N00236.000797
ALAMEDA POINT
SSIC NO. 5090.3

December 1990 86-018-1810

# PHASE 2A ANALYTICAL RESULTS FOR SITE 10, BUILDING 530 REMEDIAL INVESTIGATION/FEASIBILITY STUDY NAVAL AIR STATION ALAMEDA ALAMEDA, CALIFORNIA

**ENCLOSURE 7**

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

Copyright 1990, Canonie Environmental Services Corp.

CanonieEnvironmental

**Canonie** Environmental

Canonie Environmental Services Corp.
1825 South Grant Street
Suite 260
San Mateo, California 94402

Phone: 415-573-8012
FAX: 415-573-5654

December 5, 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 10, Building 530
Remedial Investigation/Feasibility Study
Naval Air Station Alameda
Alameda, California

Dear Ms. Dizon:

This report presents the Phase 2A analytical results for Site 10, Building 530, 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 (referenced from Table 3) are highlighted on these tables. Certified analytical reports are provided in Appendix A and 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/rr

Enclosures

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

# LIST OF TABLES


| TABLE NUMBER | TITLE |
|---|---|
| 1A | Summary Table of Analytical Results: Soil Site 10 ~~Site 19~~, Yard D-13 |
| 1B | Summary Table of Analytical Results: Soils Site 10 ~~Site 19~~, Yard D-13, Other Analytical Tests |
| 2 | Summary Table of Analytical Results: Water Site 10 ~~Site 19~~, Yard D-13 |
| 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 10, BUILDING 530
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

| | Boring Number/Sample Depth (feet) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Chemical Group/Analyte | MW530-1 2.5 - 3.0 | MW530-1 6.0 - 6.5 | MW530-1 8.5 - 9.0 | MW530-1 11.5 - 12.0 | MW530-1 13.5 - 14.0 | MW530-2 2.0 - 2.5 | MW530-2 5.0 - 5.5 | MW530-2 8.0 - 8.5 |
| Volatile Organics | | | | | | | | |
| Methylene Chloride | | | 53. | 1800. | 11. | 6. | 5. | 11. |
| Acetone | | 30. | 91. | | | | | |
| Toluene | 77. | 8. | 38. | | 140. | 72. | | 8. |
| Ethyl benzene | | | 36. | 6200. | 11. | | | |
| Xylenes (total) | | | 170. | 12000. | | | | |

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 10, BUILDING 530
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

| | Boring Number/Sample Depth (feet) | | | | | | |
|---|---|---|---|---|---|---|---|
| Chemical Group/Analyte | MW530-2 11.0 - 11.5 | MW530-2 14.0 - 14.5 | MW530-3 2.0 - 2.5 | MW530-3 4.0 - 4.5 | MW530-3 7.0 - 7.5 | MW530-3 10.0 - 10.5 | MW530-3 11.5 - 12.0 |
| Volatile Organics | | | | | | | |
| Methylene Chloride | 7. | 6. | | 7. | | 7. | 9. |
| Acetone | 18. | | | | | 18. | |
| Toluene | 10. | 31. | 1100. | | 30. | 22. | |
| Ethyl benzene | | | | | | | |
| 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 10, BUILDING 530
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

| | Boring Number/Sample Depth (feet) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Chemical Group/Analyte | MW530-1 1.0 - 1.5 | MW530-1 3.0 - 3.5 | MW530-1R 7.5 - 8.0 | MW530-1 12.0 - 12.5 | MW530-1 14.0 - 14.5 | MW530-2 2.5 - 3.0 | MW530-2 5.5 - 6.0 | MW530-2R 6.0 - 6.5 |
| Semivolatile Organics | | | | | | | | |
| Di-n-bultylphthalate | 1600. | 3800. | 4500. | | 12000. | 1000. | 610. | 400. |
| 2-Methylnaphthalene | | | | 41000. | | | | |
| Pyrene | | | | | | | | |

