N62269.AR.000377
NAWC WARMINSTER
5090.3a

**Brown & Root Environmental**

A Division of Halliburton NUS Corporation

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C-49-08-6-220

August 30, 1996

Project Number 1412

Mr. Lonnie Monaco, Code 1823
U.S. Department of the Navy
Naval Facilities Engineering Company
Northern Division, Mail Stop 82
10 Industrial Highway
Lester, Pennsylvania 19113-2090

SUBJECT: Technical Memorandum
Site 4 Removal Action
Trench 5 Verification Sampling Results

Dear Mr. Monaco:

The following summarizes the results of the verification sampling performed for Trench 5 during the Site 4 Removal Action. A total of 13 samples (including 1 duplicate) were taken from the trench, as shown in the attached sketch map. No potential hot spot areas were identified, however two of the samples taken (samples TR05-06 and TR05-07) were analyzed for the full suite of analytical parameters (TCL volatiles and semivolatiles, TAL metals, and pesticides/PCB's) as part of the overall sampling strategy of analyzing 20% of the samples for full TCL/TAL parameters. The remaining samples were analyzed for the indicator parameters, including purgeable halocarbons, PAH's, PCB's, and thallium. Raw analytical data from the lab is attached to this memo.

For the volatile organics analyses, most of the sample results had trace detections (< 0.005 mg/kg) of methylene chloride, a common lab artifact. One sample also contained trichlorofluoromethane at .0002 mg/kg. The target concentration calculated for methylene chloride (0.3 mg/kg) is well above the detected concentrations, thus no actions are required due to the presence of this compound. The concentration of trichlorofluoromethane is several orders of magnitude below EPA Region III's risk-based concentrations, both for soils (23,000 mg/kg for residential ingestion) and groundwater (risk-based tap water concentration 1.3 mg/l, soil-to-groundwater screening level 13 mg/kg), and below the PADEP standard for groundwater ingestion (2 mg/l) thus no risks are posed by this compound. There were no detections of any other VOC's, including the target compounds TCE, cis-1,2-DCE, and carbon tetrachloride.

No PAH's were detected in any of the samples, including both target PAH's and PAH's not originally included as target compounds, thus no actions are required due to PAH's.

C-49-08-6-220



PCB's were detected at a low level (0.047 mg/kg) in one sample. The target concentration for PCB's is 1.6 mg/kg, thus no actions are needed due to PCB levels.

Thallium detections ranged from 0.8 to 2.1 mg/kg, with the exception of one sample at 3.6 mg/kg (sample TR05-14). This detection is above the revised target concentration for thallium established at 2.9 mg/kg, as presented in Table 1. Sample TR05-14 is a duplicate of sample TR05-08, which had a thallium level of 1.8 mg/kg. The average thallium concentration for these two samples is 2.7 mg/kg, which is below the target concentration, thus no action is required due to thallium levels.

For the remaining metals results, the positive detections were screened against NAWC background concentrations, given in Table 2. The metals concentrations that exceeded background (calcium, nickel, selenium, and sodium) were compared against the calculated target concentrations (Table 1), with no exceedances of target concentrations.

Based on the analytical results, no additional excavation of soils is recommended for Trench 5. If you have any questions regarding the above information or would like to discuss it further, please call me at (412) 921-8778.

Sincerely yours,

Jeffrey P Orient

Jeffrey P. Orient, P.G.
Project Manager

JPO/sic

Attachments

c: T. Ames
J. Dale
S. Lehman
D. Kennedy
D. Ostrauskas
G. Glenn
N. Teamerson
File 1412

# TABLES

TABLE 1

TARGET CLEAN-UP CONCENTRATIONS

| | | PADEP (1) | RISK-BASED (2)(4) | GROUNDWATER PROTECTION (3)(4) | MINIMUM (4) |
|---|---|---|---|---|---|
| | | (mg/kg) | (mg/kg) | (mg/kg) | (mg/kg) |
| Benzo(a)anthracene | | 6 | 17 | 1.5 | 1.5 |
| Benzo(b)fluoranthene | | 6 | 17 | 4.5 | 4 5 |
| Benzo(k)fluoranthene | | NA | 170 | 45 | 45 |
| Benzo(ghi)perylene | | 500 | NA | 96000 | 500 |
| Benzo(a)pyrene | | 0.6 | 1.7 | 82 | 0.6 |
| Acenaphthene | | 30 | 76000 | 630 | 30 |
| Acenaphthylene | | NA | NA | 160 | 160 |
| Anthracene | | 70 | 380000 | 13000 | 70 |
| Chrysene | | 500 | 1700 | 150 | 150 |
| Dibenzo(a,h)anthracene | | 0.6 | 1.7 | 1.4 | 0.6 |
| Fluoranthene | | 400 | 50400 | 6400 | 400 |
| Fluorene | | 40 | 50400 | 830 | 40 |
| Indeno(1,2,3,-cd)pyrene | | 6 | 17 | 13 | 6 |
| 2-Methylnaphthalene | | NA | NA | 140 | 140 |
| Naphthalene | | 8 | 50400 | 140 | 8 |
| Phenanthrene | | 80 | NA | 850 | 80 |
| Pyrene | | 300 | 38000 | 4600 | 300 |
| Acetone | | 0.03 | 130000 | 340 | 0.03 |
| Chlorobenzene | | 10 | 25000 | 3.6 | 3.6 |
| Methylene chloride | | 0.3 | 1700 | 0.46 | 0.3 |
| Aluminum | | NA | 1300000 | 3400 | 3400 |
| Antimony | | 30 | 504 | 5.4 | 5.4 |
| Arsenic | | 3 | 8.4 | 29 | 3 |
| Barium | | 5000 | 88000 | 1700 | 1700 |
| Beryllium | | 1 | 2.9 | 63 | 1 |
| Cadmium | | 20 | 630 | 7.5 | 7.5 |
| Calcium | | NA | NA | NA | NA |
| Chromium | | 10 | 6300 | 38 | 10 |
| Cobalt | | NA | 76000 | 202 | 202 |
| Copper | | 100 | 50400 | 120 | 100 |
| Iron | | NA | 380000 | 1010 | 1010 |
| Lead | | 200 | NA | 1.4 | 1.4 |
| Magnesium | | NA | NA | NA | NA |
| Manganese | | 400 | 29000 | 77 | 77 |
| Mercury | | 20 | 380 | 2.1 | 2.1 |
| Nickel | | 200 | 25000 | 130 | 130 |
| Potassium | | NA | NA | NA | NA |
| Selenium | | 50 | 6300 | 5.2 | 5.2 |
| Silver | | 400 | 6300 | 31 | 31 |
| Sodium | | NA | NA | NA | NA |
| Thallium | | 6 | 101 | 2.9 | 2 9 |
| Vanadium | | NA | 8800 | 5200 | 5200 |
| Zinc | | 1000 | 380000 | 14000 | 1000 |

FOOTNOTES

(1) Values presented are from the "Technical Manual , Pennsylvania's Land Recycling, Revison 1 to Appendix B2 (Statewide Human Health Standards for Soils)," 4/26/96.

(2) USEPA Region III Risk-Based Concentration Table, January-June 1996.

(3) Three references: "Soil Screening Guidance: User's Guide", April 1996, "Aquatic Fate Process Data for Organic Priority Pollutants" , USEPA, 1982 and the " Drinking Water Regulations and Health Advisories", February 1996 were used to obtain groundwater protection values.

(4) Values were presented with two significant figures.

