TerraNext 8101 College Boulevard, Suite 230 Overland Park, KS 66210

July 18, 1997

COPY

Dr. Ata-ur-Rahman
Permits Ground Water Team Supervisor
Permits Section (MC130)
Texas Natural Resource Conservation Commission
12100 Park 35 Circle
Building A, Room 122
Austin, Texas 78753

**Re: Former Southern Pacific Transportation company (SPTCo)**
**Union Pacific Railroad Company**
**4910 Liberty Road Facility, Houston**
**Post-Closure Care Permit No. HW-50343-000**
**Industrial Solid Waste Registration No. 32457**
**EPA ID No. TXD00820266**
**Compliance Plan No. CP-50343**
**Semi-Annual Report: January 1 through June 30, 1997**

Dear Dr. Rahman:

Terranext is pleased to provide the enclosed Semi-annual Report for the above-referenced facility on behalf of Union Pacific Railroad Company (UP). This report presents a summary of activities conducted for the referenced facility performed as part of the post-closure care and is submitted in accordance with Provision VII.B.2 of the Compliance Plan. The designated reporting period includes January 1 through June 30, 1997.

Further correspondence regarding this report or this project should be directed to: Mr. Ed Honig, Manager Environmental Site Remediation, Union Pacific Railroad Company; 1416 Dodge Street, Omaha, Nebraska 68179. You may contact Mr. Honig via telephone at (402) 271-5979 if you have any questions.

Sincerely,

TERRANEXT

Curtis L. Jones
Senior Project Manager

Enclosure
Distribution: per Attachment

Telephone: 913 696•1300 Facsimile: 913 696•1055 www.terranext.com

**HOUSTON WOOD PRESERVING WORKS**
**COMPLIANCE PLAN NO. CP-50343**

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# COMPLIANCE PLAN
# SEMI-ANNUAL REPORT

## JANUARY 1 THROUGH
## JUNE 30, 1997



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# COMPLIANCE PLAN
# SEMI-ANNUAL REPORT
# JANUARY 1 THROUGH JUNE 30, 1997

**Union Pacific Railroad Company**
**Formerly Southern Pacific Transportation Company**
**Wood Preserving Works**
**4910 Liberty Road**
**Houston, Texas**

**Terranext Project No. 44102069.09**

**Prepared For:**

**Union Pacific Railroad Company**
**Formerly Southern Pacific Lines**
**1416 Dodge Street; Room 930**
**Omaha, Nebraska 68179**

**July 18, 1997**

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**COMPLIANCE PLAN**
**SEMI-ANNUAL REPORT**
**JANUARY 1 THROUGH JUNE 30, 1997**

**Union Pacific Railroad Company**
**Formerly Southern Pacific Transportation Company**
**Wood Preserving Works**
**4910 Liberty Road**
**Houston, Texas**

Prepared By:

Steven L. Lange
Technical Manager

Reviewed By:

Curtis L. Jones
Project Manager

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# 1.0 INTRODUCTION

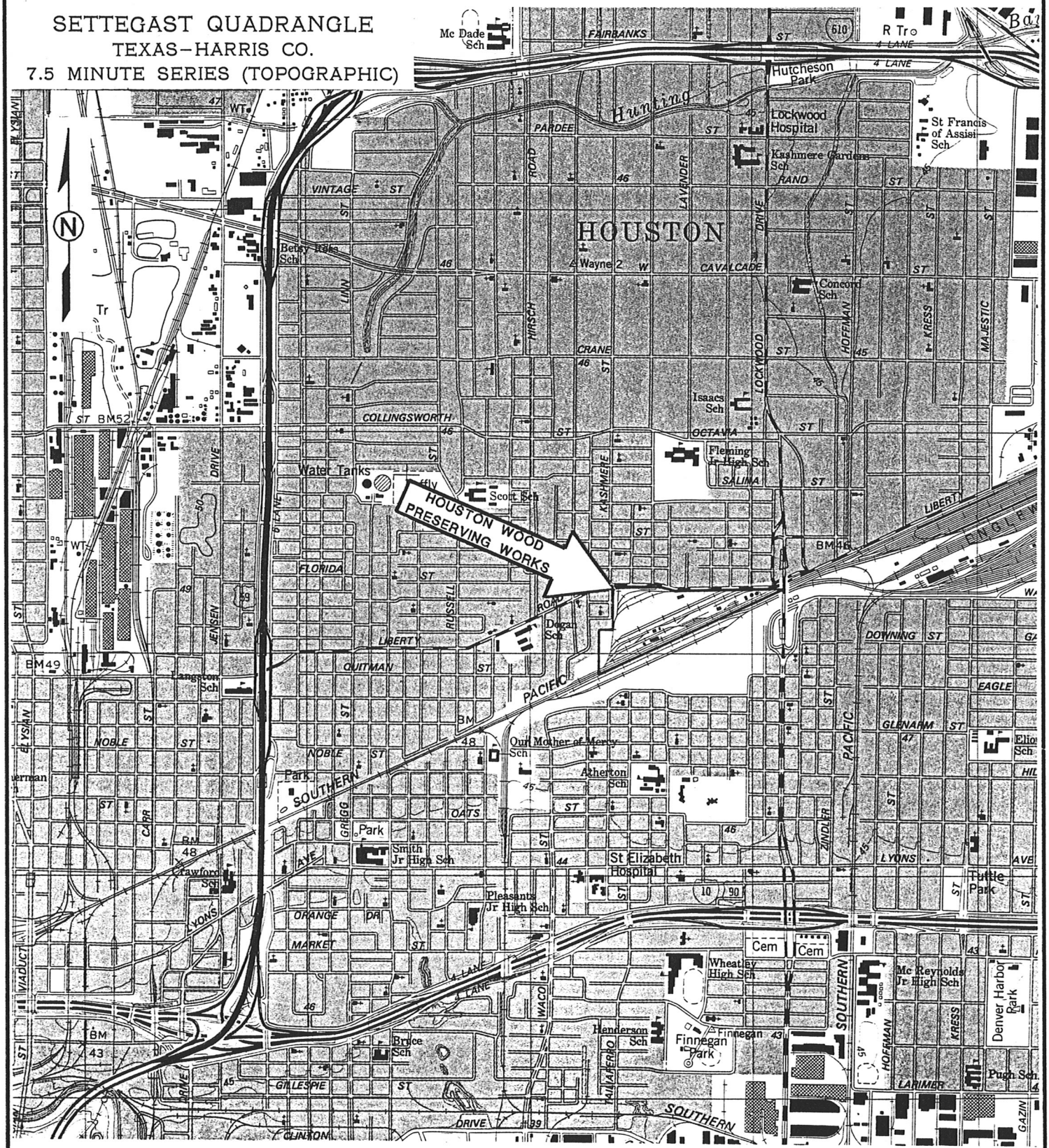
## 1.1 Purpose

On June 20, 1994, the Texas Natural Resource Conservation Commission (TNRCC) issued Permit Number HW-50343-000 (hereinafter, Permit) and TNRCC Compliance Plan Number CP-50343, which is incorporated within the Permit. The Permit applies to post-closure care for one former surface impoundment (TNRCC Permit Unit No. II.B.1) located at the Southern Pacific Transportation Company (SPTCo) former Houston Wood Preserving Works (HWPW), 4910 Liberty Road, Houston, Texas (Figure 1). In September 1996, the site became the property of the Union Pacific Railroad Company (UP). The Permit requires a RCRA Facility Investigation (RFI), and the Compliance Plan (CP) requires an Extent of Contamination (EOC) Investigation; the EOC Work Plan dated September 16, 1994, and the RFI Work Plan dated October 14, 1994, were approved respectively by letters from the TNRCC dated September 29 and October 16, 1995. Phase 1 Investigation activities outlined in the approved EOC and RFI Work Plans were initiated in October 1995. SPTCO submitted the Phase 1 RFI/EOC Investigation Report to the TNRCC on May 23, 1996. This Semi-Annual Report (SAR) was prepared to comply with the requirements of CP Provision VII.B.2. All referenced figures and tables are presented at the end of each major report section.

The activity period covered by this report is designated in CP Provision VII.B.2.a and encompasses January 1 through June 30, 1997, as the preceding six-month period.

## 1.2 Applicability and Scope

Provisions VII.B.2.a through VII.B.2.m of the Compliance Plan require that this SAR include the following:




| | | | |
|---|---|---|---|
| PROJ.# 44102069 | PAGE# | Terranext | **FIGURE 1**<br>**SITE VICINITY MAP**<br>**SPTCo WOOD PRESERVING WORKS**<br>**4910 LIBERTY ROAD**<br>**HOUSTON, TEXAS** |
| SCALE: 1" = 2000' | DRAWN BY: AP | | |
| FILE NO. FIG1-1 | DESIGNED BY: | | |
| DATE: 3/26/96 | APPROVED BY: WRG | | |

a. Narrative summary of the evaluations made in accordance with Sections V, VI, and VII with regard to corrective action and ground water monitoring.

b. Tabulated chemical analyses indicating each parameter that exceeds the Ground Water Protection Standard (CP Table I, Appendix A).

c. Tabulated water level elevations (relative to mean sea level), depth to water measurements, and total depth of well measurements.

d. Potentiometric surface maps of water table elevation during sampling events.

e. If a recovery system is installed, potentiometric surface maps indicating radius of influence, hydraulic gradients, and regional ground water flow.

f. Tabulation of the depth and thickness of non-aqueous phase liquids (NAPLs), if present, in each well for each sampling event performed during the period.

g. If a recovery system is installed, tabulation of monthly quantities of recovered ground water and NAPLs, if encountered, and graphs of weekly recorded flow rates versus time for Recovery Wells during each quarter.

h. Tabulation of data evaluation results and status of compliance of each well of CP Table III (Appendix B) with respect to the Ground Water Protection Standards.

i. Isopleth contour maps of naphthalene; acenaphthene; and the sum of benzene, toluene, ethylbenzene, and total xylenes (BTEX) concentrations.

j. Updated schedule summary per CP Provision XI.A.

k. Summary of any changes made to the monitoring/corrective action program and summary of Recovery Well inspections, repairs, and any operational difficulties.

l. Recommendation for any changes.

m. Any other items requested by the Executive Director.