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 10, BUILDING 530
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

| | Boring Number/Sample Depth (feet) | | | | | | |
|---|---|---|---|---|---|---|---|
| Chemical Group/Analyte | MW530-2 8.5 - 9.0 | MW530-2 11.5 - 12.0 | MW530-3 2.5 - 3.0 | MW530-3 5.0 - 5.5 | MW530-3 8.0 - 8.5 | MW530-3R 8.5 - 9.0 | MW530-3 12.5 - 13.0 |
| Semivolatile Organics | | | | | | | |
| Di-n-bultylphthalate | 600. | 4300. | 700. | 560. | 920. | 1900. | 5400. |
| 2-Methylnaphthalene | | | | | | | |
| Pyrene | | 970. | | | | | |

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 10, BUILDING 530
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

| | Boring Number/Sample Depth (feet) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Chemical Group/Analyte | MW530-1 1.0 - 1.5 | MW530-1 3.0 - 3.5 | MW530-1 6.5 - 7.0 | MW530-1R 7.5 - 8.0 | MW530-1 9.0 - 9.5 | MW530-1 12.0 - 12.5 | MW530-1 14.0 - 14.5 | MW530-2 0.5 - 1.0 |
| **Metals** | | | | | | | | |
| Aluminum | 7000.0 | 3710.0 | 6200.0 | 5240.0 | 1700.0 | 7730.0 | 370.0 | 4290.0 |
| Arsenic | | | | | | 12.0 | | |
| Barium | 88.0 | 53.0 | 41.0 | 42.0 | 120.0 | 60.0 | 64.0 | 34.0 |
| Cadmium | 1.2 | | | | | | | |
| Calcium | 9000.0 | 5000.0 | 3700.0 | 15000.0 | 1400.0 | 1700.0 | 710.0 | 4600.0 |
| Chromium | 23.0 | 22.0 | 31.0 | 23.0 | 18.0 | 45.0 | | 26.0 |
| Cobalt | 5.6 | | | | | | | |
| Copper | 23.0 | 18.0 | 42.0 | 37.0 | 24.0 | 11.0 | 20.0 | 29.0 |
| Iron | 11500.0 | 7260.0 | 12200.0 | 13100.0 | 15500.0 | 10700.0 | 1500.0 | 6890.0 |
| Lead | 31.0 | 59.0 | 15.0 | 25.0 | 15.0 | | 18.0 | 6.4 |
| Magnesium | 3200.0 | 1900.0 | 3200.0 | 2200.0 | | 2200.0 | | 2100.0 |
| Manganese | 210.0 | 90.0 | 110.0 | 100.0 | 13.0 | 54.0 | | 89.0 |
| Nickel | 20.0 | 21.0 | 38.0 | 25.0 | | 25.0 | | 22.0 |
| Potassium | 2100.0 | 550.0 | 1200.0 | 750.0 | 770.0 | 1400.0 | | 680.0 |
| Sodium | | | 770.0 | | 690.0 | 660.0 | | |
| Titanium | 661.0 | 330.0 | 400.0 | 310.0 | 2540.0 | 420.0 | 330.0 | 340.0 |
| Vanadium | 21.0 | 16.0 | 22.0 | 16.0 | 12.0 | 42.0 | | 16.0 |
| Zinc | 79.0 | 56.0 | 48.0 | 54.0 | 19.0 | 22.0 | 10.0 | 31.0 |

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
SITE 10, BUILDING 530
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

