N00236.000828
ALAMEDA POINT
SSIC NO. 5090.3

June 1992 86-018-1810

REVISED
PHASE 1 AND 2A ANALYTICAL RESULTS FOR SITES 1 AND 2, 1943-1956 DISPOSAL AREA WEST BEACH LANDFILL REMEDIAL INVESTIGATION/FEASIBILITY STUDY NAVAL AIR STATION ALAMEDA ALAMEDA, CALIFORNIA VOLUME 1

Prepared for: Naval Air Station Alameda

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December 10, 1990

86-018-1706

Ms. Bella Dizon
Western Division Naval Facilities
Engineering Command
PO Box 727
San Bruno, CA 94066-0727

Revised Phase 1 Analytical Results for
Sites 1, 2, and 13: 1943-1956 Disposal Area,
West Beach Landfill, and Oil Refinery
Remedial Investigation/Feasibility Study
Naval Air Station Alameda
Alameda, California

Dear Ms. Dizon:

In response to your request, this report presents the revised compilation of the analytical results for Site 1 (1943-1956 Disposal Area), Site 2 (West Beach Landfill), and Site 13 (Oil Refinery) obtained during Phase 1 of the Remedial Investigation/Feasibility Study at Naval Air Station Alameda. Summary tables and certified analytical results for these sites were previously submitted to WESTDIV personnel in separate reports between August 9 and October 1, 1990. Pertinent information enclosed with this updated report include summary tables of the analytical results, a table showing the comparison of regulatory action levels for various chemical groups, site plans showing the locations of the surface soil samples and exploratory borings, and certified analytical reports.

The summary tables (Tables 1A, 1B, and 2) were prepared as part of the Data Management Plan to provide an efficient method of screening large amounts of analytical data to determine site-specific areas of potential concern. Chemical concentrations exceeding various established action levels (referenced from Table 3) are highlighted by shading on these tables. Certified analytical reports, which include the raw laboratory data and detection limits for each analyzed chemical constituent, are provided in Appendix A.

If you have any questions regarding these results, please call me at (415) 573-8012.

Very truly yours,

Timothy G. Bodkin, R.G.
Senior Project Scientist

TGB/kw

Attachments

cc: J. Babcock, Canonie Environmental Services Corp.
R. Duffield, Canonie Environmental Services Corp.

N00236.000828
ALAMEDA POINT
SSIC NO. 5090.3

REVISED PHASE 1 ANALYTICAL RESULTS FOR SITES 1, 2 AND 13: 1943-1956 DISPOSAL AREA, WEST BEACH LANDFILL AND OIL REFINERY SITE REMEDIAL INVESTIGATION/FEASIBILITY STUDY

DATED 01 DECEMBER 1990

IS ENTERED IN THE DATABASE AND FILED AT ADMINISTRATIVE RECORD NO. **N00236.000791** AND **N00236.000792**

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TABLE 1A

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
PHASE 1
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)							
Chemical Group/Analyte	DA-1R 1.5 - 2.0	DA-1 1.5 - 2.0	DA-1 25.0 - 25.5	DA-1 50.0 - 50.5	DA-2R 3.5 - 4.0	DA 2 12.0 - 12.5	DA 2 25.0 - 25.5	DA 2 39.0 39.5
Volatile Organics								
2-Butanone				16.				
4-Methyl-2-pentanone				6.				
Acetone				57.				
Ethyl Benzene			13.					
Methylene Chloride	14.	32.	27.	14.	19.	15.	16.	14.
Toluene		9.						

Notes:

1. Analytical results are presented in micrograms/kilogram (ug/kg).

2. Blank spaces indicate that the analyte was not detected.

TABLE 1A

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
PHASE 1
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)							
	WB-1	WB-1	WB-1	WB-2	WB-2B	WB-2B	WB-3	WB-3
Chemical Group/Analyte	10.0 - 10.5	35.0 - 35.5	75.5 - 80.0	5.0 - 5.5	45.0 - 45.5	61.5 - 62.0	15.0 - 15.5	35.0 - 35.5
Volatile Organics								
2-Butanone	51.							
4-Methyl-2-pentanone								
Acetone	130.							
Ethyl Benzene								
Methylene Chloride	22.	10.	8.	18.	43.	40.	25.	23.
Toluene								

Notes:

1. Analytical results are presented in micrograms/kilogram (ug/kg).

2. Blank spaces indicate that the analyte was not detected.

TABLE 1A

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
PHASE 1
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)								
Chemical Group/Analyte	WB-3 45.0 - 45.5	WB-3R 3.5 - 4.0	WB-4R 2.5 - 3.0	WB 4 10.0 - 10.5	WB 4 30.0 - 30.5	WB 4 50.0 - 50.5	OR 1 6.0 - 6.5	OR 1 8.0 - 8.5	OR 1 13.0 - 13.5
Volatile Organics									
2-Butanone									
4-Methyl-2-pentanone									
Acetone									
Ethyl Benzene									
Methylene Chloride	21.	11.	12.	25.	16.	17.	18.	13.	14.
Toluene									

Notes:

1. Analytical results are presented in micrograms/kilogram (ug/kg).

2. Blank spaces indicate that the analyte was not detected.

TABLE 1A

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
PHASE 1
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)							
	A4	A5	A7	A8	B3	F1	F2	F4
Chemical Group/Analyte	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5
Semivolatile Organics								
Benzo(a)anthracene								
Benzo(a)pyrene								
Benzo(b)fluoranthene								
Benzo(g,h,i)perylene								
Benzo(k)fluoranthene								
Chrysene								
Di-n-butylphthalate	930.	2000.	700.	1100.	1100.		980.	
Fluoranthene						790.		
Indeno(1,2,3-cd)pyrene								
Phenanthrene								
Pyrene						900.		
bis(2-ethylhexyl)phthalate								720.

Notes:
1. Analytical results are presented in micrograms/kilogram (ug/kg).
2. Blank spaces indicate that the analyte was not detected.

TABLE 1A

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
PHASE 1
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)							
	F9	G1	G8	H1	H2	H3	I2	J1
Chemical Group/Analyte	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5
Semivolatile Organics								
Benzo(a)anthracene				9900.		1100.		
Benzo(a)pyrene				15000.		1200.		
Benzo(b)fluoranthene		6300.		10000.	1100.	2400.	1000.	840.
Benzo(g,h,i)perylene								
Benzo(k)fluoranthene								
Chrysene		3500.		13000.		1400.		
Di-n-butylphthalate	970.		1200.					
Fluoranthene				13000.		2900.	1100.	
Indeno(1,2,3-cd)pyrene								
Phenanthrene				5700.		1600.		
Pyrene		3700.		12000.	710.	2200.	980.	
bis(2-ethylhexyl)phthalate						820.		1300.

Notes:
1. Analytical results are presented in micrograms/kilogram (ug/kg).
2. Blank spaces indicate that the analyte was not detected.

TABLE 1A

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
PHASE 1
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)							
	J2	K0	K1	K2	L0	L1	L2	L5
Chemical Group/Analyte	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5
Semivolatile Organics								
Benzo(a)anthracene	910.	17000.			1900.			
Benzo(a)pyrene	1200.				2100.			
Benzo(b)fluoranthene	2300.				2000.			
Benzo(g,h,i)perylene					1800.			
Benzo(k)fluoranthene		24000.			1600.			
Chrysene	1200.	20000.	910.		2800.			
Di-n-butylphthalate				2500.		7300.	910.	
Fluoranthene	1700.	17000.			4600.			
Indeno(1,2,3-cd)pyrene					1600.			
Phenanthrene	680.	3600.						
Pyrene	1600.	21000.	810.		4300.			
bis(2-ethylhexyl)phthalate	1400.							720.

Notes:
1. Analytical results are presented in micrograms/kilogram (ug/kg).
2. Blank spaces indicate that the analyte was not detected.

TABLE 1A

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
PHASE 1
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)						
	MO	NO	OO	DA-1	DA-2	DAR-3	WB-3
Chemical Group/Analyte	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	25.0 - 25.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5
Semivolatile Organics							
Benzo(a)anthracene						2000.	2500.
Benzo(a)pyrene				5800.		3600.	5000.
Benzo(b)fluoranthene				4000.		2700.	8300.
Benzo(g,h,i)perylene						1400.	4800.
Benzo(k)fluoranthene							3400.
Chrysene						3000.	3300.
Di-n-butylphthalate	1600.	880.	7800.				
Fluoranthene						3200.	2300.
Indeno(1,2,3-cd)pyrene				2700.		1800.	2800.
Phenanthrene							
Pyrene				8300.		3200.	2700.
bis(2-ethylhexyl)phthalate					8500.		

Notes:
1. Analytical results are presented in micrograms/kilogram (ug/kg).
2. Blank spaces indicate that the analyte was not detected.

TABLE 1A

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
PHASE 1
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)							
	A1	B2	B3	F1	F2	F3	F6	C4
Chemical Group/Analyte	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5
Pesticides								
4,4'-DDD						3.8		
4,4'-DDE						3.3		
4,4'-DDT		3.0	3.3	110.	47.	3.9	5.5	
PCB-1248								
PCB-1260	370.							3200.

Notes:

1. Analytical results are presented in micrograms/kilogram (ug/kg).

2. Blank spaces indicate that the analyte was not detected.

TABLE 1A

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
PHASE 1
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)							
	H2	H3	I2	I3	I4	J2	K2	I0
Chemical Group/Analyte	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5
Pesticides								
4,4'-DDD								
4,4'-DDE	51.							
4,4'-DDT	89.	37.	41.		11.	100.		36.
PCB-1248								
PCB-1260				600.			41000.	1000.