A recovery system has not been installed for this facility. Therefore, Items e, g, and k (as each relates to Recovery Wells) will not be addressed further in this SAR. All other items as listed above are addressed in the text summary in Section 2.0 of the SAR, with supporting figures and tables presented at the end of Section 2.0. Reference information is presented in the appendices.

## 2.0 REPORT ITEMS

### 2.1 Corrective Action and Ground Water Monitoring Summary

#### 2.1.1 Corrective Action System

Existing wells were sampled and monitored to evaluate the extent of ground water contamination in the Uppermost Transmissive Zone (UTZ) and the Second Transmissive Zone (STZ). The definition of the UTZ and STZ is consistent with CP Provision I.A:

* UTZ refers to the first sand unit encountered at approximately 35 feet above mean sea level (MSL), averaging 6 to 8 feet in thickness.

* STZ refers to the second sand unit encountered at approximately 15 feet MSL, averaging 8 to 10 feet in thickness.

Existing monitoring wells in the UTZ, designated by function consistent with CP Table III, include Corrective Action Observation (CAO) wells (MW-4, -5, -7, -8, and -9) and Point of Compliance (POC) wells (MW-1a, -2, -7, -10a, and -11a). Existing wells in the STZ include POC wells (MW-10b and MW-11b) and piezometers (P-10, -11, and -12) (Appendix A).

#### 2.1.2 Ground Water Monitoring

Monitor wells and piezometers, shown in Figure 2 (page 13), were sampled on March 25, 1997, as the first semi-annual monitoring event in 1997. The schedule for ground water

monitoring was changed from quarterly to semi-annual beginning with the July 1995 event, as provided by Provision VI.C.3 of the Compliance Plan.

Ten ground water monitor wells (MW-1a, MW-2, MW-3, MW-4, MW-5, MW-7, MW-8, MW-9, MW-10a, and MW-11a) completed in the UTZ (El +35-foot zone) and two monitor wells (MW-10b and MW-11b) and three piezometers (P-10, P-11, and P-12) completed in the STZ (El +15-foot zone) were sampled during the first semi-annual period 1997. Field tracking reports and ground water sampling forms from the first semi-annual sampling event in 1997 are provided in Appendix B.

## 2.2 Analytical Data

The ground water analytical data for the first semi-annual sampling event of 1997 are listed in Tables 1 and 2 (page 22 and 23); results are tabulated for the UTZ and STZ. Detected concentrations of analytes in excess of the Ground Water Protection Standard (Appendix C) are indicated by shading on these tables.

## 2.3 Water Level Elevations

Table 3 lists the total depth, casing reference elevation, measured depth to water, and calculated water level elevation relative to mean sea level for each monitor well and piezometer.

## 2.4 Potentiometric Surface Data

Terranext used the measured ground water elevations to prepare a potentiometric map of each ground water zone. The equipotential lines were determined by applying a linear kriging algorithm to the data. Flow vectors were calculated based on the calculate head distribution and an estimated porosity of 0.30.

Figure 3 (page 14), depicts the potentiometric surface map of water table elevations for the UTZ during the first semi-annual 1997 monitoring event. Figure 4 (page 15), depicts the piezometric surface for the STZ during the first semi-annual monitoring event for the year, showing the elevations to which ground water in the STZ rises when hydrostatic pressure is released.

The gradient for UTZ is calculated to be 0.003 ft/ft to the SSW. The gradient for the STZ is calculated to be 0.005 ft/ft to the southwest.

## 2.5 Non-Aqueous Phase Liquids

Disposable bailers were used to collect ground water samples during the semi-annual sampling event. Visual observation of the ground water quality within the bailers revealed no indication of dense or light non-aqueous phase liquids (DNAPLs or LNAPLs) at the time of sampling.

On June 25, 1997, in response to the May 27, 1997 results of the Comprehensive Monitoring Evaluation conducted by TNRCC Region 12, Terranext personnel collected monthly water level measurements from all wells comprising the monitoring well network for the closed surface impoundment (permitted unit) using an oil/water interface probe as required by the Compliance Plan. The interface probe was also used as a means to determine if immiscible layers were present at either the surface of the water table or at the bottom of the water column.

The probe was lowered into each well to measure the depth to the top of the fluid column and slowly passed through the air/fluid interface to determine if LNAPL was present. This procedure was repeated to confirm the results of the first pass. Once the upper fluid interface measurements were determined, the probe was lowered to the bottom of the well

until the total depth of the well was reached. The probe was then elevated approximately one foot from the bottom of the well and slowly lowered to the base of the well in the attempt to detect the presence of any DNAPL layers at the base of the well.

The results of the water level and product thickness measurements indicated that immiscible layers were not present in any of the wells associated with the permitted unit. The table on page 9 summarizes the measurements collected on June 25, 1997.

## 2.6 Analytical Data Evaluation

Compliance Plan Provision VI.D provides two options for data evaluation: direct comparison with the concentration limits for the Ground Water Protection Standard or statistical analysis of the data. Table 4 lists the results of direct comparison of the analytical data for the first semi-annual sampling event in 1997 with the Ground Water Protection Standard and specifications of CP Provision VI.D.1. Wells and piezometers are considered compliant with the Ground Water Protection Standard if each of the constituents of concern is detected at concentrations less than or equal to the respective practical quantitation concentration limit. Wells and piezometers are considered noncompliant if one or more constituents of concern is detected at a concentration greater than the respective concentration limit.

WATER LEVEL ELEVATIONS AND PRODUCT THICKNESS

JUNE 25, 1997

| UTZ Well | Total Depth | *Reference Elevation | Depth to Water | LNAPL Thickness | DNAPL Thickness | Water Level Elevation |
|---|---|---|---|---|---|---|
| MW-1a | 19.69 | 47.97 | 2.59 | ND | ND | 43.19 |
| MW-2 | 18.55 | 48.05 | 2.59 | ND | ND | 42.71 |
| MW-3 | 20.10 | 48.63 | 3.11 | ND | ND | 40.73 |
| MW-4 | 21.85 | 49.91 | 4.68 | ND | ND | 43.44 |
| MW-5 | 27.45 | 49.60 | 3.97 | ND | ND | 44.25 |
| MW-7 | 24.83 | 47.71 | 3.86 | ND | ND | 41.97 |
| MW-8 | 25.09 | 49.37 | 4.56 | ND | ND | 43.42 |
| MW-9 | 25.37 | 48.81 | 3.80 | ND | ND | 43.73 |
| MW-10a | 25.65 | 49.90 | 4.58 | ND | ND | 42.90 |
| MW-11a | 24.08 | 50.03 | 4.88 | ND | ND | 43.36 |
| **STZ Well/ Piezometer** | **Total Depth** | ***Reference Elevation** | **Depth to Water** | **LNAPL Thickness** | **DNAPL Thickness** | **Water Level Elevation** |
| MW-10b | 46.61 | 49.96 | 4.71 | ND | ND | 42.83 |
| MW-11b | 46.78 | 50.19 | 5.06 | ND | ND | 42.96 |
| P-10 | 42.94 | 48.87 | 2.74 | ND | ND | 44.18 |
| P-11 | 42.85 | 49.02 | 3.83 | ND | ND | 43.33 |
| P-12 | 42.97 | 49.29 | 3.35 | ND | ND | 44.67 |

Table 1 Notes:

All depths and elevations measured in feet.
Product thicknesses measured to an accuracy of 0.01 inches.
* Elevation relative to Mean Sea Level
ND Phase-separated product not detected
UTZ Upper Transmissive Zone
STZ Second Transmissive Zone

## 2.7 Naphthalene, Acenaphthene, and BTEX Concentrations

The concentrations of the selected analytes as determined by the analytical laboratory have been plotted and then contoured. The contour lines were plotted using a log normal kriging technique. Locations with reported non-detects were assigned a value equal to one half of the reported laboratory detection limit.

The naphthalene, acenaphthene, and combined total BTEX concentrations determined during the first semi-annual sampling event of 1997 are illustrated in Figures 5 through 7, for the UTZ, and Figures 8 through 10 for the STZ, respectively. For monitoring well MW-8, the constituent concentrations depicted in the figures represent the average value of the concentrations from the ground water analyses from a sample collected from well MW-8 and a dupilcate sample, MW-8B.

## 2.8 Updated Compliance Plan Schedule

The Schedule for Compliance Plan Activities as required by CP Provision XI.A., submitted by SPTCo on August 19, 1994, was approved the TNRCC by letter dated, November 3, 1994. TNRCC recognized the dates and time-lines for the required activities to be correct and in accordance with the Compliance Plan. The revised (Semi-annual) schedule submitted with this report in Appendix D includes an estimated schedule for completion of RCRA Facility Investigation tasks required by the Permit.

Time frames, dates, and/or deadlines that were not specified in the Compliance Plan for required activities have been assumed based upon the estimated level of effort to complete the tasks. In some instances, the period for regulatory review was estimated to be 30 days from submittal date of the deliverable. Where unspecified in the Compliance Plan, the period of time for revisions to deliverables was assumed to be 60 days.

The EOC Work Plan dated September 16, 1994, was prepared as required under CP Provisions VIII and XI.D. In response to the TNRCC letter of April 11, 1995, the EOC

Work Plan and implementation schedule were amended and submitted to the TNRCC on May 19, 1995. In the TNRCC EOC Work Plan approval letter, dated September 29, 1995, the TNRCC requested a revised schedule corresponding to the date of initiation of the investigation; the revised schedule was submitted on November 22, 1995. The latest updated schedule is presented in Appendix D, and incorporates ongoing investigation activities and revisions to reflect actual dates of task completion and anticipated start dates for upcoming events.

The EOC Investigation Report required by CP Provisions VIII.E and IX was submitted to TNRCC as a component of the Phase 1 RFI/EOC Investigation Report, dated May 23, 1996. The schedule included herein provides for semi-annual ground water monitoring to continue at the closed impoundment. Phase 2 of the EOC Investigation was initiated in late February 1997, and is focused on the area south and southwest of the permitted unit to determine what impact the South Drainage Ditch, Solid Waste Management Unit (SWMU) 2, the Inactive Wastewater Lagoon Area of Concern (AOC) 6, and possible on-site sources may have on ground water quality in the vicinity of the permitted unit.