TABLE 2
BACKGROUND SOIL SAMPLING RESULTS

| ANALYTE | AREA B/SITE 4 RANGE | ENERAL BACKGROUN RANGE | COMBINED RANGES |
|---|---|---|---|
| ALUMINUM | 4780 - 17500 | 11200 - 18100 | 4780 - 18100 |
| ANTIMONY | 13.6 - 13.6 | NA | 13.6 |
| ARSENIC | 0.28 - 6.1 | 3.7 - 12.1 | 0.28 - 12.1 |
| BARIUM | 34.6 - 225 | 34.1 - 115 | 34.1 - 225 |
| BERYLLIUM | 0.31 - 1.7 | 0.64 - 1.1 | 0.31 - 1.7 |
| CADMIUM | NOT DETECTED | NOT DETECTED | NA |
| CALCIUM | 240 - 1910 | 520 - 1100 | 240 - 1910 |
| CHROMIUM | 7.9 - 25 | 12 - 35.3 | 7.9 - 35.3 |
| COBALT | 1.6 - 21.1 | 6.2 - 14.4 | 1.6 - 21.1 |
| COPPER | 3.6 - 30.6 | 6.5 - 22.7 | 3.6 - 30.6 |
| IRON | 6980 - 28900 | 14400 - 39900 | 6980 - 39900 |
| LEAD | 1.6 - 23.5 | 6.7 - 96.5 | 1.6 - 96.5 |
| MAGNESIUM | 518 - 4960 | 1810 - 3080 | 518 - 4960 |
| MANGANESE | 30.9 - 2010 | 124 - 718 | 30.9 - 2010 |
| MERCURY | 0.25 - 0.25 | NOT DETECTED | 0.25 - 0.25 |
| NICKEL | 4.1 - 19.1 | 8.1 - 17.5 | 4.1 - 19.1 |
| POTASSIUM | 89.1 - 3050 | 465 - 1240 | 89.1 - 3050 |
| SELENIUM | NOT DETECTED | NOT DETECTED | NA |
| SILVER | NOT DETECTED | NA | NA |
| SODIUM | 55.2 - 86.7 | NOT DETECTED | 55.2 - 86.7 |
| THALLIUM | 0.42 - 0.42 | NA | 0.42 - 0.42 |
| VANADIUM | 15.7 - 37.9 | 18.1 - 45 | 15.7 - 45 |
| ZINC | 9.0 - 48.6 | 19.6 - 60 | 9.0 - 60 |
| CYANIDE | NOT DETECTED | NA | NA |

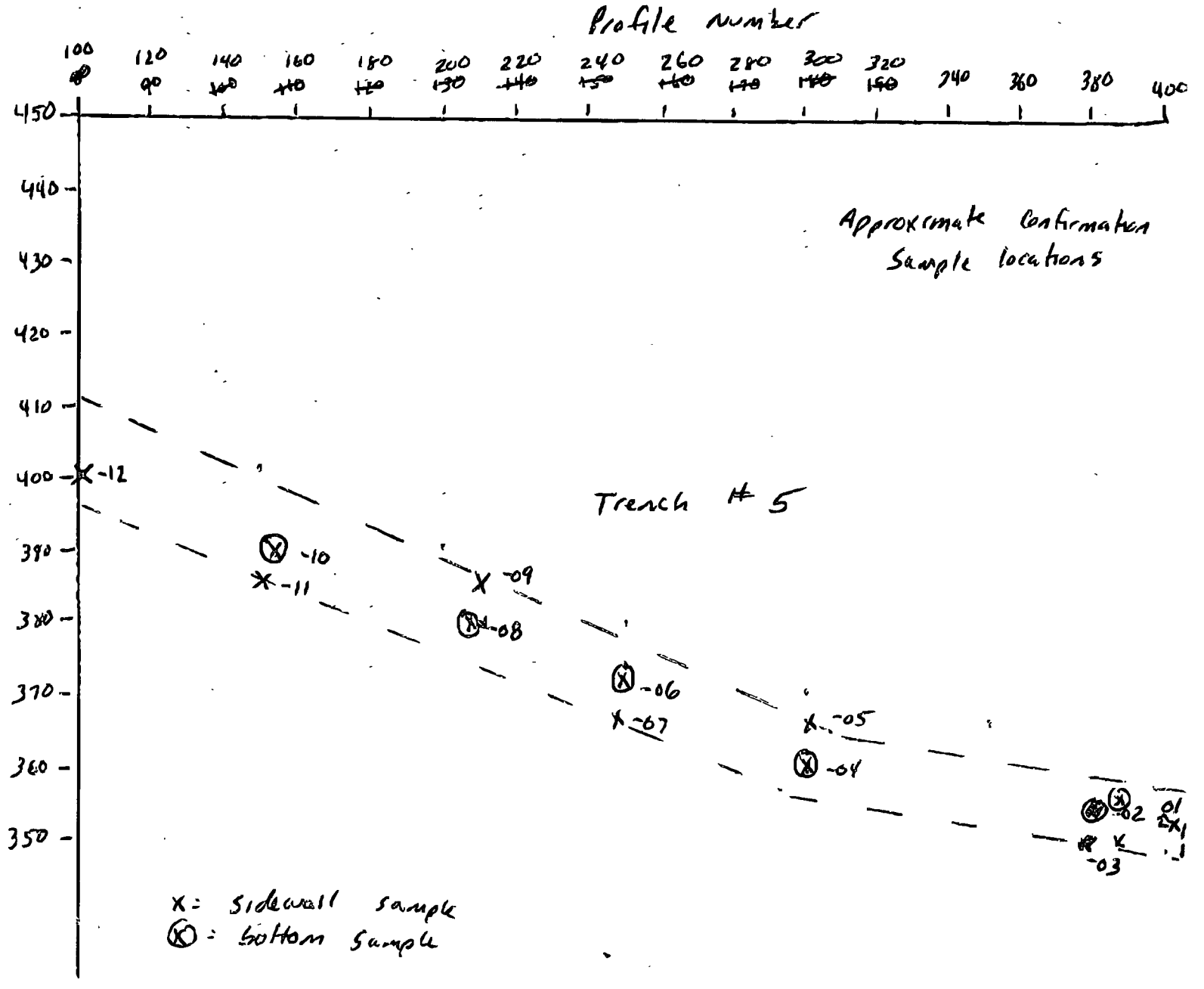
# SAMPLE LOCATION MAP
# CHAIN OF CUSTODY FORMS

# CALCULATION WORKSHEET

Order No. 19116 (01-91)

PAGE ____ OF ____

| | | | |
|---|---|---|---|
| CLIENT | JOB NUMBER | | |
| SUBJECT | | | |
| BASED ON | DRAWING NUMBER | | |
| BY | CHECKED BY | APPROVED BY | DATE |



# ANALYTICAL RESULTS
# TRENCH 5 SAMPLES

# CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO-157 1412-2232

SITE NAME: NAWC - Warminster

SAMPLERS (SIGNATURE): [signature]

| STATION NO. | DATE | TIME | COMP | GRAB | STATION LOCATION | NO. OF CONTAINERS | 4 oz. Semivolatile Halocarbons | 16 oz. Pesticides Herbicides | 4 oz. Total VOC | 16 oz. Total Metals Total Cyanide Total Phenols | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TROUT N.5 | 8-23-96 | 1310 | | ✓ | W-TR05-01 | 2 | 1 | 1 | – | – | | | |
| | | 1320 | | ✓ | W-TR05-02 | 2 | 1 | 1 | – | – | | | |
| | | 1325 | | ✓ | W-TR05-03 | 2 | 1 | 1 | – | – | | | |
| | | 1330 | | ✓ | W-TR05-04 | 2 | 1 | 1 | – | – | | | |
| | | 1335 | | ✓ | W-TR05-05 | 2 | 1 | 1 | – | – | | | |
| | | 1340 | | ✓ | W-TR05-06 | 2 | – | – | 1 | 1 | | | * Did NOT Receive 4 oz gw |
| | | 1345 | | ✓ | W-TR05-07 | 2 | – | – | 1 | 1 | | | * for VOA Analysis |
| | | 1355 | | ✓ | W-TR05-08 | 2 | 1 | 1 | – | – | | | DJ 8/23 |
| | | 1430 | | ✓ | W-TR05-09 | 2 | 1 | 1 | – | – | | | |
| | | 1415 | | ✓ | W-TR05-10 | 2 | 1 | 1 | – | – | | | DJ 8/23 |
| | | 1410 | | ✓ | W-TR05-11 | 6 | 3 | 3 | – | – | | | DJ MS/MSD * Did NOT Receive 1x16 oz gw |
| | | 1400 | | ✓ | W-TR05-12 | 2 | 1 | 1 | – | – | | | * Did not Receive 16 oz gw DJ 8/23 |
| | | 0800 | | ✓ | W-TR05-13 | 2 | 1 | 1 | – | – | | | |
| | | | | | | | | | | | | | |

| RELINQUISHED BY (SIGNATURE): | DATE / TIME: | RECEIVED BY (SIGNATURE): | RELINQUISHED BY (SIGNATURE): | DATE / TIME: | RECEIVED BY (SIGNATURE): |
|---|---|---|---|---|---|
| [signature] | 8/23/96 0715 | | | | |
| RELINQUISHED BY (SIGNATURE): | DATE / TIME: | RECEIVED BY (SIGNATURE): | RELINQUISHED BY (SIGNATURE): | DATE / TIME: | RECEIVED BY (SIGNATURE): |
| | | | | | |
| RELINQUISHED BY (SIGNATURE): | DATE / TIME: | RECEIVED FOR LABORATORY BY (SIGNATURE): | DATE / TIME: | REMARKS: | |
| | | [signature] | 8-23-96 1015 | Fed Ex # 111 838 4472 | |

