88E-02	1.39E-01	O(T)	5.2E+00		4.88E-02	MG/KG	Mean- NP	(3)
	Benzo(b)fluoranthene	MG/KG	4.63E-02	1.31E-01	O(T)	3.2E+00		4.63E-02	MG/KG	Mean- NP	(3)
	Benzo(k)fluoranthene	MG/KG	4.08E-02	9.57E-02	NT	3.5E+00		4.08E-02	MG/KG	Mean- NP	(1)
	Chromium	MG/KG	3.37E+01	3.69E+01	O(T)	3.4E+02		3.37E+01	MG/KG	Mean- O(T)	(2)
	Chrysene	MG/KG	8.48E-02	2.79E-01	O(T)	4.9E+00		8.48E-02	MG/KG	Mean- NP	(3)
	Dibenz(a,h)anthracene	MG/KG	2.41E-02	4.83E-02	NT	1.3E+00	J	2.41E-02	MG/KG	Mean- NP	(1)
	Indeno(1,2,3-cd)pyrene	MG/KG	4.06E-02	9.28E-02	NT	3.3E+00		4.06E-02	MG/KG	Mean- NP	(1)
	Lead	MG/KG	2.49E+01	5.47E+01	O(T)	4.3E+02		2.49E+01	MG/KG	Mean- NP	(3)
	Vanadium	MG/KG	2.66E+01	2.98E+01	O(T)	1.8E+03		2.66E+01	MG/KG	Mean- O(T)	(2)

Notes:

See Appendix G for a description of the statistical methods used.

a The lesser of the mean and maximum detected concentration was used as the exposure point concentration (EPC).

For chemicals detected in at least 85% of the samples censored data were replaced with one-half of the reported concentration. For detection frequencies less than 85% censored measurements were treated as random variables that could assume any value between zero and the reported concentration (see note under NP).

feet bgs	Feet below ground surface
J	Estimated value
MG/KG	Milligram per kilogram
NP	Non-parametric method*. Calculations based on stochastic modeling following the "bounding" approach in EPA (2002). 2,000 iterations of a Monte Carlo model performed for each estimate. For lognormal distributions the mean is the minimum variance unbiased estimator (MVU) following equation 13.3 in Gilbert (1987). For normal distributions the arithmetic mean is used. For both distributions, the median value from the distribution of 2,000 calculations was used as the final estimate for the mean. Censored (non-detected) data were treated as random variables that could assume any value between zero and the reported concentration. *This is not a non-parametric approach in cases where the distribution is normal, but NP is used for consistency with the RAGS guidelines for preparing summary tables for exposure point concentrations.
NT	Distribution was not tested if the sample size was less than five or the frequency of detection was less than 50 percent. Distribution defaults to lognormal.
O(T)	Other distribution (unknown); assumed to be lognormal based on examination of probability plots, box plots, and frequency histograms.
RAGS	Risk assessment guidance for Superfund
T	Transformed (lognormal) distribution confirmed using the Shapiro-Wilk W test (alpha= 0.05).
(1)	Detection frequency less than 50%, distribution not tested. A lognormal assumption was used to calculate the mean using stochastic modeling as described under the note for
(2)	Detection frequency greater than or equal to 85%, distribution confirmed or assumed lognormal. The MVU estimate of the mean of a lognormal distribution was calculated.
(3)	Detection frequency between 50 and 85 percent, distribution confirmed or assumed lognormal. Mean calculated using stochastic modeling as described under the note for NP.

TABLE H-3.10: EXPOSURE POINT CONCENTRATION SUMMARY, CENTRAL TENDENCY EXPOSURE, SITE 13 SUBSURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Future
Medium:	Site 13 Subsurface Soil (0-8 feet bgs)
Exposure Medium:	Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale[a]

Gilbert, R. O. 1987. *Statistical Methods for Environmental Pollution Monitoring*. John Wiley & Sons, Inc., New York, NY.

U.S. Environmental Protection Agency (EPA). 2002. "Calculating Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Washington, D.C. Decembe

TABLE H-3.11: EXPOSURE POINT CONCENTRATION SUMMARY, REASONABLE MAXIMUM EXPOSURE, SITE 13 GROUNDWATER

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Point	Chemical	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale[a]
Site 13	1,2-Dichloroethane	MG/L	2.74E-04	4.02E-04	NT	1.00E-03		4.02E-04	MG/L	95% UCL- NP	(1)
	2-Methylnaphthalene	MG/L	5.97E-03	1.16E-02	NT	4.10E-02		1.16E-02	MG/L	95% UCL- NP	(1)
	Arsenic	MG/L	7.72E-03	2.86E-02	T	9.60E-02		2.86E-02	MG/L	95% UCL- NP	(3)
	Benzene	MG/L	1.30E-03	4.61E-03	NT	4.40E-02		4.61E-03	MG/L	95% UCL- NP	(1)
	Ethylbenzene	MG/L	6.00E-04	1.02E-03	NT	3.00E-03		1.02E-03	MG/L	95% UCL- NP	(1)
	Manganese	MG/L	9.75E+00	6.84E+01	O(T)	7.80E+00		7.80E+00	MG/L	MAX	(2)
	Naphthalene	MG/L	1.24E-02	3.48E-02	NT	2.10E-01		3.48E-02	MG/L	95% UCL- NP	(1)
	Pentachlorophenol	MG/L	1.20E-02	1.95E-02	NT	7.00E-03	J	7.00E-03	MG/L	MAX	(1)
	Thallium	MG/L	1.25E-03	2.62E-03	NT	1.00E-02	J	2.62E-03	MG/L	95% UCL- NP	(1)
	Trichloroethene	MG/L	5.36E-04	9.06E-04	NT	1.00E-03		9.06E-04	MG/L	95% UCL- NP	(1)

Notes:

See Appendix G for a description of the statistical methods used.

a The lesser of the 95% UCL and maximum detected concentration was used as the exposure point concentration (EPC).

For chemicals detected in at least 85% of the samples censored data were replaced with one-half of the reported concentration. For detection frequencies less than 85% censored measurements were treated as random variables that could assume any value between zero and the reported concentration (see note under NP).

95% UCL	One-sided 95 percent upper confidence limit of the mean
feet bgs	Feet below ground surface
J	Estimated value
MAX	Maximum detected concentration
MG/L	Milligram per liter
MVUE	Minimum variance unbiased estimator
NP	Non-parametric method*. Calculations based on stochastic modeling following the "bounding" approach in EPA (2002). 2,000 iterations of a Monte Carlo model performed for each estimate. For confirmed or assumed lognormal distributions the 95% UCL was determined using the MVUE Chebyshev inequality. For normal distributions the 95% UCL was calculated using the t statistic. For distributions listed as NT, the 95% UCL was calculated using the nonparametric Chebyshev inequality. For all distributions, the 95th percentile value from the distribution of 2,000 calculations was used as the final estimate for the 95% UCL. Censored (non-detected) data were treated as random variables that could assume any value between zero and the reported concentration. *This is not a nonparametric approach in cases where the UCL is calculated using the t statistic or the MVUE Chebyshev inequality, but NP is used for consistency with the nomenclature used in the RAGS guidelines for preparing summary tables for exposure point concentrations.
NT	Distribution was not tested if the sample size was less than five or the frequency of detection was less than 50 percent. Distribution defaults to nonparametric.
O(T)	Other distribution (unknown); assumed to be lognormal based on examination of probability plots, box plots, and frequency histograms.
RAGS	Risk assessment guidance for Superfund
T	*Transformed (lognormal) distribution confirmed using the Shapiro-Wilk W test (alpha= 0.05).*
(1)	Detection frequency less than 50%, distribution not tested. 95% UCL estimated using the bounding approach from EPA (2002).
(2)	Detection frequency greater than or equal to 85%, distribution confirmed or assumed lognormal. 95% UCL calculated using Land's method
(3)	Detection frequency between 50 and 85 percent, distribution confirmed or assumed lognormal. 95% UCL estimated using the bounding approach from EPA (2002).

TABLE H-3.11: EXPOSURE POINT CONCENTRATION SUMMARY, REASONABLE MAXIMUM EXPOSURE, SITE 13 GROUNDWATER

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Point	Chemical	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale[a]

Gilbert, R. O. 1987. *Statistical Methods for Environmental Pollution Monitoring*. John Wiley & Sons, Inc., New York, NY.

U.S. Environmental Protection Agency (EPA). 2002. "Calculating Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Washington, D.C. December.

TABLE H-3.12: EXPOSURE POINT CONCENTRATION SUMMARY, CENTRAL TENDENCY EXPOSURE, SITE 13 GROUNDWATER

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Point	Chemical	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale[a]
Site 13	1,2-Dichloroethane	MG/L	2.74E-04	4.02E-04	NT	1.00E-03		2.74E-04	MG/L	Mean- NP	(1)
	2-Methylnaphthalene	MG/L	5.97E-03	1.16E-02	NT	4.10E-02		5.97E-03	MG/L	Mean- NP	(1)
	Arsenic	MG/L	7.72E-03	2.86E-02	T	9.60E-02		7.72E-03	MG/L	Mean- NP	(3)
	Benzene	MG/L	1.30E-03	4.61E-03	NT	4.40E-02		1.30E-03	MG/L	Mean- NP	(1)
	Ethylbenzene	MG/L	6.00E-04	1.02E-03	NT	3.00E-03		6.00E-04	MG/L	Mean- NP	(1)
	Manganese	MG/L	9.75E+00	6.84E+01	O(T)	7.80E+00		7.80E+00	MG/L	MAX	(2)
	Naphthalene	MG/L	1.24E-02	3.48E-02	NT	2.10E-01		1.24E-02	MG/L	Mean- NP	(1)
	Pentachlorophenol	MG/L	1.20E-02	1.95E-02	NT	7.00E-03	J	7.00E-03	MG/L	MAX	(1)
	Thallium	MG/L	1.25E-03	2.62E-03	NT	1.00E-02	J	1.25E-03	MG/L	Mean- NP	(1)
	Trichloroethene	MG/L	5.36E-04	9.06E-04	NT	1.00E-03		5.36E-04	MG/L	Mean- NP	(1)

Notes:

See Appendix G for a description of the statistical methods used.

a The lesser of the mean and maximum detected concentration was used as the exposure point concentration (EPC).

For chemicals detected in at least 85% of the samples censored data were replaced with one-half of the reported concentration. For detection frequencies less than 85% censored measurements were treated as random variables that could assume any value between zero and the reported concentration (see note under NP).

feet bgs	Feet below ground surface
J	Estimated value
MAX	Maximum detected concentration
MG/L	Milligram per liter
MVUE	Minimum variance unbiased estimator
NP	Non-parametric method*. Calculations based on stochastic modeling following the "bounding" approach in EPA (2002). 2,000 iterations of a Monte Carlo model performed for each estimate. For confirmed or assumed lognormal distributions the mean is the MVUE following equation 13.3 in Gilbert (1987). For normal and distributions listed as NT the arithmetic mean is used. For all distributions, the median value from the distribution of 2,000 calculations was used as the final estimate for the mean. Censored (non-detected) data were treated as random variables that could assume any value between zero and the reported concentration. *This is not a non-parametric approach in cases where the distribution is normal or lognormal, but NP is used for consistency with the nomenclature used in the RAGS guidelines for preparing summary tables for exposure point concentrations.
NT	Distribution was not tested if the sample size was less than five or the frequency of detection was less than 50 percent. Distribution defaults to nonparametric.
O(T)	Other distribution (unknown); assumed to be lognormal based on examination of probability plots, box plots, and frequency histograms.
RAGS	Risk assessment guidance for Superfund
T	Transformed (lognormal) distribution confirmed using the Shapiro-Wilk W test (alpha= 0.05).
(1)	Detection frequency less than 50%, distribution not tested. A nonparametric assumption was used to calculate the mean using stochastic modeling as described under the note for N
(2)	Detection frequency greater than or equal to 85%, distribution confirmed or assumed lognormal. The MVU estimate of the mean of a lognormal distribution was calculated.
(3)	Detection frequency between 50 and 85 percent, distribution confirmed or assumed lognormal. Mean calculated using stochastic modeling as described under the note for NP.

Gilbert, R. O. 1987. *Statistical Methods for Environmental Pollution Monitoring*. John Wiley & Sons, Inc., New York, NY.

U.S. Environmental Protection Agency (EPA). 2002. "Calculating Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Washington, D.C. December.

TABLE H-3.13: EXPOSURE POINT CONCENTRATION SUMMARY, REASONABLE MAXIMUM EXPOSURE, SITE 19 SURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Current
Medium:	Site 19 Surface Soil (0-2 feet bgs)
Exposure Medium:	Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)	Exposure Point Concentration			
							Value	Units	Statistic	Rationale[a]
Site 19	Arsenic	MG/KG	4.33E+00	8.89E+00	NT	9.5E+00	8.89E+00	MG/KG	95% UCL- NP	(2)
	Benzo(a)pyrene	MG/KG	2.00E-02	8.04E-02	T	5.2E-01	8.04E-02	MG/KG	95% UCL - NP	(1)

Notes:

See Appendix G for a description of the statistical methods used.

a The lesser of the 95% UCL and maximum detected concentration was used as the exposure point concentration (EPC).

For chemicals detected in at least 85% of the samples censored data were replaced with one-half of the reported concentration. For detection frequencies less than 85% censored measurements were treated as random variables that could assume any value between zero and the reported concentration (see note under NP).

95% UCL	One-sided 95 percent upper confidence limit of the mean
feet bgs	Feet below ground surface
MG/KG	Milligram per kilogram
NP	Non-parametric method*. Calculations based on stochastic modeling following the "bounding" approach in EPA (2002). 2,000 iterations of a Monte Carlo model performed for each estimate. For lognormal distributions the 95% UCL was determined using the non-parametric Chebyshev inequality. For normal distributions the 95% UCL was calculated using the t statistic. For both distributions, the 95th percentile value from the distribution of 2,000 calculations was used as the final estimate for the 95% UCL. Censored (non-detected) data were treated as random variables that could assume any value between zero and the reported concentration. *This is not a non-parametric approach in cases where the distribution is normal, but NP is used for consistency with the RAGS guidelines for preparing summary tables for exposure point concentrations.
NT	Distribution was not tested if the sample size was less than five or the frequency of detection was less than 50 percent. Distribution defaults to lognormal.
O(T)	Other distribution (unknown); assumed to be lognormal based on examination of probability plots, box plots, and frequency histograms.
RAGS	Risk assessment guidance for Superfund
T	Transformed (lognormal) distribution confirmed using the Shapiro-Wilk W test (alpha= 0.05).
(1)	Detection frequency between 50 and 85 percent, distribution confirmed or assumed lognormal. 95% UCL estimated using the bounding approach from EPA (2002).
(2)	Detection frequency less than 50%, distribution not tested. 95% UCL estimated using the bounding approach from EPA (2002).
(3)	Detection frequency greater than or equal to 85%, distribution confirmed or assumed lognormal. 95% UCL calculated using Land's method

Gilbert, R. O. 1987. *Statistical Methods for Environmental Pollution Monitoring*. John Wiley & Sons, Inc., New York, NY.

U.S. Environmental Protection Agency (EPA). 2002. "Calculating Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Washington, D.C. December.

TABLE H-3.14: EXPOSURE POINT CONCENTRATION SUMMARY, CENTRAL TENDENCY EXPOSURE, SITE 19 SURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Current
Medium:	Site 19 Surface Soil (0-2 feet bgs)
Exposure Medium:	Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)	Exposure Point Concentration			
							Value	Units	Statistic	Rationale[a]
Site 19	Arsenic	MG/KG	4.33E+00	8.89E+00	NT	9.5E+00	4.33E+00	MG/KG	Mean- NP	(2)
	Benzo(a)pyrene	MG/KG	2.00E-02	8.04E-02	T	5.2E-01	2.00E-02	MG/KG	Mean- NP	(1)

Notes:

See Appendix G for a description of the statistical methods used.

a The lesser of the mean and maximum detected concentration was used as the exposure point concentration (EPC).

For chemicals detected in at least 85% of the samples censored data were replaced with one-half of the reported concentration. For detection frequencies less than 85% censored measurements were treated as random variables that could assume any value between zero and the reported concentration (see note under NP).

feet bgs		Feet below ground surface
MG/KG		Milligram per kilogram
NP		Non-parametric method*. Calculations based on stochastic modeling following the "bounding" approach in EPA (2002). 2,000 iterations of a Monte Carlo model performed for each estimate. For lognormal distributions the mean is the minimum variance unbiased estimator (MVU) following equation 13.3 in Gilbert (1987). For normal distributions the arithmetic mean is used. For both distributions, the median value from the distribution of 2,000 calculations was used as the final estimate for the mean. Censored (non-detected) data were treated as random variables that could assume any value between zero and the reported concentration. *This is not a non-parametric approach in cases where the distribution is normal, but NP is used for consistency with the RAGS guidelines for preparing summary tables for exposure point concentrations.
NT		Distribution was not tested if the sample size was less than five or the frequency of detection was less than 50 percent. Distribution defaults to lognormal.
O(T)		Other distribution (unknown); assumed to be lognormal based on examination of probability plots, box plots, and frequency histograms.
RAGS		Risk assessment guidance for Superfund
T		Transformed (lognormal) distribution confirmed using the Shapiro-Wilk W test (alpha= 0.05).
	(1)	Detection frequency between 50 and 85 percent, distribution confirmed or assumed lognormal. Mean calculated using stochastic modeling as described under the note for NP.
	(2)	Detection frequency less than 50%, distribution not tested. A lognormal assumption was used to calculate the mean using stochastic modeling as described under the note for NP.
	(3)	Detection frequency greater than or equal to 85%, distribution confirmed or assumed lognormal. 95% UCL calculated using Land's method

Gilbert, R. O. 1987. *Statistical Methods for Environmental Pollution Monitoring*. John Wiley & Sons, Inc., New York, NY.

U.S. Environmental Protection Agency (EPA). 2002. "Calculating Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Washington, D.C. December.

TABLE H-3.15: EXPOSURE POINT CONCENTRATION SUMMARY, REASONABLE MAXIMUM EXPOSURE, SITE 19 SUBSURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Future
Medium:	*Site 19 Subsurface Soil (0-8 feet bgs)*
Exposure Medium:	Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)	Exposure Point Concentration			
							Value	Units	Statistic	Rationale[a]
Site 19	Arsenic	MG/KG	5.25E+00	7.75E+00	NT	9.5E+00	7.75E+00	MG/KG	95% UCL- NP	(2)
	Benzo(a)pyrene	MG/KG	1.87E-02	5.51E-02	T	5.2E-01	5.51E-02	MG/KG	95% UCL- NP	(1)
	Lead	MG/KG	9.17E+00	5.50E+01	NT	3.0E+02	5.50E+01	MG/KG	95% UCL- NP	(2)

Notes:

See Appendix G for a description of the statistical methods used.

a The lesser of the 95% UCL and maximum detected concentration was used as the exposure point concentration (EPC).

For chemicals detected in at least 85% of the samples censored data were replaced with one-half of the reported concentration. For detection frequencies less than 85% censored measurements were treated as random variables that could assume any value between zero and the reported concentration (see note under NP).

