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MCAS EL TORO
SSIC # 5090.3

HADLEY INDUSTRIES
environmental technologies

# MCAS EL TORO

# AQUASORB™ TREATMENT SYSTEM

# MONITORING REPORT

# MAY 1992

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CONTRACT #N68711-91-D-0309
CONTRACT AMOUNT: $55,224.00
CONTRACT COMPETITIVELY AWARDED

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# MCAS EL TORO
# AQUASORB[tm] GROUNDWATER TREATMENT SYSTEM
# MONITORING REPORT
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## BACKGROUND

Hadley Industries Environmental Technologies has been contracted by the Department of Navy to operate and maintain the groundwater remediation system at the MCAS El Toro Base in Santa Ana, California. This is the May 1992 monthly monitoring report.

The system consists of three purge wells (PS#1, PS#3, and PS#4) which pump groundwater from the southwestern perimeter of the Base. The purged groundwater is directed to a central area for treatment through the Aquasorb[tm] two-stage granular activated carbon (GAC) system. Treated water is pumped to a holding tank and utilized for the irrigation system at the Base golf course. The system has been operated and maintained by Hadley Industries since July 11, 1991.

## SAMPLE COLLECTION AND ANALYSIS

Five samples were collected on May 5, 1992 for analysis. Samples collected included: one INFLUENT sample, one BETWEEN STAGE sample, one EFFLUENT sample, and one sample from PS#3, and one sample from PS#4. Analytical results are compiled in Appendix A. A comparison chart of analytical results for the INFLUENT, BETWEEN STAGE, and EFFLUENT is shown in Table 1. A comparison of analytical results for PS#1, PS#3, and PS#4 is shown in Table 2.

## OPERATIONAL DATA

May 5, 1992

System inspection by Richard Sidlin. Irrigation tank flow meter is still not operating. Monthly and quarterly samples were collected and sent to Pacific Laboratories. PS#1 was not operating. Initial troubleshooting indicated a problem in the electrical panel. PS#1 could not be restarted. No Quarterly sample was obtained from this well. A cost proposal for further testing, repairs, and/or replacement of pump equipment for this well will follow.

May 6, 1992

Richard Sidlin performed further testing on PS#1. There is an electrical problem with the controls for this pump, which will require additional work by a pump specialist. Was unable to restart PS#1.

May 26,1992

Routine rounds and readings were performed by Richard Sidlin. PS#1 was still not operating. The irrigation tank flow meter is not functioning.

TABLE 1

EL TORO INTERIM GROUNDWATER TREATMENT SYSTEM

SUMMARY OF ANALYTICAL RESULTS

| | Sample Date, Concentration, ppb (ug/L) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Location/Compound | 19-Aug-91 | 10-Sep-91 | 09-Oct-91 | 26-Nov-91 | 10-Dec-91 | 07-Jan-92 | 04-Feb-92 | 05-Mar-92 | 07-Apr-92 | 05-May-92 |
| GAC INFLUENT | | | | | | | | | | |
| PCE | 19 | 42 | 41 | 37 | 40 | 35 | 37 | 33 | ND | 37 |
| TCE | 36 | 47 | 53 | 85 | 79 | 69 | 68 | 78 | 18 | 55 |
| 1, 2-Dichloroethene (total) | 2 | 3 | 4 | 3 | ND | ND | ND | ND | ND | ND |
| Acetone | 22 | ND | ND | ND | 20 | ND | 5 | 12 | 38 | 21 |
| Methylene Chloride | 10 | ND | 3 | 8 | 7 | ND | 8 | 6 | 86 | 5 |
| Chloroform | ND | 1 | 1 | 2 | ND | ND | ND | ND | ND | ND |
| Chloromethane | ND | ND | ND | ND | 23 | ND | ND | ND | ND | ND |
| Chloroethane | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Carbon Disulfide | ND | ND | ND | ND | ND | ND | ND | 6 | ND | ND |
| Bromomethane | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Vinyl Chloride | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,1-Dichloroethene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,1-Dichloroethane | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,2-Dichloroethane | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 2-Butanone | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,1,1-Trichloroethane | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Carbon Tetreachloride | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Bromodichloromethane | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,2-Dichloropropane | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| cis-1,3-Dichloropropane | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Dibromochloromethane | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,1,2-Trichloroehtane | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Benzene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| trans-1,3-dichloropropene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Bromoform | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 4-Methyl-2-Pentanone | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 2-Hexanone | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,1,2,2-Tetrachloroethane | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Toluene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Chlorobenzene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Ethylbenzene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Styrene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Xylenes (total) | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