Cooler = 3/3 c

Order No. 7954-05 (0538 D)

# CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO-159 1412-2932

SITE NAME: NAWC - Warminster

SAMPLERS (SIGNATURE): Paul M. Dai

| STATION NO. | DATE | TIME | COMP | GRAB | STATION LOCATION | NO. OF CONTAINERS | 40 ml TCL VOC | 1 L. amber TCL SVOC | 1 L amber TCL pest./PCB | 1 Liter poly TAL metals | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QA/QC | 8/22/96 | 1100 | | ✓ | W-TB-082296 | 2 | 2 | – | – | – | | | Trip Blank |
| QA/QC | 8/22/96 | 1530 | | ✓ | W-RB-082296 | 6 | 2 | 2 | 1 | 1 | | | Rinsate Blank DO Analysis |

| RELINQUISHED BY (SIGNATURE): | DATE / TIME: | RECEIVED BY (SIGNATURE): | RELINQUISHED BY (SIGNATURE): | DATE / TIME: | RECEIVED BY (SIGNATURE): |
|---|---|---|---|---|---|
| Paul M. Dai | 8/22/96 1715 | | | | |
| RELINQUISHED BY (SIGNATURE): | DATE / TIME: | RECEIVED BY (SIGNATURE): | RELINQUISHED BY (SIGNATURE): | DATE / TIME: | RECEIVED BY (SIGNATURE): |
| | | | | | |
| RELINQUISHED BY (SIGNATURE): | DATE / TIME: | RECEIVED FOR LABORATORY BY (SIGNATURE): | DATE / TIME: | REMARKS: | |
| | | [illegible] | 8/24/96 1000 | Fed Ex AB # 1118384492 | |

Order No 70440 (0693)

Cooler = 16°C

08/27/96 13:41 P.

Date: 08/27/96
Time: 10:49:25

ANALYTICAL RESULTS

Rept: AN0353
Page: 1

| Client Sample ID: | | W-TR05-01 | | W-TR05-02 | | W-TR05-03 | | W-TR05-04 | | W-TR05-05 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Job Number & Lab Sample ID: | | A96-4053 A6405301 | | A96-4053 A6405302 | | A96-4053 A6405303 | | A96-4053 A6405304 | | A96-4053 A6405305 | |
| Sample Date: | | 08/22/96 | | 08/22/96 | | 08/22/96 | | 08/22/96 | | 08/22/96 | |
| Analyte (UG/KG) | RL | Result | | Result | | Result | | Result | | Result | |
| METHOD 8260 - PURGEABLE HALOCARBONS | | | | | | | | | | | |
| Bromodichloromethane | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Bromoform | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Bromomethane | 10 | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Carbon Tetrachloride | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Chlorobenzene | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Chloroethane | 10 | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 2-Chloroethylvinyl ether | 10 | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Chloroform | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Chloromethane | 10 | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Dibromochloromethane | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichlorobenzene | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,3-Dichlorobenzene | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,4-Dichlorobenzene | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1-Dichloroethane | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloroethane | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1-Dichloroethene | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| cis-1,2-Dichloroethene | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| trans-1,2-Dichloroethene | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloropropane | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| cis-1,3-Dichloropropene | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| trans-1,3-Dichloropropene | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Methylene chloride | 5 | 3 | J | 2 | J | 2 | J | 3 | J | 3 | J |
| 1,1,2,2-Tetrachloroethane | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Tetrachloroethene | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1,1-Trichloroethane | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1,2-Trichloroethane | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Trichloroethene | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Trichlorofluoromethane | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Vinyl chloride | 10 | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| INTERNAL STANDARDS | | | | | | | | | | | |
| Bromochloromethane | 50-200 | 101 | | 100 | | 98 | | 144 | | 163 | |
| 1,4-Difluorobenzene | 50-200 | 78 | | 70 | | 81 | | 115 | | 129 | |
| Chlorobenzene-D5 | 50-200 | 85 | | 82 | | 114 | | 154 | | 154 | |
| SURROGATES | | | | | | | | | | | |
| Toluene-D8 | 81-117 | 115 | | 110 | | 98 | | 100 | | 104 | |
| p-Bromofluorobenzene | 74-121 | 95 | | 103 | | 113 | | 104 | | 114 | |
| 1,2-Dichloroethane-D4 | 80-120 | 102 | | 100 | | 101 | | 97 | | 102 | |

* Indicates Result is Outside QC Limits
NA = Not Applicable

ANALYTICAL RESULTS



| Client Sample ID: | W-TR05-06 | | W-TR05-07 | | | | |
|---|---|---|---|---|---|---|---|
| Job Number & Lab Sample ID: | A96-4075 A6407501 | | A96-4075 A6407502 | | | | |
| Sample Date: | 08/22/96 | | 08/22/96 | | | | |
| Analyte (UG/KG) | RL | Result | | Result | | | |
| METHOD 8260 - TCL VOLATILE ORGANICS | | | | | | | |
| Acetone | 10 | 10 | U | 10 | U | | |
| Benzene | 5 | 5 | U | 5 | U | | |
| Bromodichloromethane | 5 | 5 | U | 5 | U | | |
| Bromoform | 5 | 5 | U | 5 | U | | |
| Bromomethane | 10 | 10 | U | 10 | U | | |
| 2-Butanone | 10 | 10 | U | 10 | U | | |
| Carbon Disulfide | 5 | 5 | U | 5 | U | | |
| Carbon Tetrachloride | 5 | 5 | U | 5 | U | | |
| Chlorobenzene | 5 | 5 | U | 5 | U | | |
| Chloroethane | 10 | 10 | U | 10 | U | | |
| Chloroform | 5 | 5 | U | 5 | U | | |
| Chloromethane | 10 | 10 | U | 10 | U | | |
| Dibromochloromethane | 5 | 5 | U | 5 | U | | |
| 1,1-Dichloroethane | 5 | 5 | U | 5 | U | | |
| 1,2-Dichloroethane | 5 | 5 | U | 5 | U | | |
| 1,1-Dichloroethene | 5 | 5 | U | 5 | U | | |
| cis-1,2-Dichloroethene | 5 | 5 | U | 5 | U | | |
| trans-1,2-Dichloroethene | 5 | 5 | U | 5 | U | | |
| 1,2-Dichloropropane | 5 | 5 | U | 5 | U | | |
| cis-1,3-Dichloropropene | 5 | 5 | U | 5 | U | | |
| trans-1,3-Dichloropropene | 5 | 5 | U | 5 | U | | |
| Ethylbenzene | 5 | 5 | U | 5 | U | | |
| 2-Hexanone | 10 | 10 | U | 10 | U | | |
| Methylene chloride | 5 | 3 | J | 3 | J | | |
| 4-Methyl-2-pentanone | 10 | 10 | U | 10 | U | | |
| Styrene | 5 | 5 | U | 5 | U | | |
| 1,1,2,2-Tetrachloroethane | 5 | 5 | U | 5 | U | | |
| Tetrachloroethene | 5 | 5 | U | 5 | U | | |
| Toluene | 5 | 5 | U | 5 | U | | |
| 1,1,1-Trichloroethane | 5 | 5 | U | 5 | U | | |
| 1,1,2-Trichloroethane | 5 | 5 | U | 5 | U | | |
| Trichloroethene | 5 | 5 | U | 5 | U | | |
| Vinyl acetate | 10 | 10 | U | 10 | U | | |
| Vinyl chloride | 10 | 10 | U | 10 | U | | |
| Total Xylenes | 15 | 15 | U | 15 | U | | |
| INTERNAL STANDARDS | | | | | | | |
| Bromochloromethane | 50-200 | 123 | | 120 | | | |
| 1,4-Difluorobenzene | 50-200 | 100 | | 110 | | | |
| Chlorobenzene-D5 | 50-200 | 99 | | 119 | | | |
| SURROGATES | | | | | | | |
| Toluene-D8 | 81-117 | 110 | | 100 | | | |
| p-Bromofluorobenzene | 74-121 | 91 | | 93 | | | |