The Corrective Action Study Work Plan is required by CP Provision IX within 60 days of TNRCC approval of the EOC Investigation Report. The (Phase 2) EOC Investigation Report will be submitted as a component of the Phase 2 RFI/EOC Investigation Report. The Corrective Action Study may involve treatability or pilot studies for which time frames are currently uncertain. Similarly, the schedule for the corrective action phase of the project is uncertain due to existing data gaps and the need for subsequent technical and regulatory evaluation of the findings of the proposed investigation, including evaluation of risk-based cleanup standards. The Corrective Action Report is now anticipated to be approved in June 2001.

## 2.9 Monitoring/Corrective Action Program Changes and Inspections

By letter of January 10, 1995, the TNRCC acknowledged fulfillment of the requirement of CP Provision XI.B by the Operation & Maintenance (O&M) Plan dated August 19, 1994, together with the addendum to the O&M Plan dated December 8, 1994. By letter of October 13, 1995, the TNRCC approved O&M Plan Amendment 3, which included quarterly monitor well inspections.

Integrity of the well casings and siltation of the wells were evaluated during the March 1997 sampling event in accordance with CP Provision VI.C.4.e. Monitor wells and piezometers were also inspected throughout the period from September 1996 to March 1997.

POC and CAO wells and the piezometers were monitored on a quarterly basis to provide four quarters of baseline data through July 1995. Consistent with CP Provisions VI.C.3.a and VI.C.3.e, the POC wells and the CAO wells will be sampled and analyzed for the constituents of CP Table II (Appendix E) on a semi-annual basis which began in July 1995.

## 2.10 Recommendation for Any Changes

No changes in the monitoring/corrective action program are recommended at this time, pending completion of the data analyses and preparation of the Phase 2 RFI/EOC Investigation Report anticipated in October 1997. A scope of work for further investigation under Phase 3 will be presented in the Phase 2 RFI/EOC Report.

## 2.11 Other Items Requested by the Executive Director

No other items have been requested by the Executive Director of the TNRCC.