| | Boring Number/Sample Depth (feet) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Chemical Group/Analyte | MW530-2 2.5 - 3.0 | MW530-2 5.5 - 6.0 | MW530-2R 6.0 - 6.5 | MW530-2 8.5 - 9.0 | MW530-2 11.5 - 12.0 | MW530-2 14.5 - 15.0 | MW530-3 0.5 - 1.0 | MW530-3 2.5 - 3.0 |
| **Metals** | | | | | | | | |
| Aluminum | 3130.0 | 3180.0 | 3930.0 | 3720.0 | 3400.0 | 5700.0 | 3350.0 | 2880.0 |
| Arsenic | | | | | | | | |
| Barium | 300.0 | | 28.0 | | | 34.0 | 47.0 | 25.0 |
| Cadmium | | | | | | | | |
| Calcium | 17000.0 | 2900.0 | 2700.0 | 1600.0 | 1400.0 | 2600.0 | 9900.0 | 25000.0 |
| Chromium | 19.0 | 19.0 | 23.0 | 20.0 | 20.0 | 28.0 | 31.0 | 18.0 |
| Cobalt | | | | | | | | |
| Copper | 9.1 | 7.7 | 32.0 | 11.0 | 10.0 | 14.0 | 14.0 | 19.0 |
| Iron | 4860.0 | 5210.0 | 7070.0 | 6740.0 | 6770.0 | 10700.0 | 5820.0 | 4690.0 |
| Lead | | | | | | | | |
| Magnesium | 1700.0 | 1700.0 | 2300.0 | 2100.0 | 1900.0 | 3200.0 | 1800.0 | 1600.0 |
| Manganese | 80.0 | 71.0 | 82.0 | 76.0 | 71.0 | 120.0 | 82.0 | 80.0 |
| Nickel | 17.0 | 19.0 | 23.0 | 23.0 | 21.0 | 31.0 | 20.0 | 17.0 |
| Potassium | | | 690.0 | 660.0 | 600.0 | 1100.0 | | |
| Sodium | | | | 680.0 | 1000.0 | 2400.0 | 600.0 | 550.0 |
| Titanium | 290.0 | 290.0 | 320.0 | 330.0 | 280.0 | 320.0 | 280.0 | 280.0 |
| Vanadium | 14.0 | 13.0 | 15.0 | 14.0 | 13.0 | 20.0 | 15.0 | 12.0 |
| Zinc | 21.0 | 17.0 | 30.0 | 20.0 | 21.0 | 30.0 | 23.0 | 22.0 |

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
SITE 10, BUILDING 530
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

| | Boring Number/Sample Depth (feet) | | | | |
|---|---|---|---|---|---|
| Chemical Group/Analyte | MW530-3 5.0 - 5.5 | MW530-3 8.0 - 8.5 | MW530-3R 8.5 - 9.0 | MW530-3 10.5 - 11.0 | MW530-3 12.5 - 13.0 |
| Metals | | | | | |
| Aluminum | 3800.0 | 4680.0 | 3720.0 | 17000.0 | 6930.0 |
| Arsenic | | | | | |
| Barium | | 26.0 | | 78.0 | 37.0 |
| Cadmium | | | | | |
| Calcium | 3100.0 | 2000.0 | 1600.0 | 3600.0 | 5200.0 |
| Chromium | 23.0 | 27.0 | 21.0 | 61.0 | 29.0 |
| Cobalt | | | | 12.0 | |
| Copper | 7.5 | 8.0 | 6.8 | 71.0 | 26.0 |
| Iron | 6460.0 | 7860.0 | 6700.0 | 26600.0 | 11200.0 |
| Lead | | | | 18.0 | 8.8 |
| Magnesium | 1800.0 | 2500.0 | 2200.0 | 7500.0 | 3200.0 |
| Manganese | 76.0 | 85.0 | 75.0 | 300.0 | 140.0 |
| Nickel | 19.0 | 25.0 | 22.0 | 71.0 | 30.0 |
| Potassium | | 780.0 | 640.0 | 2500.0 | 1100.0 |
| Sodium | | | | 3400.0 | 1300.0 |
| Titanium | 360.0 | 360.0 | 310.0 | 640.0 | 380.0 |
| Vanadium | 16.0 | 17.0 | 14.0 | 48.0 | 22.0 |
| Zinc | 17.0 | 22.0 | 21.0 | 130.0 | 41.0 |

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
SITE 10, BUILDING 530
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
OTHER ANALYTICAL TESTS

| Boring Location/Depth | TPH (mg/kg) | pH |
|---|---|---|
| MW530-1 2.5'-3.0' | 170.0 | |
| MW530-1 5.5'-6.0' | 5.2 | |
| MW530-1 6.0'-6.5' | 103.0 | |
| MW530-1 8.5'-9.0' | 7460.0 | |
| MW530-1 11.5'-12.0' | 7560.0 | |
| MW530-1 13.5'-14.0' | 35.3 | |
| MW530-2 2.0'-2.5' | 31.3 | |
| MW530-2 14.0'-14.5' | 10.5 | |
| MW530-3 2.0'-2.5' | 39.5 | |
| MW530-3 11.5'-12.0' | 8.7 | |
| MW530-1 3.0'-3.5' | | 9.2 |
| MW530-2 2.5'-3.0' | | 9.2 |
| MW530-3 2.5'-3.0' | | 9.1 |