Notes:

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2. Blank spaces indicate that the analyte was not detected.

TABLE 1A

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
PHASE 1
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)							
	L1	M1	M9	N0	00	DA 1	DA 1R	DA 1
Chemical Group/Analyte	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 0.5	0.0 0.5	1.5 2.0
Pesticides								
4,4'-DDD								
4,4'-DDE								64.
4,4'-DDT			11.			28.		450.
PCB-1248								
PCB-1260	1200.	4100.		680.	800.		1200.	

Notes:

1. Analytical results are presented in micrograms/kilogram (ug/kg).

2. Blank spaces indicate that the analyte was not detected.

TABLE 1A

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
PHASE 1
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)				
Chemical Group/Analyte	DA-2 0.0 - 0.5	DAR-3 0.0 - 0.5	WB-1 10.5 - 11.0	WB-2 0.0 - 0.5	WB-2 0.0 - 0.5
Pesticides					
4,4'-DDD					
4,4'-DDE		21.	5.7		
4,4'-DDT		140.			19.
PCB-1248	1200.				
PCB-1260				380.	400.

Notes:

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TABLE 1A

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
PHASE 1
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)							
	A1	A2	A3	A4	A5	A6	A7	A8
Chemical Group/Analyte	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5
Metals								
Aluminum	5870.0	4590.0	4710.0	4850.0	4980.0	5810.0	5520.0	5220.0
Antimony								
Arsenic								
Barium	47.0	25.0	27.0	26.0	32.0	30.0	35.0	28.0
Cadmium	3.1							
Calcium	3600.0	2900.0	2800.0	3200.0	2800.0	4300.0	3000.0	3000.0
Chromium	37.0	31.0	31.0	32.0	31.0	31.0	31.0	32.0
Cobalt	5.4							
Copper	27.0	11.0	11.0	9.8	7.8	12.0	14.0	13.0
Iron	11300.0	7900.0	8420.0	8470.0	8680.0	9420.0	9400.0	9050.0
Lead	62.0	9.2	12.0	21.0	14.0	27.0	34.0	23.0
Magnesium	2800.0	1900.0	2200.0	2300.0	2300.0	2600.0	2600.0	2600.0
Manganese	150.0	94.0	100.0	110.0	92.0	140.0	98.0	120.0
Mercury								
Molybdenum								
Nickel	33.0	22.0	23.0	24.0	26.0	27.0	28.0	26.0
Potassium	810.0	670.0	640.0	620.0	690.0	890.0	870.0	840.0
Silver		10.0						
Sodium								
Thallium								
Titanium	400.0	440.0	430.0	450.0	450.0	450.0	440.0	450.0
Vanadium	25.0	21.0	21.0	22.0	21.0	24.0	22.0	22.0
Zinc	83.0	24.0	29.0	32.0	68.0	43.0	62.0	37.0

Notes:
1. Analytical results are presented in milligrams/kilogram (mg/kg).
2. Blank spaces indicate that the analyte was not detected.

TABLE 1A

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
PHASE 1
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)							
	B2	B3	B4	B5	B6	B7	B8	F1
Chemical Group/Analyte	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5
Metals								
Aluminum	5490.0	4240.0	4380.0	4870.0	4880.0	4160.0	4380.0	8350.0
Antimony								
Arsenic				10.0				13.0
Barium	22.0	22.0	22.0		27.0		27.0	260.0
Cadmium								1.4
Calcium	3300.0	3100.0	3000.0	3000.0	3200.0	2600.0	2800.0	3400.0
Chromium	35.0	27.0	29.0	34.0	33.0	29.0	26.0	44.0
Cobalt								5.8
Copper	10.0	8.7	7.8	6.1	7.3		7.6	35.0
Iron	8920.0	7780.0	7950.0	8090.0	8140.0	7360.0	7150.0	13300.0
Lead	29.0	28.0	13.0	21.0	23.0	9.5	28.0	82.0
Magnesium	2300.0	1900.0	2000.0	2100.0	2100.0	2000.0	2000.0	3100.0
Manganese	97.0	140.0	94.0	93.0	99.0	80.0	84.0	190.0
Mercury								
Molybdenum								
Nickel	24.0	22.0	22.0	22.0	23.0	20.0	20.0	39.0
Potassium	940.0	700.0	660.0	620.0	660.0	640.0	750.0	1200.0
Silver								
Sodium	660.0							
Thallium								
Titanium	565.0	390.0	410.0	500.0	510.0	450.0	440.0	590.0
Vanadium	24.0	20.0	20.0	22.0	21.0	19.0	20.0	29.0
Zinc	35.0	32.0	24.0	26.0	28.0	21.0	28.0	120.0

Notes:
1. Analytical results are presented in milligrams/kilogram (mg/kg).
2. Blank spaces indicate that the analyte was not detected.

TABLE 1A

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
PHASE 1
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)							
	F2	F3	F4	F5	F6	F9	F10	G1
Chemical Group/Analyte	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5
Metals								
Aluminum	7550.0	4620.0	4910.0	4580.0	4480.0	4570.0	5400.0	8600.0
Antimony								
Arsenic								
Barium	32.0		23.0	22.0	25.0	30.0	33.0	58.0
Cadmium								
Calcium	3600.0	2300.0	2200.0	2300.0	2600.0	2400.0	2700.0	4900.0
Chromium	30.0	28.0	28.0	32.0	28.0	30.0	34.0	47.0
Cobalt	6.1							6.3
Copper	18.0	7.4	6.0	6.0	7.1	26.0	15.0	27.0
Iron	13000.0	7630.0	7260.0	7620.0	7910.0	7710.0	9050.0	15000.0
Lead	51.0	21.0	10.0	14.0	18.0	17.0	20.0	44.0
Magnesium	3400.0	2000.0	2100.0	2100.0	1900.0	2000.0	2100.0	3900.0
Manganese	160.0	83.0	69.0	74.0	100.0	92.0	110.0	220.0
Mercury								
Molybdenum								
Nickel	25.0	22.0	21.0	20.0	21.0	22.0	25.0	38.0
Potassium	1200.0	920.0	880.0	780.0	620.0	660.0	810.0	1100.0
Silver			30.0					
Sodium								
Thallium								
Titanium	554.0	430.0	470.0	480.0	440.0	390.0	518.0	547.0
Vanadium	31.0	20.0	18.0	20.0	21.0	20.0	24.0	31.0
Zinc	100.0	40.0	20.0	22.0	27.0	27.0	43.0	71.0

Notes:
1. Analytical results are presented in milligrams/kilogram (mg/kg).
2. Blank spaces indicate that the analyte was not detected.

TABLE 1A

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
PHASE 1
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)							
	G2	G3	G4	G5	G8	G9	G10	H1
Chemical Group/Analyte	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5
Metals								
Aluminum	13300.0	6460.0	4040.0	5580.0	4230.0	4960.0	5260.0	8560.0
Antimony								
Arsenic						11.0		
Barium	52.0	35.0		43.0		27.0	210.0	910.0
Cadmium								2.0
Calcium	8100.0	3300.0	2900.0	2800.0	2300.0	4200.0	2800.0	7500.0
Chromium	24.0	34.0	26.0	31.0	26.0	31.0	29.0	44.0
Cobalt	7.4							6.8
Copper	35.0	20.0	6.1	8.8		14.0	16.0	49.0
Iron	17300.0	10400.0	6900.0	9460.0	7500.0	9070.0	8530.0	14800.0
Lead	34.0	35.0	13.0	19.0	6.7	12.0	41.0	85.0
Magnesium	6000.0	2500.0	1700.0	2900.0	1800.0	1800.0	2000.0	4000.0
Manganese	330.0	180.0	85.0	98.0	69.0	100.0	140.0	300.0
Mercury								
Molybdenum								
Nickel	32.0	28.0	21.0	28.0	22.0	25.0	25.0	36.0
Potassium	960.0	1000.0	600.0	1400.0	860.0	860.0	580.0	1100.0
Silver								
Sodium	790.0							
Thallium								
Titanium	550.0	460.0	350.0	500.0	370.0	500.0	546.0	831.0
Vanadium	48.0	25.0	17.0	21.0	17.0	23.0	25.0	32.0
Zinc	48.0	68.0	21.0	30.0	17.0	29.0	56.0	260.0

Notes:
1. Analytical results are presented in milligrams/kilogram (mg/kg).
2. Blank spaces indicate that the analyte was not detected.