* Indicates Result is Outside QC Limits
NA = Not Applicable



08/27/96 13:35 ID: 008/010

| Client Sample ID: | | W-TR05-08 | | W-TR05-09 | | W-TR05-10 | | W-TR05-11 | | W-TR05-12 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Job Number & Lab Sample ID: | | A96-4053 A6405308 | | A96-4053 A6405309 | | A96-4053 A6405310 | | A96-4053 A6405311 | | A96-4053 A6405312 | |
| Sample Date: | | 08/22/96 | | 08/22/96 | | 08/22/96 | | 08/22/96 | | 08/22/96 | |
| Analyte (UG/KG) | RL | Result | | Result | | Result | | Result | | Result | |
| METHOD 8260 - PURGEABLE HALOCARBONS | | | | | | | | | | | |
| Bromodichloromethane | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Bromoform | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Bromomethane | 10 | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Carbon Tetrachloride | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Chlorobenzene | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Chloroethane | 10 | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 2-Chloroethylvinyl ether | 10 | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Chloroform | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Chloromethane | 10 | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Dibromochloromethane | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichlorobenzene | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,3-Dichlorobenzene | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,4-Dichlorobenzene | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1-Dichloroethane | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloroethane | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1-Dichloroethene | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| cis-1,2-Dichloroethene | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| trans-1,2-Dichloroethene | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloropropane | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| cis-1,3-Dichloropropene | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| trans-1,3-Dichloropropene | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Methylene chloride | 5 | 3 | J | 3 | J | 4 | J | 3 | J | 2 | J |
| 1,1,2,2-Tetrachloroethane | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Tetrachloroethene | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1,1-Trichloroethane | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1,2-Trichloroethane | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Trichloroethene | 5 | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Trichlorofluoromethane | 5 | 0.2 | J | 5 | U | 5 | U | 5 | U | 5 | U |
| Vinyl chloride | 10 | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| INTERNAL STANDARDS | | | | | | | | | | | |
| Bromochloromethane | 50-200 | 148 | | 152 | | 114 | | 97 | | 112 | |
| 1,4-Difluorobenzene | 50-200 | 119 | | 126 | | 87 | | 76 | | 86 | |
| Chlorobenzene-D5 | 50-200 | 137 | | 137 | | 102 | | 85 | | 92 | |
| SURROGATES | | | | | | | | | | | |
| Toluene-D8 | 81-117 | 106 | | 113 | | 106 | | 109 | | 118 | * |
| p-Bromofluorobenzene | 74-121 | 109 | | 104 | | 100 | | 97 | | 98 | |
| 1,2-Dichloroethane-D4 | 80-120 | 100 | | 100 | | 99 | | 101 | | 102 | |

* Indicates Result is Outside QC Limits
NA = Not Applicable



08/27/96 13:34 ©000/010

| Analyte (UG/KG) | RL | Result | |
|---|---|---|---|
| Client Sample ID: | | W-TR05-14 | |
| Job Number & Lab Sample ID: | | A96-4053 A6405313 | |
| Sample Date: | | 08/22/96 | |
| METHOD 8260 - PURGEABLE HALOCARBONS | | | |
| Bromodichloromethane | 5 | 5 | U |
| Bromoform | 5 | 5 | U |
| Bromomethane | 10 | 10 | U |
| Carbon Tetrachloride | 5 | 5 | U |
| Chlorobenzene | 5 | 5 | U |
| Chloroethane | 10 | 10 | U |
| 2-Chloroethylvinyl ether | 10 | 10 | U |
| Chloroform | 5 | 5 | U |
| Chloromethane | 10 | 10 | U |
| Dibromochloromethane | 5 | 5 | U |
| 1,2-Dichlorobenzene | 5 | 5 | U |
| 1,3-Dichlorobenzene | 5 | 5 | U |
| 1,4-Dichlorobenzene | 5 | 5 | U |
| 1,1-Dichloroethane | 5 | 5 | U |
| 1,2-Dichloroethane | 5 | 5 | U |
| 1,1-Dichloroethene | 5 | 5 | U |
| cis-1,2-Dichloroethene | 5 | 5 | U |
| trans-1,2-Dichloroethene | 5 | 5 | U |
| 1,2-Dichloropropane | 5 | 5 | U |
| cis-1,3-Dichloropropene | 5 | 5 | U |
| trans-1,3-Dichloropropene | 5 | 5 | U |
| Methylene chloride | 5 | 3 | J |
| 1,1,2,2-Tetrachloroethane | 5 | 5 | U |
| Tetrachloroethene | 5 | 5 | U |
| 1,1,1-Trichloroethane | 5 | 5 | U |
| 1,1,2-Trichloroethane | 5 | 5 | U |
| Trichloroethene | 5 | 5 | U |
| Trichlorofluoromethane | 5 | 5 | U |
| Vinyl chloride | 10 | 10 | U |
| INTERNAL STANDARDS | | | |
| Bromochloromethane | 50-200 | 112 | |
| 1,4-Difluorobenzene | 50-200 | 88 | |
| Chlorobenzene-D5 | 50-200 | 94 | |
| SURROGATES | | | |
| Toluene-D8 | 81-117 | 113 | |
| p-Bromofluorobenzene | 74-121 | 94 | |
| 1,2-Dichloroethane-D4 | 80-120 | 101 | |

* Indicates Result is Outside QC Limits
NA = Not Applicable



08/27/96 13:34 ☎ 010/010

Date: 08/27/96
Time: 10:46:42

ANALYTICAL RESULTS

Rept: AN0353
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| Client Sample ID: | W-TR05-01 | | W-TR05-02 | | W-TR05-03 | | W-TR05-04 | | W-TR05-05 | |
|---|---|---|---|---|---|---|---|---|---|---|
| Job Number & Lab Sample ID: | A96-4053 A6405301 | | A96-4053 A6405302 | | A96-4053 A6405303 | | A96-4053 A6405304 | | A96-4053 A6405305 | |
| Sample Date: | 08/22/96 | | 08/22/96 | | 08/22/96 | | 08/22/96 | | 08/22/96 | |
| Analyte (UG/KG) | RL | Result | | Result | | Result | | Result | | Result | |
| METHOD 8270-HSL POLYNUCLEAR AROMATIC HYDROCARBONS | | | | | | | | | | | |
| Acenaphthene | 330 | 330 | U | 330 | U | 330 | U | 330 | U | 330 | U |
| Acenaphthylene | 330 | 330 | U | 330 | U | 330 | U | 330 | U | 330 | U |
| Anthracene | 330 | 330 | U | 330 | U | 330 | U | 330 | U | 330 | U |
| Benzo(a)anthracene | 330 | 330 | U | 330 | U | 330 | U | 330 | U | 330 | U |
| Benzo(b)fluoranthene | 330 | 330 | U | 330 | U | 330 | U | 330 | U | 330 | U |
| Benzo(k)fluoranthene | 330 | 330 | U | 330 | U | 330 | U | 330 | U | 330 | U |
| Benzo(ghi)perylene | 330 | 330 | U | 330 | U | 330 | U | 330 | U | 330 | U |
| Benzo(a)pyrene | 330 | 330 | U | 330 | U | 330 | U | 330 | U | 330 | U |
| Chrysene | 330 | 330 | U | 330 | U | 330 | U | 330 | U | 330 | U |
| Dibenzo(a,h)anthracene | 330 | 330 | U | 330 | U | 330 | U | 330 | U | 330 | U |
| Fluoranthene | 330 | 330 | U | 330 | U | 330 | U | 330 | U | 330 | U |
| Fluorene | 330 | 330 | U | 330 | U | 330 | U | 330 | U | 330 | U |
| Indeno(1,2,3-cd)pyrene | 330 | 330 | U | 330 | U | 330 | U | 330 | U | 330 | U |
| 2-Methylnaphthalene | 330 | 330 | U | 330 | U | 330 | U | 330 | U | 330 | U |
| Naphthalene | 330 | 330 | U | 330 | U | 330 | U | 330 | U | 330 | U |
| Phenanthrene | 330 | 330 | U | 330 | U | 330 | U | 330 | U | 330 | U |
| Pyrene | 330 | 330 | U | 330 | U | 330 | U | 330 | U | 330 | U |
| INTERNAL STANDARDS | | | | | | | | | | | |
| 1,4-Dichlorobenzene-D4 | 50-200 | 106 | | 107 | | 124 | | 107 | | 117 | |
| Naphthalene-D8 | 50-200 | 105 | | 112 | | 125 | | 109 | | 117 | |
| Acenaphthene-D10 | 50-200 | 109 | | 124 | | 132 | | 112 | | 122 | |
| Phenanthrene-D10 | 50-200 | 111 | | 124 | | 131 | | 112 | | 124 | |
| Chrysene-D12 | 50-200 | 97 | | 104 | | 113 | | 98 | | 101 | |
| Perylene-D12 | 50-200 | 103 | | 115 | | 126 | | 108 | | 112 | |
| SURROGATES | | | | | | | | | | | |
| Nitrobenzene-D5 | 23-120 | 59 | | 55 | | 54 | | 63 | | 54 | |
| 2-Fluorobiphenyl | 30-115 | 72 | | 66 | | 65 | | 81 | | 66 | |
| Terphenyl-D14 | 18-137 | 111 | | 98 | | 94 | | 107 | | 104 | |
| Phenol-D5 | 24-113 | 62 | | 60 | | 54 | | 65 | | 59 | |
| 2-Fluorophenol | 25-121 | 59 | | 57 | | 55 | | 63 | | 56 | |
| 2,4,6-Tribromophenol | 19-122 | 85 | | 85 | | 79 | | 96 | | 86 | |

