N00236.000796
ALAMEDA POINT
SSIC NO. 5090.3

December 1990 86-018-1810

PHASE 2A ANALYTICAL RESULTS FOR SITE 9, BUILDING 410 REMEDIAL INVESTIGATION/FEASIBILITY STUDY NAVAL AIR STATION ALAMEDA ALAMEDA, CALIFORNIA

ENCLOSURE 6

Prepared for: Western Division Naval Facilities Engineering Command
San Bruno, California

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December 3, 1990

86-018-1810

Ms. Bella Dizon (Code 1813BD)
Western Division Naval Facilities
Engineering Command
PO Box 727
San Bruno, CA 94066-0727

Phase 2A Analytical Results for Site 9, Building 410
Remedial Investigation/Feasibility Study
Naval Air Station Alameda
Alameda, California

Dear Ms. Dizon:

This report presents the Phase 2A analytical results for Site 9, Building 410, that were obtained as part of the Remedial Investigation/Feasibility Study at Naval Air Station Alameda. Pertinent information provided with this report include a site plan showing the boring and well locations, summary tables of the analytical results, a table showing the comparison of action levels for various chemical groups, and certified analytical reports.

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

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/gd

Enclosures

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

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ALAMEDA POINT
SSIC NO. 5090.3

REVISED
PHASE 1 AND 2A ANALYTICAL RESULTS FOR SITE 9, BUILDING 410 REMEDIAL INVESTIGATION/FEASIBILITY STUDY

DATED 01 JUNE 1992

IS ENTERED IN THE DATABASE AND FILED AT ADMINISTRATIVE RECORD NO. **N00236.000831**

LIST OF TABLES

TABLE NUMBER	TITLE
1A	Summary Table of Analytical Results: Soil Site 9, Building 410
1B	Summary Table of Analytical Results: Soils Site 9, Building 410, Other Analytical Tests
2	Summary Table of Analytical Results: Water Site 9, Building 410
3	Comparison of Action Levels for Various Chemical Groups

LIST OF FIGURES

FIGURE NUMBER	DRAWING NUMBER	TITLE
1	86-018-E87	Phase 2A Monitoring Well and Soil Boring Locations

LIST OF APPENDICES

APPENDIX	TITLE
A	Certified Analytical Results

TABLE 1A

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
SITE 9, BUILDING 410
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)							
Chemical Group/Analyte	MW410-1 2.0 - 2.5	MW410-1 5.5 - 6.0	MW410-1 7.0 - 7.5	MW410-1 11.0 - 11.5	MW410-1 14.0 - 14.5	MW410-2 3.0 - 3.5	MW410-2 6.0 - 6.5	MW410-2 9.0 - 9.5
Volatile Organics								
Methylene Chloride	11.	13.	15.	13.	14.	8.	15.	10.
Acetone	28.	21.	38.	24.	22.			
Toluene	51.	64.	36.	27.	22.	81.	6.	11.
Xylenes (total)								

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
SITE 9, BUILDING 410
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)							
Chemical Group/Analyte	MW410-2 12.0 - 12.5	MW410-2 15.0 - 15.5	MW410-3 3.0 - 3.5	MW410-3 8.5 - 9.0	MW410-3 11.5 - 12.0	MW410-3 14.5 - 15.0	MW410-4 3.0 - 3.5	MW410-4 5.5 - 6.0
Volatile Organics								
Methylene Chloride	15.	17.		7.	7.	6.	11.	10.
Acetone	20.	27.	13.	15.	14.	13.		
Toluene	9.	9.			7.	7.	7.	23.
Xylenes (total)								