TABLE 1A

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
PHASE 1
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)							
	H2	H3	H4	H8	H9	I2	I3	I4
Chemical Group/Analyte	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5
Metals								
Aluminum	7880.0	12600.0	4560.0	4440.0	8870.0	5880.0	6970.0	6030.0
Antimony								
Arsenic		24.0			21.0			
Barium	60.0	83.0	24.0		71.0	43.0	32.0	29.0
Cadmium	1.5	4.1				1.2		
Calcium	3300.0	5700.0	2800.0	2500.0	2500.0	2500.0	2900.0	2400.0
Chromium	41.0	74.0	29.0	26.0	42.0	56.0	32.0	31.0
Cobalt	6.1	10.0			7.7			
Copper	24.0	71.0	7.3	7.3	18.0	22.0	20.0	11.0
Iron	13400.0	32600.0	7920.0	7410.0	14800.0	10600.0	10100.0	9770.0
Lead	59.0	320.0	16.0	13.0	8.7	160.0	23.0	27.0
Magnesium	4200.0	6500.0	1900.0	1800.0	3500.0	2600.0	2500.0	2400.0
Manganese	260.0	1230.0	99.0	66.0	250.0	150.0	120.0	100.0
Mercury								
Molybdenum								
Nickel	40.0	32.0	24.0	22.0	44.0	25.0	24.0	24.0
Potassium	1500.0	1100.0	970.0	740.0	1400.0	1200.0	1100.0	750.0
Silver								
Sodium								
Thallium		14.0						
Titanium	440.0	510.0	340.0	350.0	534.0	310.0	527.0	430.0
Vanadium	26.0	50.0	19.0	17.0	30.0	20.0	24.0	24.0
Zinc	88.0	220.0	23.0	19.0	34.0	250.0	36.0	37.0

Notes:
1. Analytical results are presented in milligrams/kilogram (mg/kg).
2. Blank spaces indicate that the analyte was not detected.

TABLE 1A

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
PHASE 1
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)							
	I7	I8	J1	J2	J3	J7	J8	K0
Chemical Group/Analyte	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5
Metals								
Aluminum	4150.0	5520.0	5770.0	6110.0	4790.0	5880.0	3830.0	4620.0
Antimony								
Arsenic		11.0					11.0	
Barium		37.0	45.0	48.0	28.0	27.0		
Cadmium			3.6	2.1				
Calcium	2400.0	2400.0	3100.0	2500.0	1800.0	2200.0	2800.0	5400.0
Chromium	27.0	32.0	46.0	37.0	28.0	30.0	25.0	31.0
Cobalt								
Copper	5.2	16.0	140.0	71.0	30.0	13.0	9.4	21.0
Iron	7440.0	9530.0	12700.0	12000.0	8880.0	9150.0	7560.0	9710.0
Lead		10.0	160.0	130.0	39.0	23.0	13.0	130.0
Magnesium	1700.0	2300.0	2400.0	2700.0	2300.0	2200.0	1600.0	2200.0
Manganese	110.0	140.0	210.0	160.0	71.0	83.0	110.0	130.0
Mercury								
Molybdenum								
Nickel	23.0	28.0	36.0	26.0	23.0	26.0	23.0	28.0
Potassium	580.0	960.0	920.0	830.0	590.0	850.0	650.0	720.0
Silver								
Sodium								
Thallium								
Titanium	330.0	490.0	290.0	380.0	330.0	370.0	280.0	380.0
Vanadium	18.0	22.0	20.0	25.0	19.0	23.0	19.0	20.0
Zinc	16.0	28.0	200.0	514.0	52.0	33.0	24.0	57.0

Notes:
1. Analytical results are presented in milligrams/kilogram (mg/kg).
2. Blank spaces indicate that the analyte was not detected.

TABLE 1A

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
PHASE 1
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)							
	K1	K2	K6	K7	L0	L1	L2	L5
Chemical Group/Analyte	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5
Metals								
Aluminum	5540.0	6870.0	7760.0	4660.0	7540.0	6520.0	5860.0	7690.0
Antimony						6.4		
Arsenic	10.0			11.0	12.0			
Barium	40.0	52.0	41.0		110.0	130.0	40.0	44.0
Cadmium		7.8			1.0	7.0	5.5	
Calcium	2800.0	2300.0	4100.0	2500.0	4400.0	3000.0	2700.0	3700.0
Chromium	28.0	55.0	35.0	28.0	43.0	51.0	38.0	35.0
Cobalt		6.3	5.4		5.4	6.4		5.3
Copper	20.0	66.0	20.0	7.4	34.0	120.0	55.0	21.0
Iron	10000.0	12700.0	13400.0	8390.0	13400.0	14700.0	10600.0	12400.0
Lead	54.0	200.0	32.0	12.0	62.0	240.0	96.0	49.0
Magnesium	2100.0	3400.0	3200.0	1700.0	3100.0	3900.0	2400.0	3300.0
Manganese	130.0	220.0	130.0	99.0	180.0	240.0	110.0	150.0
Mercury								
Molybdenum								
Nickel	22.0	47.0	34.0	25.0	32.0	55.0	32.0	32.0
Potassium	690.0	950.0	1500.0	880.0	1000.0	980.0	760.0	1200.0
Silver								
Sodium								
Thallium								
Titanium	420.0	310.0	360.0	470.0	579.0	320.0	360.0	370.0
Vanadium	22.0	22.0	27.0	23.0	29.0	73.0	24.0	26.0
Zinc	89.0	110.0	48.0	29.0	80.0	518.0	140.0	64.0

Notes:
1. Analytical results are presented in milligrams/kilogram (mg/kg).
2. Blank spaces indicate that the analyte was not detected.

TABLE 1A

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
PHASE 1
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)							
	L6	L7	M0	M1	M4	M5	M6	M7
Chemical Group/Analyte	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 0.5	0.0 - 0.5	0.0 0.5	0.0 0.5
Metals								
Aluminum	5210.0	4550.0	7190.0	8100.0	5810.0	9080.0	11900.0	12600.0
Antimony								
Arsenic		11.0	12.0			22.0	28.0	33.0
Barium	30.0	21.0	130.0	61.0	52.0	81.0	74.0	73.0
Cadmium				5.2	1.1	2.3	1.2	1.7
Calcium	5800.0	2100.0	4800.0	3500.0	2700.0	5700.0	4700.0	6600.0
Chromium	32.0	31.0	90.0	52.0	35.0	34.0	45.0	38.0
Cobalt			6.8	6.1	5.2	6.4	9.6	7.9
Copper	11.0	12.0	220.0	100.0	23.0	47.0	49.0	49.0
Iron	8870.0	8620.0	16800.0	14800.0	10900.0	16200.0	20400.0	20800.0
Lead	12.0	23.0	64.0	170.0	80.0	180.0	97.0	170.0
Magnesium	1600.0	1700.0	5100.0	3500.0	2700.0	4500.0	5900.0	5300.0
Manganese	90.0	88.0	190.0	190.0	150.0	260.0	310.0	320.0
Mercury								
Molybdenum			25.0					
Nickel	23.0	28.0	86.0	39.0	33.0	38.0	52.0	38.0
Potassium	720.0	640.0	920.0	1200.0	840.0	1300.0	1500.0	1700.0
Silver								
Sodium								
Thallium								
Titanium	400.0	400.0	510.0	430.0	350.0	430.0	663.0	604.0
Vanadium	22.0	24.0	26.0	29.0	27.0	38.0	45.0	50.0
Zinc	30.0	34.0	130.0	160.0	95.0	140.0	110.0	130.0

Notes:
1. Analytical results are presented in milligrams/kilogram (mg/kg).
2. Blank spaces indicate that the analyte was not detected.

TABLE 1A

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
PHASE 1
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)							
	M8	M9	M10	N0	00	DA-1	DA-1R	DA-1
Chemical Group/Analyte	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	1.5 - 2.0
Metals								
Aluminum	8740.0	7460.0	12900.0	10200.0	11500.0	7960.0	11200.0	13000.0
Antimony							12.0	
Arsenic	19.0	18.0	21.0	12.0		14.0		45.0
Barium	49.0	47.0	47.0	120.0	93.0	82.0	120.0	130.0
Cadmium	1.0	1.2	12.0	13.0	5.4		42.0	77.0
Calcium	4500.0	4000.0	6300.0	9100.0	6400.0	6500.0	6400.0	6000.0
Chromium	43.0	34.0	36.0	64.0	48.0	52.0	430.0	77.0
Cobalt	6.2	5.4	9.5	8.2	7.4	6.0	12.0	10.0
Copper	33.0	37.0	54.0	150.0	68.0	41.0	170.0	280.0
Iron	14600.0	12000.0	22900.0	22100.0	17600.0	15600.0	17800.0	41600.0
Lead	60.0	69.0	160.0	440.0	100.0	52.0	1460.0	200.0
Magnesium	3500.0	2700.0	4400.0	4200.0	4500.0	4100.0	4600.0	6000.0
Manganese	200.0	170.0	3700.0	350.0	310.0	200.0	220.0	330.0
Mercury							1.0	0.8
Molybdenum								
Nickel	36.0	31.0	30.0	56.0	44.0	53.0	200.0	73.0
Potassium	1300.0	940.0	690.0	1300.0	1600.0	1000.0	1300.0	1600.0
Silver								
Sodium					580.0			
Thallium								
Titanium	510.0	480.0	731.0	490.0	480.0	530.0	430.0	544.0
Vanadium	33.0	34.0	66.0	34.0	34.0	30.0	31.0	44.0
Zinc	81.0	77.0	100.0	330.0	160.0	110.0	420.0	360.0

Notes:
1. Analytical results are presented in milligrams/kilogram (mg/kg).
2. Blank spaces indicate that the analyte was not detected.

