APPENDIX A

Delineation Limits

Table 1. Estimated Reporting Limits and Delineation Limits
Field Analysis for GC/MS Volatiles by SW846-8260B

Volatile Organics	Mobile Lab Reporting Limits*			Delineation Limits			MCL**
	Air µg/m³	Water µg/L	Soil mg/kg	Air µg/m³	Water µg/L	Soil mg/kg	µg/L
[redacted]	100	[redacted]	[redacted]	NA	[redacted]	[redacted]	1
Bromobenzene	100	1	0.5	NA	1	0.5	NE
Bromochloromethane	100	1	0.5	NA	1	0.5	NE
Bromodichloromethane	100	1	0.5	NA	1	0.5	NE
Bromoform	100	1	0.5	NA	1	0.5	NE
Bromomethane	100	1	1	NA	1	1	10
n-Butylbenzene	100	1	0.5	NA	1	0.5	NE
sec-Butylbenzene	100	1	0.5	NA	1	0.5	NE
tert-Butylbenzene	100	1	0.5	NA	1	0.5	NE
Carbon Tetrachloride	100	1	0.5	NA	1	0.5	0.5
Chlorobenzene	100	1	0.5	NA	1	0.5	NE
Chlorodibromomethane	100	1	0.5	NA	1	0.5	NE
Chloroethane	100	1	1	NA	1	1	NE
Chloroform	100	1	0.5	NA	1	0.5	NE
Chloromethane	100	1	1	NA	1	1	NE
2-Chlorotoluene	100	1	0.5	NA	1	0.5	NE
4-Chlorotoluene	100	1	0.5	NA	1	0.5	NE
1,2-Dibromo-3-chloropropane	100	1	0.5	NA	1	0.5	NE
1,2-Dibromomethane	100	1	0.5	NA	1	0.5	NE
Dibromomethane	100	1	0.5	NA	1	0.5	NE
1,2-Dichlorobenzene	100	1	0.5	NA	1	0.5	600
1,3-Dichlorobenzene	100	1	0.5	NA	1	0.5	NE
1,4-Dichlorobenzene	100	1	0.5	NA	1	0.5	5
Dichlorodifluoromethane	100	1	0.5	NA	1	0.5	NE
1,1-Dichloroethane	100	1	0.5	NA	1	0.5	5
1,2-Dichloroethane	100	1	0.5	NA	1	0.5	0.5
1,1-Dichloroethene	100	1	0.5	NA	1	0.5	6
[redacted]	100	[redacted]	[redacted]	NA	[redacted]	[redacted]	6
trans-1,2-Dichloroethene	100	1	0.5	NA	1	0.5	10
1,2-Dichloropropane	100	1	0.5	NA	1	0.5	5
1,3-Dichloropropane	100	1	0.5	NA	1	0.5	NE
2,2-Dichloropropane	100	1	0.5	NA	1	0.5	NE
Ethylbenzene	100	1	0.5	NA	1	0.5	300
Hexachlorobutadiene	100	1	0.5	NA	1	0.5	NE
Isopropylbenzene	100	1	0.5	NA	1	0.5	NE
p-Isopropyltoluene	100	1	0.5	NA	1	0.5	NE
Methyl-tert-butyl ether	100	1	0.5	NA	NA	NA	13
Methylene Chloride	100	1	0.5	NA	1	0.5	NE
Naphthalene	100	1	0.5	NA	1	0.5	NE
n-Propylbenzene	100	1	0.5	NA	1	0.5	NE

Table 1 (cont'd). Estimated Reporting Limits and Delineation Limits Field Analysis for GC/MS Volatiles by SW846-8260B

Volatile Organics	Mobile Lab Reporting Limits*			Delineation Limits			MCL**
	Air µg/m³	Water µg/L	Soil mg/kg	Air µg/m³	Water µg/L	Soil mg/kg	µg/L
Styrene	100	1	0.5	NA	1	0.5	100
1,1,1,2-Tetrachloroethane	100	1	0.5	NA	1	0.5	NE
1,1,2,2-Tetrachloroethane	100	1	0.5	NA	1	0.5	1
Tetrachloroethene	100	1	0.5	NA	1	0.5	5
Toluene	100	1	0.5	NA	1	0.5	150
1,2,3-Trichlorobenzene	100	1	0.5	NA	1	0.5	NE
1,2,4-Trichlorobenzene	100	1	0.5	NA	1	0.5	5
1,1,1-Trichloroethane	100	1	0.5	NA	1	0.5	200
1,1,2-Trichloroethane	100	1	0.5	NA	1	0.5	5
Trichloroethene	100			NA			5
Trichlorofluoromethane	100	1	0.5	NA	1	0.5	150
1,2,3-Trichloropropane	100	1	0.5	NA	1	0.5	NE
1,2,4-Trimethylbenzene	100	1	0.5	NA	1	0.5	NE
1,3,5-Trimethylbenzene	100	1	0.5	NA	1	0.5	NE