* Indicates Result is Outside QC Limits
NA = Not Applicable

Recra LabNet

| Client Sample ID: / Job Number & Lab Sample ID: / Sample Date: | | W-TR05-06 A96-4053 A6405306 08/22/96 | | W-TR05-07 A96-4053 A6405307 08/22/96 | | W-TR05-08 A96-4053 A6405308 08/22/96 | W-TR05-09 A96-4053 A6405309 08/22/96 | W-TR05-10 A96-4053 A6405310 08/22/96 |
|---|---|---|---|---|---|---|---|---|
| Analyte (UG/KG) | RL | Result | | Result | | Result | Result | Result |
| METHOD 8270 - TCL SEMI-VOLATILE ORGANICS | | | | | | | | |
| Acenaphthene | 330 | 330 | U | 330 | U | NA | NA | NA |
| Acenaphthylene | 330 | 330 | U | 330 | U | NA | NA | NA |
| Anthracene | 330 | 330 | U | 330 | U | NA | NA | NA |
| Benzo(a)anthracene | 330 | 330 | U | 330 | U | NA | NA | NA |
| Benzo(b)fluoranthene | 330 | 330 | U | 330 | U | NA | NA | NA |
| Benzo(k)fluoranthene | 330 | 330 | U | 330 | U | NA | NA | NA |
| Benzo(ghi)perylene | 330 | 330 | U | 330 | U | NA | NA | NA |
| Benzo(a)pyrene | 330 | 330 | U | 330 | U | NA | NA | NA |
| Benzoic acid | 1600 | 1600 | U | 1600 | U | NA | NA | NA |
| Benzyl alcohol | 330 | 330 | U | 330 | U | NA | NA | NA |
| Bis(2-chloroethoxy) methane | 330 | 330 | U | 330 | U | NA | NA | NA |
| Bis(2-chloroethyl) ether | 330 | 330 | U | 330 | U | NA | NA | NA |
| Bis(2-chloroisopropyl) ether | 330 | 330 | U | 330 | U | NA | NA | NA |
| Bis(2-ethylhexyl) phthalate | 330 | 330 | U | 330 | U | NA | NA | NA |
| 4-Bromophenyl phenyl ether | 330 | 330 | U | 330 | U | NA | NA | NA |
| Butyl benzyl phthalate | 330 | 330 | U | 330 | U | NA | NA | NA |
| 4-Chloroaniline | 330 | 330 | U | 330 | U | NA | NA | NA |
| 4-Chloro-3-methylphenol | 330 | 330 | U | 330 | U | NA | NA | NA |
| 2-Chloronaphthalene | 330 | 330 | U | 330 | U | NA | NA | NA |
| 2-Chlorophenol | 330 | 330 | U | 330 | U | NA | NA | NA |
| 4-Chlorodiphenylether | 330 | 330 | U | 330 | U | NA | NA | NA |
| Chrysene | 330 | 330 | U | 330 | U | NA | NA | NA |
| Dibenzo(a,h)anthracene | 330 | 330 | U | 330 | U | NA | NA | NA |
| Dibenzofuran | 330 | 330 | U | 330 | U | NA | NA | NA |
| Di-n-butyl phthalate | 330 | 330 | U | 330 | U | NA | NA | NA |
| 1,2-Dichlorobenzene | 330 | 330 | U | 330 | U | NA | NA | NA |
| 1,3-Dichlorobenzene | 330 | 330 | U | 330 | U | NA | NA | NA |
| 1,4-Dichlorobenzene | 330 | 330 | U | 330 | U | NA | NA | NA |
| 3,3'-Dichlorobenzidine | 660 | 660 | U | 660 | U | NA | NA | NA |
| 2,4-Dichlorophenol | 330 | 330 | U | 330 | U | NA | NA | NA |
| Diethyl phthalate | 330 | 330 | U | 330 | U | NA | NA | NA |
| 2,4-Dimethylphenol | 330 | 330 | U | 330 | U | NA | NA | NA |
| Dimethyl phthalate | 330 | 330 | U | 330 | U | NA | NA | NA |
| 4,6-Dinitro-2-methylphenol | 1600 | 1600 | U | 1600 | U | NA | NA | NA |
| 2,4-Dinitrophenol | 1600 | 1600 | U | 1600 | U | NA | NA | NA |
| 2,4-Dinitrotoluene | 330 | 330 | U | 330 | U | NA | NA | NA |
| 2,6-Dinitrotoluene | 330 | 330 | U | 330 | U | NA | NA | NA |
| Di-n-octyl phthalate | 330 | 330 | U | 330 | U | NA | NA | NA |
| Fluoranthene | 330 | 330 | U | 330 | U | NA | NA | NA |
| Fluorene | 330 | 330 | U | 330 | U | NA | NA | NA |
| Hexachlorobenzene | 330 | 330 | U | 330 | U | NA | NA | NA |
| Hexachlorobutadiene | 330 | 330 | U | 330 | U | NA | NA | NA |