TABLE 1A

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
PHASE 1
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)							
Chemical Group/Analyte	DA-1 25.0 - 25.5	DA-1 50.0 - 50.5	DA-2 0.0 - 0.5	DA-2R 2.0 - 2.5	DA-2 12.5 - 13.0	DA-2 25.5 - 26.0	DA-2 39.5 - 40.0	DAR-1 0.0 - 0.5
Metals								
Aluminum	39700.0	5130.0	5630.0	8170.0	27500.0	4190.0	9130.0	10100.0
Antimony								
Arsenic	49.0				19.0			34.0
Barium	81.0		42.0	41.0	130.0			83.0
Cadmium			2.1	1.4				1.9
Calcium	3800.0	5600.0	4500.0	5700.0	5400.0	2100.0	2600.0	5400.0
Chromium	130.0	28.0	34.0	41.0	86.0	22.0	53.0	40.0
Cobalt	20.0		6.0	7.3	15.0		9.4	7.4
Copper	170.0	11.0	29.0	32.0	60.0	6.4	39.0	61.0
Iron	5070.0	8460.0	9710.0	14100.0	33500.0	6240.0	17800.0	17900.0
Lead	32.0		64.0	61.0	11.0			150.0
Magnesium	11000.0	2000.0	2200.0	3400.0	8200.0	1700.0	3300.0	4700.0
Manganese	370.0	91.0	130.0	150.0	280.0	58.0	250.0	280.0
Mercury								
Molybdenum								
Nickel	140.0	22.0	25.0	32.0	82.0	14.0	59.0	42.0
Potassium	5400.0	810.0	880.0	1300.0	3800.0	880.0	830.0	1300.0
Silver								
Sodium	9900.0	980.0			2000.0	1700.0	2000.0	
Thallium								
Titanium	1350.0	480.0	350.0	520.0	1160.0	260.0	692.0	518.0
Vanadium	99.0	22.0	24.0	29.0	71.0	12.0	36.0	38.0
Zinc	130.0	22.0	74.0	79.0	82.0	16.0	42.0	140.0

Notes:
1. Analytical results are presented in milligrams/kilogram (mg/kg).
2. Blank spaces indicate that the analyte was not detected.

TABLE 1A

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
PHASE 1
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)							
Chemical Group/Analyte	DAR-2 0.0 - 0.5	DAR-3 0.0 - 0.5	DAR-4 0.0 - 0.5	WB-1 10.5 - 11.0	WB-1 35.5 - 36.0	WB-1 80.0 - 80.5	WB-2 0.0 - 0.5	WB-2 0.0 - 0.5
Metals								
Aluminum	4610.0	7540.0	4110.0	5310.0	18800.0	7910.0	9370.0	8540.0
Antimony								
Arsenic				12.0	32.0	15.0		14.0
Barium	22.0	46.0		40.0	30.0		45.0	86.0
Cadmium		1.4					6.2	6.4
Calcium	2200.0	2500.0	2400.0	2400.0	3600.0	2400.0	4600.0	11000.0
Chromium	27.0	54.0	28.0	33.0	59.0	45.0	56.0	44.0
Cobalt					13.0	7.0	7.5	6.4
Copper	6.7	28.0	7.8	38.0	69.0	40.0	52.0	56.0
Iron	7520.0	12100.0	7360.0	10300.0	29800.0	13200.0	16000.0	15000.0
Lead	22.0	120.0	15.0	29.0	16.0	7.2	31.0	81.0
Magnesium	1600.0	2800.0	1800.0	2400.0	9000.0	3400.0	4700.0	3800.0
Manganese	71.0	150.0	86.0	92.0	230.0	130.0	220.0	240.0
Mercury								0.3
Molybdenum								
Nickel	22.0	28.0	21.0	29.0	62.0	37.0	52.0	41.0
Potassium	610.0	1300.0	640.0	990.0	3200.0	1200.0	1400.0	1300.0
Silver								
Sodium					4200.0	710.0	730.0	710.0
Thallium								
Titanium	390.0	390.0	430.0	440.0	878.0	520.0	470.0	430.0
Vanadium	19.0	25.0	21.0	22.0	52.0	29.0	31.0	28.0
Zinc	32.0	120.0	23.0	56.0	74.0	40.0	64.0	100.0

Notes:
1. Analytical results are presented in milligrams/kilogram (mg/kg).
2. Blank spaces indicate that the analyte was not detected.

TABLE 1A

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
PHASE 1
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)							
Chemical Group/Analyte	WB-2 5.5 - 6.0	WB-2 16.0 - 16.5	WB-2B 45.5 - 46.0	WB-2B 62.0 - 62.5	WB-3 0.0 - 0.5	WB-3R 2.0 - 2.5	WB-3 15.5 - 16.0	WB-3 35.5 - 36.0
Metals								
Aluminum	5290.0	7100.0	12400.0	7970.0	4440.0	4630.0	4430.0	6800.0
Antimony								
Arsenic					10.0			19.0
Barium		36.0		48.0	31.0	45.0		28.0
Cadmium					5.1			
Calcium	2300.0	3300.0	3800.0	2800.0	2500.0	2200.0	2200.0	2400.0
Chromium	28.0	47.0	51.0	38.0	27.0	31.0	28.0	34.0
Cobalt		6.2	9.2					
Copper	6.1	7.3	32.0	10.0	15.0	23.0	19.0	26.0
Iron	8650.0	12500.0	19500.0	13000.0	7940.0	8770.0	7460.0	11900.0
Lead					15.0			
Magnesium	2200.0	3900.0	5200.0	3200.0	2100.0	2000.0	2000.0	2800.0
Manganese	97.0	130.0	170.0	140.0	110.0	97.0	81.0	120.0
Mercury								
Molybdenum								
Nickel	26.0	43.0	42.0	41.0	28.0	25.0	22.0	29.0
Potassium	610.0	920.0	1700.0	690.0	770.0	770.0	630.0	1100.0
Silver								
Sodium		2200.0	1400.0	1400.0				1100.0
Thallium								
Titanium	410.0	610.0	749.0	5400.0	410.0	440.0	440.0	520.0
Vanadium	19.0	30.0	39.0	26.0	19.0	20.0	19.0	28.0
Zinc	17.0	24.0	43.0	24.0	30.0	24.0	25.0	32.0

Notes:
1. Analytical results are presented in milligrams/kilogram (mg/kg).
2. Blank spaces indicate that the analyte was not detected.

TABLE 1A

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
PHASE 1
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)							
Chemical Group/Analyte	WB-3 45.5 - 46.0	WB-4 0.0 - 0.5	WB-4R 0.0 - 0.5	WB-4 10.5 - 11.0	WB-4 35.0 - 35.5	WB-4 50.5 - 51.0	OR-1 0.0 - 0.5	OR-1 4.0 - 4.5
Metals								
Aluminum	10300.0	5400.0	4420.0	7190.0	9460.0	15500.0	4710.0	5210.0
Antimony								
Arsenic	26.0					18.0		
Barium	31.0	34.0		46.0		27.0	34.0	28.0
Cadmium								
Calcium	2200.0	2600.0	2000.0	3100.0	2100.0	2300.0	2900.0	2200.0
Chromium	50.0	34.0	30.0	36.0	38.0	49.0	28.0	28.0
Cobalt	7.4				8.3	10.0		
Copper	31.0	12.0	9.7	25.0	18.0	100.0	36.0	23.0
Iron	15700.0	8680.0	8010.0	10300.0	14500.0	21600.0	7770.0	8420.0
Lead	6.2	19.7				13.0		
Magnesium	3200.0	2200.0	2500.0	2900.0	4200.0	6700.0	2200.0	2600.0
Manganese	140.0	100.0	92.0	120.0	110.0	190.0	92.0	90.0
Mercury								
Molybdenum								
Nickel	52.0	23.0	26.0	33.0	30.0	52.0	24.0	26.0
Potassium	1200.0	750.0		1100.0	1800.0	2600.0	730.0	930.0
Silver								
Sodium	2700.0				1800.0	1200.0		
Thallium								
Titanium	600.0	513.0	370.0	659.0	500.0	677.0	440.0	460.0
Vanadium	30.0	23.0	19.0	27.0	28.0	44.0	19.0	19.0
Zinc	57.0	28.0	18.0	30.0	31.0	62.0	27.0	24.0

Notes:
1. Analytical results are presented in milligrams/kilogram (mg/kg).
2. Blank spaces indicate that the analyte was not detected.

TABLE 1A

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
PHASE 1
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

Chemical Group/Analyte	Boring Number/Sample Depth (feet) OR-1 8.5 - 9.0	OR-1 14.0 - 14.5
Metals		
Aluminum	8900.0	13100.0
Antimony		
Arsenic		
Barium	52.0	110.0
Cadmium		
Calcium	2000.0	2600.0
Chromium	40.0	50.0
Cobalt		7.2
Copper	22.0	17.0
Iron	12500.0	19400.0
Lead		
Magnesium	2800.0	4000.0
Manganese	140.0	250.0
Mercury		
Molybdenum		
Nickel	35.0	62.0
Potassium	740.0	1000.0
Silver		
Sodium		900.0
Thallium		
Titanium	520.0	550.0
Vanadium	30.0	35.0
Zinc	30.0	36.0

Notes:
1. Analytical results are presented in milligrams/kilogram (mg/kg).
2. Blank spaces indicate that the analyte was not detected.