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
SITE 9, BUILDING 410
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)							
Chemical Group/Analyte	MW410-4 8.5 - 9.0	MW410-4 11.5 - 12.0	MW410-4 14.5 - 15.0	B410-5 2.0 - 2.5	B410-5 5.0 - 5.5	B410-5 8.0 - 8.5	B410-5 10.5 - 11.0	B410-5 14.0 - 14.5
Volatile Organics								
Methylene Chloride	13.	14.	17.	10.	11.	6.	8.	11.
Acetone			19.				24.	54.
Toluene	7.	10.	7.	17.	40.		32.	54.
Xylenes (total)								

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
SITE 9, BUILDING 410
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)							
Chemical Group/Analyte	B410-6 2.0 - 2.5	B410-6 5.5 - 6.0	B410-6 8.5 - 9.0	B410-6 11.0 - 11.5	B410-6 13.0 - 13.5	B410-7 2.5 - 3.0	B410-7 5.5 - 6.0	B410-7 8.5 - 9.0
Volatile Organics								
Methylene Chloride	10.	13.	13.	15.	15.	6.	6.	12.
Acetone				22.	20.		20.	23.
Toluene	38.	28.	21.	23.	31.	730.	110.	56.
Xylenes (total)								

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
SITE 9, BUILDING 410
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)							
Chemical Group/Analyte	B410-7 11.0 - 11.5	B410-7 14.5 - 15.0	B410-8 2.5 - 3.0	B410-8 4.0 - 4.5	B410-8 5.5 - 6.0	B410-8 7.0 - 7.5	B410-8 8.5 - 9.0	B410-9 2.5 - 3.0
Volatile Organics								
Methylene Chloride	8.	11.	10.	10.	11.	10.	17.	18.
Acetone	27.	16.				14.		12.
Toluene	30.	12.	6.	19.	25.	19.		
Xylenes (total)						29.		

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
SITE 9, BUILDING 410
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)			
Chemical Group/Analyte	B410-9 5.5 - 6.0	B410-9 8.5 - 9.0	B410-9 11.5 - 12.0	B410-9 14.5 - 15.0
Volatile Organics				
Methylene Chloride	19.	10.	12.	12.
Acetone			42.	27.
Toluene	36.	8.	14.	23.
Xylenes (total)				

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
SITE 9, BUILDING 410
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

Chemical Group/Analyte	Boring Number/Sample Depth (feet) MW410-1 2.0 - 2.5	MW410-2 15.0 - 15.5
Semivolatile Organics		
Fluoranthene	460.	
Pyrene	560.	430.
Indeno(1,2,3-cd)pyrene	430.	

Notes:

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

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
SITE 9, BUILDING 410
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)							
Chemical Group/Analyte	MW410-1 0.5 - 1.0	MW410-1 3.0 - 3.5	MW410-1 6.5 - 7.0	MW410-1 7.5 - 8.0	MW410-1 8.0 - 8.5	MW410-1 12.5 - 13.0	MW410-1 14.5 - 15.0	MW410-2 1.5 - 2.0
Metals								
Aluminum	2890.0	3270.0	3280.0	4320.0	3620.0	16200.0	6140.0	3670.0
Arsenic		3.5	3.1		2.8	6.2		
Barium	16.3	21.3	31.1	26.9	24.5	107.0	44.3	29.0
Beryllium	0.1	0.1	0.1	0.2	0.1	0.5	0.2	
Cadmium	0.2	0.2	0.3		0.3	0.8	0.3	
Calcium	1680.0	17600.0	1640.0	2310.0	2800.0	14300.0	7180.0	2300.0
Chromium	22.7	23.3	27.1	32.6	28.4	73.6	40.4	25.0
Cobalt	3.4	3.6	3.3	4.2	3.8	14.0	5.8	
Copper	6.1	5.7	4.2	11.9	4.6	25.6	10.8	7.8
Iron	5480.0	5690.0	5920.0	7290.0	6070.0	26900.0	10900.0	6810.0
Lead						10.0		
Magnesium	1710.0	1810.0	1850.0	2190.0	1870.0	9920.0	3380.0	1900.0
Manganese	68.4	76.9	95.8	86.1	77.4.0	1060.0	102.0	80.0
Nickel	20.0	19.3	19.9	24.4	20.2	86.5	39.4	21.0
Potassium	541.0	492.0	507.0	645.0	581.0	2640.0	1190.0	650.0
Silver					0.4	0.6		
Sodium	121.0	194.0	173.0	169.0	138.0	1830.0	413.0	
Thallium						5.3		
Titanium	223.0	284.0	282.0	419.0	358.0	640.0	329.0	330.0
Vanadium	13.0	14.5	13.5	18.1	15.3	47.9	21.3	16.0
Zinc	21.1	19.9	21.0	26.4	18.7	74.4	34.2	18.0