* Indicates Result is Outside QC Limits
NA = Not Applicable

| Client Sample ID: | | W-TR05-06 | | W-TR05-07 | | W-TR05-08 | | W-TR05-09 | | W-TR05-10 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Job Number & Lab Sample ID: | | A96-4053 A6405306 | | A96-4053 A6405307 | | A96-4053 A6405308 | | A96-4053 A6405309 | | A96-4053 A6405310 | |
| Sample Date: | | 08/22/96 | | 08/22/96 | | 08/22/96 | | 08/22/96 | | 08/22/96 | |
| Analyte (UG/KG) | RL | Result | | Result | | Result | | Result | | Result | |
| METHOD 8270 - TCL SEMI-VOLATILE ORGANICS | | | | | | | | | | | |
| Hexachlorocyclopentadiene | 330 | 330 | U | 330 | U | NA | | NA | | NA | |
| Hexachloroethane | 330 | 330 | U | 330 | U | NA | | NA | | NA | |
| Indeno(1,2,3-cd)pyrene | 330 | 330 | U | 330 | U | NA | | NA | | NA | |
| Isophorone | 330 | 330 | U | 330 | U | NA | | NA | | NA | |
| 2-Methylnaphthalene | 330 | 330 | U | 330 | U | NA | | NA | | NA | |
| 2-Methylphenol | 330 | 330 | U | 330 | U | NA | | NA | | NA | |
| 4-Methylphenol | 330 | 330 | U | 330 | U | NA | | NA | | NA | |
| Naphthalene | 330 | 330 | U | 330 | U | NA | | NA | | NA | |
| 2-Nitroaniline | 1600 | 1600 | U | 1600 | U | NA | | NA | | NA | |
| 3-Nitroaniline | 1600 | 1600 | U | 1600 | U | NA | | NA | | NA | |
| 4-Nitroaniline | 1600 | 1600 | U | 1600 | U | NA | | NA | | NA | |
| Nitrobenzene | 330 | 330 | U | 330 | U | NA | | NA | | NA | |
| 2-Nitrophenol | 330 | 330 | U | 330 | U | NA | | NA | | NA | |
| 4-Nitrophenol | 1600 | 1600 | U | 1600 | U | NA | | NA | | NA | |
| N-nitrosodiphenylamine | 330 | 330 | U | 330 | U | NA | | NA | | NA | |
| N-Nitroso-Di-n-propylamine | 330 | 330 | U | 330 | U | NA | | NA | | NA | |
| Pentachlorophenol | 1600 | 1600 | U | 1600 | U | NA | | NA | | NA | |
| Phenanthrene | 330 | 330 | U | 330 | U | NA | | NA | | NA | |
| Phenol | 330 | 330 | U | 330 | U | NA | | NA | | NA | |
| Pyrene | 330 | 330 | U | 330 | U | NA | | NA | | NA | |
| 1,2,4-Trichlorobenzene | 330 | 330 | U | 330 | U | NA | | NA | | NA | |
| 2,4,5-Trichlorophenol | 800 | 800 | U | 800 | U | NA | | NA | | NA | |
| 2,4,6-Trichlorophenol | 330 | 330 | U | 330 | U | NA | | NA | | NA | |
| INTERNAL STANDARDS | | | | | | | | | | | |
| 1,4-Dichlorobenzene-D4 | 50-200 | 106 | | 113 | | NA | | NA | | NA | |
| Naphthalene-D8 | 50-200 | 110 | | 115 | | NA | | NA | | NA | |
| Acenaphthene-D10 | 50-200 | 116 | | 118 | | NA | | NA | | NA | |
| Phenanthrene-D10 | 50-200 | 115 | | 118 | | NA | | NA | | NA | |
| Chrysene-D12 | 50-200 | 95 | | 101 | | NA | | NA | | NA | |
| Perylene-D12 | 50-200 | 107 | | 111 | | NA | | NA | | NA | |
| SURROGATES | | | | | | | | | | | |
| Nitrobenzene-D5 | 23-120 | 55 | | 60 | | NA | | NA | | NA | |
| 2-Fluorobiphenyl | 30-115 | 65 | | 78 | | NA | | NA | | NA | |
| Terphenyl-D14 | 18-137 | 99 | | 103 | | NA | | NA | | NA | |
| Phenol-D5 | 24-113 | 60 | | 62 | | NA | | NA | | NA | |
| 2-Fluorophenol | 25-121 | 56 | | 60 | | NA | | NA | | NA | |
| 2,4,6-Tribromophenol | 19-122 | 87 | | 92 | | NA | | NA | | NA | |

* Indicates Result is Outside QC Limits
NA = Not Applicable

| Client Sample ID: | | W-TR05-06 | W-TR05-07 | W-TR05-08 | W-TR05-09 | W-TR05-10 |
|---|---|---|---|---|---|---|
| Job Number & Lab Sample ID: | | A96-4053 A6405306 | A96-4053 A6405307 | A96-4053 A6405308 | A96-4053 A6405309 | A96-4053 A6405310 |
| Sample Date: | | 08/22/96 | 08/22/96 | 08/22/96 | 08/22/96 | 08/22/96 |
| Analyte (UG/KG) | RL | Result | Result | Result | Result | Result |
| METHOD 8270-HSL POLYNUCLEAR AROMATIC HYDROCARBONS | | | | | | |
| Acenaphthene | 330 | NA | NA | 330 U | 330 U | 330 U |
| Acenaphthylene | 330 | NA | NA | 330 U | 330 U | 330 U |
| Anthracene | 330 | NA | NA | 330 U | 330 U | 330 U |
| Benzo(a)anthracene | 330 | NA | NA | 330 U | 330 U | 330 U |
| Benzo(b)fluoranthene | 330 | NA | NA | 330 U | 330 U | 330 U |
| Benzo(k)fluoranthene | 330 | NA | NA | 330 U | 330 U | 330 U |
| Benzo(ghi)perylene | 330 | NA | NA | 330 U | 330 U | 330 U |
| Benzo(a)pyrene | 330 | NA | NA | 330 U | 330 U | 330 U |
| Chrysene | 330 | NA | NA | 330 U | 330 U | 330 U |
| Dibenzo(a,h)anthracene | 330 | NA | NA | 330 U | 330 U | 330 U |
| Fluoranthene | 330 | NA | NA | 330 U | 330 U | 330 U |
| Fluorene | 330 | NA | NA | 330 U | 330 U | 330 U |
| Indeno(1,2,3-cd)pyrene | 330 | NA | NA | 330 U | 330 U | 330 U |
| 2-Methylnaphthalene | 330 | NA | NA | 330 U | 330 U | 330 U |
| Naphthalene | 330 | NA | NA | 330 U | 330 U | 330 U |
| Phenanthrene | 330 | NA | NA | 330 U | 330 U | 330 U |
| Pyrene | 330 | NA | NA | 330 U | 330 U | 330 U |
| INTERNAL STANDARDS | | | | | | |
| 1,4-Dichlorobenzene-D4 | 50-200 | NA | NA | 105 | 108 | 109 |
| Naphthalene-D8 | 50-200 | NA | NA | 110 | 109 | 110 |
| Acenaphthene-D10 | 50-200 | NA | NA | 117 | 113 | 111 |
| Phenanthrene-D10 | 50-200 | NA | NA | 116 | 114 | 110 |
| Chrysene-D12 | 50-200 | NA | NA | 100 | 94 | 91 |
| Perylene-D12 | 50-200 | NA | NA | 104 | 97 | 105 |
| SURROGATES | | | | | | |
| Nitrobenzene-D5 | 23-120 | NA | NA | 75 | 77 | 75 |
| 2-Fluorobiphenyl | 30-115 | NA | NA | 84 | 88 | 89 |
| Terphenyl-D14 | 18-137 | NA | NA | 108 | 110 | 108 |
| Phenol-D5 | 24-113 | NA | NA | 70 | 70 | 75 |
| 2-Fluorophenol | 25-121 | NA | NA | 70 | 72 | 73 |
| 2,4,6-Tribromophenol | 19-122 | NA | NA | 100 | 101 | 105 |

* Indicates Result is Outside QC Limits
NA = Not Applicable



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| Client Sample ID: | | W-TR05-11 | | W-TR05-14 | | | | |
|---|---|---|---|---|---|---|---|---|
| Job Number & Lab Sample ID: | | A96-4053 A6405311 | | A96-4053 A6405313 | | | | |
| Sample Date: | | 08/22/96 | | 08/22/96 | | | | |
| Analyte (UG/KG) | RL | Result | | Result | | | | |
| METHOD 8270-HSL POLYNUCLEAR AROMATIC HYDROCARBONS | | | | | | | | |
| Acenaphthene | 330 | 330 | U | 330 | U | | | |
| Acenaphthylene | 330 | 330 | U | 330 | U | | | |
| Anthracene | 330 | 330 | U | 330 | U | | | |
| Benzo(a)anthracene | 330 | 330 | U | 330 | U | | | |
| Benzo(b)fluoranthene | 330 | 330 | U | 330 | U | | | |
| Benzo(k)fluoranthene | 330 | 330 | U | 330 | U | | | |
| Benzo(ghi)perylene | 330 | 330 | U | 330 | U | | | |
| Benzo(a)pyrene | 330 | 330 | U | 330 | U | | | |
| Chrysene | 330 | 330 | U | 330 | U | | | |
| Dibenzo(a,h)anthracene | 330 | 330 | U | 330 | U | | | |
| Fluoranthene | 330 | 330 | U | 330 | U | | | |
| Fluorene | 330 | 330 | U | 330 | U | | | |
| Indeno(1,2,3-cd)pyrene | 330 | 330 | U | 330 | U | | | |
| 2-Methylnaphthalene | 330 | 330 | U | 330 | U | | | |
| Naphthalene | 330 | 330 | U | 330 | U | | | |
| Phenanthrene | 330 | 330 | U | 330 | U | | | |
| Pyrene | 330 | 330 | U | 330 | U | | | |
| INTERNAL STANDARDS | | | | | | | | |
| 1,4-Dichlorobenzene-D4 | 50-200 | 109 | | 107 | | | | |
| Naphthalene-D8 | 50-200 | 112 | | 108 | | | | |
| Acenaphthene-D10 | 50-200 | 110 | | 104 | | | | |
| Phenanthrene-D10 | 50-200 | 112 | | 106 | | | | |
| Chrysene-D12 | 50-200 | 92 | | 88 | | | | |
| Perylene-D12 | 50-200 | 108 | | 108 | | | | |
| SURROGATES | | | | | | | | |
| Nitrobenzene-D5 | 23-120 | 68 | | 66 | | | | |
| 2-Fluorobiphenyl | 30-115 | 88 | | 83 | | | | |
| Terphenyl-D14 | 18-137 | 106 | | 102 | | | | |
| Phenol-D5 | 24-113 | 75 | | 71 | | | | |
| 2-Fluorophenol | 25-121 | 69 | | 68 | | | | |
| 2,4,6-Tribromophenol | 19-122 | 108 | | 92 | | | | |