TABLE 1B

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
PHASE 1
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
OTHER ANALYTICAL TESTS

Boring Number/Depth (feet)		Total Organic Carbon (mg/kg)	pH	Total Petroleum Hydrocarbons (mg/kg)	Total Asbestos (mg/kg)
A7	0.0-0.5			230.	
A8	0.0-0.5			390.	
B2	0.0-0.5			240.	
B3	0.0-0.5			110.	
C2	0.0-0.5			110.	
H1	0.0-0.5			850.	
DA-1	0.0-0.5		8.4		
DA-1R	0.0-0.5		8.6		
DA-1	0.5-1.0	1.10			0.0
DA-1R	1.0-1.5	0.21			
DA-1	1.5-2.0		9.2		
DA-1	25.0-25.5		8.6		
DA-1	26.0-26.5		7.9		
DA-1	50.0-50.5		8.3		
DA-2	0.0-0.5		9.0		
DA-2	2.0-2.5				0.0
DA-2R	2.0-2.5		9.6		
DA-2	2.5-3.0	0.34			
DA-2R	3.0-3.5	0.33			
DA-2	12.5-13.0		6.3		
DA-2	25.5-26.0		10.0		
DA-2	39.5-40.0		9.1		
WB-1	1.0-1.5				0.0
WB-1	1.5-2.0	1.90			
WB-1	10.5-11.0		9.9		
WB-1	35.5-36.0		10.0		
WB-1	80.0-80.5		10.0		
WB-2	0.0-0.5		9.5		
WB-2	0.0-0.5		9.6		
WB-2	1.0-1.5	3.30			0.0
WB-2	5.5-6.0		6.2		
WB-2	15.0-15.5	0.04			
WB-2	16.0-16.5		11.0		
WB-2B	45.5-46.0		10.0		

TABLE 1B

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
PHASE 1
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
OTHER ANALYTICAL TESTS

Boring Number/Depth (feet)	Total Organic Carbon (mg/kg)	pH	Total Petroleum Hydrocarbons (mg/kg)	Total Asbestos (mg/kg)
WB-2B 62.0-62.5		7.5		
WB-3 0.0-0.5		9.5		
WB-3 2.0-2.5				0.0
WB-3R 2.0-2.5		7.2		
WB-3 2.5-3.0	0.11			
WB-3R 3.0-3.5	0.02			
WB-3 15.5-16.0		9.1		
WB-3 35.5-36.0		8.1		
WB-3 45.5-46.0		5.6		
WB-4 0.0-0.5		7.6		
WB-4R 0.0-0.5		8.3		
WB-4R 1.0-1.5	0.12			
WB-4 2.5-3.0	0.17			0.0
WB-4 10.5-11.0		11.2		
WB-4 35.0-35.5		10.0		
WB-4 50.5-51.0		10.0		
OR-1 0.0-0.5		9.0		
OR-1 0.5-1.0	0.013			
OR-1 1.0-1.5				
OR-1 4.0-4.5		9.0		
OR-1 4.5-5.0	0.30			
OR-1 8.5-9.0		7.5		
OR-1 9.0-9.5	0.058			
OR-1 14.0-14.5		7.5		
OR-1 14.5-15.0	0.012			

TABLE 18

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
PHASE 1
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
OTHER ANALYTICAL TESTS

Boring Number	Depth (feet)	Total Kjeldahl Nitrogen (mg/kg)	Chloride (mg/kg)	Sulfate (mg/kg)
OR-1	0.0 0.5			
OR-1	0.5 1.0			
OR-1	1.0 1.5	350.0		1.5
OR-1	4.0 4.5			
OR-1	4.5 5.0	250.0		4.3
OR-1	8.5 9.0			
OR-1	9.0 9.5	160.0	4.4	6.6
OR-1	14.0 14.5			
OR-1	14.5 15.0	120.0	8.1	6.7

Notes:
1. Analytical results are presented in units as shown.
2. Sample depths are presented in feet.
3. Blank spaces indicate that the analyte was not detected or not tested for that sample.

TABLE 2

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
PHASE 1
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
RADIOLOGICAL ANALYSIS
RESULTS IN pCi/g

Sample Location/Depth		Gross Alpha	Gross Beta	Radium 226	Radium 228
A1	0.0 - 0.5	5.5	9.8	0.3	0.2
A2	0.0 - 0.5	1.7	8.7	0.2	0.0
A3	0.0 - 0.5	4.9	11.0	0.1	1.1
A4	0.0 - 0.5	4.4	20.0	0.3	0.5
A5	0.0 - 0.5	2.3	14.0	0.1	0.0
A6	0.0 - 0.5	2.3	8.5	0.3	0.0
A7	0.0 - 0.5	12.0	11.0	1.0	1.5
A8	0.0 - 0.5	3.3	13.0	0.5	0.4
B2	0.0 - 0.5	7.0	9.2	1.0	0.0
B3	0.0 - 0.5	4.4	13.0	0.7	0.0
B4	0.0 - 0.5	4.4	11.0	0.1	0.0
B5	0.0 - 0.5	1.7	11.0	0.7	0.0
B6	0.0 - 0.5	2.8	9.7	0.1	2.3
B7	0.0 - 0.5	2.3	9.4	0.0	0.0
B8	0.0 - 0.5	2.0	11.0	0.3	0.0
F1	0.0 - 0.5	2.0	14.0	0.1	0.0
F2	0.0 - 0.5	2.2	11.0	0.0	1.5
F3	0.0 - 0.5	2.3	11.0	0.0	1.2
F4	0.0 - 0.5	3.9	10.0	0.0	0.8
F5	0.0 - 0.5	4.9	8.6	0.4	1.2
F6	0.0 - 0.5	2.8	14.0	0.0	1.7

TABLE 2

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
PHASE 1
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
RADIOLOGICAL ANALYSES
RESULTS IN pCi/g

Sample Location/Depth		Gross Alpha	Gross Beta	Radium 226	Radium 228
F9	0.0 - 0.5	3.9	12.0	0.0	0.8
F10	0.0 - 0.5	2.3	15.0	0.4	2.3
G1	0.0 - 0.5	3.4	12.0	0.2	4.1
G2	0.0 - 0.5	1.8	2.8	0.1	1.9
G3	0.0 - 0.5	1.7	19.0	1.4	0.2
G4	0.0 - 0.5	1.2	10.0	0.3	1.9
G5	0.0 - 0.5	2.3	8.5	0.3	0.7
G8	0.0 - 0.5	8.2	6.4	0.1	0.0
G9	0.0 - 0.5	6.1	12.0	0.4	2.6
G10	0.0 - 0.5	2.3	18.0	0.7	0.0
H1	0.0 - 0.5	7.5	11.0	0.7	1.0
H2	0.0 - 0.5	7.5	11.0	0.4	0.9
H3	0.0 - 0.5	5.8	15.0	0.0	0.0
H4	0.0 - 0.5	1.8	11.0	0.1	0.7
H8	0.0 - 0.5	0.7	10.0	0.0	0.9
H9	0.0 - 0.5	2.3	5.3	0.3	0.3
I2	0.0 - 0.5	4.1	19.0	0.1	0.1
I3	0.0 - 0.5	3.0	15.0	0.5	1.0
I4	0.0 - 0.5	4.1	16.0	0.1	0.9
I7	0.0 - 0.5	2.8	12.0	0.0	0.9

TABLE 2

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
PHASE 1
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
RADIOLOGICAL ANALYSES
RESULTS IN pCi/g

Sample Location/Depth		Gross Alpha	Gross Beta	Radium 226	Radium 228
I8	0.0 - 0.5	2.3	17.0	1.0	0.0
J1	0.0 - 0.5	2.4	18.0	0.7	0.8
J2	0.0 - 0.5	7.0	7.5	0.5	1.2
J3	0.0 - 0.5	0.0	16.0	0.5	0.5
J7	0.0 - 0.5	0.9	12.0	0.1	1.2
J8	0.0 - 0.5	1.2	13.0	0.6	0.0
K0	0.0 - 0.5	2.3	11.0	0.6	0.1
K1	0.0 - 0.5	1.2	12.0	0.3	0.6
K2	0.0 - 0.5	4.6	9.8	0.3	1.3
K6	0.0 - 0.5	6.6	12.0	0.1	1.6
K7	0.0 - 0.5	0.0	13.0	0.3	0.0
L0	0.0 - 0.5	0.1	9.3	0.1	0.0
L1	0.0 - 0.5	5.5	11.0	0.0	0.4
L2	0.0 - 0.5	3.4	11.0	0.5	0.0
L5	0.0 - 0.5	5.5	11.0	0.0	0.6
L6	0.0 - 0.5	1.2	4.6	0.4	1.0
L7	0.0 - 0.5	2.8	6.0	0.3	0.0
M0	0.0 - 0.5	3.3	15.0	0.8	0.9
M1	0.0 - 0.5	5.5	7.1	0.3	0.3

TABLE 2

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
PHASE 1
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
RADIOLOGICAL ANALYSES
RESULTS IN pCi/g

Sample Location/Depth		Gross Alpha	Gross Beta	Radium 226	Radium 228
M4	0.0 - 0.5	5.5	12.0	0.1	1.0
M5	0.0 - 0.5	4.5	11.0	0.0	0.0
M6	0.0 - 0.5	2.8	16.0	2.2	1.4
M7	0.0 - 0.5	2.8	8.7	0.9	3.2
M8	0.0 - 0.5	3.4	9.1	0.4	3.2
M9	0.0 - 0.5	2.8	6.9	0.6	0.0
M10	0.0 - 0.5	3.1	3.8	0.1	0.4
N0	0.0 - 0.5	1.7	14.0	0.0	0.7
O0	0.0 - 0.5	5.6	10.0	0.3	0.6
Dar-1	0.0 - 0.5	15.0	16.0	0.1	0.0
Dar-2	0.0 - 0.5	14.0	7.8	1.2	0.0
Dar-3	0.0 - 0.5	21.0	13.0	0.4	0.9
Dar-4	0.0 - 0.5	16.0	29.0	0.4	0.5
DA-1	0.5 - 1.0	3.4	14.0	0.4	0.0
DA-1R	0.5 - 1.0	2.3	8.0	0.0	1.1
DA-1	1.5 - 2.0	1.2	12.0	0.4	0.0
DA-1	25.5 - 26.0	1.7	17.0	0.5	0.0
DA-1	50.5 - 51.0	2.3	8.8	0.3	5.4