95% UCL — One-sided 95 percent upper confidence limit of the mean

feet bgs — Feet below ground surface

MG/KG — Milligram per kilogram

NP — *Non-parametric method*. Calculations based on stochastic modeling following the "bounding" approach in EPA (2002). 2,000 iterations of a Monte Carlo model performed for each estimate. For lognormal distributions the 95% UCL was determined using the non-parametric Chebyshev inequality. For normal distributions the 95% UCL was calculated using the t statistic. For both distributions, the 95th percentile value from the distribution of 2,000 calculations was used as the final estimate for the 95% UCL. Censored (non-detected) data were treated as random variables that could assume any value between zero and the reported concentration.* *This is not a non-parametric approach in cases where the distribution is normal, but NP is used for consistency with the RAGS guidelines for preparing summary tables for exposure point concentrations.

NT — Distribution was not tested if the sample size was less than five or the frequency of detection was less than 50 percent. Distribution defaults to lognormal.

O(T) — *Other distribution (unknown);* assumed to be lognormal based on examination of probability plots, box plots, and frequency histograms.

RAGS — Risk assessment guidance for Superfund

T — Transformed (lognormal) distribution confirmed using the Shapiro-Wilk W test (alpha= 0.05).

(1) — Detection frequency between 50 and 85 percent, distribution confirmed or assumed lognormal. 95% UCL estimated using the bounding approach from EPA (2002).

(2) — Detection frequency less than 50%, distribution not tested. 95% UCL estimated using the bounding approach from EPA (2002).

(3) — Detection frequency between 50 and 85 percent, distribution confirmed or assumed lognormal. Mean calculated using stochastic modeling as described under the note for NP.

Gilbert, R. O. 1987. *Statistical Methods for Environmental Pollution Monitoring*. John Wiley & Sons, Inc., New York, NY.

U.S. Environmental Protection Agency (EPA). 2002. "Calculating Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Washington, D.C. December.

TABLE H-3.16: EXPOSURE POINT CONCENTRATION SUMMARY, CENTRAL TENDENCY EXPOSURE, SITE 19 SUBSURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Future
Medium:	Site 19 Subsurface Soil (0-8 feet bgs)
Exposure Medium:	Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)	Exposure Point Concentration			
							Value	Units	Statistic	Rationale[a]
Site 19	Arsenic	MG/KG	5.25E+00	7.75E+00	NT	9.5E+00	5.25E+00	MG/KG	Mean- NP	(2)
	Benzo(a)pyrene	MG/KG	1.87E-02	5.51E-02	T	5.2E-01	1.87E-02	MG/KG	Mean- NP	(1)
	Lead	MG/KG	9.17E+00	5.50E+01	NT	3.0E+02	9.17E+00	MG/KG	Mean- NP	(2)

Notes:

See Appendix G for a description of the statistical methods used.

a The lesser of the mean and maximum detected concentration was used as the exposure point concentration (EPC).

For chemicals detected in at least 85% of the samples censored data were replaced with one-half of the reported concentration. For detection frequencies less than 85% censored measurements were treated as random variables that could assume any value between zero and the reported concentration (see note under NP).

feet bgs	Feet below ground surface
MG/KG	Milligram per kilogram
NP	Non-parametric method*. Calculations based on stochastic modeling following the "bounding" approach in EPA (2002). 2,000 iterations of a Monte Carlo model performed for each estimate. For lognormal distributions the mean is the minimum variance unbiased estimator (MVU) following equation 13.3 in Gilbert (1987). For normal distributions the arithmetic mean is used. For both distributions, the median value from the distribution of 2,000 calculations was used as the final estimate for the mean. Censored (non-detected) data were treated as random variables that could assume any value between zero and the reported concentration. *This is not a non-parametric approach in cases where the distribution is normal, but NP is used for consistency with the RAGS guidelines for preparing summary tables for exposure point concentrations.
NT	Distribution was not tested if the sample size was less than five or the frequency of detection was less than 50 percent. Distribution defaults to lognormal.
O(T)	Other distribution (unknown); assumed to be lognormal based on examination of probability plots, box plots, and frequency histograms.
RAGS	Risk assessment guidance for Superfund
T	Transformed (lognormal) distribution confirmed using the Shapiro-Wilk W test (alpha= 0.05).
(1)	Detection frequency between 50 and 85 percent, distribution confirmed or assumed lognormal. Mean calculated using stochastic modeling as described under the note for NP.
(2)	Detection frequency less than 50%, distribution not tested. A lognormal assumption was used to calculate the mean using stochastic modeling as described under the note for NP.
(3)	Detection frequency between 50 and 85 percent, distribution confirmed or assumed lognormal. Mean calculated using stochastic modeling as described under the note for NP.

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U.S. Environmental Protection Agency (EPA). 2002. "Calculating Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Washington, D.C. December.

TABLE H-3.17: EXPOSURE POINT CONCENTRATION SUMMARY, REASONABLE MAXIMUM EXPOSURE, SITE 19 GROUNDWATER

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Point	Chemical	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)	Exposure Point Concentration			
							Value	Units	Statistic	Rationale[a]
Site 19	1,1-Dichloroethane	MG/L	5.90E-03	2.49E-02	T	2.70E-02	2.49E-02	MG/L	95% UCL- NP	(1)
	1,2-Dichloroethane	MG/L	2.66E-04	4.45E-04	NT	7.00E-04	4.45E-04	MG/L	95% UCL- NP	(2)
	1,2-Dichloropropane	MG/L	5.70E-04	1.11E-03	NT	2.00E-03	1.11E-03	MG/L	95% UCL- NP	(2)
	Arsenic	MG/L	3.31E-03	9.64E-03	NT	1.11E-02	9.64E-03	MG/L	95% UCL- NP	(2)
	Benzene	MG/L	3.33E-04	6.04E-04	NT	1.00E-03	6.04E-04	MG/L	95% UCL- NP	(2)
	Manganese	MG/L	7.52E+00	7.16E+01	T	5.17E+00	5.17E+00	MG/L	MAX	(1)
	Tetrachloroethene	MG/L	4.07E-03	9.35E-03	NT	2.20E-02	9.35E-03	MG/L	95% UCL- NP	(2)
	Trichloroethene	MG/L	1.26E-03	2.34E-03	NT	4.20E-03	2.34E-03	MG/L	95% UCL- NP	(2)

Notes:

See Appendix G for a description of the statistical methods used.

a The lesser of the 95% UCL and maximum detected concentration was used as the exposure point concentration (EPC).

For chemicals detected in at least 85% of the samples censored data were replaced with one-half of the reported concentration. For detection frequencies less than 85% censored measurements were treated as random variables that could assume any value between zero and the reported concentration (see note under NP).

95% UCL	One-sided 95 percent upper confidence limit of the mean
feet bgs	Feet below ground surface
MAX	Maximum detected concentration
MG/L	Milligram per liter
MVUE	Minimum variance unbiased estimator
NP	Non-parametric method*. Calculations based on stochastic modeling following the "bounding" approach in EPA (2002). 2,000 iterations of a Monte Carlo model performed for each estimate. For confirmed or assumed lognormal distributions the 95% UCL was determined using the MVUE Chebyshev inequality. For normal distributions the 95% UCL was calculated using the t statistic. For distributions listed as NT, the 95% UCL was calculated using the nonparametric Chebyshev inequality. For all distributions, the 95th percentile value from the distribution of 2,000 calculations was used as the final estimate for the 95% UCL. Censored (non-detected) data were treated as random variables that could assume any value between zero and the reported concentration. *This is not a nonparametric approach in cases where the UCL is calculated using the t statistic or the MVUE Chebyshev inequality, but NP is used for consistency with the nomenclature used in the RAGS guidelines for preparing summary tables for exposure point concentrations.
NT	Distribution was not tested if the sample size was less than five or the frequency of detection was less than 50 percent. Distribution defaults to nonparametric.
RAGS	Risk assessment guidance for Superfund
T	Transformed (lognormal) distribution confirmed using the Shapiro-Wilk W test (alpha= 0.05).
(1)	Detection frequency between 50 and 85 percent, distribution confirmed or assumed lognormal. 95% UCL estimated using the bounding approach from EPA (2002).
(2)	Detection frequency less than 50%, distribution not tested. 95% UCL estimated using the bounding approach from EPA (2002).

Gilbert, R. O. 1987. *Statistical Methods for Environmental Pollution Monitoring*. John Wiley & Sons, Inc., New York, NY.

U.S. Environmental Protection Agency (EPA). 2002. "Calculating Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Washington, D.C. December.

TABLE H-3.18: EXPOSURE POINT CONCENTRATION SUMMARY, CENTRAL TENDENCY EXPOSURE, SITE 19 GROUNDWATER

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Point	Chemical	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)	Exposure Point Concentration			
							Value	Units	Statistic	Rationale[a]
Site 19	1,1-Dichloroethane	MG/L	5.90E-03	2.49E-02	T	2.70E-02	5.90E-03	MG/L	Mean- NP	(1)
	1,2-Dichloroethane	MG/L	2.66E-04	4.45E-04	NT	7.00E-04	2.66E-04	MG/L	Mean- NP	(2)
	1,2-Dichloropropane	MG/L	5.70E-04	1.11E-03	NT	2.00E-03	5.70E-04	MG/L	Mean- NP	(2)
	Arsenic	MG/L	3.31E-03	9.64E-03	NT	1.11E-02	3.31E-03	MG/L	Mean- NP	(2)
	Benzene	MG/L	3.33E-04	6.04E-04	NT	1.00E-03	3.33E-04	MG/L	Mean- NP	(2)
	Manganese	MG/L	7.52E+00	7.16E+01	T	5.17E+00	5.17E+00	MG/L	MAX	(1)
	Tetrachloroethene	MG/L	4.07E-03	9.35E-03	NT	2.20E-02	4.07E-03	MG/L	Mean- NP	(2)
	Trichloroethene	MG/L	1.26E-03	2.34E-03	NT	4.20E-03	1.26E-03	MG/L	Mean- NP	(2)

Notes:

See Appendix G for a description of the statistical methods used.

a The lesser of the mean and maximum detected concentration was used as the exposure point concentration (EPC).

For chemicals detected in at least 85% of the samples censored data were replaced with one-half of the reported concentration. For detection frequencies less than 85% censored measurements were treated as random variables that could assume any value between zero and the reported concentration (see note under NP).

feet bgs	Feet below ground surface
MAX	Maximum detected concentration
MG/L	Milligram per liter
MVUE	Minimum variance unbiased estimator
NP	Non-parametric method*. Calculations based on stochastic modeling following the "bounding" approach in EPA (2002). 2,000 iterations of a Monte Carlo model performed for each estimate. For confirmed or assumed lognormal distributions the mean is the MVUE following equation 13.3 in Gilbert (1987). For normal and distributions listed as NT the arithmetic mean is used. For all distributions, the median value from the distribution of 2,000 calculations was used as the final estimate for the mean. Censored (non-detected) data were treated as random variables that could assume any value between zero and the reported concentration. *This is not a non-parametric approach in cases where the distribution is normal or lognormal, but NP is used for consistency with the nomenclature used in the RAGS guidelines for preparing summary tables for exposure point concentrations.
NT	Distribution was not tested if the sample size was less than five or the frequency of detection was less than 50 percent. Distribution defaults to nonparametric.
RAGS	Risk assessment guidance for Superfund
T	Transformed (lognormal) distribution confirmed using the Shapiro-Wilk W test (alpha= 0.05).
(1)	Detection frequency between 50 and 85 percent, distribution confirmed or assumed lognormal. Mean calculated using stochastic modeling as described under the note for NP.
(2)	Detection frequency less than 50%, distribution not tested. A nonparametric assumption was used to calculate the mean using stochastic modeling as described under the note for N

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U.S. Environmental Protection Agency (EPA). 2002. "Calculating Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Washington, D.C. December.

TABLE H-3.19: EXPOSURE POINT CONCENTRATION SUMMARY, REASONABLE MAXIMUM EXPOSURE, SITE 22 SURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Current
Medium:	Site 22 Surface Soil (0-2 feet bgs)
Exposure Medium:	Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale[a]
Site 22	2-Methylnaphthalene	MG/KG	9.76E-02	4.60E-01	O(T)	3.8E+00		4.60E-01	MG/KG	95% UCL- NP	(1)
	Arsenic	MG/KG	4.58E+00	1.04E+01	NT	1.8E+01		1.04E+01	MG/KG	95% UCL- NP	(3)
	Benzo(a)pyrene	MG/KG	2.73E-02	5.12E-02	T	1.9E-01	J	5.12E-02	MG/KG	95% UCL - T	(2)
	Lead	MG/KG	1.18E+02	1.52E+03	O(T)	9.9E+03		1.52E+03	MG/KG	95% UCL- O(T)	(2)

Notes:

See Appendix G for a description of the statistical methods used.

a The lesser of the 95% UCL and maximum detected concentration was used as the exposure point concentration (EPC).

For chemicals detected in at least 85% of the samples censored data were replaced with one-half of the reported concentration. For detection frequencies less than 85% censored measurements were treated as random variables that could assume any value between zero and the reported concentration (see note under NP).

95% UCL	One-sided 95 percent upper confidence limit of the mean
feet bgs	Feet below ground surface
J	Estimated value
MG/KG	Milligram per kilogram
NP	Non-parametric method*. Calculations based on stochastic modeling following the "bounding" approach in EPA (2002). 2,000 iterations of a Monte Carlo model performed for each estimate. For lognormal distributions the 95% UCL was determined using the non-parametric Chebyshev inequality. For normal distributions the 95% UCL was calculated using the t statistic. For both distributions, the 95th percentile value from the distribution of 2,000 calculations was used as the final estimate for the 95% UCL. Censored (non-detected) data were treated as random variables that could assume any value between zero and the reported concentration. *This is not a non-parametric approach in cases where the distribution is normal, but NP is used for consistency with the RAGS guidelines for preparing summary tables for exposure point concentrations.
NT	Distribution was not tested if the sample size was less than five or the frequency of detection was less than 50 percent. Distribution defaults to lognormal.
O(T)	Other distribution (unknown); assumed to be lognormal based on examination of probability plots, box plots, and frequency histograms.
RAGS	Risk assessment guidance for Superfund
T	Transformed (lognormal) distribution confirmed using the Shapiro-Wilk W test (alpha= 0.05).
(1)	Detection frequency between 50 and 85 percent, distribution confirmed or assumed lognormal. 95% UCL estimated using the bounding approach from EPA (2002).
(2)	Detection frequency greater than or equal to 85%, distribution confirmed or assumed lognormal. 95% UCL calculated using Land's method
(3)	Detection frequency less than 50%, distribution not tested. 95% UCL estimated using the bounding approach from EPA (2002).

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U.S. Environmental Protection Agency (EPA). 2002. "Calculating Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Washington, D.C. December.

TABLE H-3.20: EXPOSURE POINT CONCENTRATION SUMMARY, CENTRAL TENDENCY EXPOSURE, SITE 22 SURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Current
Medium:	Site 22 Surface Soil (0-2 feet bgs)
Exposure Medium:	Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)	Exposure Point Concentration			
							Value	Units	Statistic	Rationale[a]
Site 22	2-Methylnaphthalene	MG/KG	9.76E-02	4.60E-01	O(T)	3.8E+00	9.76E-02	MG/KG	Mean- NP	(1)
	Arsenic	MG/KG	4.58E+00	1.04E+01	NT	1.8E+01	4.58E+00	MG/KG	Mean- NP	(3)
	Benzo(a)pyrene	MG/KG	2.73E-02	5.12E-02	T	1.9E-01	2.73E-02	MG/KG	Mean- T	(2)
	Lead	MG/KG	1.18E+02	1.52E+03	O(T)	9.9E+03	1.18E+02	MG/KG	Mean- O(T)	(2)

Notes:

See Appendix G for a description of the statistical methods used.

a The lesser of the mean and maximum detected concentration was used as the exposure point concentration (EPC).

For chemicals detected in at least 85% of the samples censored data were replaced with one-half of the reported concentration. For detection frequencies less than 85% censored measurements were treated as random variables that could assume any value between zero and the reported concentration (see note under NP).

feet bgs — Feet below ground surface

NP — Non-parametric method*. Calculations based on stochastic modeling following the "bounding" approach in EPA (2002). 2,000 iterations of a Monte Carlo model performed for each estimate. For lognormal distributions the mean is the minimum variance unbiased estimator (MVU) following equation 13.3 in Gilbert (1987). For normal distributions the arithmetic mean is used. For both distributions, the median value from the distribution of 2,000 calculations was used as the final estimate for the mean. Censored (non-detected) data were treated as random variables that could assume any value between zero and the reported concentration. *This is not a non-parametric approach in cases where the distribution is normal, but NP is used for consistency with the RAGS guidelines for preparing summary tables for exposure point concentrations.

NT — Distribution was not tested if the sample size was less than five or the frequency of detection was less than 50 percent. Distribution defaults to lognormal.

O(T) — Other distribution (unknown); assumed to be lognormal based on examination of probability plots, box plots, and frequency histograms.

RAGS — Risk assessment guidance for Superfund

T — Transformed (lognormal) distribution confirmed using the Shapiro-Wilk W test (alpha= 0.05).

(1) Detection frequency between 50 and 85 percent, distribution confirmed or assumed lognormal. Mean calculated using stochastic modeling as described under the note for NP.

(2) Detection frequency greater than or equal to 85%, distribution confirmed or assumed lognormal. The MVU estimate of the mean of a lognormal distribution was calculated.

(3) Detection frequency less than 50%, distribution not tested. A lognormal assumption was used to calculate the mean using stochastic modeling as described under the note for NP.

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U.S. Environmental Protection Agency (EPA). 2002. "Calculating Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Washington, D.C. December.

TABLE H-3.21: EXPOSURE POINT CONCENTRATION SUMMARY, REASONABLE MAXIMUM EXPOSURE, SITE 22 SUBSURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Future
Medium:	Site 22 Subsuface Soil (0-8 feet bgs)
Exposure Medium:	Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale[a]
Site 22	2-Methylnaphthalene	MG/KG	1.84E+00	1.42E+01	NT	1.1E+02	J	1.42E+01	MG/KG	95% UCL- NP	(1)
	Arsenic	MG/KG	4.31E+00	7.36E+00	NT	2.4E+01		7.36E+00	MG/KG	95% UCL- NP	(1)
	Benzene	MG/KG	5.81E-01	2.58E+01	NT	3.3E+00		3.30E+00	MG/KG	MAX	(1)
	Benzo(a)pyrene	MG/KG	3.56E-02	6.71E-02	T	5.6E-01	J	6.71E-02	MG/KG	95% UCL- T	(2)
	Ethylbenzene	MG/KG	5.40E+00	1.12E+02	NT	5.7E+02		1.12E+02	MG/KG	95% UCL- NP	(1)
	Lead	MG/KG	2.99E+01	1.14E+03	O(T)	9.9E+03		1.14E+03	MG/KG	95% UCL- NP	(3)
	Toluene	MG/KG	6.41E+00	1.44E+02	O(T)	8.4E+02		1.44E+02	MG/KG	95% UCL- NP	(3)
	Xylene (Total)	MG/KG	3.49E+01	5.05E+02	NT	2.6E+03		5.05E+02	MG/KG	95% UCL- NP	(1)

Notes:

See Appendix G for a description of the statistical methods used.

a The lesser of the 95% UCL and maximum detected concentration was used as the exposure point concentration (EPC).

For chemicals detected in at least 85% of the samples censored data were replaced with one-half of the reported concentration. For detection frequencies less than 85% censored measurements were treated as random variables that could assume any value between zero and the reported concentration (see note under NP).