# Monitoring Wells and Piezometers

Houston Wood Preserving Works Site

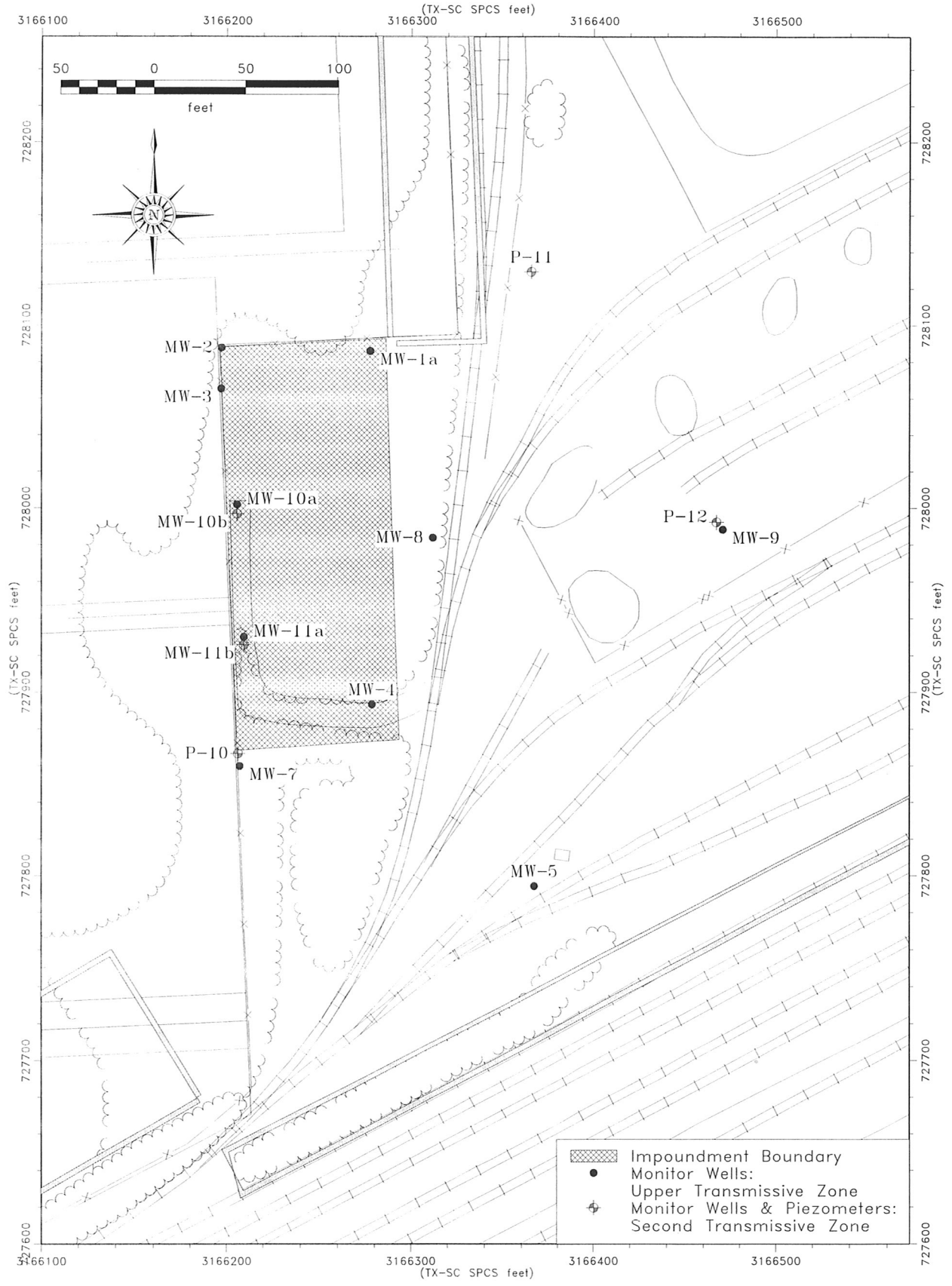



Figure 2. Monitoring Wells and Piezometers

# Potentiometric Surface: Upper Transmissive Zone; 03/25/97

Houston Wood Preserving Works Site

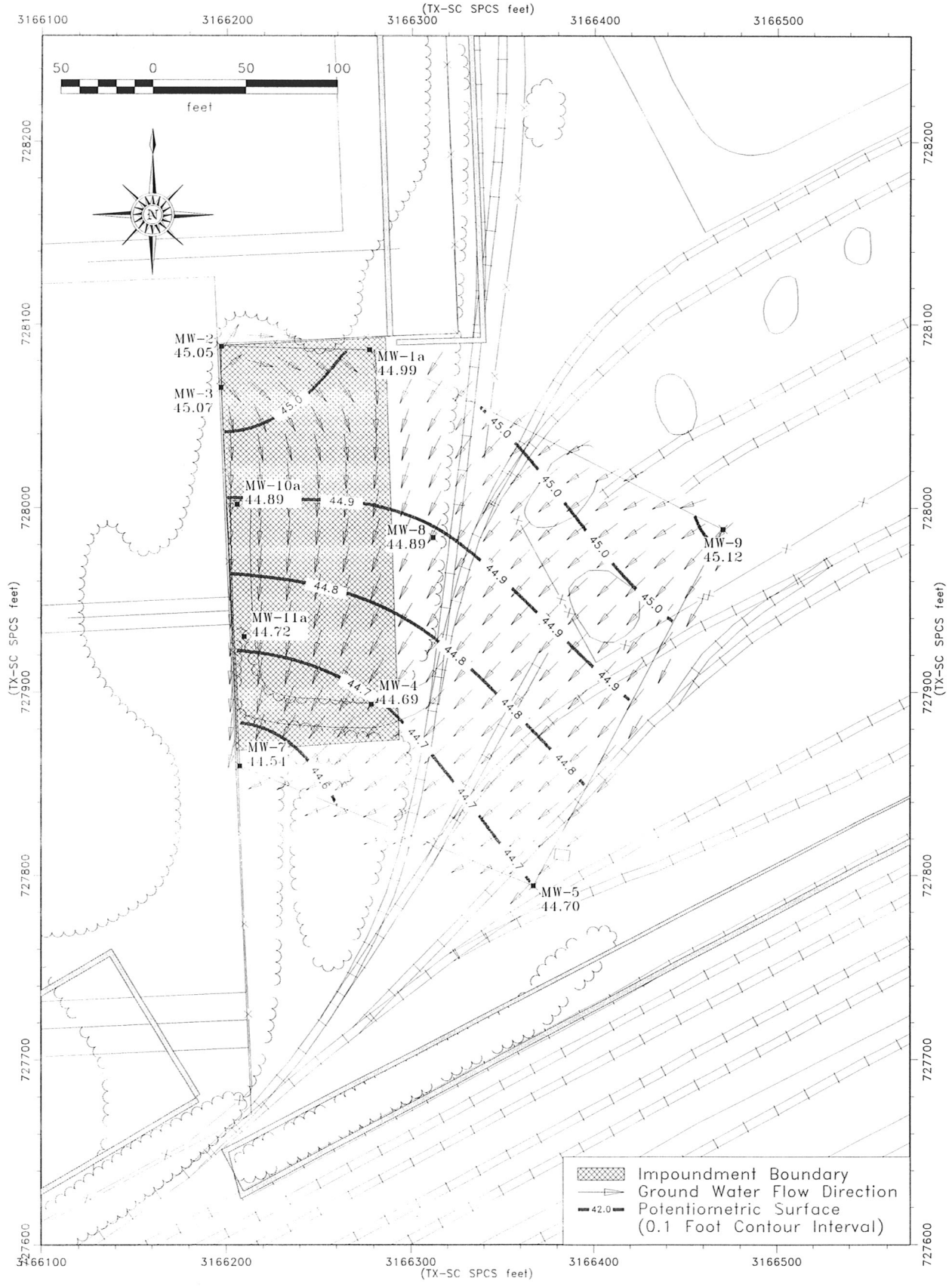



Figure 3. Potentiometric Surface: Upper Transmissive Zone; 03/25/97

# Piezometric Surface: Second Transmissive Zone; 03/25/97

Houston Wood Preserving Works Site

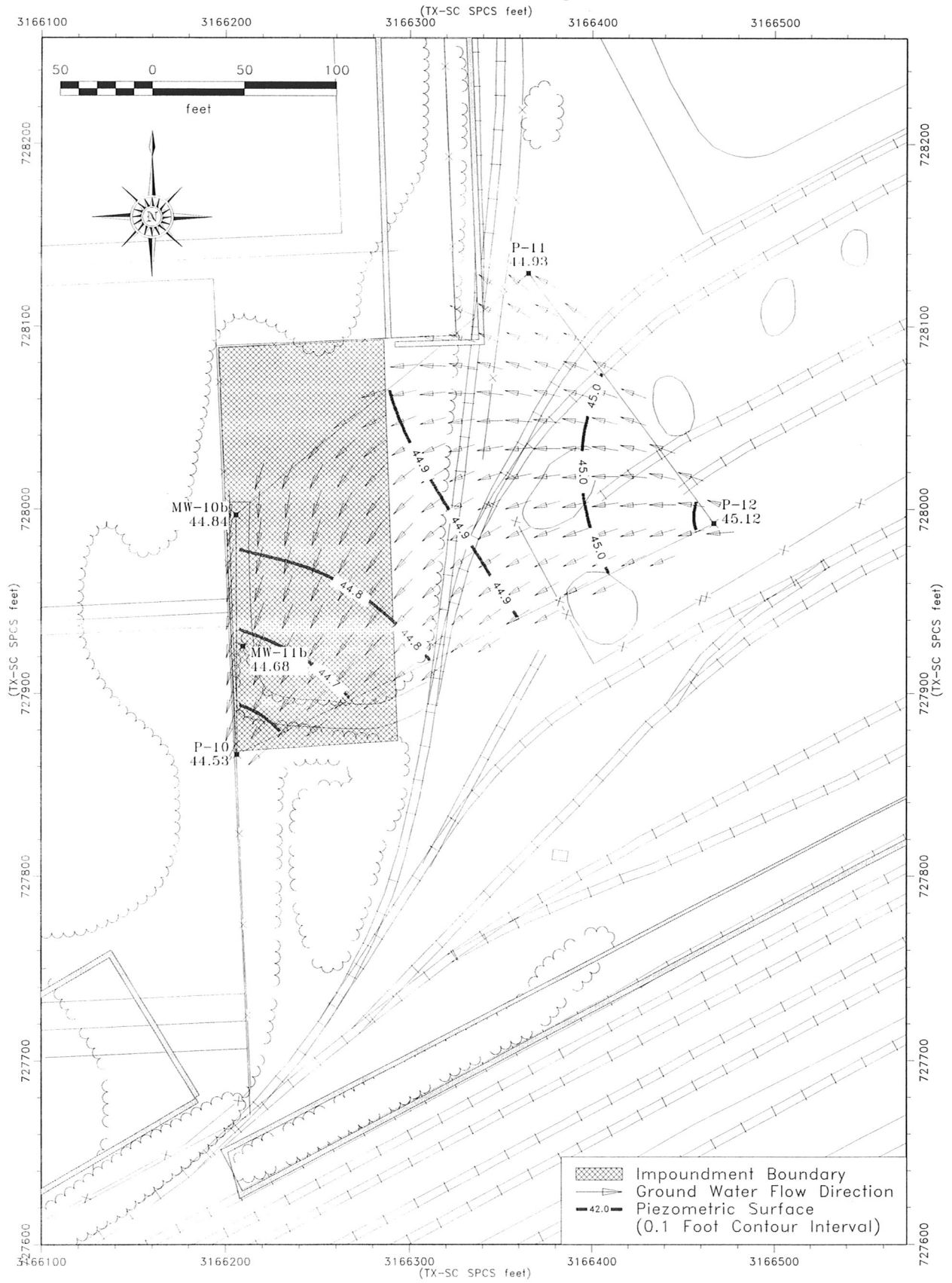



Figure 4. Piezometric Surface: Second Transmissive Zone; 03/25/97

# Interpretation of Naphthalene: Upper Transmissive Zone; 03/25/97

Houston Wood Preserving Works Site