TABLE 2

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
PHASE 1
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
RADIOLOGICAL ANALYSES
RESULTS IN pCi/g

Sample Location/Depth	Gross Alpha	Gross Beta	Radium 226	Radium 228
DA-2 0.5 - 1.0	20	18.0	0.2	0.0
DA-2 13.0 - 13.5	7.4	9.8	0.3	0.0
DA-2 26.0 - 26.5	34.0	11.0	0.5	0.3
DA-2 40.0 - 40.5	52.0	0.9	0.3	1.2
DA-2R 2.5 - 3.0	5.0	12.0	0.7	0.5
WB-1 0.5 - 1.0	3.4	12.0	0.6	0.8
WB-1 11.0 - 11.5	4.0	5.7	0.4	0.4
WB-1 36.0 - 36.5	8.8	5.9	0.3	0.0
WB-1 80.5 - 81.0	0.0	9.0	0.5	0.6
WB-2 0.5 - 1.0	2.3	10.0	0.4	0.5
WB-2 6.0 - 6.5	0.0	12.0	0.3	0.8
WB-2 17.0 - 17.5	1.8	9.5	0.4	1.0
WB-2 46.0 - 46.5	9.6	12.0	0.0	0.6
WB-2 62.5 - 63.0	5.7	14.0	0.0	0.2
WB-3 0.5 - 1.0	0.7	11.0	0.8	0.6
WB-3R 2.5 - 3.0	9.3	11.0	1.5	1.2
WB-3 16.0 - 16.5	1.3	10.0	0.3	0.0
WB-3 36.0 - 36.5	9.8	3.9	0.8	0.8
WB-3 46.0 - 46.5	2.9	6.2	0.4	0.0

TABLE 3

COMPARISON OF ACTION LEVELS FOR VARIOUS CHEMICAL GROUPS
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

Chemical Group/Analyte	MCL (mg/l)	STLC (mg/l)	TTLC (mg/kg)	AAI Biological Receptor	AAI Water (ug/l)	AAI Air (ug/m3)	AAI Soil (mg/kg)
Volatile Organics							
Xylene				Saltwater	70		
Xylene (all isomers)	1.75			Human	2,000	400	30,000
Semivolatile Organics							
Acenaphthene				Human	20	2	
Acenaphthylene				Human	20	2	
Anthracene				Human	20	2	100
Atrazine	0.003						
Bentazon	0.018						
Benzo(a)pyrene				Human	0.09	0.009	
Fluoranthene				Human	20	2	
Fluorene				Human	20	2	
Naphthalene				Human	20	2	
Naphthalene				Freshwater	600		
Naphthalene				Saltwater	700		
Pentachlorophenol		1.7	17	Human	2	0.2	
Pentachlorophenol				Freshwater	5		
Pentachlorophenol				Saltwater	10		
Phenanthrene				Human	20	2	100
Pyrene				Human	20	2	
Pesticides/PCBs							
2,4,5-TP Silvex	0.01	1.	10				
2,4-D	0.1	10.	100	Human	40	4	
Aldicarb				Human	20	2	

TABLE 3

COMPARISON OF ACTION LEVELS FOR VARIOUS CHEMICAL GROUPS
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

Chemical Group/Analyte	MCL (mg/l)	STLC (mg/l)	TTLC (mg/kg)	AAI Biological Receptor	AAI Water (ug/l)	AAI Air (ug/m3)	AAI Soil (mg/kg)
Volatile Organics							
1,1,1-Trichloroethane	0.2			Human	300	300	
1,1,2,2-Tetrachloroethane	0.001						
1,1,2-Trichloroethane	0.032						
1,1-Dichloroethylene	0.006						
1,2-Dichloroethane	0.0005						
1,3-Dichloropropene	0.0005						
1,4-Dichlorobenzene	0.005						
2-Butanone				Human	2,000	300	
Benzene	0.001			Human	0.2	0.07	
Benzene				Freshwater	1		
Benzene				Saltwater	1		
Carbon Tetrachloride	0.0005						
Chloroform				Human	6	0.6	
Dibromochloropropane	0.0002						
Ethylbenzene	0.68			Human	2,000	100	
Ethylene Dibromide	0.00002						
Monochlorobenzene	0.03						
n-Hexane				Human	100	200	
Tetrachloroethylene	0.005						
Toluene				Human	2,000	200	
Toluene				Freshwater	90		
Toluene				Saltwater	20		
Trichloroethylene	0.005	204.	2,040	Human	/	/	
Vinyl Chloride	0.0005			Human	0.5	0.1	
Xylene				Freshwater	40		

TABLE 3

COMPARISON OF ACTION LEVELS FOR VARIOUS CHEMICAL GROUPS
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

Chemical Group/Analyte	MCL (mg/l)	STLC (mg/l)	TTLC (mg/kg)	AAL Biological Receptor	AAL Water (ug/l)	AAL Air (ug/m3)	AAL Soil (mg/kg)
Pesticides/PCBs							
Aldrin		0.14	1.4				
Chlordan		0.25	2.5				
DDD,DDE,DDT		0.1	1.0				
Diazinon				Human	30	3	
Dicofol				Human	1	0.1	
Dieldrin		0.8	8				
Dioxin (2,3,7,8-TCCD)		0.001	0.01				
Endrin	0.0002	0.02	0.2				
Heptachlor		0.47	4.7	Human	0.1	0.01	
Heptachlor Epoxide				Human	0.02	0.002	
Kepone		2.1	21				
Lead Compounds, Organic			13				
Lindane	0.004	0.4	4	Human	0.2	0.02	
Malathion				Human	800	80	
Methoxychlor	0.1	10.	100				
Mirex		2.1	21				
Molinate	0.02						
Paraquat				Human	200	4	
Parathion, Ethyl				Human	40	0.2	
Polychlorinated Biphenyls (PCBs)		5.	50				
Simazine	0.01						
Thiobencarb	0.07						
Toxaphene	0.005	0.5	5				

TABLE 3

COMPARISON OF ACTION LEVELS FOR VARIOUS CHEMICAL GROUPS
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

Chemical Group/Analyte	MCL (mg/l)	STLC (mg/l)	TTLC (mg/kg)	AAL Biological Receptor	AAL Water (ug/l)	AAL Air (ug/m3)	AAL Soil (mg/kg)
Inorganics							
Aluminum	1.0						
Antimony		15.	500				
Arsenic	0.05	5.0	500	Freshwater	70		
Arsenic				Saltwater	20		
Asbestos			1.0				
Barium	1.0	100.	10,000	Human	350	5	
Beryllium		0.75	75				
Cadmium	0.01	1.0	100	Freshwater	0.2		
Cadmium				Saltwater	5		
Chromium	0.05			Freshwater	50		
Chromium				Saltwater	2		
Chromium III		560.	2,500	Human	50,000	50	
Chromium VI		5.	500				
Cobalt		80.	8,000				
Copper		25.	2,500	Human	4,000	200	
Copper				Freshwater	4		
Copper				Saltwater	6		
Cyanide				Human	1,000	50	
Fluoride (temperature dependent)	1.4 to 2.4						
Fluoride Salts		180.	18,000				
Lead	0.05	5.0	1,000	Freshwater	10		
Lead				Saltwater	4		
Mercury (inorganic)	0.002	0.2	20	Human	70	0.07	
Molybdenum		350.	3,500				
Nickel		20.	2,000	Human	400	0.1	

TABLE 3

COMPARISON OF ACTION LEVELS FOR VARIOUS CHEMICAL GROUPS
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

Chemical Group/Analyte	MCL (mg/l)	STLC (mg/l)	TTLC (mg/kg)	AAI Biological Receptor	AAI Water (ug/l)	AAI Air (ug/m3)	AAI Soil (mg/kg)
Inorganics							
Nickel				Freshwater	1		
Nickel				Saltwater	8		
Nitrate	45.0			Saltwater	10		
Selenium	0.01	1.0	100				
Silver	0.05	5.	500	Human	200	2	
Silver				Freshwater	1		
Silver				Saltwater	6		
Thallium		7.0	700				
Vanadium		24.	2,400				
Zinc		250.	5,000	Human	8,000	800	
Zinc				Freshwater	30		
Zinc				Saltwater	10		
Consumer Acceptance Limits							
Color	15 units						
Copper	1.0						
Corrosivity	Relatively Low						
Odor - Threshold	3 units						
Foaming Agents (MBAs)	0.5						
Iron	0.3						
Manganese	0.05						
Thiobencarb	0.001						
Turbidity	5 units						
Zinc	5.0						

TABLE 3A

COMPARISON OF ACTION LEVELS FOR VARIOUS CHEMICAL GROUPS
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

Chemical Group/Analyte	MCL (mg/l)	STLC (mg/l)	TTLC (mg/kg)	AAL Biological Receptor	AAL Water (ug/l)	AAL Air (ug/m3)	AAL Soil (mg/kg)
Inorganics							
Nickel				Freshwater	1		
Nickel				Saltwater	8		
Nitrate	45.0			Saltwater	10		
Selenium	0.01	1.0	100				
Silver	0.05	5.	500	Human	200	2	
Silver				Freshwater	1		
Silver				Saltwater	6		
Thallium		7.0	700				
Vanadium		24.	2,400				
Zinc		250.	5,000	Human	8,000	800	
Zinc				Freshwater	30		
Zinc				Saltwater	10		
Consumer Acceptance Limits							
Color	15 units						
Copper	1.0						
Corrosivity	Relatively Low						
Odor - Threshold	3 units						
Foaming Agents (MBAs)	0.5						
Iron	0.3						
Manganese	0.05						
Thiobencarb	0.001						
Turbidity	5 units						
Zinc	5.0						