Table 1 Page 2

| Location/Compound | 19-Aug-91 | 10-Sep-91 | 09-Oct-91 | 26-Nov-91 | 10-Dec-91 | 07-Jan-92 | 04-Feb-92 | 05-Mar-92 | 07-Apr-92 | 05-May-92 |
|---|---|---|---|---|---|---|---|---|---|---|
| GAC BETWEEN | | | | | | | | | | |
| Methylene Chloride | A | 2 | 5 | 22 | 8 | 74 | 5 | 8 | 29 | ND |
| Acetone | ND | ND | ND | ND | 7 | 16 | ND | 9 | 14 | 6 |
| Chloromethane | ND | ND | ND | ND | 5 | ND | ND | ND | ND | ND |
| Chloroform | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Chloroethane | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Carbon Disulfide | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Bromomethane | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Vinyl Chloride | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,1-Dichloroethene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,1-Dichloroethane | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,2-Dichloroethene (total) | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 2-Butanone | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,2-Dichloroethane | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,1,1-Trichloroethane | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Carbon Tetreachloride | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Bromodichloromethane | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,2-Dichloropropane | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| cis-1,3-Dichloropropane | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Dibromochloromethane | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,1,2-Trichloroehtane | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Benzene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| trans-1,3-dichloropropene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Bromoform | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 4-Methyl-2-Pentanone | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| TCE | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| PCE | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 2-Hexanone | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,1,2,2-Tetrachloroethane | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Toluene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Chlorobenzene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Ethylbenzene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Styrene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Xylenes (total) | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

| Location/Compound | 19-Aug-91 | 10-Sep-91 | 09-Oct-91 | 26-Nov-91 | 10-Dec-91 | 07-Jan-92 | 04-Feb-92 | 05-Mar-92 | 07-Apr-92 | 05-May-92 |
|---|---|---|---|---|---|---|---|---|---|---|
| GAC EFFLUENT | | | | | | | | | | |
| Methylene Chloride | 7 | 4 | 4 | 25 | 8 | 7 | ND | 8 | 12 | 5 |
| Acetone | 12 | ND | ND | ND | 5 | ND | ND | 7 | 20 | 11 |
| Chloroform | 2 | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Chloromethane | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Chloroethane | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Carbon Disulfide | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Bromomethane | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Vinyl Chloride | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,1-Dichloroethene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,1-Dichloroethane | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,2-Dichloroethene (total) | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 2-Butanone | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,2-Dichloroethane | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,1,1-Trichloroethane | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Carbon Tetreachloride | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Bromodichloromethane | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,2-Dichloropropane | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| cis-1,3-Dichloropropane | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Dibromochloromethane | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,1,2-Trichloroehtane | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Benzene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| trans-1,3-dichloropropene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Bromoform | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 4-Methyl-2-Pentanone | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| TCE | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| PCE | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 2-Hexanone | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,1,2,2-Tetrachloroethane | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Toluene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Chlorobenzene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Ethylbenzene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Styrene | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Xylenes (total) | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

LEGEND:
NA - No analysis
ND - Not detected
(A) - No between stage in place

TABLE 2

EL TORO INTERIM GROUNDWATER TREATMENT SYSTEM

| | Sample Date, Concentration, ppb (ug/L) | | | |
|---|---|---|---|---|
| Location/compound | 8/19/91 | 11/26/91 | 02/04/92 | 05/05/92 |
| PS-1 | | | | |
| Acetone | 8 | ND | ND | NS |
| TCE | 17 | 8 | 5 | NS |
| Methylene Chloride | 15 | 21 | ND | NS |
| 1,2-Dichloroethene (total) | ND | ND | ND | NS |
| Chloroform | ND | ND | ND | NS |
| 1,1,2-Trichloroethane | ND | ND | ND | NS |
| PCE | ND | ND | ND | NS |
| Chloromethane | ND | ND | ND | NS |
| Bromomethane | ND | ND | ND | NS |
| Vinyl Chloride | ND | ND | ND | NS |
| Chloroehtane | ND | ND | ND | NS |
| Carbon Disulfide | ND | ND | ND | NS |
| 1,1-Dichloroethene | ND | ND | ND | NS |
| 1,1-Dichloroethane | ND | ND | ND | NS |
| 1,2-Dichloroethane | ND | ND | ND | NS |
| 2-Butanone | ND | ND | ND | NS |
| 1,1'1-Trichloroethane | ND | ND | ND | NS |
| Carbon Tetrachloride | ND | ND | ND | NS |
| Bromodichloromethane | ND | ND | ND | NS |
| 1,2-Dichloropropane | ND | ND | ND | NS |
| cis-1,3-Dichloropropane | ND | ND | ND | NS |
| Dibromochloromethane | ND | ND | ND | NS |
| Benzene | ND | ND | ND | NS |
| trans-1,3-dichloropropane | ND | ND | ND | NS |
| Bromoform | ND | ND | ND | NS |
| 4-Methyl-2-Pentanone | ND | ND | ND | NS |
| 2-Hexanone | ND | ND | ND | NS |
| 1,1,2,2-Tetrachloroethane | ND | ND | ND | NS |
| Toluene | ND | ND | ND | NS |
| Chlorobenzene | ND | ND | ND | NS |
| Ethylbenzene | ND | ND | ND | NS |
| Stryene | ND | ND | ND | NS |
| Xylenes (total) | ND | ND | ND | NS |