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 10, BUILDING 530
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

| Chemical Group/Analyte | Units | Well Number MW530-1 | MW530-2 | MW530-3 |
|---|---|---|---|---|
| Volatile Organics | | | | |
| Benzene | ug/l | 19. | | |
| Ethylbenzene | ug/l | 79. | | |
| Methylene Chloride | ug/l | 7. | 7. | 12. |
| Toluene | ug/l | 7. | | |
| Xylenes (total) | ug/l | 190. | | |
| Semivolatile Organics | | | | |
| 2-Methylnaphthalene | ug/l | 390. | | |
| Naphthalene | ug/l | 250. | | |
| Total Petroleum Hydrocarbons | mg/l | 72.6 | | 0.18 |
| Metals | | | | |
| Aluminum | mg/l | 54 | 92 | 129 |
| Arsenic | mg/l | 0.057 | | 0.11 |
| Barium | mg/l | 2.4 | 0.47 | 0.53 |
| Cadmium | mg/l | | | 0.0065 |
| Calcium | mg/l | 129 | 43 | 107 |
| Chromium | mg/l | 0.34 | 0.3 | 0.4 |
| Cobalt | mg/l | | 0.063 | 0.073 |
| Copper | mg/l | 0.16 | 0.17 | 0.19 |
| Iron | mg/l | 162 | 141 | 160 |
| Lead | mg/l | 0.36 | 0.11 | |
| Magnesium | mg/l | 33 | 45 | 56 |
| Manganese | mg/l | 0.77 | 1.7 | 2.4 |
| Nickel | mg/l | 0.17 | 0.35 | 0.45 |
| Potassium | mg/l | 30 | 26 | 25 |
| Selenium | mg/l | 0.068 | | |
| Silver | mg/l | 0.018 | | |
| Sodium | mg/l | 274 | 237 | 65 |
| Titanium | mg/l | 12 | 2.4 | 3.5 |
| Vanadium | mg/l | 0.3 | 0.3 | 0.33 |
| Zinc | mg/l | 0.28 | 0.36 | 0.44 |
| Total Organic Carbon | mg/l | 22.9 | 95.0 | 28.3 |

TABLE 2

SUMMARY TABLE OF ANALYTICAL RESULTS: WATER
SITE 10, BUILDING 530
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

| Chemical Group/Analyte | Units | Well Number MW530-1 | MW530-2 | MW530-3 |
|---|---|---|---|---|
| General Minerals | | | | |
| Alkalinity, bicarb (as CaCO3) | mg/l | 380. | 680. | |
| Alkalinity, carb (as CaCO3) | mg/l | 30. | | |
| Alkalinity, total (as CaCO3) | mg/l | 410. | 680. | |
| Total Hardness | mg/l | | | 498. |
| Chloride | mg/l | 73. | 71. | 63. |
| Sulfate | mg/l | 16. | 195. | 25. |
| Oil & Grease | mg/l | 48. | | |
| Total Dissolved Solids | mg/l | 970. | 1370. | 610. |
| Specific Conductance | umhos/c | 1050 | 1880 | 900 |
| pH | – | 8.3 | 6.7 | 7.6 |
| Calcium | mg/l | 129. | 43. | 107. |
| Copper | mg/l | 0.16 | 0.17 | 0.19 |
| Iron | mg/l | 162. | 141. | 160. |
| Magnesium | mg/l | 33. | 45. | 56. |
| Manganese | mg/l | 0.77 | 1.7 | 2.4 |
| Sodium | mg/l | 274. | 237. | 65. |
| Zinc | mg/l | 0.28 | 0.36 | 0.44 |

Notes:

1. Shaded concentrations denote concentrations in excess of Maximum Contaminant Levels or Applied Action Limits.

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) | 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) | 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