TABLE 3

COMPARISON OF ACTION LEVELS FOR VARIOUS CHEMICAL GROUPS
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

Chemical Group/Analyte	MCL (mg/l)	STLC (mg/l)	TTLC (mg/kg)	AAL Biological Receptor	AAL Water (ug/l)	AAL Air (ug/m3)	AAL Soil (mg/kg)
Mineralization							
Total Dissolved Solids	500						
or							
Specific Conductance	900 umhos						
Chloride	250						
Sulfate	250						

Notes:

1. MCLs are Maximum Contaminant Levels.
2. AALs are Applied Action Levels.
3. STLCs are Soluble Threshold Limit Concentrations.
4. TTLCs are Total Threshold Limit Concentrations.
5. MCLs, STLCs, and TTLCs were referenced in Barclay's California Code of Regulations, Title 22, Social Security, Division 4, Environmental Health, updated June 22, 1990.
6. AALs were referenced from the California Department of Health Services AAL List 90-1, dated June 29, 1990, which supersedes all previous AAL lists.
7. MCLs for the constituents listed under Consumer Acceptance Limits and Mineralization apply to Secondary Drinking Water Standards.
8. State of California recommended MCLs are listed for Mineralization under the Secondary Drinking Water Standards.
9. Freshwater and saltwater biological receptors for the listed AALs apply to aquatic life.

TABLE 5

COMPARISON OF ACTION LEVELS FOR VARIOUS CHEMICAL GROUPS
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

Chemical Group/Analyte	Action Levels: Soil (pCi/g)	Action Levels: Water (pCi/l)	MCL (pCi/l)
Combined Radium 226 and Radium 228		5	5
Averaged over the first 15 cm of soil below the surface	5		
Averaged over 15 cm thick layers of soil more than 15 cm below the surface.	15		
Gross alpha-particle activity		15	15
Gross beta-particle activity			50
Tritium			20,000
Strontium-90			8
Uranium			20

Notes:

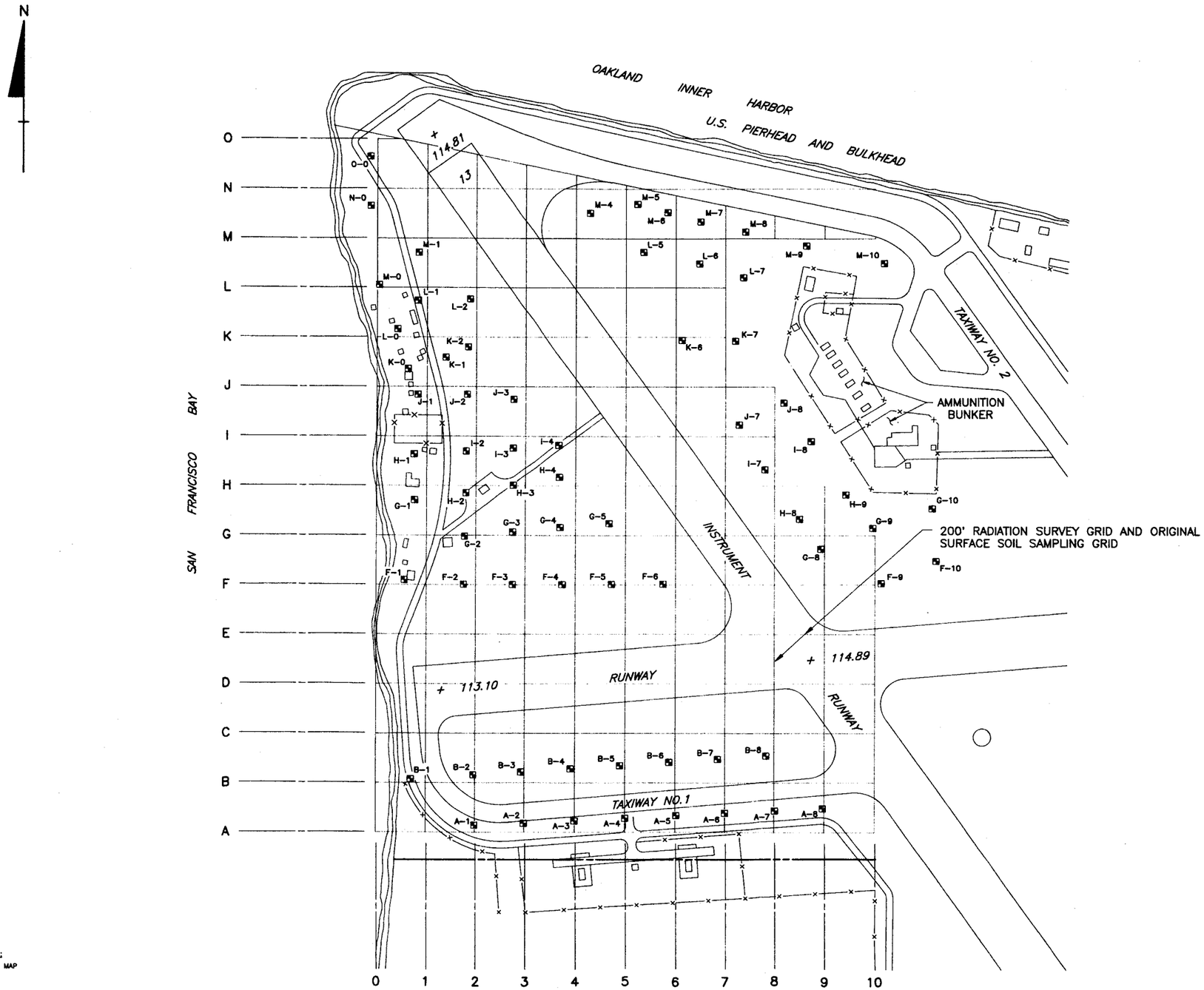
1. Action Levels are referenced from 40 CFR Chapter I, Part 192, Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings, updated July 1, 1989.

2. MCLs are Maximum Contaminant Levels.

3. MCLs are referenced from Barclay's California Code of Regulations, Title 22, Social Security, Division 4, Environmental Health, updated March 31, 1990.

4. pCi/g and pCi/l denote picocuries per gram and picocuries per liter, respectively.

DRAWING NUMBER 86-018-E81



LEGEND:

- SURFACE SOIL SAMPLE LOCATION
- CHAIN LINK FENCE

NOTES:

1. SURFACE SOIL SAMPLING GRID WAS MODIFIED AND REDUCED TO ABOUT 70 SAMPLING LOCATIONS BECAUSE THE NAS OPERATIONS OFFICE REQUIRED THAT NO SAMPLING BE PERFORMED WITHIN PAVED RUNWAY AREAS. (RECENTLY-PAVED RUNWAY AREAS ACTUALLY COVER SIGNIFICANTLY WIDER AREAS, THAT SHOWN ON THIS PLAN). IN ADDITION, THE NAS WEAPONS OFFICE ALSO REQUIRED THAT SAMPLING SHOULD BE PERFORMED OUTSIDE OF A 100-FOOT SETBACK FROM THE AMMUNITION BUNKER LOCATED BETWEEN RUNWAY 13 AND TAXIWAY NO. 2.