95% UCL	One-sided 95 percent upper confidence limit of the mean
feet bgs	Feet below ground surface
J	Estimated value
MAX	Maximum detected concentration
MG/KG	Milligram per kilogram
NP	Non-parametric method*. Calculations based on stochastic modeling following the "bounding" approach in EPA (2002). 2,000 iterations of a Monte Carlo model performed for each estimate. For lognormal distributions the 95% UCL was determined using the non-parametric Chebyshev inequality. For normal distributions the 95% UCL was calculated using the t statistic. For both distributions, the 95th percentile value from the distribution of 2,000 calculations was used as the final estimate for the 95% UCL. Censored (non-detected) data were treated as random variables that could assume any value between zero and the reported concentration. *This is not a non-parametric approach in cases where the distribution is normal, but NP is used for consistency with the RAGS guidelines for preparing summary tables for exposure point concentrations.
NT	Distribution was not tested if the sample size was less than five or the frequency of detection was less than 50 percent. Distribution defaults to lognormal.
O(T)	Other distribution (unknown); assumed to be lognormal based on examination of probability plots, box plots, and frequency histograms.
RAGS	Risk assessment guidance for Superfund
T	Transformed (lognormal) distribution confirmed using the Shapiro-Wilk W test (alpha= 0.05).
(1)	Detection frequency less than 50%, distribution not tested. 95% UCL estimated using the bounding approach from EPA (2002).
(2)	Detection frequency greater than or equal to 85%, distribution confirmed or assumed lognormal. 95% UCL calculated using Land's method
(3)	Detection frequency between 50 and 85 percent, distribution confirmed or assumed lognormal. 95% UCL estimated using the bounding approach from EPA (2002).

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U.S. Environmental Protection Agency (EPA). 2002. "Calculating Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Washington, D.C. December.

TABLE H-3.22: EXPOSURE POINT CONCENTRATION SUMMARY, CENTRAL TENDENCY EXPOSURE, SITE 22 SUBSURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Future
Medium:	Site 22 Subsurface Soil (0-8 feet bgs)
Exposure Medium:	Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale[a]
Site 22	2-Methylnaphthalene	MG/KG	1.84E+00	1.42E+01	NT	1.1E+02	J	1.84E+00	MG/KG	Mean- NP	(1)
	Arsenic	MG/KG	4.31E+00	7.36E+00	NT	2.4E+01		4.31E+00	MG/KG	Mean- NP	(1)
	Benzene	MG/KG	5.81E-01	2.58E+01	NT	3.3E+00		5.81E-01	MG/KG	Mean- NP	(1)
	Benzo(a)pyrene	MG/KG	3.56E-02	6.71E-02	T	5.6E-01	J	3.56E-02	MG/KG	Mean- T	(2)
	Ethylbenzene	MG/KG	5.40E+00	1.12E+02	NT	5.7E+02		5.40E+00	MG/KG	Mean- NP	(1)
	Lead	MG/KG	2.99E+01	1.14E+03	O(T)	9.9E+03		2.99E+01	MG/KG	Mean- NP	(3)
	Toluene	MG/KG	6.41E+00	1.44E+02	O(T)	8.4E+02		6.41E+00	MG/KG	Mean- NP	(2)
	Xylene (Total)	MG/KG	3.49E+01	5.05E+02	NT	2.6E+03		3.49E+01	MG/KG	Mean- NP	(1)

Notes:

See Appendix G for a description of the statistical methods used.

a The lesser of the mean and maximum detected concentration was used as the exposure point concentration (EPC).

For chemicals detected in at least 85% of the samples censored data were replaced with one-half of the reported concentration. For detection frequencies less than 85% censored measurements were treated as random variables that could assume any value between zero and the reported concentration (see note under NP).

feet bgs	Feet below ground surface
J	Estimated value
MG/KG	Milligram per kilogram
NP	Non-parametric method*. Calculations based on stochastic modeling following the "bounding" approach in EPA (2002). 2,000 iterations of a Monte Carlo model performed for each estimate. For lognormal distributions the mean is the minimum variance unbiased estimator (MVU) following equation 13.3 in Gilbert (1987). For normal distributions the arithmetic mean is used. For both distributions, the median value from the distribution of 2,000 calculations was used as the final estimate for the mean. Censored (non-detected) data were treated as random variables that could assume any value between zero and the reported concentration. *This is not a non-parametric approach in cases where the distribution is normal, but NP is used for consistency with the RAGS guidelines for preparing summary tables for exposure point concentrations.
NT	Distribution was not tested if the sample size was less than five or the frequency of detection was less than 50 percent. Distribution defaults to lognormal.
O(T)	Other distribution (unknown); assumed to be lognormal based on examination of probability plots, box plots, and frequency histograms.
RAGS	Risk assessment guidance for Superfund
T	Transformed (lognormal) distribution confirmed using the Shapiro-Wilk W test (alpha= 0.05).
(1)	*Detection frequency less than 50%, distribution not tested.* A lognormal assumption was used to calculate the mean using stochastic modeling as described under the note for NP.
(2)	Detection frequency greater than or equal to 85%, distribution confirmed or assumed lognormal. The MVU estimate of the mean of a lognormal distribution was calculated.
(3)	Detection frequency between 50 and 85 percent, distribution confirmed or assumed lognormal. Mean calculated using stochastic modeling as described under the note for NP.

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TABLE H-3.23: EXPOSURE POINT CONCENTRATION SUMMARY, REASONABLE MAXIMUM EXPOSURE, SITE 22 GROUNDWATER

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Point	Chemical	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale[a]
Site 22	1,2-Dichloroethane	MG/L	2.05E-03	6.95E-03	NT	3.80E-02		6.95E-03	MG/L	95% UCL- NP	(1)
	2-Methylnaphthalene	MG/L	1.02E-02	2.84E-02	NT	6.00E-02		2.84E-02	MG/L	95% UCL- NP	(1)
	Arsenic	MG/L	1.24E-02	5.29E-02	T	4.10E-02		4.10E-02	MG/L	MAX	(3)
	Benzene	MG/L	5.39E-01	1.49E+00	NT	8.30E+00		1.49E+00	MG/L	95% UCL- NP	(1)
	Chloroform	MG/L	2.24E-03	1.20E-02	NT	1.90E-02		1.20E-02	MG/L	95% UCL- NP	(1)
	Ethylbenzene	MG/L	1.21E-01	4.48E-01	NT	3.83E+00	J	4.48E-01	MG/L	95% UCL- NP	(1)
	Manganese	MG/L	5.09E+00	2.05E+01	O(T)	1.10E+01		1.10E+01	MG/L	MAX	(2)
	Naphthalene	MG/L	8.42E-02	2.14E-01	NT	3.80E-01		2.14E-01	MG/L	95% UCL- NP	(1)
	n-Propylbenzene	MG/L	1.34E-01	2.30E-01	O(N)	2.80E-01		2.30E-01	MG/L	95% UCL- NP	(1)
	Tetrachloroethene	MG/L	1.92E-03	1.14E-02	NT	2.60E-03	J	2.60E-03	MG/L	MAX	(1)
	Thallium	MG/L	1.83E-03	3.74E-03	NT	1.00E-02		3.74E-03	MG/L	95% UCL- NP	(1)
	Toluene	MG/L	2.95E-01	1.51E+00	NT	1.53E+01	J	1.51E+00	MG/L	95% UCL- NP	(1)
	Trichloroethene	MG/L	2.37E-03	1.20E-02	NT	2.00E-02	J	1.20E-02	MG/L	95% UCL- NP	(1)
	Xylene	MG/L	3.87E-01	1.96E+00	NT	1.70E+01	J	1.96E+00	MG/L	95% UCL- NP	(1)

Notes:

See Appendix G for a description of the statistical methods used.

a The lesser of the 95% UCL and maximum detected concentration was used as the exposure point concentration (EPC).

For chemicals detected in at least 85% of the samples censored data were replaced with one-half of the reported concentration. For detection frequencies less than 85% censored measurements were treated as random variables that could assume any value between zero and the reported concentration (see note under NP).

95% UCL	One-sided 95 percent upper confidence limit of the mean
feet bgs	Feet below ground surface
J	Estimated value
MAX	Maximum detected concentration
MG/L	Milligram per liter
MVUE	Minimum variance unbiased estimator
NP	Non-parametric method*. Calculations based on stochastic modeling following the "bounding" approach in EPA (2002). 2,000 iterations of a Monte Carlo model performed for each estimate. For confirmed or assumed lognormal distributions the 95% UCL was determined using the MVUE Chebyshev inequality. For normal distributions the 95% UCL was calculated using the t statistic. For distributions listed as NT, the 95% UCL was calculated using the nonparametric Chebyshev inequality. For all distributions, the 95th percentile value from the distribution of 2,000 calculations was used as the final estimate for the 95% UCL. Censored (non-detected) data were treated as random variables that could assume any value between zero and the reported concentration. *This is not a nonparametric approach in cases where the UCL is calculated using the t statistic or the MVUE Chebyshev inequality, but NP is used for consistency with the nomenclature used in the RAGS guidelines for preparing summary tables for exposure point concentrations.
NT	Distribution was not tested if the sample size was less than five or the frequency of detection was less than 50 percent. Distribution defaults to nonparametric.
O(N)	Other distribution (unknown); assumed to be normal based on examination of probability plots, box plots, and frequency histograms.
O(T)	Other distribution (unknown); assumed to be lognormal based on examination of probability plots, box plots, and frequency histograms.
RAGS	Risk assessment guidance for Superfund
T	Transformed (lognormal) distribution confirmed using the Shapiro-Wilk W test (alpha= 0.05).

TABLE H-3.23: EXPOSURE POINT CONCENTRATION SUMMARY, REASONABLE MAXIMUM EXPOSURE, SITE 22 GROUNDWATER

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Point	Chemical	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale[a]

(1) Detection frequency less than 50%, distribution not tested. 95% UCL estimated using the bounding approach from EPA (2002).

(2) Detection frequency greater than or equal to 85%, distribution confirmed or assumed lognormal. 95% UCL calculated using Land's method

(3) Detection frequency between 50 and 85 percent, distribution confirmed or assumed lognormal. 95% UCL estimated using the bounding approach from EPA (2002).

Gilbert, R. O. 1987. *Statistical Methods for Environmental Pollution Monitoring*. John Wiley & Sons, Inc., New York, NY.

U.S. Environmental Protection Agency (EPA). 2002. "Calculating Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Washington, D.C. December.

TABLE H-3.24: EXPOSURE POINT CONCENTRATION SUMMARY, CENTRAL TENDENCY EXPOSURE, SITE 22 GROUNDWATER

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Point	Chemical	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale[a]
Site 22	1,2-Dichloroethane	MG/L	2.05E-03	6.95E-03	NT	3.80E-02		2.05E-03	MG/L	Mean- NP	(1)
	2-Methylnaphthalene	MG/L	1.02E-02	2.84E-02	NT	6.00E-02		1.02E-02	MG/L	Mean- NP	(1)
	Arsenic	MG/L	1.24E-02	5.29E-02	T	4.10E-02		1.24E-02	MG/L	Mean- NP	(3)
	Benzene	MG/L	5.39E-01	1.49E+00	NT	8.30E+00		5.39E-01	MG/L	Mean- NP	(1)
	Chloroform	MG/L	2.24E-03	1.20E-02	NT	1.90E-02		2.24E-03	MG/L	Mean- NP	(1)
	Ethylbenzene	MG/L	1.21E-01	4.48E-01	NT	3.83E+00	J	1.21E-01	MG/L	Mean- NP	(1)
	Manganese	MG/L	5.09E+00	2.05E+01	O(T)	1.10E+01		5.09E+00	MG/L	Mean- O(T)	(2)
	Naphthalene	MG/L	8.42E-02	2.14E-01	NT	3.80E-01		8.42E-02	MG/L	Mean- NP	(1)
	n-Propylbenzene	MG/L	1.34E-01	2.30E-01	O(N)	2.80E-01		1.34E-01	MG/L	Mean- NP	(1)
	Tetrachloroethene	MG/L	1.92E-03	1.14E-02	NT	2.60E-03	J	1.92E-03	MG/L	Mean- NP	(1)
	Thallium	MG/L	1.83E-03	3.74E-03	NT	1.00E-02		1.83E-03	MG/L	Mean- NP	(1)
	Toluene	MG/L	2.95E-01	1.51E+00	NT	1.53E+01	J	2.95E-01	MG/L	Mean- NP	(1)
	Trichloroethene	MG/L	2.37E-03	1.20E-02	NT	2.00E-02	J	2.37E-03	MG/L	Mean- NP	(1)
	Xylene	MG/L	3.87E-01	1.96E+00	NT	1.70E+01	J	3.87E-01	MG/L	Mean- NP	(1)

Notes:

See Appendix G for a description of the statistical methods used.

a The lesser of the mean and maximum detected concentration was used as the exposure point concentration (EPC).

For chemicals detected in at least 85% of the samples censored data were replaced with one-half of the reported concentration. For detection frequencies less than 85% censored measurements were treated as random variables that could assume any value between zero and the reported concentration (see note under NP).

feet bgs	Feet below ground surface
J	Estimated value
MG/L	Milligram per liter
MVUE	Minimum variance unbiased estimator
NP	Non-parametric method*. Calculations based on stochastic modeling following the "bounding" approach in EPA (2002). 2,000 iterations of a Monte Carlo model performed for each estimate. For confirmed or assumed lognormal distributions the mean is the MVUE following equation 13.3 in Gilbert (1987). For normal and distributions listed as NT the arithmetic mean is used. For all distributions, the median value from the distribution of 2,000 calculations was used as the final estimate for the mean. Censored (non-detected) data were treated as random variables that could assume any value between zero and the reported concentration. *This is not a non-parametric approach in cases where the distribution is normal or lognormal, but NP is used for consistency with the nomenclature used in the RAGS guidelines for preparing summary tables for exposure point concentrations.
NT	Distribution was not tested if the sample size was less than five or the frequency of detection was less than 50 percent. Distribution defaults to nonparametric.
O(N)	Other distribution (unknown); assumed to be normal based on examination of probability plots, box plots, and frequency histograms.
O(T)	Other distribution (unknown); assumed to be lognormal based on examination of probability plots, box plots, and frequency histograms.
RAGS	Risk assessment guidance for Superfund
T	Transformed (lognormal) distribution confirmed using the Shapiro-Wilk W test (alpha= 0.05).
(1)	Detection frequency less than 50%, distribution not tested. A nonparametric assumption was used to calculate the mean using stochastic modeling as described under the note for NP.
(2)	Detection frequency greater than or equal to 85%, distribution confirmed or assumed lognormal. The MVU estimate of the mean of a lognormal distribution was calculated.

TABLE H-3.24: EXPOSURE POINT CONCENTRATION SUMMARY, CENTRAL TENDENCY EXPOSURE, SITE 22 GROUNDWATER

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Point	Chemical	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale[a]

(3) Detection frequency between 50 and 85 percent, distribution confirmed or assumed lognormal. Mean calculated using stochastic modeling as described under the note for NP.

Gilbert, R. O. 1987. *Statistical Methods for Environmental Pollution Monitoring*. John Wiley & Sons, Inc., New York, NY.

U.S. Environmental Protection Agency (EPA). 2002. "Calculating Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Washington, D.C. December.

TABLE H-3.25: EXPOSURE POINT CONCENTRATION SUMMARY, REASONABLE MAXIMUM EXPOSURE, SITE 23 SURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Current
Medium:	Site 23 Surface Soil (0-2 feet bgs)
Exposure Medium:	Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)	Exposure Point Concentration			
							Value	Units	Statistic	Rationale[a]
Site 23	Arsenic	MG/KG	3.17E+00	7.46E+00	NT	4.2E+00	4.20E+00	MG/KG	MAX	(2)
	Benz(a)anthracene	MG/KG	3.99E-02	1.34E-01	O(T)	2.1E+00	1.34E-01	MG/KG	95% UCL - NP	(1)
	Benzo(a)pyrene	MG/KG	4.44E-02	1.44E-01	O(T)	2.0E+00	1.44E-01	MG/KG	95% UCL - NP	(1)
	Benzo(b)fluoranthene	MG/KG	4.58E-02	1.51E-01	O(T)	2.0E+00	1.51E-01	MG/KG	95% UCL - NP	(1)
	Benzo(k)fluoranthene	MG/KG	3.90E-02	1.03E-01	NT	1.6E+00	1.03E-01	MG/KG	95% UCL - NP	(2)
	Dibenz(a,h)anthracene	MG/KG	2.17E-02	4.73E-02	NT	3.9E-01	4.73E-02	MG/KG	95% UCL - NP	(2)
	Indeno(1,2,3-cd)pyrene	MG/KG	3.83E-02	1.21E-01	O(T)	1.4E+00	1.21E-01	MG/KG	95% UCL - NP	(1)

Notes:

See Appendix G for a description of the statistical methods used.

a The lesser of the 95% UCL and maximum detected concentration was used as the exposure point concentration (EPC).

For chemicals detected in at least 85% of the samples censored data were replaced with one-half of the reported concentration. For detection frequencies less than 85% censored measurements were treated as random variables that could assume any value between zero and the reported concentration (see note under NP).

95% UCL	One-sided 95 percent upper confidence limit of the mean
feet bgs	Feet below ground surface
MAX	Maximum detected concentration
MG/KG	Milligram per kilogram
NP	Non-parametric method*. Calculations based on stochastic modeling following the "bounding" approach in EPA (2002). 2,000 iterations of a Monte Carlo model performed for each estimate. For lognormal distributions the 95% UCL was determined using the non-parametric Chebyshev inequality. For normal distributions the 95% UCL was calculated using the t statistic. For both distributions, the 95th percentile value from the distribution of 2,000 calculations was used as the final estimate for the 95% UCL. Censored (non-detected) data were treated as random variables that could assume any value between zero and the reported concentration. *This is not a non-parametric approach in cases where the distribution is normal, but NP is used for consistency with the RAGS guidelines for preparing summary tables for exposure point concentrations.
NT	Distribution was not tested if the sample size was less than five or the frequency of detection was less than 50 percent. Distribution defaults to lognormal.
O(T)	Other distribution (unknown); assumed to be lognormal based on examination of probability plots, box plots, and frequency histograms.
RAGS	Risk assessment guidance for Superfund
(1)	Detection frequency between 50 and 85 percent, distribution confirmed or assumed lognormal. 95% UCL estimated using the bounding approach from EPA (2002).
(2)	Detection frequency less than 50%, distribution not tested. 95% UCL estimated using the bounding approach from EPA (2002).
(3)	Detection frequency greater than or equal to 85%, distribution confirmed or assumed lognormal. 95% UCL calculated using Land's method

Gilbert, R. O. 1987. *Statistical Methods for Environmental Pollution Monitoring*. John Wiley & Sons, Inc., New York, NY.

U.S. Environmental Protection Agency (EPA). 2002. "Calculating Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Washington, D.C. December.