Table 2 Page 2

| Location/compound | 8/19/91 | 11/26/91 | 02/04/92 | 05/05/92 |
|---|---|---|---|---|
| PS-3 | | | | |
| Methylene Chloride | 5 | 15 | 5 | ND |
| Acetone | 9 | ND | ND | 9 |
| 1,2-Dichloroethene (total) | 3 | 3 | ND | ND |
| Chloroform | 2 | 2 | ND | ND |
| TCE | 50 | 90 | 43 | 67 |
| 1,1,2-Trichloroethane | 2 | 3 | ND | ND |
| PCE | 34 | 41 | 47 | 41 |
| Chloromethane | ND | ND | ND | ND |
| Bromomethane | ND | ND | ND | ND |
| Vinyl Chloride | ND | ND | ND | ND |
| Chloroehtane | ND | ND | ND | ND |
| Carbon Disulfide | ND | ND | ND | ND |
| 1,1-Dichloroethene | ND | ND | ND | ND |
| 1,1-Dichloroethane | ND | ND | ND | ND |
| 1,2-Dichloroethane | ND | ND | ND | ND |
| 2-Butanone | ND | ND | ND | ND |
| 1,1'1-Trichloroethane | ND | ND | ND | ND |
| Carbon Tetrachloride | ND | ND | ND | ND |
| Bromodichloromethane | ND | ND | ND | ND |
| 1,2-Dichloropropane | ND | ND | ND | ND |
| cis-1,3-Dichloropropane | ND | ND | ND | ND |
| Dibromochloromethane | ND | ND | ND | ND |
| Benzene | ND | ND | ND | ND |
| trans-1,3-dichloropropane | ND | ND | ND | ND |
| Bromoform | ND | ND | ND | ND |
| 4-Methyl-2-Pentanone | ND | ND | ND | ND |
| 2-Hexanone | ND | ND | ND | ND |
| 1,1,2,2-Tetrachloroethane | ND | ND | ND | ND |
| Toluene | ND | ND | ND | ND |
| Chlorobenzene | ND | ND | ND | ND |
| Ethylbenzene | ND | ND | ND | ND |
| Stryene | ND | ND | ND | ND |
| Xylenes (total) | ND | ND | ND | ND |

Table 2 Page 3

| Location/compound | 8/19/91 | 11/26/91 | 02/04/92 | 05/05/92 |
|---|---|---|---|---|
| PS-4 | | | | |
| Methylene Chloride | 3 | 8 | ND | ND |
| Acetone | 13 | ND | 9 | 9 |
| 1,2-Dichloroethene (total) | 4 | 5 | ND | ND |
| Chloroform | 1 | ND | ND | ND |
| TCE | 40 | 41 | 39 | 36 |
| PCE | 25 | 43 | 27 | 28 |
| 1,1,2-Trichloroethane | ND | ND | ND | ND |
| Chloromethane | ND | ND | ND | ND |
| Bromomethane | ND | ND | ND | ND |
| Vinyl Chloride | ND | ND | ND | ND |
| Chloroehtane | ND | ND | ND | ND |
| Carbon Disulfide | ND | ND | ND | ND |
| 1,1-Dichloroethene | ND | ND | ND | ND |
| 1,1-Dichloroethane | ND | ND | ND | ND |
| 1,2-Dichloroethane | ND | ND | ND | ND |
| 2-Butanone | ND | ND | ND | ND |
| 1,1'1-Trichloroethane | ND | ND | ND | ND |
| Carbon Tetrachloride | ND | ND | ND | ND |
| Bromodichloromethane | ND | ND | ND | ND |
| 1,2-Dichloropropane | ND | ND | ND | ND |
| cis-1,3-Dichloropropane | ND | ND | ND | ND |
| Dibromochloromethane | ND | ND | ND | ND |
| Benzene | ND | ND | ND | ND |
| trans-1,3-dichloropropane | ND | ND | ND | ND |
| Bromoform | ND | ND | ND | ND |
| 4-Methyl-2-Pentanone | ND | ND | ND | ND |
| 2-Hexanone | ND | ND | ND | ND |
| 1,1,2,2-Tetrachloroethane | ND | ND | ND | ND |
| Toluene | ND | ND | ND | ND |
| Chlorobenzene | ND | ND | ND | ND |
| Ethylbenzene | ND | ND | ND | ND |
| Stryene | ND | ND | ND | ND |
| Xylenes (total) | ND | ND | ND | ND |