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

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
SITE 9, BUILDING 410
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)							
Chemical Group/Analyte	MW410-2 3.5 - 4.0	MW410-2 6.5 - 7.0	MW410-2 9.5 - 10.0	MW410-2 12.5 - 13.0	MW410-2 15.5 - 16.0	MW410-3 1.0 - 1.5	MW410-3 4.0 - 4.5	MW410-3 6.0 - 6.5
Metals								
Aluminum	3720.0	3300.0	3750.0	3550.0	5220.0	3920.0	3110.0	3860.0
Arsenic							2.9	
Barium	42.0	45.0	24.0			51.2	44.0	29.2
Beryllium								
Cadmium								
Calcium	2600.0	6400.0	2000.0	1700.0	3500.0	14000.0	12400.0	2190.0
Chromium	25.0	21.0	25.0	22.0	20.0	34.4	26.5	38.7
Cobalt						4.5	3.4	3.9
Copper	23.0	6.1	6.0	20.0	58.0	27.9	7.6	9.6
Iron	6830.0	5450.0	5960.0	6220.0	7970.0	6660.0	5650.0	6730.0
Lead	7.0				8.6			
Magnesium		1700.0	2000.0	1900.0	2400.0	1990.0	1710.0	2030.0
Manganese	81.0	70.0	73.0	73.0	110.0	135.0	84.2	80.4
Nickel	21.0	17.0	20.0	20.0	23.0	23.1	17.7	20.8
Potassium	650.0		660.0		880.0	560.0	370.0	470.0
Silver								
Sodium						244.0	224.0	147.0
Thallium								
Titanium	320.0	340.0	360.0	340.0	280.0	329.0	252.0	358.0
Vanadium	16.0	14.0	16.0	15.0	18.0	16.7	14.6	17.3
Zinc	25.0	12.0	16.0	22.0	52.0	32.5	20.2	21.4

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

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
SITE 9, BUILDING 410
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)							
Chemical Group/Analyte	MW410-3 9.0 - 9.5	MW410-3 12.0 - 12.5	MW410-3 15.0 - 15.5	MW410-4 1.0 - 1.5	MW410-4 4.0 - 4.5	MW410-4 6.0 - 6.5	MW410-4 9.0 - 9.5	MW410-4 12.0 - 12.5
Metals								
Aluminum	3690.0	4570.0	3890.0	3300.0	2940.0	3960.0	3370.0	5170.0
Arsenic			3.7					
Barium	22.1	25.7	17.5	108.0	19.9	32.4	16.7	32.3
Beryllium								
Cadmium								
Calcium	1910.0	2040.0	4960.0	9970.0	1860.0	2310.0	1410.0	2030.0
Chromium	26.8	29.6	25.3	23.4	22.5	32.8	23.5	32.8
Cobalt	4.1	5.0	4.9	3.6	3.3	4.4	3.6	4.7
Copper	6.5	9.7	12.1	10.7	6.1	8.9	6.5	10.0
Iron	6390.0	7420.0	6370.0	5600.0	5420.0	7030.0	5680.0	8500.0
Lead								
Magnesium	2020.0	2350.0	1810.0	1840.0	1640.0	2140.0	1770.0	2520.0
Manganese	79.5	90.4	81.5	74.1	69.8	86.5	70.6	93.7
Nickel	21.2	24.1	17.4	18.9	18.5	22.1	18.6	27.5
Potassium	610.0	700.0	720.0	460.0	390.0	550.0	500.0	910.0
Silver								
Sodium	234.0	453.0	445.0	252.0	185.0	143.0	206.0	555.0
Thallium								
Titanium	324.0	367.0	223.0	294.0	234.0	418.0	262.0	435.0
Vanadium	16.0	17.2	13.6	14.0	12.9	18.7	13.1	19.3
Zinc	24.8	27.8	26.6	26.8	19.9	24.0	24.9	30.4