TABLE H-3.26: EXPOSURE POINT CONCENTRATION SUMMARY, CENTRAL TENDENCY EXPOSURE, SITE 23 SURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Current
Medium:	Site 23 Surface Soil (0-2 feet bgs)
Exposure Medium:	Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)	Exposure Point Concentration			
							Value	Units	Statistic	Rationale[a]
Site 23	Arsenic	MG/KG	3.17E+00	7.46E+00	NT	4.2E+00	3.17E+00	MG/KG	Mean- NP	(2)
	Benz(a)anthracene	MG/KG	3.99E-02	1.34E-01	O(T)	2.1E+00	3.99E-02	MG/KG	Mean - NP	(1)
	Benzo(a)pyrene	MG/KG	4.44E-02	1.44E-01	O(T)	2.0E+00	4.44E-02	MG/KG	Mean - NP	(1)
	Benzo(b)fluoranthene	MG/KG	4.58E-02	1.51E-01	O(T)	2.0E+00	4.58E-02	MG/KG	Mean - NP	(1)
	Benzo(k)fluoranthene	MG/KG	3.90E-02	1.03E-01	NT	1.6E+00	3.90E-02	MG/KG	Mean - NP	(2)
	Dibenz(a,h)anthracene	MG/KG	2.17E-02	4.73E-02	NT	3.9E-01	2.17E-02	MG/KG	Mean - NP	(2)
	Indeno(1,2,3-cd)pyrene	MG/KG	3.83E-02	1.21E-01	O(T)	1.4E+00	3.83E-02	MG/KG	Mean - NP	(1)

Notes:

See Appendix G for a description of the statistical methods used.

a The lesser of the mean and maximum detected concentration was used as the exposure point concentration (EPC).

For chemicals detected in at least 85% of the samples censored data were replaced with one-half of the reported concentration. For detection frequencies less than 85% censored measurements were treated as random variables that could assume any value between zero and the reported concentration (see note under NP).

feet bgs	Feet below ground surface
MG/KG	Milligram per kilogram
NP	Non-parametric method*. Calculations based on stochastic modeling following the "bounding" approach in EPA (2002). 2,000 iterations of a Monte Carlo model performed for each estimate. For lognormal distributions the mean is the minimum variance unbiased estimator (MVU) following equation 13.3 in Gilbert (1987). For normal distributions the arithmetic mean is used. For both distributions, the median value from the distribution of 2,000 calculations was used as the final estimate for the mean. Censored (non-detected) data were treated as random variables that could assume any value between zero and the reported concentration. *This is not a non-parametric approach in cases where the distribution is normal, but NP is used for consistency with the RAGS guidelines for preparing summary tables for exposure point concentrations.
NT	Distribution was not tested if the sample size was less than five or the frequency of detection was less than 50 percent. Distribution defaults to lognormal.
O(T)	Other distribution (unknown); assumed to be lognormal based on examination of probability plots, box plots, and frequency histograms.
RAGS	Risk assessment guidance for Superfund
(1)	Detection frequency between 50 and 85 percent, distribution confirmed or assumed lognormal. Mean calculated using stochastic modeling as described under the note for NP.
(2)	Detection frequency less than 50%, distribution not tested. A lognormal assumption was used to calculate the mean using stochastic modeling as described under the note for NP.
(3)	Detection frequency greater than or equal to 85%, distribution confirmed or assumed lognormal. 95% UCL calculated using Land's method

Gilbert, R. O. 1987. *Statistical Methods for Environmental Pollution Monitoring*. John Wiley & Sons, Inc., New York, NY.

U.S. Environmental Protection Agency (EPA). 2002. "Calculating Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Washington, D.C. December.

TABLE H-3.27: EXPOSURE POINT CONCENTRATION SUMMARY, REASONABLE MAXIMUM EXPOSURE, SITE 23 SUBSURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Future
Medium:	Site 23 Subsurface Soil (0-8 feet bgs)
Exposure Medium:	Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)	Exposure Point Concentration			
							Value	Units	Statistic	Rationale[a]
Site 23	2-Methylnaphthalene	MG/KG	6.37E-02	2.67E-01	NT	1.1E+01	2.67E-01	MG/KG	95% UCL - NP	(2)
	Arsenic	MG/KG	3.82E+00	6.00E+00	NT	4.3E+00	4.30E+00	MG/KG	MAX	(2)
	Benz(a)anthracene	MG/KG	2.55E-02	7.44E-02	O(T)	2.1E+00	7.44E-02	MG/KG	95% UCL - NP	(1)
	Benzo(a)pyrene	MG/KG	3.00E-02	8.50E-02	O(T)	2.0E+00	8.50E-02	MG/KG	95% UCL - NP	(1)
	Benzo(b)fluoranthene	MG/KG	4.92E-03	1.22E-02	T	5.4E-02	1.22E-02	MG/KG	95% UCL- NP	(1)
	Benzo(k)fluoranthene	MG/KG	3.16E-02	7.34E-02	NT	1.6E+00	7.34E-02	MG/KG	95% UCL - NP	(2)
	Dibenz(a,h)anthracene	MG/KG	1.59E-02	3.09E-02	NT	3.9E-01	3.09E-02	MG/KG	95% UCL - NP	(2)
	Indeno(1,2,3-cd)pyrene	MG/KG	2.44E-02	6.43E-02	O(T)	1.4E+00	6.43E-02	MG/KG	95% UCL - NP	(2)

Notes:

See Appendix G for a description of the statistical methods used.

a The lesser of the 95% UCL and maximum detected concentration was used as the exposure point concentration (EPC).

For chemicals detected in at least 85% of the samples censored data were replaced with one-half of the reported concentration. For detection frequencies less than 85% censored measurements were treated as random variables that could assume any value between zero and the reported concentration (see note under NP).

95% UCL	One-sided 95 percent upper confidence limit of the mean
feet bgs	Feet below ground surface
MAX	Maximum detected concentration
MG/KG	Milligram per kilogram
NP	Non-parametric method*. Calculations based on stochastic modeling following the "bounding" approach in EPA (2002). 2,000 iterations of a Monte Carlo model performed for each estimate. For lognormal distributions the 95% UCL was determined using the non-parametric Chebyshev inequality. For normal distributions the 95% UCL was calculated using the t statistic. For both distributions, the 95th percentile value from the distribution of 2,000 calculations was used as the final estimate for the 95% UCL. Censored (non-detected) data were treated as random variables that could assume any value between zero and the reported concentration. *This is not a non-parametric approach in cases where the distribution is normal, but NP is used for consistency with the RAGS guidelines for preparing summary tables for exposure point concentrations.
NT	Distribution was not tested if the sample size was less than five or the frequency of detection was less than 50 percent. Distribution defaults to lognormal.
O(T)	Other distribution (unknown); assumed to be lognormal based on examination of probability plots, box plots, and frequency histograms.
RAGS	Risk assessment guidance for Superfund
T	Transformed (lognormal) distribution confirmed using the Shapiro-Wilk W test (alpha= 0.05).
(1)	Detection frequency between 50 and 85 percent, distribution confirmed or assumed lognormal. 95% UCL estimated using the bounding approach from EPA (2002).
(2)	Detection frequency less than 50%, distribution not tested. 95% UCL estimated using the bounding approach from EPA (2002).
(3)	Detection frequency greater than or equal to 85%, distribution confirmed or assumed lognormal. 95% UCL calculated using Land's method

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U.S. Environmental Protection Agency (EPA). 2002. "Calculating Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Washington, D.C. December.

TABLE H-3.28: EXPOSURE POINT CONCENTRATION SUMMARY, CENTRAL TENDENCY EXPOSURE, SITE 23 SUBSURFACE SOIL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Future
Medium:	Site 23 Subsurface Soil (0-8 feet bgs)
Exposure Medium:	Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)	Exposure Point Concentration			
							Value	Units	Statistic	Rationale[a]
Site 23	2-Methylnaphthalene	MG/KG	6.37E-02	2.67E-01	NT	1.1E+01	6.37E-02	MG/KG	Mean- NP	(2)
	Arsenic	MG/KG	3.82E+00	6.00E+00	NT	4.3E+00	3.82E+00	MG/KG	Mean- NP	(2)
	Benz(a)anthracene	MG/KG	2.55E-02	7.44E-02	O(T)	2.1E+00	2.55E-02	MG/KG	Mean- NP	(1)
	Benzo(a)pyrene	MG/KG	3.00E-02	8.50E-02	O(T)	2.0E+00	3.00E-02	MG/KG	Mean- NP	(1)
	Benzo(b)fluoranthene	MG/KG	4.92E-03	1.22E-02	T	5.4E-02	4.92E-03	MG/KG	Mean- NP	(1)
	Benzo(k)fluoranthene	MG/KG	3.16E-02	7.34E-02	NT	1.6E+00	3.16E-02	MG/KG	Mean- NP	(2)
	Dibenz(a,h)anthracene	MG/KG	1.59E-02	3.09E-02	NT	3.9E-01	1.59E-02	MG/KG	Mean- NP	(2)
	Indeno(1,2,3-cd)pyrene	MG/KG	2.44E-02	6.43E-02	O(T)	1.4E+00	2.44E-02	MG/KG	Mean- NP	(2)

Notes:

See Appendix G for a description of the statistical methods used.

a The lesser of the mean and maximum detected concentration was used as the exposure point concentration (EPC).

For chemicals detected in at least 85% of the samples censored data were replaced with one-half of the reported concentration. For detection frequencies less than 85% censored measurements were treated as random variables that could assume any value between zero and the reported concentration (see note under NP).

feet bgs	Feet below ground surface
MG/KG	Milligram per kilogram
NP	Non-parametric method*. Calculations based on stochastic modeling following the "bounding" approach in EPA (2002). 2,000 iterations of a Monte Carlo model performed for each estimate. For lognormal distributions the mean is the minimum variance unbiased estimator (MVU) following equation 13.3 in Gilbert (1987). For normal distributions the arithmetic mean is used. For both distributions, the median value from the distribution of 2,000 calculations was used as the final estimate for the mean. Censored (non-detected) data were treated as random variables that could assume any value between zero and the reported concentration. *This is not a non-parametric approach in cases where the distribution is normal, but NP is used for consistency with the RAGS guidelines for preparing summary tables for exposure point concentrations.
NT	Distribution was not tested if the sample size was less than five or the frequency of detection was less than 50 percent. Distribution defaults to lognormal.
O(T)	Other distribution (unknown); assumed to be lognormal based on examination of probability plots, box plots, and frequency histograms.
RAGS	Risk assessment guidance for Superfund
T	Transformed (lognormal) distribution confirmed using the Shapiro-Wilk W test (alpha= 0.05).
(1)	Detection frequency between 50 and 85 percent, distribution confirmed or assumed lognormal. Mean calculated using stochastic modeling as described under the note for NP.
(2)	Detection frequency less than 50%, distribution not tested. A lognormal assumption was used to calculate the mean using stochastic modeling as described under the note for NP.
(3)	Detection frequency greater than or equal to 85%, distribution confirmed or assumed lognormal. 95% UCL calculated using Land's method

Gilbert, R. O. 1987. *Statistical Methods for Environmental Pollution Monitoring*. John Wiley & Sons, Inc., New York, NY.

U.S. Environmental Protection Agency (EPA). 2002. "Calculating Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Washington, D.C. December.

TABLE H-3.29: EXPOSURE POINT CONCENTRATION SUMMARY, REASONABLE MAXIMUM EXPOSURE, SITE 23 GROUNDWATER

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Point	Chemical	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale[a]
Site 23	1,2,4-Trimethylbenzene	MG/L	6.54E-02	3.35E-01	NT	8.60E-01	J	3.35E-01	MG/L	95% UCL- NP	(1)
	2-Butanone	MG/L	2.13E-01	1.13E+00	NT	4.20E+00	J	1.13E+00	MG/L	95% UCL- NP	(1)
	2-Methylnaphthalene	MG/L	7.85E-03	1.89E-02	NT	5.10E-02		1.89E-02	MG/L	95% UCL- NP	(1)
	Arsenic	MG/L	6.24E-03	1.15E-02	NT	1.80E-02		1.15E-02	MG/L	95% UCL- NP	(1)
	Benzene	MG/L	1.78E-02	1.63E-01	NT	1.00E-03		1.00E-03	MG/L	MAX	(1)
	Benzo(a)pyrene	MG/L	3.78E-03	1.07E-02	NT	6.00E-04	J	6.00E-04	MG/L	MAX	(1)
	Benzo(b)fluoranthene	MG/L	5.25E-03	1.20E-02	NT	8.00E-04	J	8.00E-04	MG/L	MAX	(1)
	Chrysene	MG/L	5.29E-03	1.18E-02	NT	9.00E-04	J	9.00E-04	MG/L	MAX	(1)
	Ethylbenzene	MG/L	2.13E-02	1.69E-01	NT	1.50E-02		1.50E-02	MG/L	MAX	(1)
	Isopropylbenzene	MG/L	7.52E-02	3.89E-01	NT	1.00E+00	J	3.89E-01	MG/L	95% UCL- NP	(1)
	Naphthalene	MG/L	3.89E-02	1.81E-01	NT	1.10E+00	J	1.81E-01	MG/L	95% UCL- NP	(1)
	sec-Butylbenzene	MG/L	7.51E-02	3.89E-01	NT	1.00E+00	J	3.89E-01	MG/L	95% UCL- NP	(1)
	Thallium	MG/L	1.27E-03	2.82E-03	NT	3.70E-03	J	2.82E-03	MG/L	95% UCL- NP	(1)
	Xylene (Total)	MG/L	3.52E-02	1.41E-01	NT	6.60E-01	J	1.41E-01	MG/L	95% UCL- NP	(1)

Notes:

See Appendix G for a description of the statistical methods used.

a The lesser of the 95% UCL and maximum detected concentration was used as the exposure point concentration (EPC).

For chemicals detected in at least 85% of the samples censored data were replaced with one-half of the reported concentration. For detection frequencies less than 85% censored measurements were treated as random variables that could assume any value between zero and the reported concentration (see note under NP).

95% UCL	One-sided 95 percent upper confidence limit of the mean
feet bgs	Feet below ground surface
J	Estimated value
MAX	Maximum detected concentration
MG/L	Milligram per liter
MVUE	Minimum variance unbiased estimator
NP	*Non-parametric method*. Calculations based on stochastic modeling following the "bounding" approach in EPA (2002).* 2,000 iterations of a Monte Carlo model performed for each estimate. For confirmed or assumed lognormal distributions the 95% UCL was determined using the MVUE Chebyshev inequality. For normal distributions the 95% UCL was calculated using the t statistic. For distributions listed as NT, the 95% UCL was calculated using the nonparametric Chebyshev inequality. For all distributions, the 95th percentile value from the distribution of 2,000 calculations was used as the final estimate for the 95% UCL. Censored (non-detected) data were treated as random variables that could assume any value between zero and the reported concentration. *This is not a nonparametric approach in cases where the UCL is calculated using the t statistic or the MVUE Chebyshev inequality, but NP is used for consistency with the nomenclature used in the RAGS guidelines for preparing summary tables for exposure point concentrations.
NT	Distribution was not tested if the sample size was less than five or the frequency of detection was less than 50 percent. Distribution defaults to nonparametric.
RAGS	Risk assessment guidance for Superfund
(1)	Detection frequency less than 50%, distribution not tested. 95% UCL estimated using the bounding approach from EPA (2002).

TABLE H-3.29: EXPOSURE POINT CONCENTRATION SUMMARY, REASONABLE MAXIMUM EXPOSURE, SITE 23 GROUNDWATER

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Point	Chemical	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale[a]

Gilbert, R. O. 1987. *Statistical Methods for Environmental Pollution Monitoring.* John Wiley & Sons, Inc., New York, NY.

U.S. Environmental Protection Agency (EPA). 2002. "Calculating Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Washington, D.C. December.

TABLE H-3.30: EXPOSURE POINT CONCENTRATION SUMMARY, CENTRAL TENDENCY EXPOSURE, SITE 23 GROUNDWATER

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Point	Chemical	Units	Arithmetic Mean	95% UCL (Distribution)		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale[a]
Site 23	1,2,4-Trimethylbenzene	MG/L	6.54E-02	3.35E-01	NT	8.60E-01	J	6.54E-02	MG/L	Mean- NP	(1)
	2-Butanone	MG/L	2.13E-01	1.13E+00	NT	4.20E+00	J	2.13E-01	MG/L	Mean- NP	(1)
	2-Methylnaphthalene	MG/L	7.85E-03	1.89E-02	NT	5.10E-02		7.85E-03	MG/L	Mean- NP	(1)
	Arsenic	MG/L	6.24E-03	1.15E-02	NT	1.80E-02		6.24E-03	MG/L	Mean- NP	(1)
	Benzene	MG/L	1.78E-02	1.63E-01	NT	1.00E-03		1.00E-03	MG/L	MAX	(1)
	Benzo(a)pyrene	MG/L	3.78E-03	1.07E-02	NT	6.00E-04	J	6.00E-04	MG/L	MAX	(1)
	Benzo(b)fluoranthene	MG/L	5.25E-03	1.20E-02	NT	8.00E-04	J	8.00E-04	MG/L	MAX	(1)
	Chrysene	MG/L	5.29E-03	1.18E-02	NT	9.00E-04	J	9.00E-04	MG/L	MAX	(1)
	Ethylbenzene	MG/L	2.13E-02	1.69E-01	NT	1.50E-02		1.50E-02	MG/L	MAX	(1)
	Isopropylbenzene	MG/L	7.52E-02	3.89E-01	NT	1.00E+00	J	7.52E-02	MG/L	Mean- NP	(1)
	Naphthalene	MG/L	3.89E-02	1.81E-01	NT	1.10E+00	J	3.89E-02	MG/L	Mean- NP	(1)
	sec-Butylbenzene	MG/L	7.51E-02	3.89E-01	NT	1.00E+00	J	7.51E-02	MG/L	Mean- NP	(1)
	Thallium	MG/L	1.27E-03	2.82E-03	NT	3.70E-03	J	1.27E-03	MG/L	Mean- NP	(1)
	Xylene (Total)	MG/L	3.52E-02	1.41E-01	NT	6.60E-01	J	3.52E-02	MG/L	Mean- NP	(1)

Notes:

See Appendix G for a description of the statistical methods used.

a The lesser of the mean and maximum detected concentration was used as the exposure point concentration (EPC).

For chemicals detected in at least 85% of the samples censored data were replaced with one-half of the reported concentration. For detection frequencies less than 85% censored measurements were treated as random variables that could assume any value between zero and the reported concentration (see note under NP).

feet bgs	Feet below ground surface
J	Estimated value
MAX	Maximum detected concentration
MG/L	Milligram per liter
MVUE	Minimum variance unbiased estimator
NP	Non-parametric method*. Calculations based on stochastic modeling following the "bounding" approach in EPA (2002). 2,000 iterations of a Monte Carlo model performed for each estimate. For confirmed or assumed lognormal distributions the mean is the MVUE following equation 13.3 in Gilbert (1987). For normal and distributions listed as NT the arithmetic mean is used. For all distributions, the median value from the distribution of 2,000 calculations was used as the final estimate for the mean. Censored (non-detected) data were treated as random variables that could assume any value between zero and the reported concentration. *This is not a non-parametric approach in cases where the distribution is normal or lognormal, but NP is used for consistency with the nomenclature used in the RAGS guidelines for preparing summary tables for exposure point concentrations.
NT	Distribution was not tested if the sample size was less than five or the frequency of detection was less than 50 percent. Distribution defaults to nonparametric.
RAGS	Risk assessment guidance for Superfund
(1)	Detection frequency less than 50%, distribution not tested. A nonparametric assumption was used to calculate the mean using stochastic modeling as described under the note for NP.

Gilbert, R. O. 1987. *Statistical Methods for Environmental Pollution Monitoring*. John Wiley & Sons, Inc., New York, NY.

U.S. Environmental Protection Agency (EPA). 2002. "Calculating Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Washington, D.C. December.