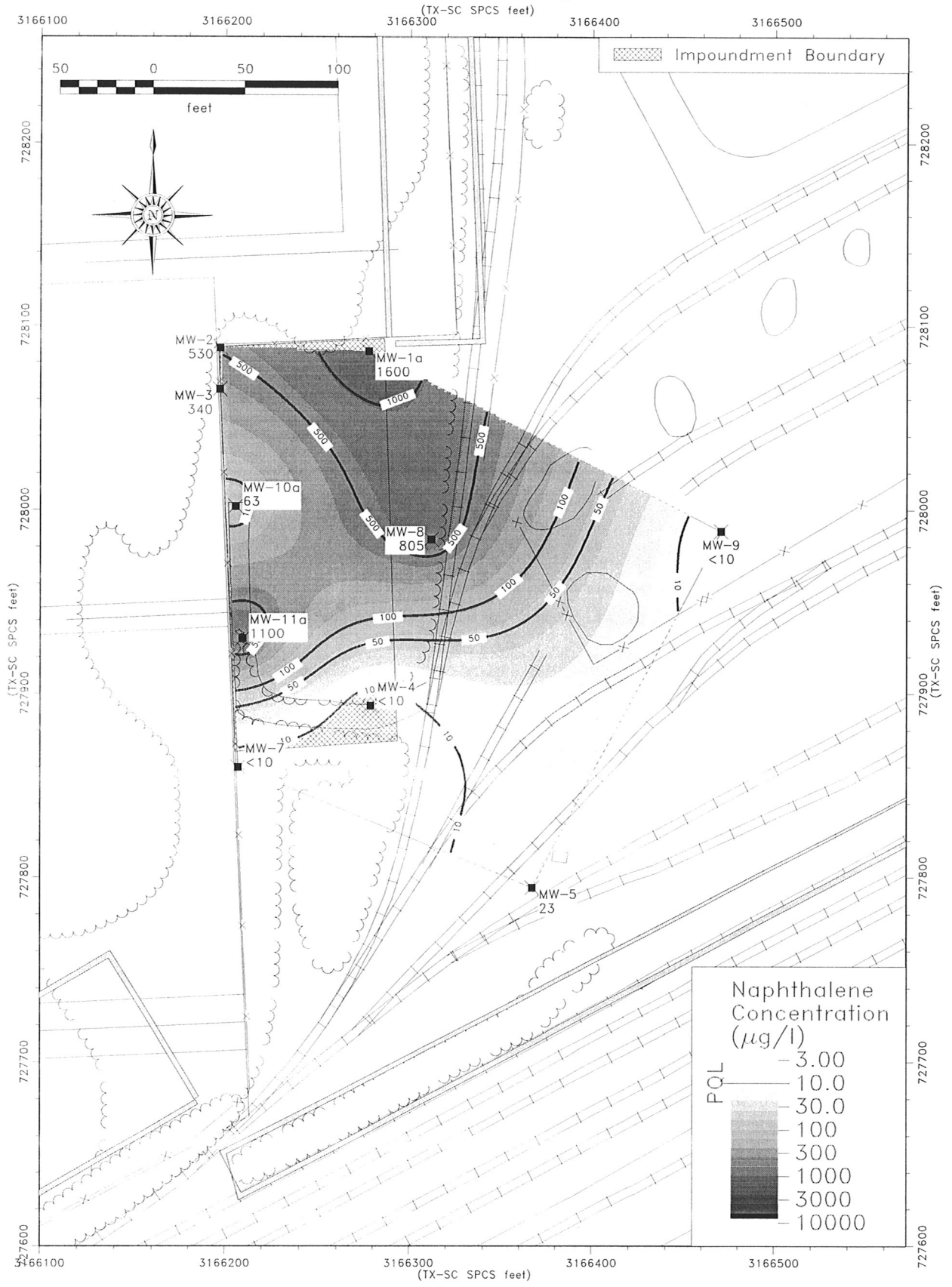



Figure 5. Interpretation of Naphthalene: Upper Transmissive Zone; 03/25/97

# Interpretation of Acenaphthene: Upper Transmissive Zone; 03/25/97

Houston Wood Preserving Works Site

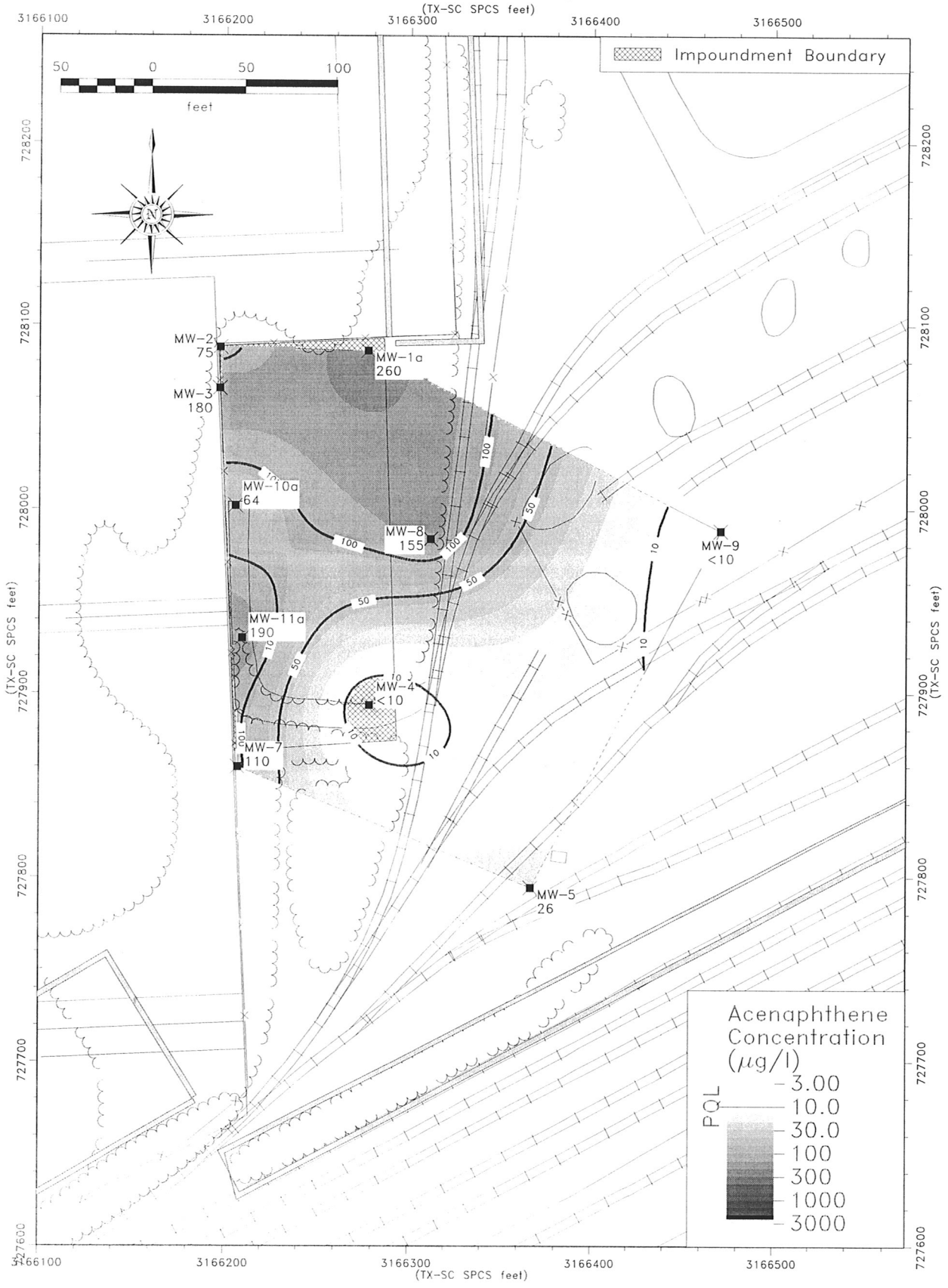



Figure 6. Interpretation of Acenaphthene: Upper Transmissive Zone; 03/25/97

# Interpretation of Total BTEX: Upper Transmissive Zone; 03/25/97

Houston Wood Preserving Works Site

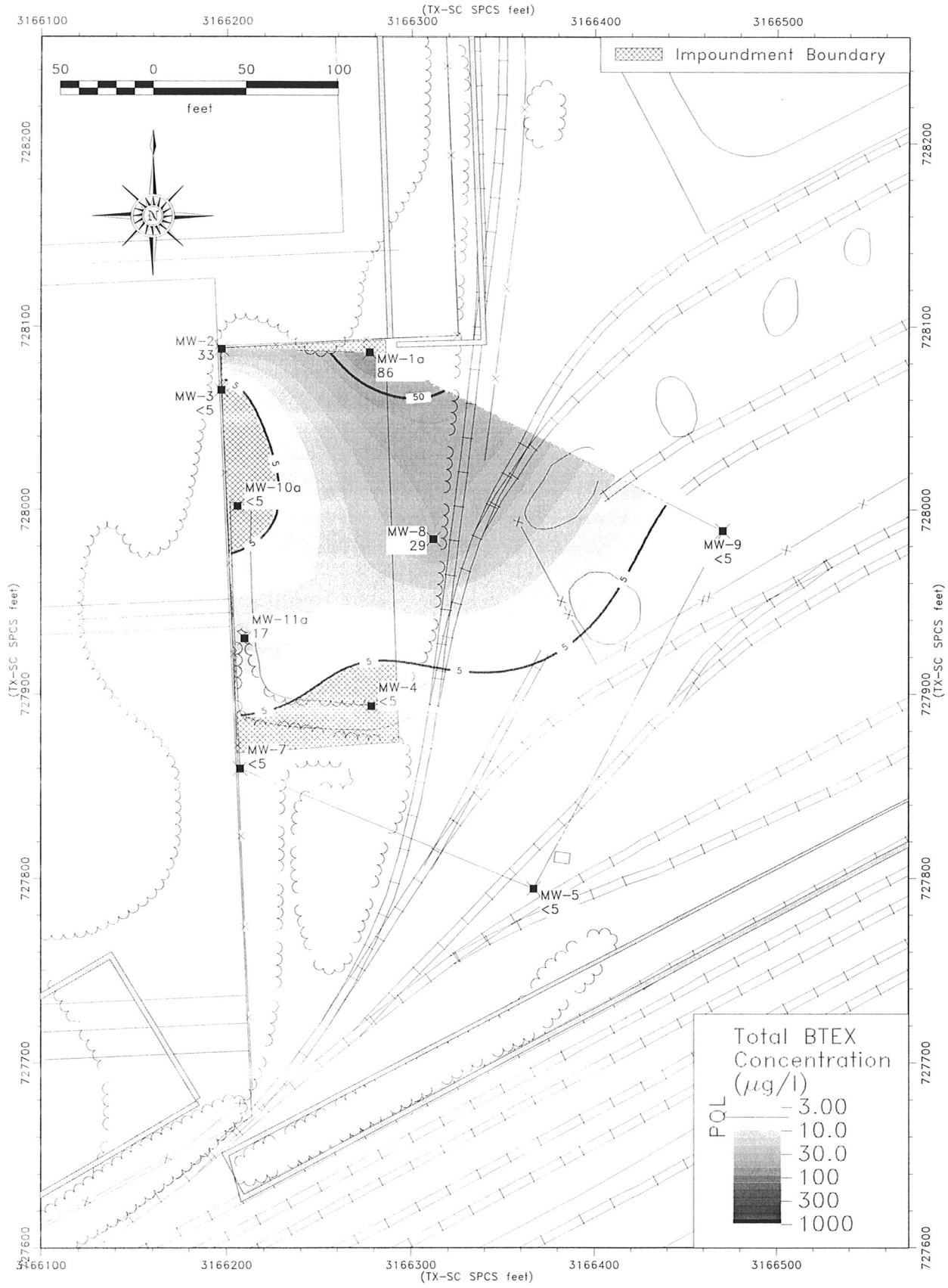



Figure 7. Interpretation of Total BTEX: Upper Transmissive Zone; 03/25/97

# Interpretation of Naphthalene: Second Transmissive Zone; 03/25/97

Houston Wood Preserving Works Site