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

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
SITE 9, BUILDING 410
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)							
Chemical Group/Analyte	MW410-4 15.0 - 15.5	B410-5 0.5 - 1.0	B410-5 2.0 - 2.5	B410-5 5.5 - 6.0	B410-5 8.5 - 9.0	B410-5 11.0 - 11.5	B410-5 11.5 - 12.0	B410-5 14.5 - 15.0
Metals								
Aluminum	6160.0	3260.0	3110.0	2950.0	4020.0	28800.0	19300.0	5270.0
Arsenic	4.0	3.8	2.2			9.7	10.0	5.8
Barium	31.3	24.4	17.3	18.5	21.3	91.5	81.0	17.5
Beryllium		0.1	0.1	0.2	0.1	0.8	0.6	0.2
Cadmium		0.3	0.3	0.2	0.3	1.0	1.0	0.3
Calcium	6740.0	2320.0	1360.0	1340.0	1360.0	4050.0	4240.0	3740.0
Chromium	31.9	24.1	24.2	24.7	27.6	107.0	86.0	27.4
Cobalt	7.0	3.6	3.8	3.9	3.7	18.4	16.6	6.9
Copper	19.9	8.8	6.0	4.3	6.0	43.9	35.3	10.1
Iron	10700.0	6260.0	5950.0	5510.0	7140.0	39000.0	31500.0	8820.0
Lead	9.8					13.4	16.2	8.2
Magnesium	3030.0	1810.0	1820.0	1730.0	2240.0	10200.0	9570.0	2720.0
Manganese	144.0	95.8	73.6	62.5	79.1	375.0	461.0	120.0
Nickel	30.2	17.8	20.6	20.2	25.0	111.0	96.8	23.3
Potassium	1200.0	390.0	524.0	455.0	743.0	3740.0	3110.0	1190.0
Silver							1.0	
Sodium	788.0	231.0	336.0	129.0	375.0	2900.0	2800.0	855.0
Thallium								
Titanium	403.0	281.0	263.0	249.0	321.0	1190.0	615.0	276.0
Vanadium	22.8	14.8	14.4	12.7	16.0	70.8	55.3	18.9
Zinc	40.6	24.7	19.6	18.8	25.5	102.0	105.0	36.3