TABLE H-3.31: EXPOSURE POINT CONCENTRATION SUMMARY, REASONABLE MAXIMUM EXPOSURE, SITE 9 INFINITE INDOOR AIR

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Current, Future
Medium:	Infinite Indoor Air
Exposure Medium:	Infinite Indoor Air

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration		
						Value	Units	Rationale[a]
Site 9 Resident	Benzene	UG / M^3	N/A	N/A	7.9E-01	7.9E-01	UG / M^3	--
	Vinyl Chloride	UG / M^3	N/A	N/A	4.6E+01	4.6E+01	UG / M^3	--
Site 9 Industrial Worker	Benzene	UG / M^3	N/A	N/A	7.9E-02	7.9E-02	UG / M^3	--
	Vinyl Chloride	UG / M^3	N/A	N/A	4.6E+00	4.6E+00	UG / M^3	--

Notes:

a The infinite indoor air concentrations were modeled using the protocol established in Attachment H1.

N/A Not applicable (not calculated)

UG / M^3 Microgram per cubic meter

TABLE H-3.32: EXPOSURE POINT CONCENTRATION SUMMARY, CENTRAL TENDENCY EXPOSURE, SITE 9 INFINITE INDOOR AIR

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Current, Future
Medium:	Infinite Indoor Air
Exposure Medium:	Infinite Indoor Air

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration		
						Value	Units	Rationale[a]
Site 9 Resident	Benzene	UG / M^3	N/A	N/A	7.9E-01	7.9E-01	UG / M^3	--
	Vinyl Chloride	UG / M^3	N/A	N/A	8.9E+00	8.9E+00	UG / M^3	--
Site 9 Industrial Worker	Benzene	UG / M^3	N/A	N/A	7.9E-02	7.9E-02	UG / M^3	--
	Vinyl Chloride	UG / M^3	N/A	N/A	8.9E-01	8.9E-01	UG / M^3	--

Notes:

a The infinite indoor air concentrations were modeled using the protocol established in Attachment H1.

N/A Not applicable (not calculated)

UG / M^3 Microgram per cubic meter

TABLE H-3.33: EXPOSURE POINT CONCENTRATION SUMMARY, REASONABLE MAXIMUM EXPOSURE, SITE 22 INFINITE INDOOR AIR

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Current, Future
Medium:	Infinite Indoor Air
Exposure Medium:	Infinite Indoor Air

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration		
						Value	Units	Rationale[a]
Site 22 Resident	Benzene	UG / M^3	N/A	N/A	1.4E+01	1.4E+01	UG / M^3	--
	Ethylbenzene	UG / M^3	N/A	N/A	1.1E+01	1.1E+01	UG / M^3	--
	m-Xylene	UG / M^3	N/A	N/A	2.6E+01	2.6E+01	UG / M^3	--
	o-Xylene	UG / M^3	N/A	N/A	4.7E+00	4.7E+00	UG / M^3	--
	Toluene	UG / M^3	N/A	N/A	2.9E+01	2.9E+01	UG / M^3	--
Site 22 Industrial Worker	Benzene	UG / M^3	N/A	N/A	1.4E+00	1.4E+00	UG / M^3	--
	Ethylbenzene	UG / M^3	N/A	N/A	1.1E+00	1.1E+00	UG / M^3	--
	m-Xylene	UG / M^3	N/A	N/A	2.6E+00	2.6E+00	UG / M^3	--
	o-Xylene	UG / M^3	N/A	N/A	4.7E-01	4.7E-01	UG / M^3	--
	Toluene	UG / M^3	N/A	N/A	2.9E+00	2.9E+00	UG / M^3	--

Notes:

a The infinite indoor air concentrations were modeled using the protocol established in Attachment H1.

N/A Not applicable (not calculated)

UG / M^3 Microgram per cubic meter

TABLE H-3.34: EXPOSURE POINT CONCENTRATION SUMMARY, CENTRAL TENDENCY EXPOSURE, SITE 22 INFINITE INDOOR AIR

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Current, Future
Medium:	Infinite Indoor Air
Exposure Medium:	Infinite Indoor Air

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration		
						Value	Units	Rationale[a]
Site 22 Resident	Benzene	UG / M³	N/A	N/A	1.4E+01	1.4E+01	UG / M³	--
	Ethylbenzene	UG / M³	N/A	N/A	1.1E+01	1.1E+01	UG / M³	--
	m-Xylene	UG / M³	N/A	N/A	2.6E+01	2.6E+01	UG / M³	--
	o-Xylene	UG / M³	N/A	N/A	4.7E+00	4.7E+00	UG / M³	--
	Toluene	UG / M³	N/A	N/A	2.9E+01	2.9E+01	UG / M³	--
Site 22 Industrial Worker	Benzene	UG / M³	N/A	N/A	1.4E+00	1.4E+00	UG / M³	--
	Ethylbenzene	UG / M³	N/A	N/A	1.1E+00	1.1E+00	UG / M³	--
	m-Xylene	UG / M³	N/A	N/A	2.6E+00	2.6E+00	UG / M³	--
	o-Xylene	UG / M³	N/A	N/A	4.7E-01	4.7E-01	UG / M³	--
	Toluene	UG / M³	N/A	N/A	2.9E+00	2.9E+00	UG / M³	--

Notes:

a The infinite indoor air concentrations were modeled using the protocol established in Attachment H1.

N/A Not applicable (not calculated)

UG / M³ *Microgram per cubic meter*

TABLE H-4.1: VALUES USED FOR DAILY INTAKE RME SOIL EXPOSURES

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name (1)
Ingestion	Industrial Worker	Adult	Alameda Point Site Under Assessment	CS	Chemical Concentration in Soil	EPC	mg/kg	RAGS Part D Table 3 series for each site will document the rationale.	Intake (mg/kg-day) = (CS x FI x IRS x EF x ED x MCF) / (BW x AT)
				IRS	Ingestion Rate - Soil	100	mg/day	EPA 2001a; EPA 2002c	
				FI	Fraction Ingested	1	unitless	Professional judgment	
				EF	Exposure Frequency	250	days/year	EPA 1991	
				ED	Exposure Duration	25	years	EPA 1991	
				MCF	Mass Conversion Factor	1E-06	kg/mg	Not applicable	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	9,125	days	EPA 1989	
	Construction Worker	Adult	Alameda Point Site Under Assessment	CS	Chemical Concentration in Soil	EPC	mg/kg	RAGS Part D Table 3 series for each site will document the rationale.	Intake (mg/kg-day) = (CS x FI x IRS x EF x ED x MCF) / (BW x AT)
				IRS	Ingestion Rate - Soil	330	mg/day	EPA 2001a	
				FI	Fraction Ingested	1	unitless	Professional judgment	
				EF	Exposure Frequency	250	days/year	EPA 1991	
				ED	Exposure Duration	1	years	DTSC 2000	
				MCF	Mass Conversion Factor	1E-06	kg/mg	Not applicable	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	365	days	EPA 1989	
	Resident	Adult	Alameda Point Site Under Assessment	CS	Chemical Concentration in Soil	EPC	mg/kg	RAGS Part D Table 3 series for each site will document the rationale.	Intake (mg/kg-day) = (CS x FI x IRS x EF x ED x MCF) / (BW x AT)
				IRS	Ingestion Rate - Soil	100	mg/day	EPA 1991	
				FI	Fraction Ingested	1	unitless	Professional judgment	
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	24	years	EPA 1991	
				MCF	Mass Conversion Factor	1E-06	kg/mg	Not applicable	
				BW	Body Weight	70	kg	EPA 1991	

TABLE H-4.1: VALUES USED FOR DAILY INTAKE RME SOIL EXPOSURES

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name (1)
Ingestion (continued)	Resident (continued)	Adult (continued)	Alameda Point Site Under Assessment	AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	8,760	days	EPA 1989	
		Child	Alameda Point Site Under Assessment	CS	Chemical Concentration in Soil	EPC	mg/kg	RAGS Part D Table 3 series for each site will document the rationale.	Intake (mg/kg-day) = (CS x FI x IRS x EF x ED x MCF) / (BW x AT)
				IRS	Ingestion Rate - Soil	200	mg/day	EPA 1991	
				FI	Fraction Ingested	1	unitless	Professional judgment	
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	6	years	EPA 1991	
				MCF	Mass Conversion Factor	1E-06	kg/mg	Not applicable	
				BW	Body Weight	15	kg	EPA 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	2,190	days	EPA 1989	
Dermal	Industrial Worker	Adult	Alameda Point Site Under Assessment	CS	Chemical Concentration in Soil	EPC	mg/kg	RAGS Part D Table 3 series for each site will document the rationale.	Intake (mg/kg-day) = (CS x ABS x SA x AF x EF x ED x MCF) / (BW x AT)
				ABS	Dermal Absorption Factor	Chemical-specific	unitless	EPA 2001b	
				SA	Exposed Skin Surface Area	3,300	cm^2	EPA 2001b	
				AF	Soil to Skin Adherence Factor	0.2	mg/cm^2	EPA 2001b	
				EF	Exposure Frequency	250	days/year	EPA 1991	
				ED	Exposure Duration	25	years	EPA 1991	
				MCF	Mass Conversion Factor	1E-06	kg/mg	Not applicable	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	9,125	days	EPA 1989	
	Construction Worker	Adult	Alameda Point Site Under Assessment	CS	Chemical Concentration in Soil	EPC	mg/kg	RAGS Part D Table 3 series for each site will document the rationale.	Intake (mg/kg-day) = (CS x ABS x SA x AF x EF x ED x MCF) / (BW x AT)
				ABS	Dermal Absorption Factor	Chemical-specific	unitless	EPA 2001b	
				SA	Exposed Skin Surface Area	3,300	cm^2	DTSC 2000	
				AF	Soil to Skin Adherence Factor	0.3	mg/cm^2	DTSC 2000	
				EF	Exposure Frequency	250	days/year	EPA 1991	

TABLE H-4.1: VALUES USED FOR DAILY INTAKE RME SOIL EXPOSURES

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name (1)
Dermal (continued)	Construction Worker	Adult (continued)	Alameda Point Site Under Assessment	ED	Exposure Duration	1	years	DTSC 2000	
				MCF	Mass Conversion Factor	1E-06	kg/mg	Not applicable	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	365	days	EPA 1989	
	Resident	Adult	Alameda Point Site Under Assessment	CS	Chemical Concentration in Soil	EPC	mg/kg	RAGS Part D Table 3 series for each site will document the rationale.	Intake (mg/kg-day) = (CS x ABS x SA x AF x EF x ED x MCF) / (BW x AT)
				ABS	Dermal Absorption Factor	Chemical-specific	unitless	EPA 2001b	
				SA	Exposed Skin Surface Area	5,700	cm^2	EPA 2001b	
				AF	Soil to Skin Adherence Factor	0.07	mg/cm^2	EPA 2001b	
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	24	years	EPA 2002c	
				MCF	Mass Conversion Factor	1E-06	kg/mg	Not applicable	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	8,760	days	EPA 1989	
		Child	Alameda Point Site Under Assessment	CS	Chemical Concentration in Soil	EPC	mg/kg	RAGS Part D Table 3 series for each site will document the rationale.	Intake (mg/kg-day) = (CS x ABS x SA x AF x EF x ED x MCF) / (BW x AT)
				ABS	Dermal Absorption Factor	Chemical-specific	unitless	EPA 2001b	
				SA	Exposed Skin Surface Area	2,800	cm^2	EPA 2001b	
				AF	Soil to Skin Adherence Factor	0.2	mg/cm^2	EPA 2001b	
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	6	years	EPA 1991	
				MCF	Mass Conversion Factor	1E-06	kg/mg	Not applicable	
				BW	Body Weight	15	kg	EPA 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	2,190	days	EPA 1989	
Inhalation	Industrial Worker	Adult	Alameda Point Site Under Assessment	CA	Chemical Concentration in Air	Chemical-specific	mg/m^3	Calculated from CS	Intake (mg/kg-day) = (CA x InhR x ET x EF x ED) / (BW x AT)

TABLE H-4.1: VALUES USED FOR DAILY INTAKE RME SOIL EXPOSURES

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name (1)
Inhalation (continued)	Industrial Worker (continued)	Adult (continued)	Alameda Point Site Under Assessment	InhR	Inhalation Rate	2.50	m^3/hour	EPA 1991	
				ET	Exposure Time	8	hours/day	EPA 1991	where CA= CS / PEF for particulates, and
				EF	Exposure Frequency	250	days/year	EPA 1991	CA= CS / VF for volatiles
				ED	Exposure Duration	25	years	EPA 1991	PEF = 1.32E+09 m^3/kg (EPA 2002c)
				BW	Body Weight	70	kg	EPA 1991	VF = Chemical-specific volatilization factor
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	9,125	days	EPA 1989	
	Construction Worker	Adult	Alameda Point Site Under Assessment	CA	Chemical Concentration in Air	Chemical-specific	mg/m^3	Calculated from CS	Intake (mg/kg-day) = (CA x InhR x ET x EF x ED) / (BW x AT)
				InhR	Inhalation Rate	2.50	m^3/hour	EPA 1991	
				ET	Exposure Time	8	hours/day	EPA 1991	where CA = CS / PEF for particulates, and
				EF	Exposure Frequency	250	days/year	EPA 1991	CA = CS / VF for volatiles
				ED	Exposure Duration	1	years	DTSC 2000	PEF = 1.32E+09 m^3/kg (EPA 2002c)
				BW	Body Weight	70	kg	EPA 1991	VF = Chemical-specific volatilization factor
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	365	days	EPA 1989	
	Resident	Adult	Alameda Point Site Under Assessment	CA	Chemical Concentration in Air	Chemical-specific	mg/m^3	Calculated from CS	Intake (mg/kg-day) = (CA x InhR x ET x EF x ED) / (BW x AT)
				InhR	Inhalation Rate	0.83	m^3/hour	EPA 1991	
				ET	Exposure Time (3)	24	hours/day	EPA 1991	where CA = CS / PEF for particulates, and
				EF	Exposure Frequency	350	days/year	EPA 1991	CA = CS / VF for volatiles
				ED	Exposure Duration	24	years	EPA 1991	PEF = 1.32E+09 m^3/kg (EPA 2002c)
				BW	Body Weight	70	kg	EPA 1991	VF = Chemical-specific volatilization factor
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	8,760	days	EPA 1989	
		Child (2)	Alameda Point Site Under Assessment	CA	Chemical Concentration in Air	Chemical-specific	mg/m^3	Calculated from CS	Intake (mg/kg-day) = (CA x InhR x ET x EF x ED) / (BW x AT)
				InhR	Inhalation Rate	0.42	m^3/hour	EPA 1991	
				ET	Exposure Time (3)	24	hours/day	EPA 1991	where CA = CS / PEF for particulates, and
				EF	Exposure Frequency	350	days/year	EPA 1991	CA = CS / VF for volatiles

TABLE H-4.1: VALUES USED FOR DAILY INTAKE RME SOIL EXPOSURES

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name (1)
Inhalation (continued)	Resident (continued)	Child (2) (continued)	Alameda Point Site Under Assessment	ED	Exposure Duration	6	years	EPA 1991	PEF = 1.32E+09 m^3/kg (EPA 2002c)
				BW	Body Weight	15	kg	EPA 1991	VF = Chemical-specific volatilization factor
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	2,190	days	EPA 1989	
Ingestion of Homegrown Produce	Resident	Adult	Alameda Point Site Under Assessment	CS	Chemical Concentration in Soil	EPC	mg/kg	RAGS Part D Table 3 series for each site will document the rationale.	Intake (mg/kg-day) = (CS x FI x UF x IRS x EF x ED) / (BW x AT)
				UF	Uptake Factor	Chemical-specific	unitless	DTSC 1993; EPA 1996	
				FI	Fraction Ingested	0.4	unitless	EPA 1996	
				IRS	Intake Rate	0.0812	kg/day	EPA 1997	
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	24	years	EPA 1991	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	8,760	days	EPA 1989	
		Child	Alameda Point Site Under Assessment	CS	Chemical Concentration in Soil	EPC	mg/kg	RAGS Part D Table 3 series for each site will document the rationale.	Intake (mg/kg-day) = (CS x FI x UF x IRS x EF x ED) / (BW x AT)
				UF	Uptake Factor	Chemical-specific	unitless	DTSC 1993; EPA 1996	
				FI	Fraction Ingested	0.4	unitless	EPA 1996	
				IRS	Intake Rate	0.0174	kg/day	EPA 1997	
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	6	years	EPA 1991	
				BW	Body Weight	15	kg	EPA 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	2,190	days	EPA 1989	

TABLE H-4.1: VALUES USED FOR DAILY INTAKE RME SOIL EXPOSURES

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name (1)

Notes:

(1) See Section 5 for discussion of the intake assumptions.

(2) While children's inhalation rates can be estimated, the toxicity factors applied in a risk assessment are based on chronic risks and not adjusted for a child's unique physiology.