SCALE
200 0 200 400 FEET

REFERENCE:
- U.S. NAVY MAP

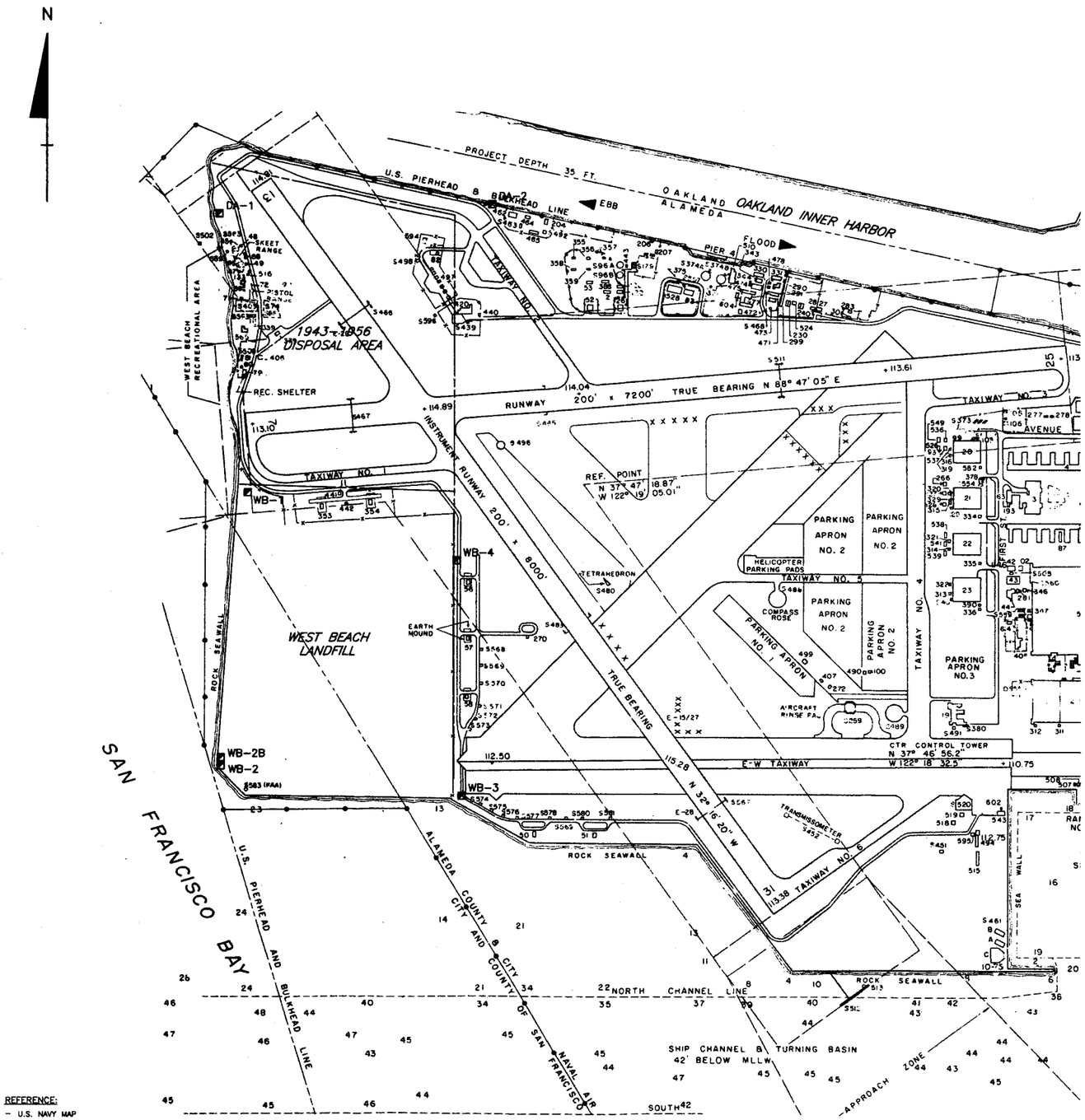
SURFACE SOIL SAMPLE LOCATIONS
1943-1956 DISPOSAL AREA
NAVAL AIR STATION
ALAMEDA, CALIFORNIA
PREPARED FOR
WESTERN DIVISION NAVAL
FACILITIES ENGINEERING COMMAND
SAN BRUNO, CALIFORNIA

Canonie Environmental

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
2	12-7-90	ISSUED FOR REVIEW	VZC	TGB	JWB
1	10-19-90	ISSUED FOR REVIEW	VZC	TGB	JWB

JUN 19 1992

DATE: 8-7-90	FIGURE 1	DRAWING NUMBER 86-018-E81	2
SCALE: AS SHOWN			



REFERENCE:
- U.S. NAVY MAP

LEGEND:

WB-1 DEEP EXPLORATION BORING LOCATION

SCALE
500 0 500 1,000 FEET

DEEP EXPLORATION BORING LOCATIONS
NAVAL AIR STATION
ALAMEDA, CALIFORNIA

PREPARED FOR

WESTERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
SAN BRUNO, CALIFORNIA

Canonie Environmental

DRAWN BY	KCH	CHECKED BY	
	8-17-90	APPROVED BY	

DRAWING NUMBER 86-018-E83

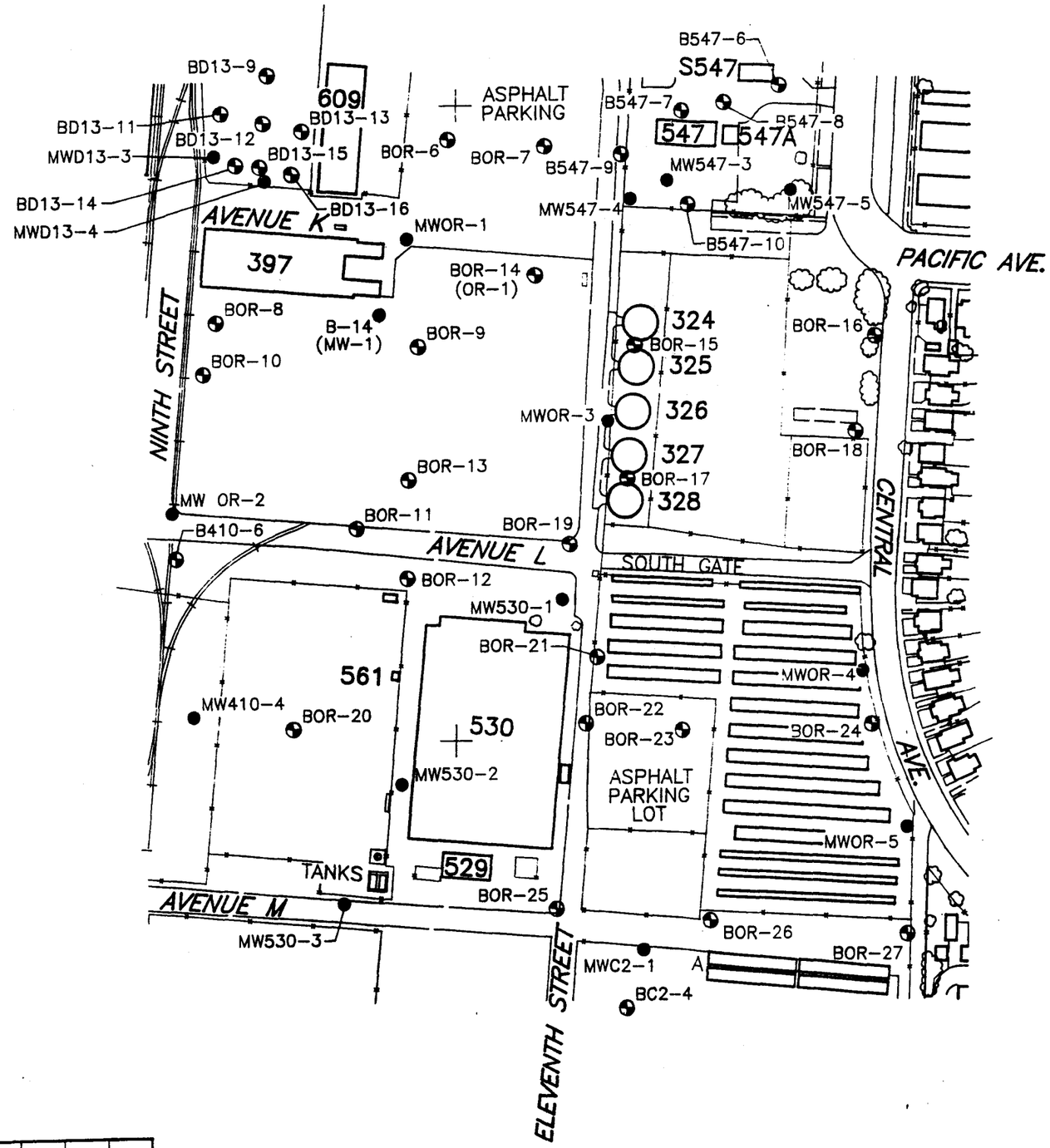
REVISIONS

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
2	12-7-90	ISSUED FOR REVIEW	VZC	TGB	JWB
1	8-21-90	ISSUED FOR PERMIT	KCH/VZC	TGB	JWB

JUN 19 1992

DATE: 8-17-90	FIGURE 2	DRAWING NUMBER 86-018-E83
SCALE: AS SHOWN		

DRAWING NUMBER 86-018-B92



LEGEND:

- BOR-7 — SOIL BORING LOCATION
- MW547-4 — MONITORING WELL LOCATION
- B-14 (MW-1) — MONITORING WELL LOCATION (HLA, 1989)

SCALE

200 0 200 FEET

SITE PLAN
OIL REFINERY SITE
NAVAL AIR STATION
ALAMEDA, CALIFORNIA

PREPARED FOR

WESTERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
SAN BRUNO, CALIFORNIA

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No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1	12-7-90	ISSUED FOR REVIEW	KCH/VZC	TGB	JWB

DATE: 10-19-90	FIGURE 3	DRAWING NUMBER 86-018-B92
SCALE: AS SHOWN		

APPENDIX A

CERTIFIED ANALYTICAL RESULTS

N00236.000828
ALAMEDA POINT
SSIC NO. 5090.3

APPENDIX A – CERTIFIED ANALYTICAL RESULTS

THIS RECORD CONTAINS ANALYTICAL DATA AND IS NOT REQUIRED TO BE PHYSICALLY LOCATED WITH THE ADMINISTRATIVE RECORD DOCUMENT.

THIS DATA WILL NOT BE IMAGED.

TO VIEW THE DATA, CONTACT:

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N00236.000828
ALAMEDA POINT
SSIC NO. 5090.3

REVISED PHASE 1 AND 2A ANALYTICAL RESULTS FOR SITES 1 AND2, 1943-1956 DISPOSAL AREA AND WEST BEACH LANDFILL REMEDIAL INVESTIGATION/FEASIBILITY STUDY

DATED 01 JUNE 1992

THIS RECORD CONTAINS MULTIPLE VOLUMES WHICH HAVE BEEN ENTERED SEPARATELY

VOLUME II OF II IS ENTERED IN THE DATABASE AND FILED AT ADMINISTRATIVE RECORD NO. **N00236.000829**