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

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
SITE 9, BUILDING 410
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)							
Chemical Group/Analyte	B410-6 0.5 - 1.0	B410-6 3.5 - 4.0	B410-6 4.0 - 4.5	B410-6 8.0 - 8.5	B410-6 10.0 - 10.5	B410-6 12.5 - 13.0	B410-6 14.5 - 15.0	B410-7 1.0 - 1.5
Metals								
Aluminum	4540.0	4150.0	4400.0	4260.0	4090.0	10900.0	6200.0	4360.0
Arsenic	4.2	4.3	2.6	3.4		6.5	3.4	3.3
Barium	38.0	18.8	23.3	23.6	36.8	61.9	57.1	53.4
Beryllium	0.2	0.1	0.1	0.1	0.1	0.5	0.2	
Cadmium	0.2	0.2			0.2	0.6		
Calcium	5710.0	2220.0	2430.0	2130.0	1940.0	3590.0	1600.0	5730.0
Chromium	37.3	29.1	30.4	29.9	31.0	57.0	41.3	29.4
Cobalt	4.2	4.4	4.2	3.7	3.8	9.8	5.7	4.2
Copper	5.3	5.9	4.5	5.8	5.0	18.7	9.5	39.8
Iron	7340.0	6830.0	6950.0	6940.0	6770.0	18300.0	11200.0	7920.0
Lead						8.8		
Magnesium	2150.0	2120.0	2110.0	1980.0	1950.0	5380.0	2890.0	2230.0
Manganese	928.0	83.0	83.0	80.4	85.7	267.0	125.0	128.0
Nickel	23.5	23.0	22.3	21.6	21.9	56.0	38.5	20.3
Potassium	638.0	582.0	573.0	620.0	622.0	1840.0	1070.0	910.0
Silver	0.4							
Sodium	272.0	200.0	166.0	219.0	478.0	2420.0	1620.0	266.0
Thallium		3.3						
Titanium	419.0	413.0	428.0	404.0	353.0	517.0	312.0	363.0
Vanadium	18.8	17.7	17.5	17.6	17.7	35.2	20.6	17.5
Zinc	21.5	22.9	22.1	25.3	21.9	54.4	28.3	40.4

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

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
SITE 9, BUILDING 410
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)							
Chemical Group/Analyte	B410-7 3.0 - 3.5	B410-7 6.0 - 6.5	B410-7 9.0 - 9.5	B410-7 11.5 - 12.0	B410-7 15.0 - 15.5	B410-8 1.0 - 1.5	B410-8 3.0 - 3.5	B410-8 4.5 - 5.0
Metals								
Aluminum	3380.0	7070.0	16000.0	16100.0	7580.0	3520.0	3630.0	3340.0
Arsenic			5.0	6.1	3.2			
Barium	22.3	128.0	58.5	98.2	29.2	94.0	66.0	86.0
Beryllium								
Cadmium								
Calcium	1750.0	1950.0	2950.0	2910.0	2640.0	4200.0	12000.0	5300.0
Chromium	25.8	41.4	66.1	81.7	44.3	27.0	22.0	22.0
Cobalt	4.1	6.4	12.8	13.7	6.7			
Copper	10.7	10.9	24.5	14.9	10.7	36.0	9.0	6.7
Iron	6170.0	11900.0	25700.0	26400.0	11900.0	6280.0	6280.0	5980.0
Lead			10.9					
Magnesium	2020.0	3170.0	7950.0	6140.0	3470.0	1700.0	1700.0	1600.0
Manganese	80.1	125.0	327.0	241.0	113.0	68.0	80.0	76.0
Nickel	20.8	33.9	67.5	88.5	40.6	19.0	18.0	18.0
Potassium	470.0	1110.0	2600.0	2200.0	1300.0	570.0	530.0	540.0
Silver								
Sodium	208.0	939.0	3510.0	3410.0	1130.0			
Thallium								
Titanium	245.0	465.0	451.0	756.0	479.0	320.0	330.0	320.0
Vanadium	14.0	26.3	41.5	46.3	26.0	15.0	16.0	15.0
Zinc	27.4	34.9	63.4	54.2	31.8	40.0	19.0	14.0