LEGEND
ND = NOT DETECTED
NS = NOT SAMPLED

## MAINTENANCE DATA

Conducted general housekeeping and maintenance for the site.

Was unable to start PS#1.

## DISCUSSION OF RESULTS

During the period of April 28 through May 26, 1992, the Aquasorb$^{tm}$ GAC system treated 50,932 cubic feet (380,971 gallons) of groundwater. Average total flow rate from the three purge wells for this 28 day period is 9.7 gpm.

Table 3 provides a summary of flow rates from each of the three purge wells, and gallons treated at the GAC system. Figure 1 is a flow schematic of the Aquasorb$^{tm}$ system.

Analytical results indicate a total of 118 micrograms per liter (ug/l) of contaminants entering the treatment system (INFLUENT), 6 ug/l Acetone at the BETWEEN STAGE, and 5 ug/l Methylene Chloride and 11 ug/l Acetone at the EFFLUENT.

Quarterly pumping well analytical shows a number of contaminants in both PS#3 and PS#4 (Table 2). The next quarterly sampling is scheduled for August 1992.

## ACTIVITIES PLANNED FOR NEXT MONTH

The next monthly monitoring and sampling of the GAC treatment system will be performed on Tuesday, June 9. The end of the month inspection and data collection will be performed on June 30, 1992.