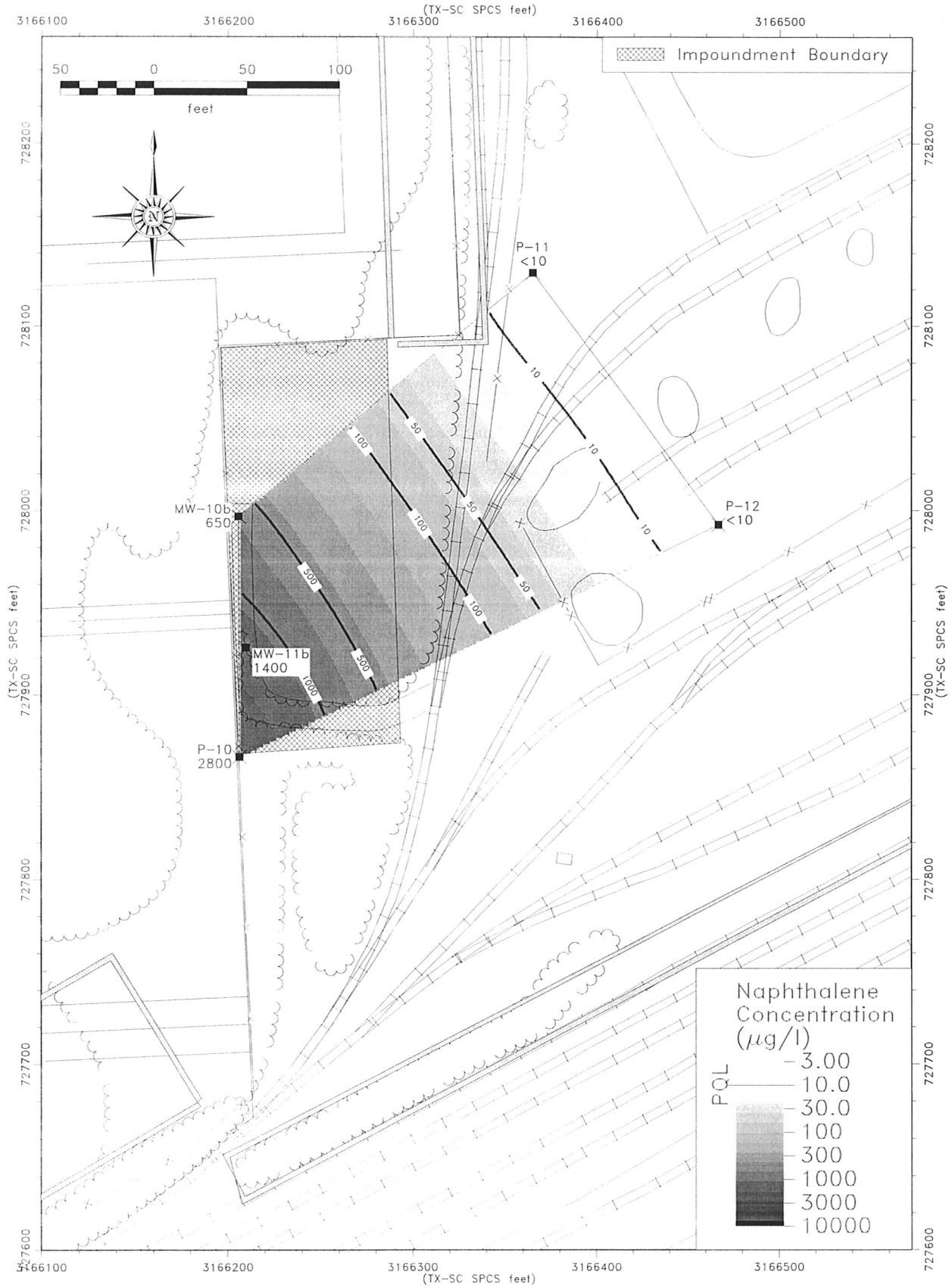



Figure 8. Interpretation of Naphthalene: Second Transmissive Zone; 03/25/97

# Interpretation of Acenaphthene: Second Transmissive Zone; 03/25/97

Houston Wood Preserving Works Site

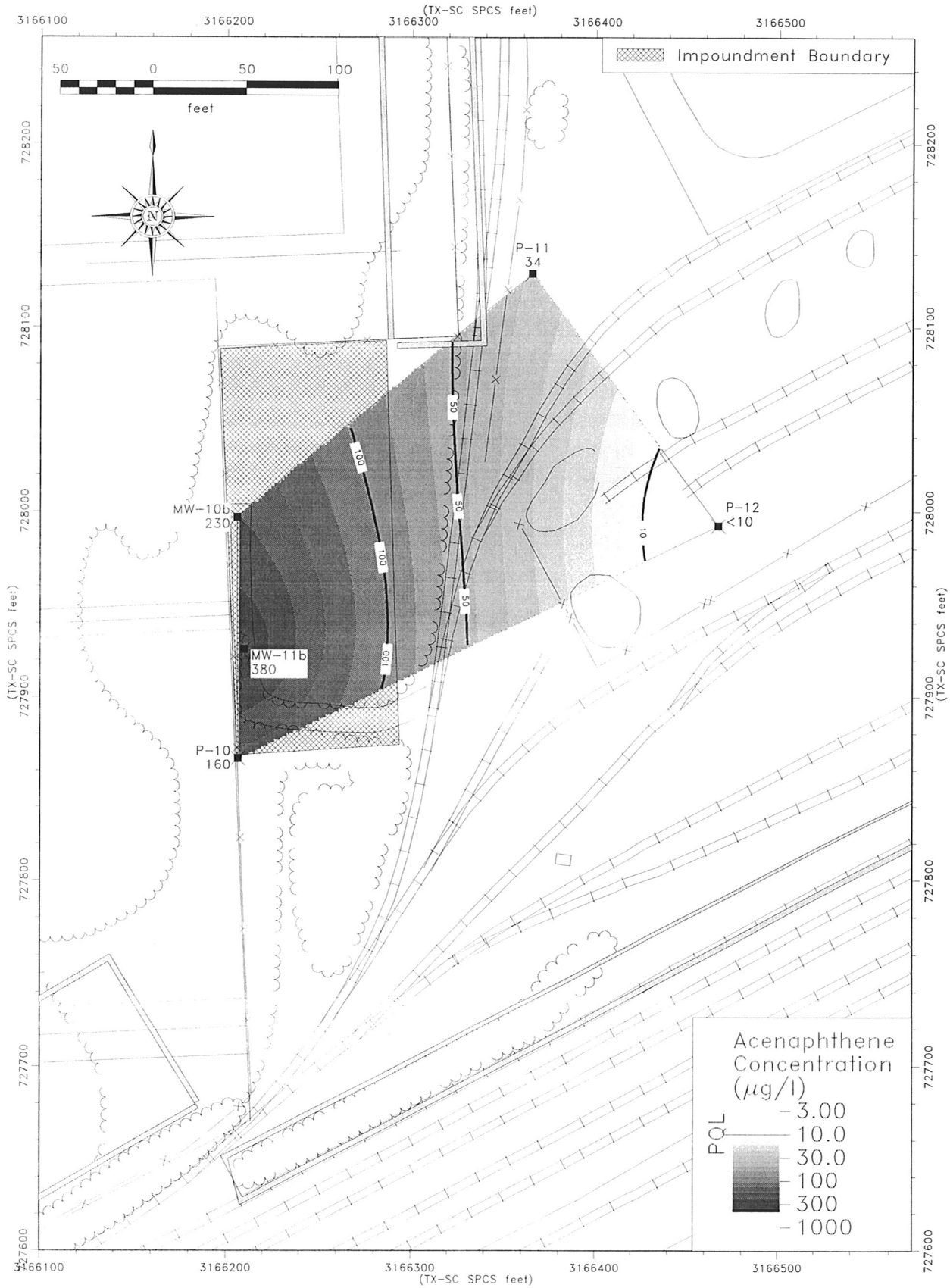



Figure 9. Interpretation of Acenaphthene: Second Transmissive Zone; 03/25/97

# Interpretation of Total BTEX: Second Transmissive Zone; 03/25/97

Houston Wood Preserving Works Site

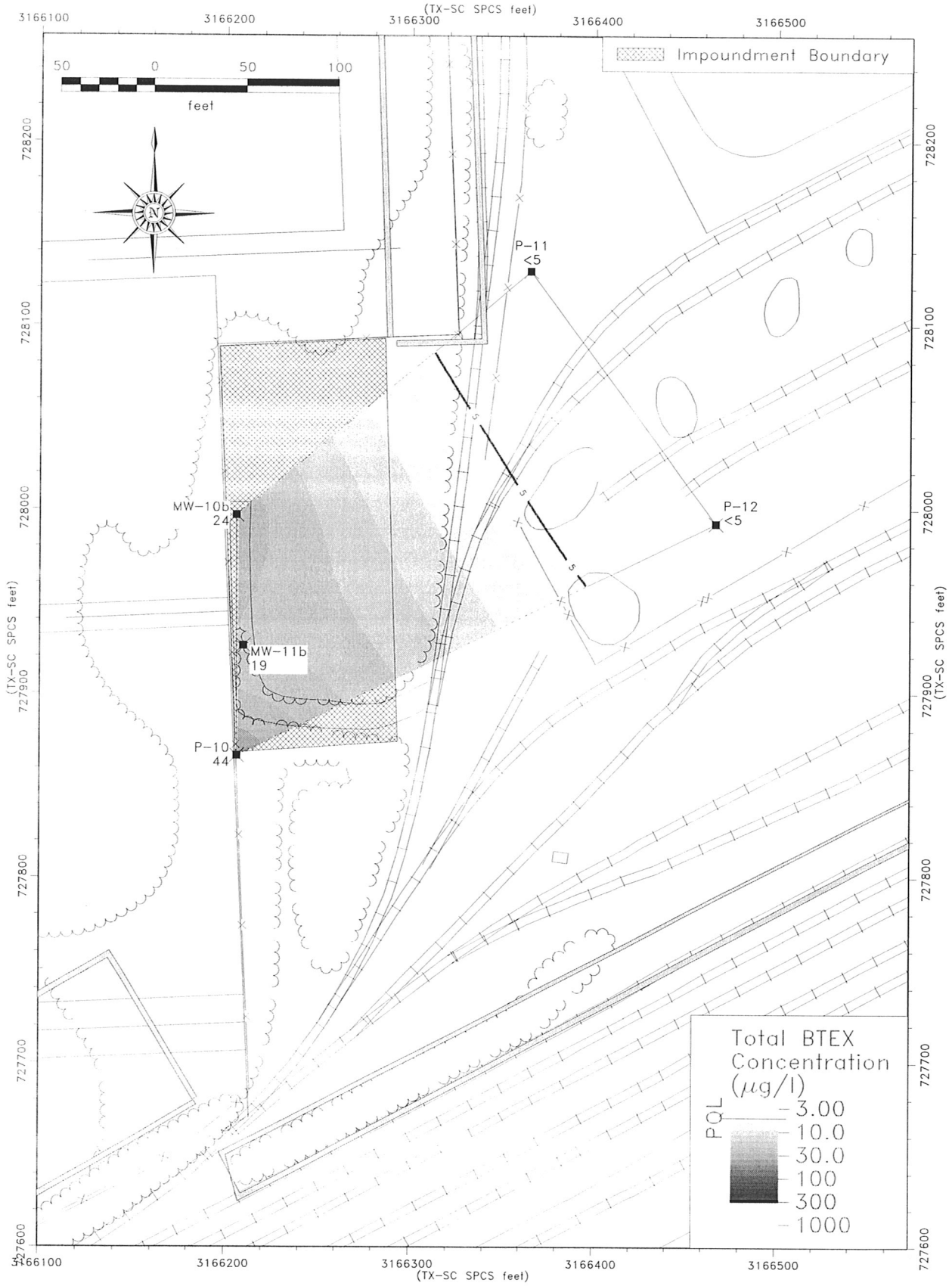



Figure 10. Interpretation of Total BTEX: Second Transmissive Zone; 03/25/97

TABLE 1
SUMMARY OF ANALYTICAL RESULTS FOR UTZ
(El +35-FOOT SAND ZONE) MONITOR WELLS
First Semi-annual Event 1997