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

SUMMARY TABLE OF ANALYTICAL RESULTS: SOIL
SITE 9, BUILDING 410
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

	Boring Number/Sample Depth (feet)								
Chemical Group/Analyte	B410-8 6.0 - 6.5	B410-8 7.5 - 8.0	B410-8 9.0 - 9.5	B410-9 1.0 - 1.5	B410-9 3.0 - 3.5	B410-9 6.0 - 6.5	B410-9 9.0 - 9.5	B410-9 12.0 - 12.5	B410-9 15.0 - 15.5
Metals									
Aluminum	3680.0	3330.0	3070.0	11900.0	3880.0	2900.0	2880.0	4660.0	8970.0
Arsenic				5.9		3.5			6.0
Barium	51.0	42.0	28.0	198.0	22.9	29.5	49.4	31.1	56.4
Beryllium									
Cadmium									
Calcium	2300.0	2100.0	2200.0	12700.0	3060.0	2360.0	19200.0	2080.0	2850.0
Chromium	25.0	23.0	19.0	24.9	30.5	24.4	22.1	32.2	51.6
Cobalt				11.1	4.3	3.4	2.9	4.7	8.5
Copper	7.0	6.2	7.7	89.4	19.4	7.6	7.7	12.6	23.6
Iron	5660.0	5680.0	5370.0	19300.0	6410.0	5350.0	5090.0	8180.0	15400.0
Lead				9.1					12.9
Magnesium	1600.0	1600.0	1600.0	5860.0	1800.0	1570.0	1620.0	2720.0	4370.0
Manganese	64.0	63.0	72.0	1050.0	85.1	67.6	97.0	96.0	157.0
Nickel	17.0	18.0	17.0	33.7	18.3	16.5	14.6	29.3	46.8
Potassium		650.0		2400.0	470.0	310.0	340.0	860.0	1500.0
Silver									
Sodium				343.0	157.0	109.0	225.0	222.0	1080.0
Thallium									
Titanium	350.0	310.0	310.0	1020.0	366.0	282.0	274.0	365.0	609.0
Vanadium	16.0	15.0	13.0	31.9	16.6	13.8	12.8	17.1	30.2
Zinc	14.0	14.0	16.0	80.6	27.5	17.7	17.4	33.3	53.5

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
SITE 9, BUILDING 410
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
OTHER ANALYTICAL TESTS

Boring Location/Depth	pH	CEC (mg/kg)	TOC (mg/kg)
MW410-1 1.0 - 1.5		2.9	263
MW410-1 3.0 - 3.5	9.4		
MW410-2 2.0 - 2.5		2.88	263
MW410-2 3.5 - 4.0	10.0		
MW410-3 1.5 - 2.0		2.56	263
MW410-3 4.0 - 4.5	9.39		
MW410-4 2.5 - 3.0		2.08	210
MW410-4 4.0 - 4.5	9.89		
B410-5 1.0 - 1.5		3.1	316
B410-5 2.5 - 3.0	10.0		
B410-6 1.0 - 1.5		2.7	210
B410-6 3.5 - 4.0	9.7		
B410-7 3.0 - 3.5	9.57		
B410-7 4.0 - 4.5		5.6	1680
B410-8 1.5 - 2.0		2.8	473
B410-8 3.0 - 3.5	8.3		
B410-9 1.5 - 2.0		3.12	263
B410-9 3.0 - 3.5	9.3		

Notes:

1. Analytical results are presented in units as shown.

2. Sample depths are presented in feet.

TABLE 2

SUMMARY TABLE OF ANALYTICAL RESULTS: WATER
SITE 9, BUILDING 410
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

Chemical Group/Analyte	Units	Well Number MW410-1	MW410-2	MW410-3	MW410-4
Volatile Organics					
Methylene Chloride	ug/l	11.	10.	11.	10.
Metals					
Aluminum	mg/l	89	38	98	85
Arsenic	mg/l	0.054		0.07	
Barium	mg/l	0.33	0.3	0.62	0.35
Calcium	mg/l	30	57	83	36
Chromium	mg/l	0.27	0.15	0.35	0.34
Cobalt	mg/l			0.063	0.06
Copper	mg/l	0.12	0.074	0.14	0.12
Iron	mg/l	114	57	136	136
Lead	mg/l	0.088		0.09	0.058
Magnesium	mg/l	41	35	65	40
Manganese	mg/l	1.5	0.87	1.5	1.2
Nickel	mg/l	0.29	0.17	0.47	0.36
Potassium	mg/l	26	19	39	23
Selenium	mg/l				0.055
Silver	mg/l	0.013			
Sodium	mg/l	246	151	143	53
Titanium	mg/l	2.4	1.4	3.9	2.6
Vanadium	mg/l	0.23	0.11	0.28	0.25
Zinc	mg/l	0.31	0.16	0.35	0.28
Total Organic Carbon	mg/l	4.7	12.0	7.2	7.8
General Minerals					
Alkalinity, bicarb (as CaCO3)	mg/l	220.	470.	450.	150.
Alkalinity, carb (as CaCO3)	mg/l				8.
Alkalinity, total (as CaCO3)	mg/l	220.	470.	450.	160.
Total Hardness	mg/l	244.	290.	475.	250.
Chloride	mg/l	382.	28.	42.	13.
Sulfate	mg/l	15.	43.	140.	18.
Foaming Agents (MBAS)	mg/l		0.38		
Total Dissolved Solids	mg/l	990.	660.	846.	320.
Specific Conductance	umhos/c	1560	1020	1070	380
pH	-	7.8	7.7	7.4	8.4
Calcium	mg/l	30.	57.	83.	36.

TABLE 2

SUMMARY TABLE OF ANALYTICAL RESULTS: WATER
SITE 9, BUILDING 410
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

Chemical Group/Analyte	Units	Well Number			
		MW410-1	MW410-2	MW410-3	MW410-4
General Minerals					
Copper	mg/l	0.12	0.074	0.14	0.12
Iron	mg/l	114.	57.	136.	136.
Magnesium	mg/l	41.	35.	65.	40.
Manganese	mg/l	1.5	0.9	1.5	1.2
Sodium	mg/l	246.	151.	143.	53.
Zinc	mg/l	0.31	0.16	0.35	0.28

Notes:

1. Shaded chemical concentrations denote those concentrations exceeding Maximum Contamination Levels.

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)
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	7	7	
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)
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)	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)	SHC (mg/l)	THC (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)	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