TABLE 3

EL TORO GROUND WATER TREATMENT SYSTEM

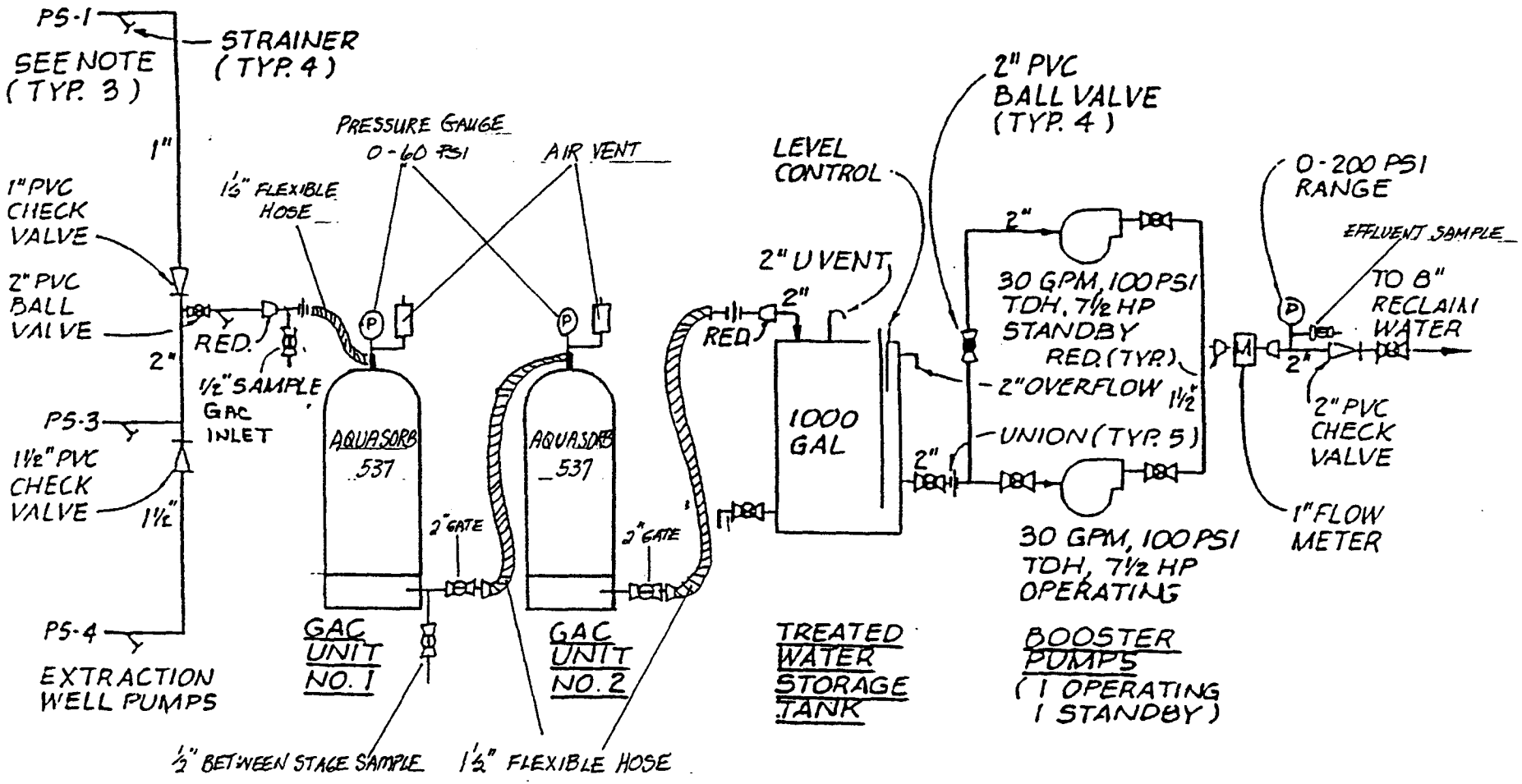
SUMMARY OF FLOW RATES

| | 7/11/91 | 8/19/91 | 8/27/91 | 9/10/91 | 9/24/91 | 10/01/91 | 10/8/91 | 10/29/91 | 11/07/92 | 11/14/91 | 11/22/92 | 11/26/92 | 12/10/92 | 12/27/92 | 01/07/92 | 01/28/92 | 02/04/92 | 02/24/92 | 03/05/92 | 03/31/92 | 04/07/92 | 04/28/92 | 05/05/92 | 05/28/92 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PS#1** | | | | | | | | | | | | | | | | | | | | | | | | |
| Meter reading (gal) | 13120 | 165670 | * | * | * | 165720 | 170950 | 184410 | NR | 193720 | NR | 202010 | 211130 | 222380 | 230077 | 244720 | 249340 | 260760 | 268270 | 286650 | 291940 | 306650 | 308190 | * |
| Gallons pumped | NA | 152550 | NA | NA | NA | NA | 5230 | 13460 | NR | 9310 | NR | 8290 | 9120 | 11250 | 7697 | 14643 | 4620 | 11420 | 7510 | 18380 | 5290 | 14710 | 1540 | NA |
| # of days | NA | 39 | 8 | 14 | 14 | 7 | 7 | 21 | NR | 16 | NR | 12 | 14 | 17 | 11 | 21 | 7 | 20 | 10 | 26 | 7 | 21 | 7 | 21 |
| Average flow (gpm) | NA | 2.7 | NA | NA | NA | NA | 0.52 | 0.45 | NR | 0.4 | NR | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.4 | 0.5 | 0.5 | 0.5 | 0.5 | 0.2 | NA |
| **PS#3** | | | | | | | | | | | | | | | | | | | | | | | | |
| Meter reading (gal) | 2953050 | 3227320 | 3280920 | 3389840 | 3431790 | 3497750 | 3556980 | 3704880 | NR | 3809200 | NR | 3897180 | 3992540 | 4109860 | 4190710 | 4337670 | 4383130 | 4503770 | 4574150 | 4747550 | 4799980 | 4941250 | 4962720 | 5142290 |
| Gallons pumped | NA | 274270 | 53600 | 108920 | 41950 | 65960 | 59230 | 147900 | NR | 104320 | NR | 87980 | 95360 | 117320 | 80850 | 146960 | 45460 | 120640 | 70390 | 173400 | 52430 | 141270 | 41470 | 159570 |
| # of days | NA | 39 | 8 | 14 | 14 | 7 | 7 | 21 | NR | 16 | NR | 12 | 14 | 17 | 11 | 21 | 7 | 20 | 10 | 26 | 7 | 21 | 7 | 21 |
| Average flow (gpm) | NA | 4.88 | 4.65 | 5.4 | 2 | 6.5 | 5.8 | 4.9 | NR | 4.5 | NR | 5.1 | 4.7 | 4.8 | 5.1 | 4.9 | 4.5 | 4.2 | 4.9 | 4.6 | 5.2 | 4.7 | 4.1 | 5.3 |
| **PS#4** | | | | | | | | | | | | | | | | | | | | | | | | |
| Meter reading (gal) | 2457900 | 2570560 | 2624350 | 2726230 | 2759660 | 2813460 | 2859700 | 2984330 | NR | 3030140 | NR | 3030180 | 3121680 | 3229860 | 3295600 | 3419960 | 3459990 | 3555060 | 3599890 | 3605990 | 3662790 | 3794360 | 3838390 | 3969990 |