Table 2. Estimated Reporting Limits and Delineation Limits Field Analysis for GC/MS Volatiles by SW846-8260B (continued)

Volatile Organics	Mobile Lab Reporting Limits*			Delineation Limits			MCL**
	Air µg/m³	Water µg/L	Soil mg/kg	Air µg/m³	Water µg/L	Soil mg/kg	µg/L
Vinyl chloride	100			NA			0.5
o-Xylene	100	1	0.5	NA	1	0.5	1750
m-Xylene	100	1	0.5	NA	1	0.5	
p-Xylene	100	1	0.5	NA	1	0.5	
TPH gasoline	NA	50	10	NA	50	10	NE

Notes:

*Quantitation limits listed for soil/sediment are based on wet weight. The quantitation limits calculated by the laboratory for soil/sediment, calculated on dry weight basis as required by the contract, will be higher.

** Maximum Contaminant Levels for Organic Chemicals - Title 22, California Code of Regulations, Division 4. Environmental Health. Chapter 15. Domestic Water Quality and Monitoring, Article 5.5. Primary Standards—Organic Chemicals, Section 64444. General Requirements, Table 64444-A. September 12, 2003.

***Environmental Screening Levels (ESLs) were established in *Screening For Environmental Concerns at Sites With Contaminated Soil and Groundwater (Interim final)* (RWQCB, 2003). Values are based on Table B - Shallow soils (</= 3 m bgs), Groundwater is NOT a Current or Potential Source of Drinking Water for Commercial/Industrial Use. Shallow soils are soils, less than 3 meters (approx 10 ft), where the maximum depth that impacted soil could be excavated and left exposed at the surface. Typically, groundwater is less than 10 feet below ground surface at the former Arsenal. Therefore, any impacted soil would be expected at depths less than 10 feet.

****All concentrations will be reported down to Method Detection Limits, which can be up to 3 times lower than the reporting limit. Therefore, the delineation limit will be met for this compound but the result will be estimated.

NA = not applicable

NE = not established

Key Indicators are shaded

µg/m³ = microgram per cubic meter

µg/L = microgram per liter

mg/kg = milligrams per kilogram

Table 3. Estimated Reporting Limits and Delineation Limits Field Analysis for GC/MS Method 8015M TEPH (Extractable)

	Mobile Lab Reporting Limits*			Delineation Limits		
	Air µg/m³	Water µg/L	Soil mg/kg	Air ug/m³	Water µg/L	Soil mg/kg
	NA			NA		
	NA			NA		

Notes:

*Quantitation limits listed for soil/sediment are based on wet weight. The quantitation limits calculated by the laboratory for soil/sediment, calculated on dry weight basis as required by the contract, will be higher.

**Environmental Screening Levels (ESLs) were established in *Screening For Environmental Concerns at Sites With Contaminated Soil and Groundwater (Interim final)* (RWQCB, 2003). Values are based on Table B - Shallow soils (</= 3 m bgs), Groundwater is NOT a Current or Potential Source of Drinking Water for Commercial/Industrial Use. Shallow soils are soils, less than 3 meters (approx 10 ft), where the maximum depth that impacted soil could be excavated and left exposed at the surface. Typically, groundwater is less than 10 feet below ground surface at the former Arsenal. Therefore, any impacted soil would be expected at depths less than 10 feet.

NA = not applicable

Key indicators are shaded

µg/m³ = microgram per cubic meter

µg/L = microgram per liter

mg/kg = milligrams per kilogram

Table 4. Quantitation Limits, Ambient Concentrations, Benicia Screening Levels and Delineation Limits for Metals