(3) These exposure times for inhalation are shown to represent the total daily inhalation rate on an hourly basis. However, the actual outdoor activity where particles or vapors would be inhaled does not amount to round-the-clock exposure. In particular, for residential scenarios where exposure to indoor air is assumed, this will result in a conservative overestimate of risk, unless soil (vapor and particulate) and groundwater (indoor air and soil gas) pathways are characterized separately.

cm^2 = Square centimeter
days/year = Days per year
DTSC = Department of Toxic Substances Control
EPA = U.S. Environmental Protection Agency
EPC = Exposure point concentration
hours/day = Hours per day
kg = Kilogram
kg/mg = Kilograms per milligram
mg/cm^2 = Milligrams per square centimeter
mg/day = Milligrams per day
mg/kg = Milligrams per kilogram
mg/m^3 = Milligrams per cubic meter
m^3/hour = Cubic meters per hour
m^3/kg = Cubic meters of air per kg soil (reduced from mg/m^3-air per mg/kg-soil)
OERR = Office of Emergency and Remedial Response
PEF = Particulate emission factor
RAGS = Risk Assessment Guidance for Superfund
RME = Reasonable maximum exposure

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TABLE H-4.2: VALUES USED FOR DAILY INTAKE RME GROUNDWATER EXPOSURES

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name (1)
Ingestion	Resident	Adult	Alameda Point Site Under Assessment	CW	Chemical Concentration in Groundwater	Chemical-specific	mg/L	RAGS Part D Table 3 series for each site will document the rationale.	Intake (mg/kg-day) = (CW x WC x EF x ED) / (BW x AT)
				WC	Water Consumption Rate	2	liters/day	EPA 1989	
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	24	years	EPA 1991	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
					Averaging Time - Non-cancer	8,760	days	EPA 1989	
		Child	Alameda Point Site Under Assessment	CW	Chemical Concentration in Groundwater	Chemical-specific	mg/L	RAGS Part D Table 3 series for each site will document the rationale.	Intake (mg/kg-day) = (CW x WC x EF x ED) / (BW x AT)
				WC	Water Consumption Rate	1	liters/day	EPA 1989	
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	6	years	EPA 1991	
				BW	Body Weight	15	kg	EPA 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	2,190	days	EPA 1989	
Dermal	Resident	Adult	Alameda Point Site Under Assessment	CW	Chemical Concentration in Groundwater	Chemical-specific	mg/L	RAGS Part D Table 3 series for each site will document the rationale.	Intake (mg/kg-day) = (CW x SAw x PC x ET x EF x ED x .001) / (BW x AT)
				SA_w	Surface Area	18,000	cm^2	EPA 2001b	
				PC	Dermal Permeability Coefficient	Chemical-specific	cm/hr	EPA 2001b	
				ET	Bath or Shower Duration	0.58	hours/day	EPA 2001b	
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	24	years	EPA 1989	
				0.001	Volumetric Conversion Factor	1.0E-03	L/cm^3	Not applicable	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	8,760	days	EPA 1989	
		Child	Alameda Point Site Under Assessment	CW	Chemical Concentration in Groundwater	Chemical-specific	mg/L	RAGS Part D Table 3 series for each site will document the rationale.	Intake (mg/kg-day) = (CW x SAw x PC x ET x EF x ED x .001) / (BW x AT)
				SA_w	Surface Area	6,600	cm^2	EPA 2001b	
				PC	Dermal Permeability Coefficient	Chemical-specific	cm/hr	EPA 2001b	
				ET	Bath or Shower Duration	1	hours/day	EPA 2001b	

TABLE H-4.2: VALUES USED FOR DAILY INTAKE RME GROUNDWATER EXPOSURES

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name (1)
Dermal (continued)	Resident (continued)	Child (continued)	Alameda Point Site Under Assessment	EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	6	years	EPA 1989	
				0.001	Volumetric Conversion Factor	1.0E-03	L/cm^3	Not applicable	
				BW	Body Weight	15	kg	EPA 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	2,190	days	EPA 1989	
Inhalation of Volatiles Released from Domestic Water Use	Resident	Adult	Alameda Point Site Under Assessment	CW	Chemical Concentration in Groundwater	Chemical-specific	mg/L	RAGS Part D Table 3 series for each site will document the rationale.	Intake (mg/kg-day) = (CW x VF_W x InhR x ET x EF x ED) / (BW x AT)
				InhR	Inhalation Rate	0.83	m^3/hour	EPA 1991	
				VF_W	Volatilization Factor	0.5	L/m^3	EPA 2002c	
				ET	Exposure Time	0.58	hours/day	Professional judgment	
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	24	years	EPA 1991	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	8,760	days	EPA 1989	
		Child	Alameda Point Site Under Assessment	CW	Chemical Concentration in Groundwater	Chemical-specific	mg/L	RAGS Part D Table 3 series for each site will document the rationale.	Intake (mg/kg-day) = (CW x VF_W x InhR x ET x EF x ED) / (BW x AT)
				InhR	Inhalation Rate	0.42	m^3/hour	EPA 1991	
				ET	Exposure Time	1	hours/day	Professional judgment	
				VF_W	Volatilization Factor	0.5	L/m^3	EPA 2002c	
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	6	years	EPA 1991	
				BW	Body Weight	15	kg	EPA 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	2,190	days	EPA 1989	
Inhalation of Volatiles in Indoor Air	Industrial Worker	Adult	Alameda Point Site Under Assessment	CA	Chemical Concentration in Air	EPC	mg/m^3	Modeled from CW	Intake (mg/kg-day) = (CA x InhR x ET x EF x ED) / (BW x AT)
				InhR	Inhalation Rate	2.50	m^3/hour	EPA 1991	
				ET	Exposure Time	8	hours/day	EPA 1991	
				EF	Exposure Frequency	250	days/year	EPA 1991	

TABLE H-4.2: VALUES USED FOR DAILY INTAKE RME GROUNDWATER EXPOSURES

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name (1)
Inhalation of Volatiles in Indoor Air (continued)	Industrial Worker (continued)	Adult (continued)	Alameda Point Site Under Assessment	ED	Exposure Duration	25	years	EPA 1991	where CA will be modeled from CW and/or soil gas data using the Johnson & Ettinger model
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	9,125	days	EPA 1989	
	Resident	Adult	Alameda Point Site Under Assessment	CA	Chemical Concentration in Air	EPC	mg/m^3	Modeled from CW	Intake (mg/kg-day) = (CA x InhR x ET x EF x ED) / (BW x AT)
				InhR	Inhalation Rate	0.83	m^3/hour	EPA 1991	
				ET	Exposure Time (3)	24	hours/day	EPA 1991	
				EF	Exposure Frequency	350	days/year	EPA 1991	where CA will be modeled from CW and/or soil gas data using the Johnson & Ettinger model
				ED	Exposure Duration	24	years	EPA 1991	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	8,760	days	EPA 1989	
		Child (2)	Alameda Point Site Under Assessment	CA	Chemical Concentration in Air	EPC	mg/m^3	Modeled from CW	Intake (mg/kg-day) = (CA x InhR x ET x EF x ED) / (BW x AT)
				InhR	Inhalation Rate	0.42	m^3/hour	EPA 1991	
				ET	Exposure Time (3)	24	hours/day	EPA 1991	
				EF	Exposure Frequency	350	days/year	EPA 1991	where CA will be modeled from CW and/or soil gas data using the Johnson & Ettinger model
				ED	Exposure Duration	6	years	EPA 1991	
				BW	Body Weight	15	kg	EPA 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	2,190	days	EPA 1989	

Notes:

(1) *See Section 5 for discussion of the intake assumptions.*

(2) While children's inhalation rates can be estimated, the toxicity factors applied in a risk assessment are based on chronic risks and not adjusted for a child's unique physiology.

(3) *These exposure times for inhalation are shown to represent the total daily inhalation rate on an hourly basis.* However, because some outdoor activity is being assumed based on the inclusion of soil pathways and outdoor air inhalation, this will result in a conservative overestimate of risk, unless soil (vapor and particulate) and groundwater (indoor air and soil gas) pathways are characterized separately.

cm^2 = Square centimeters
cm/hr = Centimeters per hour
days/year = Days per year
DTSC = Department of Toxic Substances Control
m^3/hour = Cubic meters per hour
L/cm^3 = Liters per cubic centimeter
mg/kg-day = Milligrams per kilogram per day
mg/m^3 = Milligrams per cubic meter

TABLE H-4.2: VALUES USED FOR DAILY INTAKE RME GROUNDWATER EXPOSURES

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name (1)

EPA = U.S. Environmental Protection Agency
EPC = Exposure Point Concentration
hours/day = Hours per day
kg = Kilogram
mg/L = Milligrams per liter
RAGS = Risk Assessment Guidance for Superfund
RME = Reasonable maximum exposure

References:

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TABLE H-4.3: VALUES USED FOR DAILY INTAKE CTE SOIL EXPOSURES

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name (1)
Ingestion	Industrial Worker	Adult	Alameda Point Site Under Assessment	CS	Chemical Concentration in Soil	EPC	mg/kg	RAGS Part D Table 3 series for each site will document the rationale.	Intake (mg/kg-day) = (CS x FI x IRS x EF x ED x MCF) / (BW x AT)
				IRS	Ingestion Rate - Soil	50	mg/day	EPA 1991	
				FI	Fraction Ingested	1	unitless	Professional judgment	
				EF	Exposure Frequency	219	days/year	EPA 2001b	
				ED	Exposure Duration	4.5	years	USDC 1994	
				MCF	Mass Conversion Factor	1E-06	kg/mg	Not applicable	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	1,643	days	EPA 1989	
	Construction Worker	Adult	Alameda Point Site Under Assessment	CS	Chemical Concentration in Soil	EPC	mg/kg	RAGS Part D Table 3 series for each site will document the rationale.	Intake (mg/kg-day) = (CS x FI x IRS x EF x ED x MCF) / (BW x AT)
				IRS	Ingestion Rate - Soil	100	mg/day	EPA 1997	
				FI	Fraction Ingested	1	unitless	Professional judgment	
				EF	Exposure Frequency	60	days/year	Professional judgment	
				ED	Exposure Duration	1	years	DTSC 2000	
				MCF	Mass Conversion Factor	1E-06	kg/mg	Not applicable	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	365	days	EPA 1989	
	Resident	Adult	Alameda Point Site Under Assessment	CS	Chemical Concentration in Soil	EPC	mg/kg	RAGS Part D Table 3 series for each site will document the rationale.	Intake (mg/kg-day) = (CS x FI x IRS x EF x ED x MCF) / (BW x AT)
				IRS	Ingestion Rate - Soil	50	mg/day	EPA 1997	
				FI	Fraction Ingested	1	unitless	Professional judgment	
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	9	years	EPA 1989	
				MCF	Mass Conversion Factor	1E-06	kg/mg	Not applicable	
				BW	Body Weight	70	kg	EPA 1991	

TABLE H-4.3: VALUES USED FOR DAILY INTAKE CTE SOIL EXPOSURES

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name (1)
Ingestion (continued)	Resident (continued)	Adult (continued)	Alameda Point Site Under Assessment	AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	3,285	days	EPA 1989	
		Child	Alameda Point Site Under Assessment	CS	Chemical Concentration in Soil	EPC	mg/kg	RAGS Part D Table 3 series for each site will document the rationale.	Intake (mg/kg-day) = (CS x FI x IRS x EF x ED x MCF) / (BW x AT)
				IRS	Ingestion Rate - Soil	100	mg/day	EPA 1997	
				FI	Fraction Ingested	1	unitless	Professional judgment	
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	6	years	EPA 1991	
				MCF	Mass Conversion Factor	1E-06	kg/mg	Not applicable	
				BW	Body Weight	15	kg	EPA 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	2,190	days	EPA 1989	
Dermal	Industrial Worker	Adult	Alameda Point Site Under Assessment	CS	Chemical Concentration in Soil	EPC	mg/kg	RAGS Part D Table 3 series for each site will document the rationale.	Intake (mg/kg-day) = (CS x ABS x SA x AF x EF x ED x MCF) / (BW x AT)
				ABS	Dermal Absorption Factor	Chemical-specific	unitless	EPA 2001b	
				SA	Exposed Skin Surface Area	3,300	cm^2	EPA 2001b	
				AF	Soil to Skin Adherence Factor	0.02	mg/cm^2	EPA 2001b	
				EF	Exposure Frequency	219	days/year	EPA 2001b	
				ED	Exposure Duration	4.5	years	USDC 1994	
				MCF	Mass Conversion Factor	1E-06	kg/mg	Not applicable	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	1,643	days	EPA 1989	
	Construction Worker	Adult	Alameda Point Site Under Assessment	CS	Chemical Concentration in Soil	EPC	mg/kg	RAGS Part D Table 3 series for each site will document the rationale.	Intake (mg/kg-day) = (CS x ABS x SA x AF x EF x ED x MCF) / (BW x AT)
				ABS	Dermal Absorption Factor	Chemical-specific	unitless	EPA 2001b	
				SA	Exposed Skin Surface Area	3,300	cm^2	EPA 2001b	
				AF	Soil to Skin Adherence Factor	0.1	mg/cm^2	DTSC 2000	

TABLE H-4.3: VALUES USED FOR DAILY INTAKE CTE SOIL EXPOSURES

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name (1)
Dermal (continued)	Construction Worker (continued)	Adult (continued)	Alameda Point Site Under Assessment	EF	Exposure Frequency	60	days/year	Professional judgment	
				ED	Exposure Duration	1	years	DTSC 2000	
				MCF	Mass Conversion Factor	1E-06	kg/mg	Not applicable	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	365	days	EPA 1989	
	Resident	Adult	Alameda Point Site Under Assessment	CS	Chemical Concentration in Soil	EPC	mg/kg	RAGS Part D Table 3 series for each site will document the rationale.	Intake (mg/kg-day) = (CS x ABS x SA x AF x EF x ED x MCF) / (BW x AT)
				ABS	Dermal Absorption Factor	Chemical-specific	unitless	EPA 2001b	
				SA	Exposed Skin Surface Area	5,700	cm^2	EPA 2001b	
				AF	Soil to Skin Adherence Factor	0.01	mg/cm^2	EPA 2001b	
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	9	years	EPA 1989	
				MCF	Mass Conversion Factor	1E-06	kg/mg	Not applicable	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	3,285	days	EPA 1989	
		Child	Alameda Point Site Under Assessment	CS	Chemical Concentration in Soil	EPC	mg/kg	RAGS Part D Table 3 series for each site will document the rationale.	Intake (mg/kg-day) = (CS x ABS x SA x AF x EF x ED x MCF) / (BW x AT)
				ABS	Dermal Absorption Factor	Chemical-specific	unitless	EPA 2001b	
				SA	Exposed Skin Surface Area	2,800	cm^2	EPA 2001b	
				AF	Soil to Skin Adherence Factor	0.04	mg/cm^2	EPA 2001b	
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	6	years	EPA 1991	
				MCF	Mass Conversion Factor	1E-06	kg/mg	Not applicable	
				BW	Body Weight	15	kg	EPA 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	2,190	days	EPA 1989	

TABLE H-4.3: VALUES USED FOR DAILY INTAKE CTE SOIL EXPOSURES

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name (1)
Inhalation	Industrial Worker	Adult	Alameda Point Site Under Assessment	CA	Chemical Concentration in Air	Chemical-specific	mg/m^3	Calculated from CS	Intake (mg/kg-day) = (CA x IRA x ET x EF x ED) / (BW x AT)
				IRA	Inhalation Rate - Air	2.50	m^3/hour	EPA 1991	
				ET	Exposure Time	8	hours/day	EPA 1991	where CA= CS / PEF for particulates, and
				EF	Exposure Frequency	219	days/year	EPA 2001b	CA= CS / VF for volatiles
				ED	Exposure Duration	4.5	years	USDC 1994	PEF = 1.32E+09 m^3/kg (EPA 2002c)
				BW	Body Weight	70	kg	EPA 1991	VF = Chemical-specific volatilization factor
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	1,643	days	EPA 1989	
	Construction Worker	Adult	Alameda Point Site Under Assessment	CA	Chemical Concentration in Air	Chemical-specific	mg/m^3	Calculated from CS	Intake (mg/kg-day) = (CA x IRA x ET x EF x ED) / (BW x AT)
				IRA	Inhalation Rate - Air	2.50	m^3/hour	EPA 1991	
				ET	Exposure Time	8	hours/day	EPA 1991	where CA = CS / PEF for particulates, and
				EF	Exposure Frequency	60	days/year	Professional judgment	CA = CS / VF for volatiles
				ED	Exposure Duration	1	years	DTSC 2000	PEF = 1.32E+09 m^3/kg (EPA 2002c)
				BW	Body Weight	70	kg	EPA 1991	VF = Chemical-specific volatilization factor
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	365	days	EPA 1989	
	Resident	Adult	Alameda Point Site Under Assessment	CA	Chemical Concentration in Air	Chemical-specific	mg/m^3	Calculated from CS	Intake (mg/kg-day) = (CA x InhR x ET x EF x ED) / (BW x AT)
				InhR	Inhalation Rate	0.83	m^3/hour	EPA 1991	
				ET	Exposure Time (3)	24	hours/day	EPA 1991	where CA = CS / PEF for particulates, and
				EF	Exposure Frequency	350	days/year	EPA 1991	CA = CS / VF for volatiles
				ED	Exposure Duration	9	years	EPA 1989	PEF = 1.32E+09 m^3/kg (EPA 2002c)
				BW	Body Weight	70	kg	EPA 1991	VF = Chemical-specific volatilization factor
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	3,285	days	EPA 1989	
		Child (2)	Alameda Point Site Under Assessment	CA	Chemical Concentration in Air	Chemical-specific	mg/m^3	Calculated from CS	Intake (mg/kg-day) = (CA x InhR x ET x EF x ED) / (BW x AT)
				InhR	Inhalation Rate	0.42	m^3/hour	EPA 1991	
				ET	Exposure Time (3)	24	hours/day	EPA 1991	

TABLE H-4.3: VALUES USED FOR DAILY INTAKE CTE SOIL EXPOSURES

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name (1)
Inhalation (continued)	Resident (continued)	Child (2) (continued)	Alameda Point Site Under Assessment	EF	Exposure Frequency	350	days/year	EPA 1991	where CA = CS / PEF for particulates, and CA = CS / VF for volatiles
				ED	Exposure Duration	6	years	EPA 1991	
				BW	Body Weight	15	kg	EPA 1991	PEF = 1.32E+09 m^3/kg (EPA 2002c)
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	VF = Chemical-specific volatilization factor
				AT-NC	Averaging Time - Non-cancer	2,190	days	EPA 1989	
Ingestion of Homegrown Produce	Resident	Adult	Alameda Point Site Under Assessment	CS	Chemical Concentration in Soil	EPC	mg/kg	RAGS Part D Table 3 series for each site will document the rationale.	Intake (mg/kg-day) = (CS x FI x UF x IRS x EF x ED) / (BW x AT)
				UF	Uptake Factor	Chemical-specific	unitless	DTSC 1993; EPA 1996	
				FI	Fraction Ingested	0.2	unitless	Professional judgment	
				IRS	Intake Rate	0.03	kg/day	EPA 1997	
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	9	years	EPA 1991	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	3,285	days	EPA 1989	
		Child	Alameda Point Site Under Assessment	CS	Chemical Concentration in Soil	EPC	mg/kg	RAGS Part D Table 3 series for each site will document the rationale.	Intake (mg/kg-day) = (CS x FI x UF x IRS x EF x ED) / (BW x AT)
				UF	Uptake Factor	Chemical-specific	unitless	DTSC 1993; EPA 1996	
				FI	Fraction Ingested	0.2	unitless	Professional judgment	
				IRS	Intake Rate	0.0064	kg/day	EPA 1997	
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	6	years	EPA 1991	
				BW	Body Weight	15	kg	EPA 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	2,190	days	EPA 1989	

TABLE H-4.3: VALUES USED FOR DAILY INTAKE CTE SOIL EXPOSURES

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name (1)

Notes:

(1) See Section 5 for discussion of the intake assumptions.

(2) While children's inhalation rates can be estimated, the toxicity factors applied in a risk assessment are based on chronic risks and not adjusted for a child's unique physiology.