| Gallons pumped | NA | 112660 | 53790 | 101880 | 33430 | 53800 | 46240 | 124630 | NR | 45810 | NR | 40 | 91500 | 108180 | 65740 | 124260 | 40130 | 95070 | 44830 | 6100 | 56800 | 131570 | 44030 | 131600 |
| # of days | NA | 39 | 8 | 14 | 14 | 7 | 7 | 21 | NR | 16 | NR | 12 | 14 | 17 | 11 | 21 | 7 | 20 | 10 | 26 | 7 | 21 | 7 | 21 |
| Average flow (gpm) | NA | 2 | 4.66 | 5.1 | 1.7 | 5.3 | 4.6 | 4.1 | NR | 2 | NR | 0 | 4.5 | 4.4 | 4.2 | 4.1 | 4 | 3.3 | 3.1 | 0.2 | 5.6 | 4.5 | 4.4 | 4.4 |
| **GAC EFFLUENT** | | | | | | | | | | | | | | | | | | | | | | | | |
| Meter reading (cu ft) | 761668 | 816674 | 831100 | 859411 | 868150 | 878186 | 893109 | 929748 | NR | 945046 | NR | 957878 | 963941 | 1015379 | 1036010 | 1074332 | 1086318 | 1116846 | 1133357 | 1159890 | 1175365 | 1213824 | 1225418 | 1264756 |
| Gallons pumped | NA | 411445 | 107906 | 211766 | 65367 | 75069 | 111624 | 274060 | NR | 114429 | NR | 95983 | 194951 | 235156 | 154320 | 286649 | 69656 | 228349 | 123577 | 196392 | 114206 | 283827 | 86723 | 294248 |
| # of days | NA | 39 | 8 | 14 | 14 | 7 | 7 | 21 | NR | 16 | NR | 12 | 14 | 17 | 11 | 21 | 7 | 20 | 10 | 26 | 7 | 21 | 7 | 21 |
| Average flow (gpm) | NA | 7.32 | 9.36 | 10.5 | 3.2 | 7.4 | 11.1 | 9.1 | NR | 5 | NR | 5.6 | 9.7 | 9.6 | 9.7 | 9.8 | 8.9 | 8 | 8.6 | 5.3 | 11.3 | 9.4 | 8.6 | 9.7 |
| **GOLF COURSE TANK** | | | | | | | | | | | | | | | | | | | | | | | | |
| Meter reading (cu ft) | NR | NR | NR | NR | NR | NR | 9825000 | 11286900 | NR | NA | NR | 13087240 | NR | 13087240 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Gallons pumped | NR | NR | NR | NR | NR | NR | NR | 10935012 | NR | NA | NR | 13466543 | NR | 0 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| # of days | NR | NR | NR | NR | NR | NR | NR | 21 | NR | NA | NR | 28 | NR | 17 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Average flow | NR | NR | NR | NR | NR | NR | NR | 362 | NR | NA | NR | 334 | NR | 0 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Treated GW as % of Irrigation Water | NR | NR | NR | NR | NR | NR | NR | 5.1 | NA | NA | NA | 3.4 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

LEGEND:
NR - NOT RECORDED
NA - NOT AVAILIBLE
* - PUMP OFF LINE

EL TORO MCAS
INTERIM GROUNDWATER
TREATMENT SYSTEM
SCHEMATIC FLOW DIAGRAM

FIGURE 1



# APPENDIX A

# ANALYTICAL RESULTS

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

INFLUENT

Lab Name: PACIFIC ANALYTICAL Contract:

Lab Code: PACIF Case No.: SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 17001