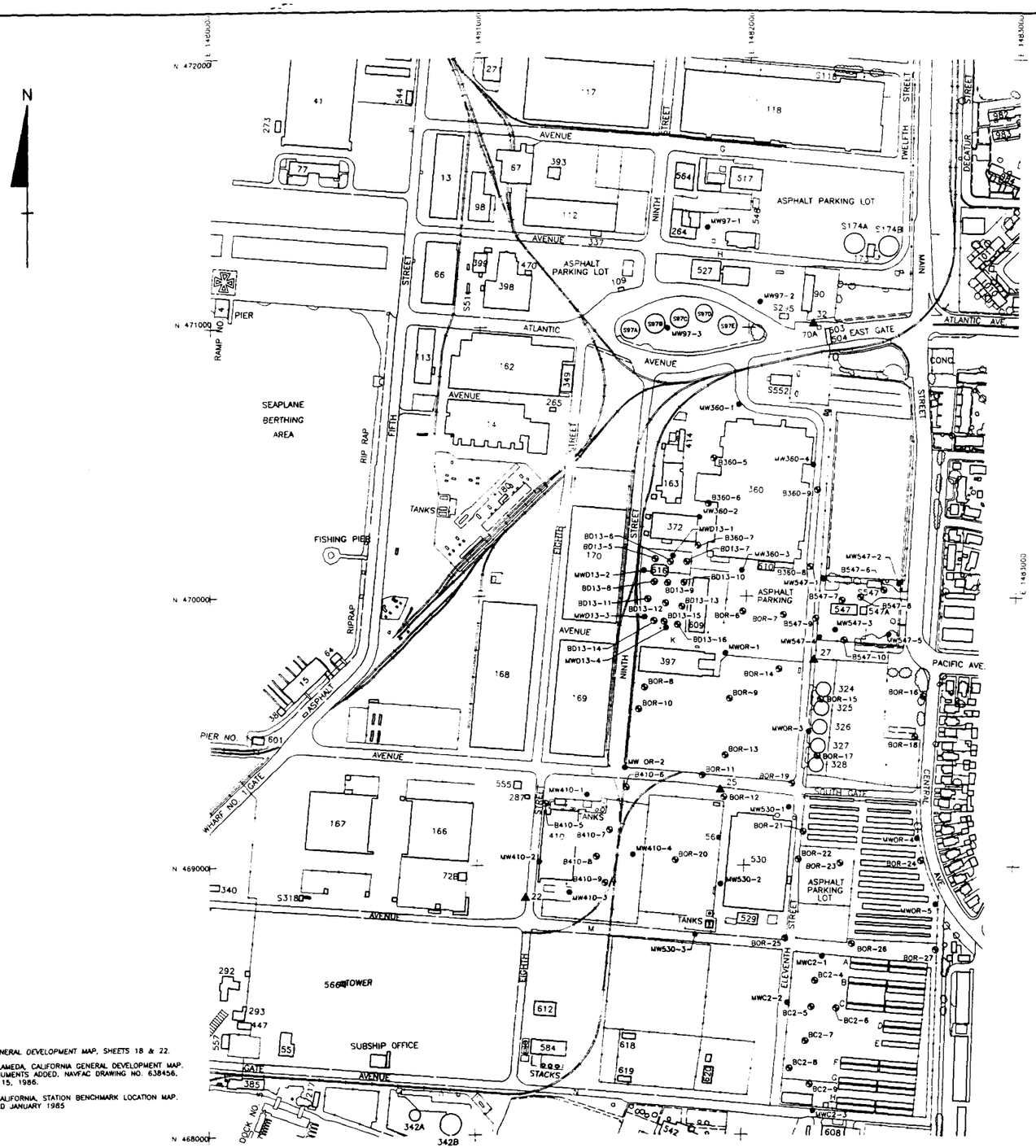
COMPARISON OF ACTION LEVELS FOR VARIOUS CHEMICAL GROUPS
NAS ALAMEDA
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

| 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.

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

# APPENDIX A – CERTIFIED ANALYTICAL RESULTS

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

DUE TO EXTENSIVE VOLUME, THIS DATA WILL NOT BE IMAGED.

TO VIEW THE DATA, CONTACT:

**DIANE C. SILVA**
**RECORDS MANAGEMENT SPECIALIST**
**NAVAL FACILITIES ENGINEERING COMMAND SOUTHWEST**
**1220 PACIFIC HIGHWAY**
**SAN DIEGO, CA 92132**

**TELEPHONE: (619) 532-3676**