* Indicates Result is Outside QC Limits
NA = Not Applicable

Date: 08/27/96
Time: 10:59:58

ANALYTICAL RESULTS

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| Client Sample ID: | W-TR05-12 | | | | | |
|---|---|---|---|---|---|---|
| Job Number & Lab Sample ID: | A96-4075 A6407504 | | | | | |
| Sample Date: | 08/22/96 | | | | | |
| Analyte (UG/KG) | RL | Result | | | | |
| METHOD 8270-HSL POLYNUCLEAR AROMATIC HYDROCARBONS | | | | | | |
| Acenaphthene | 330 | 330 | U | | | |
| Acenaphthylene | 330 | 330 | U | | | |
| Anthracene | 330 | 330 | U | | | |
| Benzo(a)anthracene | 330 | 330 | U | | | |
| Benzo(b)fluoranthene | 330 | 330 | U | | | |
| Benzo(k)fluoranthene | 330 | 330 | U | | | |
| Benzo(ghi)perylene | 330 | 330 | U | | | |
| Benzo(a)pyrene | 330 | 330 | U | | | |
| Chrysene | 330 | 330 | U | | | |
| Dibenzo(a,h)anthracene | 330 | 330 | U | | | |
| Fluoranthene | 330 | 330 | U | | | |
| Fluorene | 330 | 330 | U | | | |
| Indeno(1,2,3-cd)pyrene | 330 | 330 | U | | | |
| 2-Methylnaphthalene | 330 | 330 | U | | | |
| Naphthalene | 330 | 330 | U | | | |
| Phenanthrene | 330 | 330 | U | | | |
| Pyrene | 330 | 330 | U | | | |
| INTERNAL STANDARDS | | | | | | |
| 1,4-Dichlorobenzene-D4 | 50-200 | 95 | | | | |
| Naphthalene-D8 | 50-200 | 100 | | | | |
| Acenaphthene-D10 | 50-200 | 100 | | | | |
| Phenanthrene-D10 | 50-200 | 106 | | | | |
| Chrysene-D12 | 50-200 | 87 | | | | |
| Perylene-D12 | 50-200 | 109 | | | | |
| SURROGATES | | | | | | |
| Nitrobenzene-D5 | 23-120 | 72 | | | | |
| 2-Fluorobiphenyl | 30-115 | 89 | | | | |
| Terphenyl-D14 | 18-137 | 107 | | | | |
| Phenol-D5 | 24-113 | 76 | | | | |
| 2-Fluorophenol | 25-121 | 71 | | | | |
| 2,4,6-Tribromophenol | 19-122 | 100 | | | | |

* Indicates Result is Outside QC Limits
NA = Not Applicable

Recra LabNet

08/27/96 15:39 ID: 01/04/06

Date: 08/27/96
Time: 13:19:49

ANALYTICAL RESULTS

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Page: 1

| Client Sample ID: | | W-TR05-01 | | W-TR05-02 | | W-TR05-03 | | W-TR05-04 | | W-TR05-05 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Job Number & Lab Sample ID: | | A96-4053 A6405301 | | A96-4053 A6405302 | | A96-4053 A6405303 | | A96-4053 A6405304 | | A96-4053 A6405305 | |
| Sample Date: | | 08/22/96 | | 08/22/96 | | 08/22/96 | | 08/22/96 | | 08/22/96 | |
| Analyte (UG/KG) | RL | Result | | Result | | Result | | Result | | Result | |
| METHOD 8080 - POLYCHLORINATED BIPHENYLS | | | | | | | | | | | |
| Aroclor 1016 | 40 | 40 | U | 40 | U | 40 | U | 40 | U | 40 | U |
| Aroclor 1221 | 80 | 80 | U | 80 | U | 80 | U | 80 | U | 80 | U |
| Aroclor 1232 | 40 | 40 | U | 40 | U | 40 | U | 40 | U | 40 | U |
| Aroclor 1242 | 40 | 40 | U | 47 | | 40 | U | 40 | U | 40 | U |
| Aroclor 1248 | 40 | 40 | U | 40 | U | 40 | U | 40 | U | 40 | U |
| Aroclor 1254 | 40 | 40 | U | 40 | U | 40 | U | 40 | U | 40 | U |
| Aroclor 1260 | 40 | 40 | U | 40 | U | 40 | U | 40 | U | 40 | U |
| SURROGATES | | | | | | | | | | | |
| Tetrachloro-m-xylene | 27-132 | 78 | | 57 | | 68 | | 88 | | 84 | |
| Decachlorobiphenyl | 58-150 | 100 | | 65 | | 82 | | 110 | | 96 | |

* Indicates Result is Outside QC Limits
NA = Not Applicable

| Client Sample ID: | | W-TR05-06 | | W-TR05-07 | | | | |
|---|---|---|---|---|---|---|---|---|
| Job Number & Lab Sample ID: | | A96-4053 A6405306 | | A96-4053 A6405307 | | | | |
| Sample Date: | | 08/22/96 | | 08/22/96 | | | | |
| Analyte (UG/KG) | RL | Result | | Result | | | | |
| METHOD 8080 - TCL PESTICIDES/PCBS | | | | | | | | |
| Aldrin | 8.0 | 8.0 | U | 8.0 | U | | | |
| alpha-BHC | 8.0 | 8.0 | U | 8.0 | U | | | |
| beta-BHC | 8.0 | 8.0 | U | 8.0 | U | | | |
| gamma-BHC (Lindane) | 8.0 | 8.0 | U | 8.0 | U | | | |
| delta-BHC | 8.0 | 8.0 | U | 8.0 | U | | | |
| Chlordane | 80 | 80 | U | 80 | U | | | |
| 4,4'-DDD | 16 | 16 | U | 16 | U | | | |
| 4,4'-DDE | 16 | 16 | U | 16 | U | | | |
| 4,4'-DDT | 16 | 16 | U | 16 | U | | | |
| Dieldrin | 16 | 16 | U | 16 | U | | | |
| Endosulfan I | 16 | 16 | U | 16 | U | | | |
| Endosulfan II | 16 | 16 | U | 16 | U | | | |
| Endosulfan Sulfate | 16 | 16 | U | 16 | U | | | |
| Endrin | 16 | 16 | U | 16 | U | | | |
| Endrin aldehyde | 32 | 32 | U | 32 | U | | | |
| Heptachlor | 8.0 | 8.0 | U | 8.0 | U | | | |
| Heptachlor epoxide | 8.0 | 8.0 | U | 8.0 | U | | | |
| Methoxychlor | 80 | 80 | U | 80 | U | | | |
| Toxaphene | 160 | 160 | U | 160 | U | | | |
| Aroclor 1016 | 40 | 40 | U | 40 | U | | | |
| Aroclor 1221 | 80 | 80 | U | 80 | U | | | |
| Aroclor 1232 | 40 | 40 | U | 40 | U | | | |
| Aroclor 1242 | 40 | 40 | U | 40 | U | | | |
| Aroclor 1248 | 40 | 40 | U | 40 | U | | | |
| Aroclor 1254 | 40 | 40 | U | 40 | U | | | |
| Aroclor 1260 | 40 | 40 | U | 40 | U | | | |
| SURROGATES | | | | | | | | |
| Tetrachloro-m-xylene | 27-132 | 90 | | 88 | | | | |
| Decachlorobiphenyl | 58-150 | 112 | | 108 | | | | |