| | ANALYTICAL RESULTS (µg/L) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| COMPOUND | MW-1a | MW-2 | MW-3 | MW-4 | MW-5 | MW-7 | MW-8 | MW-9 | MW-10a | MW-11a |
| BENZENE | 11 | ND<5 | ND<5 | ND<5 | ND<5 | ND<5 | ND<5 | ND<5 | ND<5 | ND<5 |
| CHLOROBENZENE | ND<5 | ND<5 | ND<5 | ND<5 | ND<5 | ND<5 | ND<5 | ND<5 | ND<5 | ND<5 |
| 1,2-DICHLOROETHANE | ND<5 | ND<5 | ND<5 | ND<5 | ND<5 | ND<5 | ND<5 | ND<5 | ND<5 | ND<5 |
| DICHLOROMETHANE | ND<5 | ND<5 | ND<5 | ND<5 | ND<5 | ND<5 | ND<5 | ND<5 | ND<5 | ND<5 |
| ETHYLBENZENE | 28 | 10 | ND<5 | ND<5 | ND<5 | ND<5 | 7 | ND<5 | ND<5 | 7 |
| TOLUENE | 5 | 7 | ND<5 | ND<5 | ND<5 | ND<5 | 5 | ND<5 | ND<5 | ND<5 |
| XYLENES | 42 | 16 | ND<5 | ND<5 | ND<5 | ND<5 | 13 | ND<5 | ND<5 | 10 |
| ACENAPHTHENE | 260 | 75 | 180 | ND<10 | 26 | 110 | 170 | ND<10 | 64 | 190 |
| ACENAPHTHYLENE | <100* | ND<10 | <100* | ND<10 | ND<10 | ND<10 | <40* | ND<10 | ND<10 | <100* |
| ANTHRACENE | <100* | ND<10 | <100* | ND<10 | ND<10 | ND<10 | <40* | ND<10 | ND<10 | <100* |
| BENZO(A)ANTHRACENE | <100* | ND<10 | <100* | ND<10 | ND<10 | ND<10 | <40* | ND<10 | ND<10 | <100* |
| BENZO(A)PYRENE | <100* | ND<10 | <100* | ND<10 | ND<10 | ND<10 | <40* | ND<10 | ND<10 | <100* |
| BIS(2-ETHYLHEXYL)PHTHALATE | <100* | ND<10 | <100* | ND<10 | ND<10 | ND<10 | <40* | ND<10 | ND<10 | <100* |
| BIS(2-CHLOROETHOXY)METHANE | <100* | ND<10 | <100* | ND<10 | ND<10 | ND<10 | <40* | ND<10 | ND<10 | <100* |
| 2-CHLORONAPHTHALENE | <100* | ND<10 | <100* | ND<10 | ND<10 | ND<10 | <40* | ND<10 | ND<10 | <100* |
| CHRYSENE | <100* | ND<10 | <100* | ND<10 | ND<10 | ND<10 | <40* | ND<10 | ND<10 | <100* |
| DIBENZOFURAN | 160 | 50 | 120 | ND<10 | ND<10 | ND<10 | 140 | ND<10 | 15 | <100* |
| 2,4-DIMETHYLPHENOL | <100* | 16 | <100* | ND<10 | ND<10 | ND<10 | <40* | ND<10 | ND<10 | <100* |
| DI-N-BUTYL PHTHALATE | <100* | ND<10 | <100* | ND<10 | ND<10 | ND<10 | <40* | ND<10 | ND<10 | <100* |
| 4,6-DINITRO-O-CRESOL | <500* | ND<50 | <500* | ND<50 | ND<50 | ND<50 | <200* | ND<50 | ND<50 | <500* |
| 2,4-DINITROTOLUENE | <100* | ND<10 | <100* | ND<10 | ND<10 | ND<10 | <40* | ND<10 | ND<10 | <100* |
| 2,6-DINITROTOLUENE | <100* | ND<10 | <100* | ND<10 | ND<10 | ND<10 | <40* | ND<10 | ND<10 | <100* |
| 1,2-DIPHENYLHYDRAZINE | <100* | ND<10 | <100* | ND<10 | ND<10 | ND<10 | <40* | ND<10 | ND<10 | <100* |
| FLUORANTHENE | <100* | ND<10 | <100* | ND<10 | ND<10 | ND<10 | <40* | ND<10 | ND<10 | <100* |
| FLUORENE | 170 | 44 | 120 | ND<10 | 13 | 81 | 190 | ND<10 | 31 | <100* |
| 2-METHYLNAPHTHALENE | 270 | ND<10 | <100* | ND<10 | ND<10 | ND<10 | 110 | ND<10 | ND<10 | <100* |
| NAPHTHALENE | 1,600 | 530 | 340 | ND<10 | 23 | ND<10 | 640 | ND<10 | 63 | 1,100 |
| NITROBENZENE | <100* | ND<10 | <100* | ND<10 | ND<10 | ND<10 | <40* | ND<10 | ND<10 | <100* |
| 4-NITROPHENOL | <500* | ND<50 | <500* | ND<50 | ND<50 | ND<50 | <200* | ND<50 | ND<50 | <500* |
| N-NITROSODIPHENYLAMINE | <100* | ND<10 | <100* | ND<10 | ND<10 | ND<10 | <40* | ND<10 | ND<10 | <100* |
| PENTACHLOROPHENOL | <500* | ND<50 | <500* | ND<50 | ND<50 | ND<50 | <200* | ND<50 | ND<50 | <500* |
| PHENANTHRENE | 130 | ND<10 | <100* | ND<10 | ND<10 | ND<10 | 51 | ND<10 | ND<10 | <100* |
| PHENOL | <100* | ND<10 | <100* | ND<10 | ND<10 | ND<10 | <40* | ND<10 | ND<10 | <100* |
| PYRENE | <100* | ND<10 | <100* | ND<10 | ND<10 | ND<10 | <40* | ND<10 | ND<10 | <100* |

µg/L = micrograms per liter
ND = Not Detected at given detection limit
* = Reporting limits for semi-volatiles are elevated due to the dilution factor required as a result of high analyte concentration.

TerraNext

TABLE 2
SUMMARY OF ANALYTICAL RESULTS FOR STZ
(El +15-FOOT SAND ZONE) MONITOR WELLS AND PIEZOMETERS
First Semi-annual Event 1997

| ANALYTICAL RESULTS (µg/L) | | | | | |
|---|---|---|---|---|---|
| COMPOUND | P-10 | P-11 | P-12 | MW-10b | MW-11b |
| BENZENE | ND<5 | ND<5 | ND<5 | ND<5 | ND<5 |
| CHLOROBENZENE | ND<5 | ND<5 | ND<5 | ND<5 | ND<5 |
| 1,2-DICHLOROETHANE | ND<5 | ND<5 | ND<5 | ND<5 | ND<5 |
| DICHLOROMETHANE | ND<5 | ND<5 | ND<5 | ND<5 | ND<5 |
| ETHYLBENZENE | 24 | ND<5 | ND<5 | 9 | 9 |
| TOLUENE | ND<5 | ND<5 | ND<5 | ND<5 | ND<5 |
| XYLENES | 20 | ND<5 | ND<5 | 15 | 10 |
| ACENAPHTHENE | 160 | 34 | ND<10 | 230 | 380 |
| ACENAPHTHYLENE | ND<10 | ND<10 | ND<10 | ND<10 | 110 |
| ANTHRACENE | 11 | ND<10 | ND<10 | 28 | <100* |
| BENZO(A)ANTHRACENE | ND<10 | ND<10 | ND<10 | ND<10 | <100* |
| BENZO(A)PYRENE | ND<10 | ND<10 | ND<10 | ND<10 | <100* |
| BIS(2-ETHYLHEXYL)PHTHALATE | ND<10 | ND<10 | ND<10 | ND<10 | <100* |
| BIS(2-CHLOROETHOXY)METHANE | ND<10 | ND<10 | ND<10 | ND<10 | <100* |
| 2-CHLORONAPHTHALENE | ND<10 | ND<10 | ND<10 | ND<10 | <100* |
| CHRYSENE | ND<10 | ND<10 | ND<10 | ND<10 | <100* |
| DIBENZOFURAN | 40 | ND<10 | ND<10 | 130 | 250 |
| 2,4-DIMETHYLPHENOL | ND<10 | ND<10 | ND<10 | ND<10 | <100* |
| DI-N-BUTYL PHTHALATE | ND<10 | ND<10 | ND<10 | ND<10 | <100* |
| 4,6-DINITRO-O-CRESOL | ND<50 | ND<50 | ND<50 | ND<50 | <500* |
| 2,4-DINITROTOLUENE | ND<10 | ND<10 | ND<10 | ND<10 | <100* |
| 2,6-DINITROTOLUENE | 19 | ND<10 | ND<10 | ND<10 | <100* |
| 1,2-DIPHENYLHYDRAZINE | ND<10 | ND<10 | ND<10 | ND<10 | <100* |
| FLUORANTHENE | 10 | ND<10 | ND<10 | 20 | <100* |
| FLUORENE | 100 | 17 | ND<10 | 150 | 270 |
| 2-METHYLNAPHTHALENE | 150* | ND<10 | ND<10 | 97 | 260 |
| NAPHTHALENE | 2800 | ND<10 | ND<10 | 650 | 1400 |
| NITROBENZENE | ND<10 | ND<10 | ND<10 | ND<10 | <100* |
| 4-NITROPHENOL | ND<50 | ND<50 | ND<50 | ND<50 | <500* |
| N-NITROSODIPHENYLAMINE | ND<10 | ND<10 | ND<10 | ND<10 | <100* |
| PENTACHLOROPHENOL | ND<50 | ND<50 | ND<50 | ND<50 | <500* |
| PHENANTHRENE | 49 | ND<10 | ND<10 | 140 | 270 |
| PHENOL | ND<10 | ND<10 | ND<10 | ND<10 | <100* |
| PYRENE | ND<10 | ND<10 | ND<10 | ND<10 | <100* |

µg/L = micrograms per liter
ND = Not Detected at given detection limit
* = Reporting limits for semi-volatiles are elevated due to the dilution factor required as a result of high analyte concentration.
A = The reported result is below the reporting limit for the target

TerraNext

TABLE 3
WATER LEVEL ELEVATIONS
FIRST SEMI-ANNUAL 1997

| UTZ Well | Total Depth | *Reference Elevation | Depth to Water | Water Level Elevation |
|---|---|---|---|---|
| MW-1a | 19.69 | 47.95 | 2.96 | 44.99 |
| MW-2 | 18.55 | 48.03 | 2.98 | 45.05 |
| MW-3 | 20.10 | 48.55 | 3.48 | 45.07 |
| MW-4 | 21.85 | 49.85 | 5.16 | 44.69 |
| MW-5 | 27.45 | 49.35 | 4.65 | 44.70 |
| MW-7 | 24.83 | 48.86 | 4.32 | 44.54 |
| MW-8 | 25.09 | 49.37 | 4.48 | 44.89 |
| MW-9 | 25.37 | 49.29 | 4.17 | 45.12 |
| MW-10a | 25.65 | 49.90 | 5.01 | 44.89 |
| MW-11a | 24.08 | 50.04 | 5.32 | 44.72 |
| **STZ Well/ Piezometer** | **Total Depth** | ***Reference Elevation** | **Depth to Water** | **Water Level Elevation** |
| MW-10b | 46.61 | 49.97 | 5.13 | 44.84 |
| MW-11b | 46.78 | 50.19 | 5.51 | 44.68 |
| P-10 | 42.94 | 47.72 | 3.19 | 44.53 |
| P-11 | 42.85 | 49.02 | 4.09 | 44.93 |
| P-12 | 42.97 | 48.82 | 3.70 | 45.12 |

* - All depths and elevations measured in feet; depth relative to Reference Elevation and elevation relative to Mean Sea Level
UTZ Upper Transmissive Zone
STZ Second Transmissive Zone

TABLE 4
COMPLIANCE OF WELLS AND PIEZOMETERS
WITH GROUND WATER PROTECTION STANDARD

| Monitoring Point | First Semi-annual Period 1997 | |
|---|---|---|
| UTZ Well | Compliant | Noncompliant |
| MW-1a | | X |
| MW-2 | | X |
| MW-3 | | X |
| MW-4 | X | |
| MW-5 | | X |
| MW-7 | | X |
| MW-8 | | X |
| MW-9 | X | |
| MW-10a | | X |
| MW-11a | | X |
| STZ Well/Piezometer | Compliant | Noncompliant |
| MW-10b | | X |
| MW-11b | | X |
| P-10 | | X |
| P-11 | | X |
| P-12 | X | |

# APPENDIX A

# DESIGNATION OF WELLS BY FUNCTION

DESIGNATION OF WELLS BY FUNCTION

| Designated Function* | Zone Monitored | Well Number | Sampling Frequency |
|---|---|---|---|
| Point of Compliance | UTZ | MW-1<br>MW-2<br>MW-7<br>MW-10a<br>MW-11a | Semi-annual |
| | STZ | MW-10b<br>MW-11b | Semi-annual |
| Corrective Action Observation | UTZ | MW-4<br>MW-5<br>MW-7<br>MW-8<br>MW-9 | Semi-annual |
| | STZ | P-10<br>P-11<br>P-12 | Semi-annual |

* Background Wells are negated by the use of the Practical Quantitation Limit (PQL), unless the Compliance Plan is modified under CP Provision VI.A.