(3) These exposure times for inhalation are shown to represent the total daily inhalation rate on an hourly basis. However, the actual outdoor activity where particles or vapors would be inhaled does not amount to round-the-clock exposure. In particular, for residential scenarios where exposure to indoor air is assumed, this will result in a conservative overestimate of risk, unless soil (vapor and particulate) and groundwater (indoor air and soil gas) pathways are characterized separately.

cm^2 = Square centimeter
CTE= Central tendency exposure
days/year = Days per year
DTSC = Department of Toxic Substances Control
EPA = U.S. Environmental Protection Agency
EPC = Exposure Point Concentration
hours/day = Hours per day
kg = Kilogram
kg/mg = Kilograms per milligram
mg/cm^2 = Milligrams per square centimeter
mg/day = Milligrams per day
mg/kg = Milligrams per kilogram
mg/m^3 = Milligrams per cubic meter
OERR = Office of Emergency and Remedial Response
m^3/hour = Cubic meters per hour
m^3/kg = Cubic meters of air per kg soil (reduced from mg/m^3-air per mg/kg-soil)
PEF = Particulate emission factor
RAGS = Risk Assessment Guidance for Superfund
USDC = U.S. Department of Commerce

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TABLE H-4.4: VALUES USED FOR DAILY INTAKE CTE GROUNDWATER EXPOSURES

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name (1)
Ingestion	Resident	Adult	Alameda Point Site Under Assessment	CW	Chemical Concentration in Groundwater	Chemical-specific	mg/L	RAGS Part D Table 3 series for each site will document the rationale.	Intake (mg/kg-day) = (CW x WC x EF x ED) / (BW x AT)
				WC	Water Consumption Rate	1.4	liters/day	EPA 1989	
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	9	years	EPA 1989	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	3,285	days	EPA 1989	
		Child	Alameda Point Site Under Assessment	CW	Chemical Concentration in Groundwater	Chemical-specific	mg/L	RAGS Part D Table 3 series for each site will document the rationale.	Intake (mg/kg-day) = (CW x WC x EF x ED) / (BW x AT)
				WC	Water Consumption Rate	1	liters/day	EPA 1989	
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	6	years	EPA 1991	
				BW	Body Weight	15	kg	EPA 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	2,190	days	EPA 1989	
Dermal	Resident	Adult	Alameda Point Site Under Assessment	CW	Chemical Concentration in Groundwater	Chemical-specific	mg/L	RAGS Part D Table 3 series for each site will document the rationale.	Intake (mg/kg-day) = (CW x SAw x PC x ET x EF x ED x .001) / (BW x AT)
				SA_w	Surface Area	18,000	cm^2	EPA 2001b	
				PC	Dermal Permeability Coefficient	Chemical-specific	cm/hr	EPA 2001b	
				ET	Bath or Shower Duration	0.25	hours/day	EPA 2001b	
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	9	years	EPA 1989	
				0.001	Volumetric Conversion Factor	1.0E-03	L/cm^3	Not applicable	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	3,285	days	EPA 1989	

TABLE H-4.4: VALUES USED FOR DAILY INTAKE CTE GROUNDWATER EXPOSURES

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name (1)
Dermal (Continued)	Resident (Continued)	Child	Alameda Point Site Under Assessment	CW	Chemical Concentration in Groundwater	Chemical-specific	mg/L	RAGS Part D Table 3 series for each site will document the rationale.	Intake (mg/kg-day) = (CW x SAw x PC x ET x EF x ED x .001) / (BW x AT)
				SA_w	Surface Area	6,600	cm^2	EPA 2001b	
				PC	Dermal Permeability Coefficient	Chemical-specific	cm/hr	EPA 2001b	
				ET	Bath or Shower Duration	0.33	hours/day	EPA 2001b	
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	6	years	EPA 1991	
				0.001	Volumetric Conversion Factor	1.0E-03	L/cm^3	Not applicable	
				BW	Body Weight	15	kg	EPA 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	2,190	days	EPA 1989	
Inhalation of Volatiles Released from Domestic Water Use	Resident	Adult	Alameda Point Site Under Assessment	CW	Chemical Concentration in Groundwater	Chemical-specific	mg/L	RAGS Part D Table 3 series for each site will document the rationale.	Intake (mg/kg-day) = (CW x VF_W x InhR x ET x EF x ED) / (BW x AT)
				InhR	Inhalation Rate	0.83	m^3/hour	EPA 1991	
				VF_W	Volatilization Factor	0.5	L/m^3	EPA 2002c	
				ET	Exposure Time	0.25	hours/day	Professional judgment	
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	9	years	EPA 1989	
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	3,285	days	EPA 1989	
		Child	Alameda Point Site Under Assessment	CW	Chemical Concentration in Groundwater	Chemical-specific	mg/L	RAGS Part D Table 3 series for each site will document the rationale.	Intake (mg/kg-day) = (CW x VF_W x InhR x ET x EF x ED) / (BW x AT)
				InhR	Inhalation Rate	0.42	m^3/hour	EPA 1991	
				ET	Exposure Time	0.33	hours/day	Professional judgment	
				VF_W	Volatilization Factor	0.5	L/m^3	EPA 2002c	
				EF	Exposure Frequency	350	days/year	EPA 1991	
				ED	Exposure Duration	6	years	EPA 1991	

TABLE H-4.4: VALUES USED FOR DAILY INTAKE CTE GROUNDWATER EXPOSURES

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name (1)
Inhalation of Volatiles Released from Domestic Water Use (continued)	Resident (continued)	Child (continued)	Alameda Point Site Under Assessment	BW	Body Weight	15	kg	EPA 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	2,190	days	EPA 1989	
Inhalation of Volatiles in Indoor Air	Industrial Worker	Adult	Alameda Point Site Under Assessment	CA	Chemical Concentration in Air	EPC	mg/m^3	Modeled from CW	Intake (mg/kg-day) =
				InhR	Inhalation Rate	2.50	m^3/hour	EPA 1991	(CA x InhR x ET x EF x ED) / (BW x AT)
				ET	Exposure Time	8	hours/day	EPA 1991	
				EF	Exposure Frequency	219	days/year	EPA 2001b	where CA will be modeled from CW and/or soil
				ED	Exposure Duration	4.5	years	USDC 1994	gas data using the Johnson & Ettinger model
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	1,643	days	EPA 1989	
	Resident	Adult	Alameda Point Site Under Assessment	CA	Chemical Concentration in Air	EPC	mg/m^3	Modeled from CW	Intake (mg/kg-day) =
				InhR	Inhalation Rate	0.83	m^3/hour	EPA 1991	(CA x InhR x ET x EF x ED) / (BW x AT)
				ET	Exposure Time (3)	24	hours/day	EPA 1991	
				EF	Exposure Frequency	350	days/year	EPA 1991	where CA will be modeled from CW and/or soil
				ED	Exposure Duration	9	years	EPA 1989	gas data using the Johnson & Ettinger model
				BW	Body Weight	70	kg	EPA 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	3,285	days	EPA 1989	
		Child (2)	Alameda Point Site Under Assessment	CA	Chemical Concentration in Air	EPC	mg/m^3	Modeled from CW	Intake (mg/kg-day) =
				InhR	Inhalation Rate	0.42	m^3/hour	EPA 1991	(CA x InhR x ET x EF x ED) / (BW x AT)
				ET	Exposure Time (3)	24	hours/day	EPA 1991	
				EF	Exposure Frequency	350	days/year	EPA 1991	where CA will be modeled from CW and/or soil
				ED	Exposure Duration	6	years	EPA 1991	gas data using the Johnson & Ettinger model
				BW	Body Weight	15	kg	EPA 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA 1989	
				AT-NC	Averaging Time - Non-cancer	2,190	days	EPA 1989	

TABLE H-4.4: VALUES USED FOR DAILY INTAKE CTE GROUNDWATER EXPOSURES

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name (1)

Notes:

(1) See Section 5 for discussion of the intake assumptions.

(2) While children's inhalation rates can be estimated, the toxicity factors applied in a risk assessment are based on chronic risks and not adjusted for a child's unique physiology.

(3) These exposure times for inhalation are shown to represent the total daily inhalation rate on an hourly basis. However, because some outdoor activity is being assumed based on the inclusion of soil pathways and outdoor air inhalation, this will result in a conservative overestimate of risk, unless soil (vapor and particulate) and groundwater (indoor air and soil gas) pathways are characterized separately.

cm^2 = Square centimeters
cm/hr = Centimeters per hour
CTE = Central tendency exposure
days/year = Days per year
EPA = U.S. Environmental Protection Agency
EPC = Exposure Point Concentration
hours/day = Hours per day
kg = Kilogram
m^3/hour = Cubic meters per hour
L/cm^3 = Liters per cubic centimeter
mg/kg-day = Milligrams per kilogram per day
mg/m^3 = Milligrams per cubic meter
mg/L = Milligrams per liter
OERR = Office of Emergency and Remedial Response
RAGS = Risk Assessment Guidance for Superfund
USDC = U.S. Department of Commerce

References:

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TABLE H-5.1.EPA: EPA NON-CANCER TOXICITY DATA - ORAL/DERMAL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal (1)	Absorbed RfD for Dermal		Primary Target Organ(s)	Combined Uncertainty/ Modifying Factors	RfD:Target Organ(s)	
		Value	Units		Value	Units			Source(s)	Date(s) (YYYY)
Antimony	Chronic	4.0E-04	mg/kg-day	100%	4.0E-04	mg/kg-day	Longevity, Blood, Cholesterol	1000	IRIS	2003
Arsenic	Chronic	3.0E-04	mg/kg-day	100%	3.0E-04	mg/kg-day	Skin	3	IRIS	2003
Chromium[a]	Chronic	1.5E+00	mg/kg-day	100%	1.5E+00	mg/kg-day	No observed effect	1000	IRIS	2003
Lead	--	--	--	--	--	--	--	--	--	--
Manganese[b]	Chronic	2.4E-02	mg/kg-day	100%	2.4E-02	mg/kg-day	CNS	3	IRIS	2003
Thallium[c]	Chronic	6.6E-05	mg/kg-day	100%	6.6E-05	mg/kg-day	Liver, Blood	3000	IRIS	2003
Vanadium	Chronic	7.0E-03	mg/kg-day	100%	7.0E-03	mg/kg-day	No observed effect	100	HEAST	1997
Benz(a)anthracene	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	--	--	--	--	--	--	--	--	--	--
Chrysene	--	--	--	--	--	--	--	--	--	--
Dibenz(a,h)anthracene	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	--	--	--	--	--	--	--	--	--	--
Naphthalene	Chronic	2.0E-02	mg/kg-day	100%	2.0E-02	mg/kg-day	Body Weight	3000	IRIS	2003
1,1-Dichloroethane	Chronic	1.0E-01	mg/kg-day	100%	1.0E-01	mg/kg-day	No observed effect	1000	HEAST	1997
1,2,3-Trichloropropane	Chronic	6.0E-03	mg/kg-day	100%	6.0E-03	mg/kg-day	Blood	1000	IRIS	2003
1,2,4-Trimethylbenzene	Chronic	5.0E-02	mg/kg-day	100%	5.0E-02	mg/kg-day	No observed effect	3000	R9-NCEA	2002
1,2-Dichloroethane	Chronic	3.0E-02	mg/kg-day	100%	3.0E-02	mg/kg-day	Kidney, Death	1000	R9-NCEA	2002
1,2-Dichloroethene (Total)[d]	Chronic	1.0E-02	mg/kg-day	100%	1.0E-02	mg/kg-day	Blood	3000	HEAST	1997
1,2-Dichloropropane	Chronic	1.1E-03	mg/kg-day	100%	1.1E-03	mg/kg-day	Nasal	300	R9-R	2002
1,3-Dichloropropane[e]	Chronic	1.1E-03	mg/kg-day	100%	1.1E-03	mg/kg-day	Nasal	300	R9-R	2002
2,2'-Oxybis(1-chloropropane)	Chronic	4.0E-02	mg/kg-day	100%	4.0E-02	mg/kg-day	Blood	1000	IRIS	2003
2-Butanone[f]	Chronic	6.0E-01	mg/kg-day	100%	6.0E-01	mg/kg-day	Fetus	3000	IRIS	2003
2-Methylnaphthalene	Chronic	9.0E-03	mg/kg-day	100%	9.0E-03	mg/kg-day	Lung	1000	NCEA	2000
4-Methylphenol	Chronic	5.0E-03	mg/kg-day	100%	5.0E-03	mg/kg-day	CNS, Respiratory, Whole Body	1000	HEAST	1997
Benzene	Chronic	4.0E-03	mg/kg-day	100%	4.0E-03	mg/kg-day	Blood	300	IRIS	2003
Chloroethane	Chronic	4.0E-01	mg/kg-day	100%	4.0E-01	mg/kg-day	No observed effect	3000	R9-NCEA	2002
Chloroform	Chronic	1.0E-02	mg/kg-day	100%	1.0E-02	mg/kg-day	Liver	1000	IRIS	2003
Ethylbenzene	Chronic	1.0E-01	mg/kg-day	100%	1.0E-01	mg/kg-day	Kidney, Liver	1000	IRIS	2003
Isopropylbenzene	Chronic	1.0E-01	mg/kg-day	100%	1.0E-01	mg/kg-day	Kidney	1000	IRIS	2003

TABLE H-5.1.EPA: EPA NON-CANCER TOXICITY DATA - ORAL/DERMAL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal (1)	Absorbed RfD for Dermal		Primary Target Organ(s)	Combined Uncertainty/ Modifying Factors	RfD:Target Organ(s)	
		Value	Units		Value	Units			Source(s)	Date(s) (YYYY)
Methyl-t-butyl ether	Chronic	8.6E-01	mg/kg-day	100%	8.6E-01	mg/kg-day	Liver, Kidney, Eyes	100	R9-R	2002
n-Propylbenzene	Chronic	4.0E-02	mg/kg-day	100%	4.0E-02	mg/kg-day	--	--	R9-NCEA	2002
Pentachlorophenol	Chronic	3.0E-02	mg/kg-day	100%	3.0E-02	mg/kg-day	--	--	IRIS	2003
sec-Butylbenzene	Chronic	4.0E-02	mg/kg-day	100%	4.0E-02	mg/kg-day	--	--	R9-NCEA	2002
Tetrachloroethene	Chronic	1.0E-02	mg/kg-day	100%	1.0E-02	mg/kg-day	Liver	1000	IRIS	2003
Toluene	Chronic	2.0E-01	mg/kg-day	100%	2.0E-01	mg/kg-day	Kidney, Liver	1000	IRIS	2003
Trichloroethene	Chronic	3.0E-04	mg/kg-day	100%	3.0E-04	mg/kg-day	Liver, Kidney, Fetus	3000	R9-NCEA	2002
Vinyl chloride	Chronic	3.0E-03	mg/kg-day	100%	3.0E-03	mg/kg-day	Liver	30	IRIS	2003
m-Xylene[g]	Chronic	2.0E-01	mg/kg-day	100%	2.0E-01	mg/kg-day	Death, Body Weight	1000	IRIS	2003
o-Xylene[g]	Chronic	2.0E-01	mg/kg-day	100%	2.0E-01	mg/kg-day	Death, Body Weight	1000	IRIS	2003
Xylene (Total)	Chronic	2.0E-01	mg/kg-day	100%	2.0E-01	mg/kg-day	Death, Body Weight	1000	IRIS	2003

Notes:

(1) EPA (2001b). See Section H.6.3 of text for additional information.

a The oral RfD for chromium III was used as the surrogate toxicity value.

b The oral RFD for non-food sources of manganese (such as soil and drinking water) was modified from the oral RFD which includes all sources, including diet (IRIS 2003).

c The oral RFD for thallium was derived by making the adjustment contained in the IRIS 2003 file for thallium sulfate, based on the molecular weight of thallium in the thallium salt. Final adjusted oral RFD is shown in Section 2.3 of the Region 9 PRG Table Update memo (2002).

d The oral RFD for cis-1,2-dichloroethene was used as the surrogate toxicity value.

e The oral RfD for 1,2-dichloropropane was used as the surrogate toxicity value.

f The oral RfD for methyl ethyl ketone was used as the surrogate toxicity value.

g The oral RfD for total xylene was used as the surrogate toxicity value.

--	Not available; not applicable
CNS	Central nervous system
EPA	Environmental Protection Agency
HEAST	Health Effects Assessment Summary Tables
IRIS	Integrated Risk Information System
mg/kg-day	Milligram per kilogram per day
PRG	Preliminary remediation goal
R9	U.S. EPA Region 9 PRGs
R9-NCEA	Source of toxicity value listed as National Center for Environmental Assessment in the EPA Region 9 PRGs
R9-R	Route-extrapolated toxicity value as listed in the EPA Region 9 PRGs
RfD	Reference dose, inhalation

TABLE H-5.2.EPA: EPA NON-CANCER TOXICITY DATA - INHALATION

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Extrapolated RfD		Primary Target Organ(s)	Combined Uncertainty/ Modifying Factors	RfD:Target Organ(s)	
		Value	Units	Value	Units			Source(s)	Date(s) (YYYY)
Antimony	--	--	--	--	--	--	--	--	--
Arsenic	--	--	--	--	--	--	--	--	--
Chromium[a]	--	--	--	--	--	--	--	--	--
Lead	--	--	--	--	--	--	--	--	--
Manganese	Chronic	5.0E-05	(mg/m^3)	1.4E-05	mg/kg-day	CNS	1000	IRIS	2003
Thallium	--	--	--	--	--	--	--	--	--
Vanadium	--	--	--	--	--	--	--	--	--
Benz(a)anthracene	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	--	--	--	--	--	--	--	--	--
Chrysene	--	--	--	--	--	--	--	--	--
Dibenz(a,h)anthracene	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	--	--	--	--	--	--	--	--	--
Naphthalene	Chronic	3.0E-03	(mg/m^3)	8.6E-04	mg/kg-day	Nasal	3000	IRIS	2003
1,1-Dichloroethane	Chronic	5.0E-01	(mg/m^3)	1.4E-01	mg/kg-day	Kidney	1000	HEAST	1997
1,2,3-Trichloropropane	Chronic	4.9E-03	(mg/m^3)	1.4E-03	mg/kg-day	Blood	1000	R9-NCEA	2002
1,2,4-Trimethylbenzene	Chronic	6.0E-03	(mg/m^3)	1.7E-03	mg/kg-day	CNS	3000	R9-NCEA	2002
1,2-Dichloroethane	Chronic	5.0E-03	(mg/m^3)	1.4E-03	mg/kg-day	GI, Liver	3000	R9-NCEA	2002
1,2-Dichloroethene (Total)[b]	Chronic	3.5E-02	(mg/m^3)	1.0E-02	mg/kg-day	Blood	3000	R9-R	2002
1,2-Dichloropropane	Chronic	4.0E-03	(mg/m^3)	1.1E-03	mg/kg-day	Nasal	300	IRIS	2003
1,3-Dichloropropane[c]	Chronic	4.0E-03	(mg/m^3)	1.1E-03	mg/kg-day	Nasal	300	IRIS	2003
2,2'-Oxybis(1-chloropropane)	Chronic	1.4E-01	(mg/m^3)	4.0E-02	mg/kg-day	Blood	1000	R9-R	2002
2-Butanone[d]	Chronic	1.0E+00	(mg/m^3)	2.9E-01	mg/kg-day	Fetus	3000	IRIS	2003
2-Methylnaphthalene[e]	Chronic	3.0E-03	(mg/m^3)	8.6E-04	mg/kg-day	Nasal	3000	IRIS	2003
4-Methylphenol	Chronic	1.8E-02	(mg/m^3)	5.0E-03	mg/kg-day	CNS, Respiratory	1000	R9-R	2003
Benzene	Chronic	3.0E-02	(mg/m^3)	8.6E-03	mg/kg-day	Blood	300	IRIS	2003
Chloroethane	Chronic	1.0E+01	(mg/m^3)	2.9E+00	mg/kg-day	Fetus	300	IRIS	2003
Chloroform	Chronic	3.0E-03	(mg/m^3)	8.6E-04	mg/kg-day	--	--	R9-NCEA	2002
Ethylbenzene	Chronic	1.0E+00	(mg/m^3)	2.9E-01	mg/kg-day	Developmental	300	IRIS	2003

TABLE H-5.2.EPA: EPA NON-CANCER TOXICITY DATA - INHALATION

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Extrapolated RfD		Primary Target Organ(s)	Combined Uncertainty/ Modifying Factors	RfD:Target Organ(s)	
		Value	Units	Value	Units			Source(s)	Date(s) (YYYY)
Isopropylbenzene	Chronic	4.0E-01	(mg/m^3)	1.1E-01	mg/kg-day	Kidney	1000	IRIS	2003
Methyl-t-butyl ether	Chronic	3.0E+00	(mg/m^3)	8.6E-01	mg/kg-day	Liver, Kidney, Eyes	100	IRIS	2003
n-Propylbenzene	Chronic	1.4E-01	(mg/m^3)	4.0E-02	mg/kg-day	--	--	R9-R	2002
Pentachlorophenol	Chronic	1.1E-01	(mg/m^3)	3.0E-02	mg/kg-day	Kidney, Liver	100	R9-R	2002
sec-Butylbenzene	Chronic	1.4E-01	(mg/m^3)	4.0E-02	mg/kg-day	--	--	R9-R	2002
Tetrachloroethene	Chronic	6.0E-01	(mg/m^3)	1.7E-01	mg/kg-day	Liver, Kidney	30	R9-NCEA	2002
Toluene	Chronic	4.0E-01	(mg/m^3)	1.1E-01	mg/kg-day	CNS	300	IRIS	2003
Trichloroethene	Chronic	4.0E-02	(mg/m^3)	1.0E-02	mg/kg-day	CNS, Liver, Endocrine	1000	R9-NCEA	2002
Vinyl chloride	Chronic	1.0E-01	(mg/m^3)	2.9E-02	mg/kg-day	Liver	30	IRIS	2003
m-Xylene[f]	Chronic	1.0E-01	(mg/m^3)	2.9E-02	mg/kg-day	CNS	300	IRIS	2003
o-Xylene[f]	Chronic	1.0E-01	(mg/m^3)	2.9E-02	mg/kg-day	CNS	300	IRIS	2003
Xylene (Total)	Chronic	1.0E-01	(mg/m^3)	2.9E-02	mg/kg-day	CNS	300	IRIS	2003

Notes:

a The RFC for chromium III was used as the surrogate toxicity value.

b The RFD for cis-1,2-dichloroethene was used as the surrogate toxicity value.

c The RFC for 1,2-dichloropropane was used as the surrogate toxicity value.

d The RFC for methyl ethyl ketone was used as the surrogate toxicity value.

e The RFD for naphthalene was used as the surrogate toxicity value.

f The RFD for total xylene was used as the surrogate toxicity value.