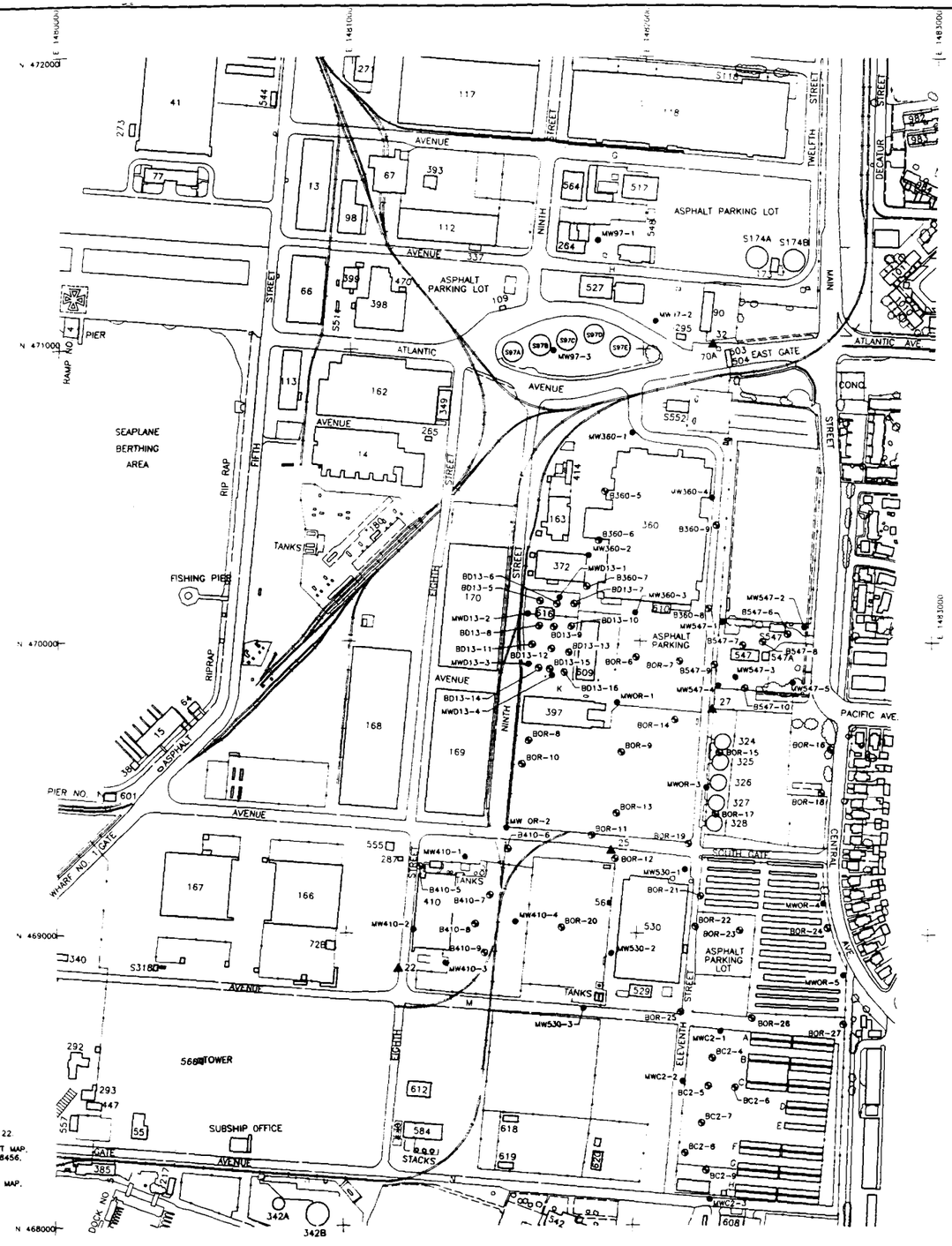
COMPARISON OF ACTION LEVELS FOR VARIOUS CHEMICAL GROUPS
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

Chemical Group/Analyte	MCL (mg/l)	STLC (mg/l)	TTLC (mg/kg)	AAL			
				Biological Receptor	Water (ug/L)	Air (ug/m3)	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.

DRAWING NUMBER 86-018-E87



LEGEND:

- B360-5 SOIL BORING LOCATION
- MW97-2 MONITORING WELL LOCATION
- ▲22 SURVEY MONUMENT

SCALE
200 0 200 400 FEET

PHASE 2A
MONITORING WELL AND
SOIL BORING LOCATIONS
NAVAL AIR STATION
ALAMEDA, CALIFORNIA

PREPARED FOR

WESTERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
SAN BRUNO, CALIFORNIA

REFERENCES:

1. NAVAL AIR STATION ALAMEDA GENERAL DEVELOPMENT MAP, SHEETS 18 & 22.
2. NAVAL AIR STATION ALAMEDA, ALAMEDA, CALIFORNIA GENERAL DEVELOPMENT MAP, STATION MAP WITH SURVEY MONUMENTS ADDED, NAVFAC DRAWING NO. 638456, REVISION 8, DATED SEPTEMBER 15, 1986.
3. NAVAL AIR STATION, ALAMEDA, CALIFORNIA, STATION BENCHMARK LOCATION MAP, PWC DRAWING NO. 25144, DATED JANUARY 1985

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
2	11-9-90	ISSUED FOR PHASE 2A SURVEY DATA REPORT	VZC	TCB	RJG
1	10-17-90	ISSUED FOR ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT PERMIT NO. 90385	VZC	TCB	RJG

Canonie Environmental

DATE: 10-9-90	FIGURE 1	DRAWING NUMBER 86-018-E87	2
SCALE: AS SHOWN			

APPENDIX A

CERTIFIED ANALYTICAL RESULTS

N00236.000796
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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