Chemical of Interest	Fixed Lab Quantitation Limits* (mg/kg)	Ambient Concentration (mg/kg)	Benicia Screening Levels (BSLs)										Delineation Limits mg/kg
			Commercial/Industrial Workers		Construction/Utility Workers		Residents			Open Space Visitors			
			Carcinogens (mg/kg)	Noncarcinogens (mg/kg)	Carcinogens (mg/kg)	Noncarcinogens (mg/kg)	Carcinogens[1] (mg/kg)	Adult Noncarcinogens (mg/kg)	Child Noncarcinogens (mg/kg)	Carcinogens 1 (mg/kg)	Adult Noncarcinogens (mg/kg)	Child Noncarcinogens (mg/kg)	
Aluminum	5.00E+01	2.83E+04	NC	1.68E+06	NC	1.23E+05	NC	6.59E+05	7.61E+04	NC	1.18E+08	2.52E+07	1.68E+06
Antimony	2.00E+01	8.52E+00	NC	8.18E+02	NC	1.06E+03	NC	2.92E+02	3.13E+01	NC	NA	NA	8.18E+02
Arsenic	4.00E-01	1.69E+01	2.73E+00	4.39E+02	1.20E+01	6.74E+02	3.89E-01	1.96E+02	2.16E+01	5.35E+04	NA	NA	4.39E+02
Barium	1.00E+00	2.24E+02	NC	1.24E+05	NC	1.20E+04	NC	4.75E+04	5.37E+03	NC	1.18E+07	2.52E+06	1.24E+05
Beryllium	1.00E-01	8.29E-01	2.24E+03	3.69E+03	1.10E+02	4.77E+02	1.05E+03	1.39E+03	1.54E+02	9.55E+04	4.79E+05	1.03E+05	3.69E+03
Cadmium	1.00E+00	8.66E-01	2.99E+03	1.01E+03	1.46E+02	1.32E+03	1.40E+03	3.64E+02	3.90E+01	1.27E+05	NA	NA	1.01E+03
Chromium, Total	2.00E+00	7.53E+01	4.48E+02	C	2.19E+01	C	2.11E+02	C	C	1.91E+04	C	C	4.48E+02
Cobalt	2.00E+00	1.33E+01	NC	1.23E+05	NC	1.60E+05	NC	4.38E+04	4.69E+03	NC	NA	NA	1.23E+05
Copper	3.00E+00	4.05E+01	NC	7.58E+04	NC	9.87E+04	NC	2.71E+04	2.90E+03	NC	NA	NA	7.58E+04
Iron	1.50E+01	5.26E+04	NC	6.13E+05	NC	7.98E+05	NC	2.19E+05	2.35E+04	NC	NA	NA	6.13E+05
Lead[2]	5.00E+00	2.01E+01	NC	7.50E+02	NC	NA	NC	NA	4.00E+02	NA	NA	NA	7.50E+02
Manganese	5.00E-01	1.07E+03	NC	3.23E+04	NC	1.26E+03	NC	1.39E+04	1.76E+03	NC	1.18E+06	2.52E+05	3.23E+04
Mercury	1.00E-01	2.87E-01	NC	6.13E+02	NC	7.98E+02	NC	2.19E+02	2.35E+01	NC	NA	NA	6.13E+02
Molybdenum	1.50E+01	2.51E+00	NC	1.02E+04	NC	1.33E+04	NC	3.65E+03	3.91E+02	NC	NA	NA	1.02E+04
Nickel	1.50E+01	3.83E+01	NC	4.09E+04	NC	5.32E+04	NC	1.46E+04	1.56E+03	NC	NA	NA	4.09E+04
Selenium	1.00E+00	6.05E-01	NC	1.02E+04	NC	1.33E+04	NC	3.65E+03	3.91E+02	NC	NA	NA	1.02E+04
Silver	5.00E+00	1.67E+00	NC	1.02E+04	NC	1.33E+04	NC	3.65E+03	3.91E+02	NC	NA	NA	1.02E+04
Thallium	4.00E+00	8.50E-01	NC	1.35E+02	NC	1.76E+02	NC	4.82E+01	5.16E+00	NC	NA	NA	1.35E+02
Tin	1.00E+01	1.90E+01	NC	1.23E+06	NC	1.60E+06	NC	4.38E+05	4.69E+04	NC	NA	NA	1.23E+06
Vanadium	1.00E+01	9.22E+01	NC	1.43E+04	NC	1.86E+04	NC	5.11E+03	5.48E+02	NC	NA	NA	1.43E+04
Zinc	1.00E+01	1.26E+02	NC	6.13E+05	NC	7.98E+05	NC	2.19E+05	2.35E+04	NC	NA	NA	6.13E+05

Notes:
BSLs are based on ingestion of soil, dermal contact with soil, and inhalation of dust particles and vapors.
1 Age-adjustment for carcinogenic chemicals takes into account both child and adult soil exposures per USEPA (1991b) guidance.
2 BSLs for lead are based on the USEPA's Integrated Exposure Uptake Biokinetic Model and recommendations of USEPA's Technical Review Workgroup.
C = Chemical is a carcinogen. No BSL developed for noncancer endpoint.
NC = Chemical is a noncarcinogen. No BSL developed for cancer endpoint.
ND = Not Detected
NA = Not available.
*Analysis of antimony, barium, beryllium, total chromium, cobalt, copper, manganese, molybdenum, nickel, silver, tin, vanadium and zinc by 6010B, cadmium and lead by 6010B ICP trace, arsenic by 7060A, selenium by 7740, thallium by 7841 and mercury by 7471A.