Sample wt/vol: 5.0(g/mL) ML Lab File ID: RR1101

Level: (low/med) LOW Date Received: 05/07/92

% Moisture: not dec. 0 Date Analyzed: 05/14/92

GC Column: 1%SP1000 ID: 2 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 5 | J |
| 67-64-1 | Acetone | 21 | |
| 75-15-0 | Carbon Disulfide | 10 | U |
| 75-35-4 | 1,1-Dichloroethene | 10 | U |
| 75-35-3 | 1,1-Dichloroethane | 10 | U |
| 156-60-5 | 1,2-Dichloroethene (total) | 10 | U |
| 67-66-3 | Chloroform | 10 | U |
| 107-06-2 | 1,2-Dichloroethane | 10 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 10 | U |
| 56-23-5 | Carbon Tetrachloride | 10 | U |
| 75-27-4 | Bromodichloromethane | 10 | U |
| 78-87-5 | 1,2-Dichloropropane | 10 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 10 | U |
| 79-01-6 | Trichloroethene | 55 | |
| 124-48-1 | Dibromochloromethane | 10 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 10 | U |
| 71-43-2 | Benzene | 10 | U |
| 10061-02-6 | trans-1,3-dichloropropene | 10 | U |
| 75-25-2 | Bromoform | 10 | U |
| 591-78-6 | 4-Methyl-2-Pentanone | 10 | U |
| 108-10-1 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 37 | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 10 | U |
| 108-88-3 | Toluene | 10 | U |
| 108-90-7 | Chlorobenzene | 10 | U |
| 100-41-4 | Ethylbenzene | 10 | U |
| 100-42-5 | Styrene | 10 | U |
| 1330-20-7 | Xylene (total) | 10 | U |

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BETWEEN

Lab Name: PACIFIC ANALYTICAL Contract:

Lab Code: PACIF Case No.: SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 17002

Sample wt/vol: 5.0(g/mL) Lab File ID: RR1111

Level: (low/med) LOW Date Received: 05/07/92

% Moisture: not dec. 0 Date Analyzed: 05/14/92

GC Column: 1%SP1000 ID: 2 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 10 | U |
| 67-64-1 | Acetone | 6 | J |
| 75-15-0 | Carbon Disulfide | 10 | U |
| 75-35-4 | 1,1-Dichloroethene | 10 | U |
| 75-35-3 | 1,1-Dichloroethane | 10 | U |
| 156-60-5 | 1,2-Dichloroethene (total) | 10 | U |
| 67-66-3 | Chloroform | 10 | U |
| 107-06-2 | 1,2-Dichloroethane | 10 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 10 | U |
| 56-23-5 | Carbon Tetrachloride | 10 | U |
| 75-27-4 | Bromodichloromethane | 10 | U |
| 78-87-5 | 1,2-Dichloropropane | 10 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 10 | U |
| 79-01-6 | Trichloroethene | 10 | U |
| 124-48-1 | Dibromochloromethane | 10 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 10 | U |
| 71-43-2 | Benzene | 10 | U |
| 10061-02-6 | trans-1,3-dichloropropene | 10 | U |
| 75-25-2 | Bromoform | 10 | U |
| 591-78-6 | 4-Methyl-2-Pentanone | 10 | U |
| 108-10-1 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 10 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 10 | U |
| 108-88-3 | Toluene | 10 | U |
| 108-90-7 | Chlorobenzene | 10 | U |
| 100-41-4 | Ethylbenzene | 10 | U |
| 100-42-5 | Styrene | 10 | U |
| 1330-20-7 | Xylene (total) | 10 | U |

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EFFLUENT

Lab Name: PACIFIC ANALYTICAL Contract:

Lab Code: PACIF Case No.: SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 17003