* Indicates Result is Outside QC Limits
NA = Not Applicable



09/29/96 10:24 D 000/000

| Client Sample ID: | | W-TR05-08 | | W-TR05-09 | | W-TR05-10 | | W-TR05-11 | | W-TR05-14 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Job Number & Lab Sample ID: | | A96-4053 A6405308 | | A96-4053 A6405309 | | A96-4053 A6405310 | | A96-4053 A6405311 | | A96-4053 A6405313 | |
| Sample Date: | | 08/22/96 | | 08/22/96 | | 08/22/96 | | 08/22/96 | | 08/22/96 | |
| Analyte (UG/KG) | RL | Result | | Result | | Result | | Result | | Result | |
| METHOD 8080 - POLYCHLORINATED BIPHENYLS | | | | | | | | | | | |
| Aroclor 1016 | 40 | 40 | U | 40 | U | 40 | U | 40 | U | 40 | U |
| Aroclor 1221 | 80 | 80 | U | 80 | U | 80 | U | 80 | U | 80 | U |
| Aroclor 1232 | 40 | 40 | U | 40 | U | 40 | U | 40 | U | 40 | U |
| Aroclor 1242 | 40 | 40 | U | 40 | U | 40 | U | 40 | U | 40 | U |
| Aroclor 1248 | 40 | 40 | U | 40 | U | 40 | U | 40 | U | 40 | U |
| Aroclor 1254 | 40 | 40 | U | 40 | U | 40 | U | 40 | U | 40 | U |
| Aroclor 1260 | 40 | 40 | U | 40 | U | 40 | U | 40 | U | 40 | U |
| SURROGATES | | | | | | | | | | | |
| Tetrachloro-m-xylene | 27-132 | 88 | | 83 | | 87 | | 94 | | 92 | |
| Decachlorobiphenyl | 58-150 | 92 | | 103 | | 106 | | 114 | | 98 | |

* Indicates Result is Outside QC Limits
NA = Not Applicable



08/27/96 13:52 ID: 0005/006

AMALYTICAL RESULTS



| Client Sample ID: | W-TR05-12 | | | | | |
|---|---|---|---|---|---|---|
| Job Number & Lab Sample ID: | A96-4075 A6407504 | | | | | |
| Sample Date: | 08/22/96 | | | | | |
| Analyte (UG/KG) | RL | Result | | | | |
| METHOD 8080 - POLYCHLORINATED BIPHENYLS | | | | | | |
| Aroclor 1016 | 40 | 40 | U | | | |
| Aroclor 1221 | 80 | 80 | U | | | |
| Aroclor 1232 | 40 | 40 | U | | | |
| Aroclor 1242 | 40 | 40 | U | | | |
| Aroclor 1248 | 40 | 40 | U | | | |
| Aroclor 1254 | 40 | 40 | U | | | |
| Aroclor 1260 | 40 | 40 | U | | | |
| SURROGATES | | | | | | |
| Tetrachloro-m-xylene | 27-132 | 90 | | | | |
| Decachlorobiphenyl | 58-150 | 110 | | | | |

* Indicates Result is Outside QC Limits
NA = Not Applicable

ANALYTICAL RESULTS



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | Client Sample ID: | W-TR05-01 | W-TR05-02 | W-TR05-03 | W-TR05-04 | W-TR05-05 |
| | | Job Number & Lab Sample ID: | A96-4053 A6405301 | A96-4053 A6405302 | A96-4053 A6405303 | A96-4053 A6405304 | A96-4053 A6405305 |
| | | Sample Date: | 08/22/96 | 08/22/96 | 08/22/96 | 08/22/96 | 08/22/96 |
| Analyte | UNITS OF MEASURE | RL | Result | Result | Result | Result | Result |
| TOTAL METALS | | | | | | | |
| Thallium - Total | MG/KG | 0.36 | 1.5 | 0.78 | 1.3 | 2.1 | 1.6 |

* Indicates Result is Outside QC Limits
NA = Not Applicable



09/17/96 15:48 ID: 002/004

AWALYTICAL RESULTS



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Client Sample ID: | | | W-TR05-06 | W-TR05-07 | | | |
| Job Number & Lab Sample ID: | | | A96-4053 A6405306 | A96-4053 A6405307 | | | |
| Sample Date: | | | 08/22/96 | 08/22/96 | | | |
| Analyte | UNITS OF MEASURE | RL | Result | Result | | | |
| TOTAL HSL METALS | | | | | | | |
| Aluminum - Total | MG/KG | 0.77 | 10200 | 9550 | | | |
| Antimony - Total | MG/KG | 0.57 | 0.91 | 0.70 U | | | |
| Arsenic - Total | MG/KG | 0.28 | 0.49 | 1.8 | | | |
| Barium - Total | MG/KG | 0.024 | 201 | 76.6 | | | |
| Beryllium - Total | MG/KG | 0.010 | 1.7 | 0.86 | | | |
| Cadmium - Total | MG/KG | 0.021 | 0.026 U | 0.026 U | | | |
| Calcium - Total | MG/KG | 0.54 | 3280 | 1140 | | | |
| Chromium - Total | MG/KG | 0.26 | 20.7 | 35.2 | | | |
| Cobalt - Total | MG/KG | 0.12 | 15.5 | 2.8 | | | |
| Copper - Total | MG/KG | 0.087 | 3.9 | 6.8 | | | |
| Iron - Total | MG/KG | 2.4 | 24000 | 12600 | | | |
| Lead - Total | MG/KG | 0.13 | 20.0 | 7.8 | | | |
| Magnesium - Total | MG/KG | 0.87 | 4320 | 1560 | | | |
| Manganese - Total | MG/KG | 0.036 | 1030 | 126 | | | |
| Mercury - Total | MG/KG | 0.033 | 0.043 U | 0.042 U | | | |
| Nickel - Total | MG/KG | 0.25 | 24.4 | 8.4 | | | |
| Potassium - Total | MG/KG | 9.3 | 2410 | 703 | | | |
| Selenium - Total | MG/KG | 0.28 | 2.0 | 0.72 | | | |
| Silver - Total | MG/KG | 0.25 | 0.31 U | 0.30 U | | | |
| Sodium - Total | MG/KG | 56.8 | 214 | 196 | | | |
| Thallium - Total | MG/KG | 0.20 | 0.26 U | 0.24 U | | | |
| Vanadium - Total | MG/KG | 0.087 | 23.6 | 24.9 | | | |
| Zinc - Total | MG/KG | 0.024 | 48.8 | 23.1 | | | |

* Indicates Result is Outside QC Limits
NA = Not Applicable

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Client Sample ID: | | | W-TR05-08 | W-TR05-09 | W-TR05-10 | W-TR05-11 | W-TR05-14 |
| Job Number & Lab Sample ID: | | | A96-4053 A6405308 | A96-4053 A6405309 | A96-4053 A6405310 | A96-4053 A6405311 | A96-4053 A6405313 |
| Sample Date: | | | 08/22/96 | 08/22/96 | 08/22/96 | 08/22/96 | 08/22/96 |
| Analyte | UNITS OF MEASURE | RL | Result | Result | Result | Result | Result |
| TOTAL METALS | | | | | | | |
| Thallium - Total | MG/KG | 0.36 | 1.8 | 1.7 | 0.96 | 1.4 | 3.6 |

* Indicates Result Is Outside QC Limits
NA = Not Applicable



08/27/96 15:48 ID: 004/004

Date: 08/27/96
Time: 15:21:16

ANALYTICAL RESULTS

Rept: AW0353
Page: 1

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Client Sample ID: | | | W-TR05-12 | | | | |
| Job Number & Lab Sample ID: | | | A96-4075 A6407504 | | | | |
| Sample Date: | | | 08/22/96 | | | | |
| Analyte | UNITS OF MEASURE | RL | Result | | | | |
| TOTAL METALS | | | | | | | |
| Thallium - Total | MG/KG | 0.36 | 1.1 | | | | |

* Indicates Result Is Outside QC Limits
NA = Not Applicable