--	Not available; not applicable
CNS	Central nervous system
EPA	Environmental Protection Agency
IRIS	Integrated Risk Information System
mg/kg-day	Milligram per kilogram per day
mg/m^3	Milligram per cubic meter
PRG	Preliminary remediation goal
R9	U.S. EPA Region 9 PRGs
R9-NCEA	Source of toxicity value listed as National Center for Environmental Assessment in the EPA Region 9 PRGs
R9-R	Route-extrapolated toxicity value as listed in the EPA Region 9 PRGs
RfC	Reference concentration
RfD	Reference dose, inhalation

TABLE H-6.1.EPA: EPA CANCER TOXICITY DATA - ORAL/DERMAL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Chemical of Potential Concern	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal (1)	Absorbed Cancer Slope Factor for Dermal		Weight of Evidence/ Cancer Guideline Description	Oral CSF	
	Value	Units		Value	Units		Source(s)	Date(s) (YYYY)
Antimony	--	--	--	--	--	--	--	--
Arsenic	1.5E+00	$(mg/kg\text{-}day)^{-1}$	100%	1.5E+00	$(mg/kg\text{-}day)^{-1}$	A (IRIS 2003)	IRIS	2003
Chromium[a]	--	--	--	--	--	D (IRIS 2003)	IRIS	2003
Lead	--	--	--	--	--	B2 (IRIS 2003)	IRIS	2003
Manganese	--	--	--	--	--	D (IRIS 2003)	--	--
Thallium	--	--	--	--	--	--	--	--
Vanadium	--	--	--	--	--	--	--	--
Benz(a)anthracene	7.3E-01	$(mg/kg\text{-}day)^{-1}$	100%	7.3E-01	$(mg/kg\text{-}day)^{-1}$	B2 (IRIS 2003)	R9-NCEA	2002
Benzo(a)pyrene	7.3E+00	$(mg/kg\text{-}day)^{-1}$	100%	7.3E+00	$(mg/kg\text{-}day)^{-1}$	B2 (IRIS 2003)	IRIS	2003
Benzo(b)fluoranthene	7.3E-01	$(mg/kg\text{-}day)^{-1}$	100%	7.3E-01	$(mg/kg\text{-}day)^{-1}$	B2 (IRIS 2003)	R9-NCEA	2002
Benzo(k)fluoranthene	7.3E-02	$(mg/kg\text{-}day)^{-1}$	100%	7.3E-02	$(mg/kg\text{-}day)^{-1}$	B2 (IRIS 2003)	R9-NCEA	2002
Chrysene	7.3E-03	$(mg/kg\text{-}day)^{-1}$	100%	7.3E-03	$(mg/kg\text{-}day)^{-1}$	B2 (IRIS 2003)	R9-NCEA	2002
Dibenz(a,h)anthracene	7.3E+00	$(mg/kg\text{-}day)^{-1}$	100%	7.3E+00	$(mg/kg\text{-}day)^{-1}$	B2 (IRIS 2003)	R9-NCEA	2002
Indeno(1,2,3-cd)pyrene	7.3E-01	$(mg/kg\text{-}day)^{-1}$	100%	7.3E-01	$(mg/kg\text{-}day)^{-1}$	B2 (IRIS 2003)	R9-NCEA	2002
Naphthalene	--	--	--	--	--	--	--	--
1,1-Dichloroethane	--	--	--	--	--	C (IRIS 2003)	--	--
1,2,3-Trichloropropane	2.0E+00	$(mg/kg\text{-}day)^{-1}$	100%	2.0E+00	$(mg/kg\text{-}day)^{-1}$	--	R9-NCEA	2002
1,2,4-Trimethylbenzene	--	--	--	--	--	--	--	--
1,2-Dichloroethane	9.1E-02	$(mg/kg\text{-}day)^{-1}$	100%	9.1E-02	$(mg/kg\text{-}day)^{-1}$	B2 (IRIS 2003)	IRIS	2003
1,2-Dichloroethene (Total)[b]	--	--	--	--	--	D (IRIS 2003)	--	--
1,2-Dichloropropane	6.8E-02	$(mg/kg\text{-}day)^{-1}$	100%	6.8E-02	$(mg/kg\text{-}day)^{-1}$	B2 (HEAST 1997)	HEAST	1997
1,3-Dichloropropane[c]	6.8E-02	$(mg/kg\text{-}day)^{-1}$	100%	6.8E-02	$(mg/kg\text{-}day)^{-1}$	B2 (HEAST 1997)	HEAST	1997
2,2'-Oxybis(1-chloropropane)	--	--	--	--	--	--	--	--
2-Butanone[d]	--	--	--	--	--	D (IRIS 2003)	--	--
2-Methylnaphthalene[e]	--	--	--	--	--	C (IRIS 2003)	IRIS	2003
4-Methylphenol	--	--	--	--	--	C (IRIS 2003)	--	--
Benzene	5.5E-02	$(mg/kg\text{-}day)^{-1}$	100%	5.5E-02	$(mg/kg\text{-}day)^{-1}$	A (IRIS 2003)	IRIS	2003
Chloroethane	2.9E-03	$(mg/kg\text{-}day)^{-1}$	100%	2.9E-03	$(mg/kg\text{-}day)^{-1}$	B2 (NCEA 1993)	R9-NCEA	2002
Chloroform	--	--	--	--	--	B2 (IRIS 2003)	--	--
Ethylbenzene	3.9E-03	$(mg/kg\text{-}day)^{-1}$	100%	3.9E-03	$(mg/kg\text{-}day)^{-1}$	D (IRIS 2003)	R9-R	2002

TABLE H-6.1.EPA: EPA CANCER TOXICITY DATA - ORAL/DERMAL

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Chemical of Potential Concern	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal (1)	Absorbed Cancer Slope Factor for Dermal		Weight of Evidence/ Cancer Guideline Description	Oral CSF	
	Value	Units		Value	Units		Source(s)	Date(s) (YYYY)
Isopropylbenzene	--	--	--	--	--	D (IRIS 2003)	--	--
Methyl-T-Butyl Ether	3.3E-03	$(mg/kg\text{-}day)^{-1}$	100%	3.3E-03	$(mg/kg\text{-}day)^{-1}$	--	R9-NCEA	2002
N-Propylbenzene	--	--	--	--	--	--	--	--
Pentachlorophenol	1.2E-01	$(mg/kg\text{-}day)^{-1}$	100%	1.2E-01	$(mg/kg\text{-}day)^{-1}$	B2 (IRIS 2003)	IRIS	2003
sec-Butylbenzene	--	--	--	--	--	--	--	--
Tetrachloroethene	5.2E-02	$(mg/kg\text{-}day)^{-1}$	100%	5.2E-02	$(mg/kg\text{-}day)^{-1}$	--	R9-NCEA	2002
Toluene	--	--	--	--	--	D (IRIS 2003)	IRIS	2003
Trichloroethene	4.0E-01	$(mg/kg\text{-}day)^{-1}$	100%	4.0E-01	$(mg/kg\text{-}day)^{-1}$	B1 (NCEA 2001)	R9-NCEA	2002
Vinyl Chloride (adult/child)[f]	1.5E+00	$(mg/kg\text{-}day)^{-1}$	100%	1.5E+00	$(mg/kg\text{-}day)^{-1}$	A (IRIS 2003)	IRIS	2003
Vinyl Chloride (adult)[g]	7.5E-01	$(mg/kg\text{-}day)^{-1}$	100%	7.5E-01	$(mg/kg\text{-}day)^{-1}$	A (IRIS 2003)	IRIS	2003
m-Xylene[h]	--	--	--	--	--	--	--	--
o-Xylene[h]	--	--	--	--	--	--	--	--
Xylene (Total)	--	--	--	--	--	--	--	--

Notes:

(1) EPA (2001b). See Section H.6.3 of text for additional information.

a The oral SF for Chromium III was used as the surrogate toxicity value.

b The oral SF for cis-1,2-dichloroethene was used as the surrogate toxicity value.

c The oral SF for 1,2-dichloropropane was used as the surrogate toxicity value.

d The oral SF for methyl ethyl ketone was used as the surrogate toxicity value.

e The oral SF for naphthalene was used as the surrogate toxicity value.

f The vinyl chloride oral cancer slope factor for continuous lifetime exposure during adulthood was used to estimate risks for the industrial/commercial scenarios

g The vinyl chloride oral cancer slope factor for continuous lifetime exposure from birth was used to estimate risks for the residential/recreational scenarios

h The oral SF for total xylene was used as the surrogate toxicity value.

--	Not available; not applicable
CSF	Cancer slope factor
EPA	Environmental Protection Agency
HEAST	Health Effects Assessment Summary Tables
IRIS	Integrated Risk Information System

EPA Weight-of-Evidence Classification:

A - Human carcinogen

B1 - Probable human carcinogen - indicates that limited human data are available

B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans

C - Possible human carcinogen

D - Not classifiable as to human carcinogenicity

mg/kg-day	Milligram per kilogram per day
PRG	Preliminary remediation goal
R9	U.S. EPA Region 9 PRGs
R9-NCEA	Source of toxicity value listed as National Center for Environmental Assessment in the EPA Region 9 PRGs
R9-R	Route-extrapolated toxicity value as listed in the EPA Region 9 PRGs

TABLE H-6.2.EPA: EPA CANCER TOXICITY DATA - INHALATION

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Chemical of Potential Concern	Unit Risk		Inhalation Cancer Slope Factor		Weight of Evidence/ Cancer Guideline Description	Unit Risk : Inhalation CSF	
	Value	Units	Value	Units		Source(s)	Date(s) (YYYY)
Antimony	--	--	--	--	--	--	--
Arsenic	4.3E-03	$(ug/m^3)^{-1}$	1.5E+01	$(mg/kg\text{-}day)^{-1}$	A (IRIS 2003)	IRIS	2003
Chromium[a]	--	--	--	--	D (IRIS 2003)	IRIS	2003
Lead	--	--	--	--	B2 (IRIS 2003)	IRIS	2003
Manganese	--	--	--	--	D (IRIS 2003)	--	--
Thallium	--	--	--	--	--	--	--
Vanadium	--	--	--	--	--	--	--
Benz(a)anthracene	2.1E-04	$(ug/m^3)^{-1}$	7.3E-01	$(mg/kg\text{-}day)^{-1}$	B2 (IRIS 2003)	R9-R	2002
Benzo(a)pyrene	2.1E-03	$(ug/m^3)^{-1}$	7.3E+00	$(mg/kg\text{-}day)^{-1}$	B2 (IRIS 2003)	R9-R	2002
Benzo(b)fluoranthene	2.1E-04	$(ug/m^3)^{-1}$	7.3E-01	$(mg/kg\text{-}day)^{-1}$	B2 (IRIS 2003)	R9-R	2002
Benzo(k)fluoranthene	2.1E-05	$(ug/m^3)^{-1}$	7.3E-02	$(mg/kg\text{-}day)^{-1}$	B2 (IRIS 2003)	R9-R	2002
Chrysene	2.1E-06	$(ug/m^3)^{-1}$	7.3E-03	$(mg/kg\text{-}day)^{-1}$	B2 (IRIS 2003)	R9-R	2002
Dibenz(a,h)anthracene	2.1E-03	$(ug/m^3)^{-1}$	7.3E+00	$(mg/kg\text{-}day)^{-1}$	B2 (IRIS 2003)	R9-R	2002
Indeno(1,2,3-cd)pyrene	2.1E-04	$(ug/m^3)^{-1}$	7.3E-01	$(mg/kg\text{-}day)^{-1}$	B2 (IRIS 2003)	R9-R	2002
Naphthalene	--	--	--	--	--	--	--
1,1-Dichloroethane	--	--	--	--	C (IRIS 2003)	--	--
1,2,3-Trichloropropane	5.7E-04	$(ug/m^3)^{-1}$	2.0E+00	$(mg/kg\text{-}day)^{-1}$	--	R9-NCEA	2002
1,2,4-Trimethylbenzene	--	--	--	--	--	--	--
1,2-Dichloroethane	2.6E-05	$(ug/m^3)^{-1}$	9.1E-02	$(mg/kg\text{-}day)^{-1}$	B2 (IRIS 2003)	IRIS	2003
1,2-Dichloroethene (Total)[b]	--	--	--	--	D (IRIS 2003)	--	--
1,2-Dichloropropane	1.9E-05	$(ug/m^3)^{-1}$	6.8E-02	$(mg/kg\text{-}day)^{-1}$	B2 (HEAST 1997)	R9-R	2002
1,3-Dichloropropane[c]	1.9E-05	$(ug/m^3)^{-1}$	6.8E-02	$(mg/kg\text{-}day)^{-1}$	B2 (HEAST 1997)	R9-R	2002
2,2'-Oxybis(1-chloropropane)	--	--	--	--	--	--	--
2-Butanone[d]	--	--	--	--	D (IRIS 2003)	--	--
2-Methylnaphthalene[e]	--	--	--	--	C (IRIS 2003)	IRIS	2003
4-Methylphenol	--	--	--	--	C (IRIS 2003)	--	--
Benzene	7.8E-06	$(ug/m^3)^{-1}$	2.7E-02	$(mg/kg\text{-}day)^{-1}$	A (IRIS 2003)	IRIS	2003
Chloroethane	8.3E-07	$(ug/m^3)^{-1}$	2.9E-03	$(mg/kg\text{-}day)^{-1}$	B2 (NCEA 1993)	R9-R	2002
Chloroform[f]	2.3E-05	$(ug/m^3)^{-1}$	8.1E-02	$(mg/kg\text{-}day)^{-1}$	B2 (IRIS 2003)	IRIS	2003
Ethylbenzene	1.1E-06	$(ug/m^3)^{-1}$	3.9E-03	$(mg/kg\text{-}day)^{-1}$	D (IRIS 2003)	R9-NCEA	2002

TABLE H-6.2.EPA: EPA CANCER TOXICITY DATA - INHALATION

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Chemical of Potential Concern	Unit Risk		Inhalation Cancer Slope Factor		Weight of Evidence/ Cancer Guideline Description	Unit Risk : Inhalation CSF	
	Value	Units	Value	Units		Source(s)	Date(s) (YYYY)
Isopropylbenzene	--	--	--	--	D (IRIS 2003)	--	--
Methyl-T-Butyl Ether	1.0E-07	$(ug/m^3)^{-1}$	3.5E-04	$(mg/kg\text{-}day)^{-1}$	--	R9-NCEA	2002
N-Propylbenzene	--	--	--	--	--	--	--
Pentachlorophenol	3.4E-05	$(ug/m^3)^{-1}$	1.2E-01	$(mg/kg\text{-}day)^{-1}$	B2 (IRIS 2003)	R9-R	2002
sec-Butylbenzene	--	--	--	--	--	--	--
Tetrachloroethene	2.9E-06	$(ug/m^3)^{-1}$	1.0E-02	$(mg/kg\text{-}day)^{-1}$	--	R9-NCEA	2002
Toluene	--	--	--	--	D (IRIS 2003)	IRIS	2003
Trichloroethene	1.1E-04	$(ug/m^3)^{-1}$	4.0E-01	$(mg/kg\text{-}day)^{-1}$	B1 (NCEA 2001)	R9-NCEA	2002
Vinyl Chloride (adult/child) [g]	8.8E-06	$(ug/m^3)^{-1}$	3.1E-02	$(mg/kg\text{-}day)^{-1}$	A (IRIS 2003)	IRIS	2003
Vinyl Chloride (adult) [h]	4.4E-06	$(ug/m^3)^{-1}$	1.6E-02	$(mg/kg\text{-}day)^{-1}$	A (IRIS 2003)	IRIS	2003
m-Xylene [i]	--	--	--	--	--	--	--
o-Xylene [i]	--	--	--	--	--	--	--
Xylene (Total)	--	--	--	--	--	--	--

Notes:

a The inhalation CSF for chromium III was used as the surrogate toxicity value.

b The inhalation CSF for cis-1,2-dichloroethene was used as the surrogate toxicity value.

c The inhalation CSF for 1,2-dichloropropane was used as the surrogate toxicity value.

d The inhalation CSF for methyl ethyl ketone was used as the surrogate toxicity value.

e The inhalation CSF for naphthalene was used as the surrogate toxicity value.

f The evaluation of cancer risk from chloroform inhalation was developed in 1987 and does not incorporate newer data or the 1996 or 1999 draft cancer assessment guidelines. EPA is currently working to revise the assessment for inhalation exposure.

g The vinyl chloride inhalation cancer slope factor (calculated from an air unit risk factor) for continuous lifetime exposure during adulthood was used to estimate risks for the industrial/commercial scenarios

h The vinyl chloride inhalation cancer slope factor (calcuated from an air unit risk factor) for continuous lifetimje exposure from birth was used to estimate risks for the residential/recreational scenarios

i The inhalation CSF for total xylene was used as the surrogate toxicity value.

EPA Weight-of-Evidence Classification:

A - Human carcinogen

B1 - Probable human carcinogen - indicates that limited human data are available.

B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans.

C - Possible human carcinogen

D - Not classifiable as to human carcinogenicity

TABLE H-6.2.EPA: EPA CANCER TOXICITY DATA - INHALATION

Appendix H, HHRA for Sites 9, 13, 19, 22, and 23, Operable Unit 2A, Alameda Point, Alameda, California

Chemical of Potential Concern	Unit Risk		Inhalation Cancer Slope Factor		Weight of Evidence/ Cancer Guideline Description	Unit Risk : Inhalation CSF	
	Value	Units	Value	Units		Source(s)	Date(s) (YYYY)

--	Not available; not applicable
CSF	Cancer slope factor
EPA	Environmental Protection Agency
HEAST	Health Effects Assessment Summary Tables
IRIS	Integrated Risk Information System
mg/kg-day	Milligram per kilogram per day
PRG	Preliminary remediation goal
R9	U.S. EPA Region 9 PRGs
R9-NCEA	Source of toxicity value listed as National Center for Environmental Assessment in the EPA Region 9 PRGs
R9-R	Route-extrapolated toxicity value as listed in the EPA Region 9 PRGs
ug/m^3	Microgram per cubic meter
URF	Unit risk factor