Sample wt/vol: 5.0(g/mL) Lab File ID: RR1121

Level: (low/med) LOW Date Received: 05/07/92

% Moisture: not dec. 0 Date Analyzed: 05/14/92

GC Column: 1%SP1000 ID: 2 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 5 | J |
| 67-64-1 | Acetone | 11 | |
| 75-15-0 | Carbon Disulfide | 10 | U |
| 75-35-4 | 1,1-Dichloroethene | 10 | U |
| 75-35-3 | 1,1-Dichloroethane | 10 | U |
| 156-60-5 | 1,2-Dichloroethene (total) | 10 | U |
| 67-66-3 | Chloroform | 10 | U |
| 107-06-2 | 1,2-Dichloroethane | 10 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 10 | U |
| 56-23-5 | Carbon Tetrachloride | 10 | U |
| 75-27-4 | Bromodichloromethane | 10 | U |
| 78-87-5 | 1,2-Dichloropropane | 10 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 10 | U |
| 79-01-6 | Trichloroethene | 10 | U |
| 124-48-1 | Dibromochloromethane | 10 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 10 | U |
| 71-43-2 | Benzene | 10 | U |
| 10061-02-6 | trans-1,3-dichloropropene | 10 | U |
| 75-25-2 | Bromoform | 10 | U |
| 591-78-6 | 4-Methyl-2-Pentanone | 10 | U |
| 108-10-1 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 10 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 10 | U |
| 108-88-3 | Toluene | 10 | U |
| 108-90-7 | Chlorobenzene | 10 | U |
| 100-41-4 | Ethylbenzene | 10 | U |
| 100-42-5 | Styrene | 10 | U |
| 1330-20-7 | Xylene (total) | 10 | U |

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PS#3

Lab Name: PACIFIC ANALYTICAL Contract:

Lab Code: PACIF Case No.: SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 17004

Sample wt/vol: 5.0 (g/mL) Lab File ID: RR1131

Level: (low/med) LOW Date Received: 05/07/92

% Moisture: not dec. 0 Date Analyzed: 05/14/92

GC Column: 1%SP1000 ID: 2 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 10 | U |
| 67-64-1 | Acetone | 9 | J |
| 75-15-0 | Carbon Disulfide | 10 | U |
| 75-35-4 | 1,1-Dichloroethene | 10 | U |
| 75-35-3 | 1,1-Dichloroethane | 10 | U |
| 156-60-5 | 1,2-Dichloroethene (total) | 10 | U |
| 67-66-3 | Chloroform | 10 | U |
| 107-06-2 | 1,2-Dichloroethane | 10 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 10 | U |
| 56-23-5 | Carbon Tetrachloride | 10 | U |
| 75-27-4 | Bromodichloromethane | 10 | U |
| 78-87-5 | 1,2-Dichloropropane | 10 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 10 | U |
| 79-01-6 | Trichloroethene | 67 | |
| 124-48-1 | Dibromochloromethane | 10 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 10 | U |
| 71-43-2 | Benzene | 10 | U |
| 10061-02-6 | trans-1,3-dichloropropene | 10 | U |
| 75-25-2 | Bromoform | 10 | U |
| 591-78-6 | 4-Methyl-2-Pentanone | 10 | U |
| 108-10-1 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 41 | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 10 | U |
| 108-88-3 | Toluene | 10 | U |
| 108-90-7 | Chlorobenzene | 10 | U |
| 100-41-4 | Ethylbenzene | 10 | U |
| 100-42-5 | Styrene | 10 | U |
| 1330-20-7 | Xylene (total) | 10 | U |

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PS#4

Lab Name: PACIFIC ANALYTICAL Contract:

Lab Code: PACIF Case No.: SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 17005

Sample wt./vol.: 5.0(g/mL) Lab File ID: RR1141

Level: (low/med) LOW Date Received: 05/07/92

% Moisture: not dec. 0 Date Analyzed: 05/15/92

GC Column: 1%SP1000 ID: 2 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 10 | U |
| 67-64-1 | Acetone | 9 | J |
| 75-15-0 | Carbon Disulfide | 10 | U |
| 75-35-4 | 1,1-Dichloroethene | 10 | U |
| 75-35-3 | 1,1-Dichloroethane | 10 | U |
| 156-60-5 | 1,2-Dichloroethene (total) | 10 | U |
| 67-66-3 | Chloroform | 10 | U |
| 107-06-2 | 1,2-Dichloroethane | 10 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 10 | U |
| 56-23-5 | Carbon Tetrachloride | 10 | U |
| 75-27-4 | Bromodichloromethane | 10 | U |
| 78-87-5 | 1,2-Dichloropropane | 10 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 10 | U |
| 79-01-6 | Trichloroethene | 36 | |
| 124-48-1 | Dibromochloromethane | 10 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 10 | U |
| 71-43-2 | Benzene | 10 | U |
| 10061-02-6 | trans-1,3-dichloropropene | 10 | U |
| 75-25-2 | Bromoform | 10 | U |
| 591-78-6 | 4-Methyl-2-Pentanone | 10 | U |
| 108-10-1 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 28 | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 10 | U |
| 108-88-3 | Toluene | 10 | U |
| 108-90-7 | Chlorobenzene | 10 | U |
| 100-41-4 | Ethylbenzene | 10 | U |
| 100-42-5 | Styrene | 10 | U |
| 1330-20-7 | Xylene (total) | 10 | U |