# APPENDIX B

# FIELD TRACKING REPORT AND GROUND WATER SAMPLING FORMS

**PROJECT NUMBER: 44102069**

**PROJECT NAME: Closed Surface Impoundment, 4910 Liberty Road in Houston, Texas**

**FIELD TRACKING REPORT: First Semi-annual Event 1997**

| FIELD SAMPLE CODE | BRIEF DESCRIPTION | DATE | TIME(S) | SAMPLER |
|---|---|---|---|---|
| MW-1a | Water | 3-25-97 | 1420 | Goldsby |
| MW-2 | Water | 3-25-97 | 1125 | Goldsby |
| MW-3 | Water | 3-25-97 | 1400 | Goldsby |
| MW-4 | Water | 3-25-97 | 1540 | Goldsby |
| MW-5 | Water | 3-26-97 | 1000 | Goldsby |
| MW-7 | Water | 3-26-97 | 1125 | Goldsby |
| MW-8 | Water | 3-26-97 | 1050 | Goldsby |
| MW-9 | Water | 3-25-97 | 1310 | Goldsby |
| MW-10a | Water | 3-25-97 | 1535 | Goldsby |
| MW-10b | Water | 3-25-97 | 1800 | Goldsby |
| MW-11a | Water | 3-25-97 | 1555 | Goldsby |
| MW-11b | Water | 3-25-97 | 1500 | Goldsby |
| P-10 | Water | 3-26-97 | 1135 | Goldsby |
| P-11 | Water | 3-26-97 | 1215 | Goldsby |
| P-12 | Water | 3-26-97 | 1010 | Goldsby |

**TERRANEXT**
**GROUND WATER SAMPLING FORM**
**WELL NUMBER: MW-1a**

**Job Name:** First Semi-annual Sampling 1997 **Job Number:** 44102069

**Client:** Union Pacific Rail Road **Date Sampled:** 3-25-97

**Site Location:** 4910 Liberty Rd., Houston, Texas **Time Sampled:** 1420

**Weather:** Partly Cloudy, 75°F **Sampled By:** Goldsby/Jones (T)

## EVACUATION DATA

| | |
|---|---|
| **Elevation of Measuring Point (MP):** | 47.95' |
| **Depth to Water (From MP):** | 2.96' |
| **Depth of Well (From MP):** | 19.44' |
| **Volume of Water in Well:** | 10.76 gallons |
| **Volume of Water Evacuated:** | 33 gallons |

## FIELD PARAMETERS FOLLOWING PURGING ACTIVITIES

| | |
|---|---|
| **Temp (°C):** | 21.4 |
| **pH:** | 6.72 |
| **Specific Conductivity ($\mu$mhos/cm):** | 1306 |
| **Purge Method:** | Disposable Bailer |
| **Sampling Method:** | Disposable Bailer |
| **Remarks:** | Lab Rep #00060618 |

TerraNext

**FIELD TESTING:**
**WELL ID: MW-1a**
**March 25, 1997**

| TIME | WATER PURGED (gallons) | TEMP °C | pH | SPEC COND. ($\mu$mhos/cm) |
|---|---|---|---|---|
| 3-25-97 1215 | - | 20.9 | 6.77 | 1477 |
| 3-25-97 1222 | 11 | 20.9 | 6.79 | 1527 |
| 3-25-97 1228 | 22 | 21.2 | 6.73 | 1373 |
| 3-25-97 1235 | 33 | 21.4 | 6.72 | 1306 |
| 3-25-97 | 33 | 22.2 | 6.82 | 1318 |
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**TERRANEXT**
**GROUND WATER SAMPLING FORM**
**WELL NUMBER: MW-2**

**Job Name:** First Semi-annual Sampling 1997 **Job Number:** 44102069

**Client:** Union Pacific Rail Road **Date Sampled:** 3-25-97

**Site Location:** 4910 Liberty Rd., Houston, Texas **Time Sampled:** 1125

**Weather:** Partly Cloudy, 75°F **Sampled By:** Goldsby/Jones (T)

## EVACUATION DATA

| | |
|---|---|
| **Elevation of Measuring Point (MP):** | 48.03' |
| **Depth to Water (From MP):** | 2.98' |
| **Depth of Well (From MP):** | 18.40' |
| **Volume of Water in Well:** | 2.51 gallons |
| **Volume of Water Evacuated:** | 9 gallons |

## FIELD PARAMETERS FOLLOWING PURGING ACTIVITIES

| | |
|---|---|
| **Temp (°C):** | 20.4 |
| **pH:** | 6.56 |
| **Specific Conductivity ($\mu$mhos/cm):** | 1004 |
| **Purge Method:** | Disposable Bailer |
| **Sampling Method:** | Disposable Bailer |
| **Remarks:** | Lab Rep #00060618 |

TerraNext

**FIELD TESTING:**
**WELL ID: MW-2**
**March 25, 1997**

| TIME | WATER PURGED (gallons) | TEMP °C | pH | SPEC COND. ($\mu$mhos/cm) |
|---|---|---|---|---|
| 3-25-97 1032 | - | 19.8 | 6.55 | 725 |
| 3-25-97 1039 | 3 | 19.4 | 6.61 | 730 |
| 3-25-97 1045 | 6 | 19.3 | 6.59 | 833 |
| 3-25-97 1052 | 9 | 20.4 | 6.56 | 1004 |
| 3-25-97 1056 | 9 | 19.7 | 6.65 | 1084 |
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**TERRANEXT**
**GROUND WATER SAMPLING FORM**
**WELL NUMBER: MW-3**

**Job Name:** First Semi-annual Sampling 1997 **Job Number:** 44102069

**Client:** Union Pacific Rail Road **Date Sampled:** 3-25-97

**Site Location:** 4910 Liberty Rd., Houston, Texas **Time Sampled:** 1400

**Weather:** Partly Cloudy, 75°F **Sampled By:** Goldsby/Jones (T)

## EVACUATION DATA

| | |
|---|---|
| **Elevation of Measuring Point (MP):** | 48.55' |
| **Depth to Water (From MP):** | 3.48' |
| **Depth of Well (From MP):** | 19.93' |
| **Volume of Water in Well:** | 2.68 gallons |
| **Volume of Water Evacuated:** | 9 gallons |

## FIELD PARAMETERS FOLLOWING PURGING ACTIVITIES

| | |
|---|---|
| **Temp (°C):** | 21.1 |
| **pH:** | 6.90 |
| **Specific Conductivity ($\mu$mhos/cm):** | 1364 |
| **Purge Method:** | Disposable Bailer |
| **Sampling Method:** | Disposable Bailer |
| **Remarks:** | Lab Rep #0060618 |

TerraNext

**FIELD TESTING:**
**WELL ID: MW-3**
**March 25, 1997**

| TIME | WATER PURGED (gallons) | TEMP °C | pH | SPEC COND. ($\mu$mhos/cm) |
|---|---|---|---|---|
| 3-25-97 1224 | - | 20.3 | 6.82 | 1366 |
| 3-25-97 1232 | 3 | 20.5 | 6.81 | 1358 |
| 3-25-97 1240 | 6 | 20.7 | 6.79 | 1358 |
| 3-25-97 1249 | 9 | 21.1 | 6.90 | 1364 |
| 3-25-97 1400 | 9 | 20.6 | 6.77 | 1384 |
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**TERRANEXT**
**GROUND WATER SAMPLING FORM**
**WELL NUMBER: MW-4**

**Job Name:** First Semi-annual Sampling 1997 **Job Number:** 44102069

**Client:** Union Pacific Rail Road **Date Sampled:** 3-25-97

**Site Location:** 4910 Liberty Rd., Houston, Texas **Time Sampled:** 1540

**Weather:** Partly Cloudy, 75°F **Sampled By:** Goldsby/Jones (T)

## EVACUATION DATA

| | | |
|---|---|---|
| **Elevation of Measuring Point (MP):** | | 49.85' |
| **Depth to Water (From MP):** | 5.16' | |
| **Depth of Well (From MP):** | | 22.03' |
| **Volume of Water in Well:** | | 2.75 gallons |
| **Volume of Water Evacuated:** | | 9 gallons |

## FIELD PARAMETERS FOLLOWING PURGING ACTIVITIES

| | |
|---|---|
| **Temp (°C):** | 21.9 |
| **pH:** | 6.67 |
| **Specific Conductivity ($\mu$mhos/cm):** | 892 |
| **Purge Method:** | Disposable Bailer |
| **Sampling Method:** | Disposable Bailer |
| **Remarks:** | Lab Rep #00060618 |

TerraNext

**FIELD TESTING:**
**WELL ID: MW-4**
**March 25, 1997**

| TIME | WATER PURGED (gallons) | TEMP °C | pH | SPEC COND. ($\mu$mhos/cm) |
|---|---|---|---|---|
| 3-25-97 1440 | - | 20.4 | 6.65 | 934 |
| 3-25-97 1447 | 3 | 20.8 | 6.63 | 937 |
| 3-25-97 1453 | 6 | 21.1 | 6.67 | 914 |
| 3-25-97 1458 | 9 | 21.9 | 6.67 | 892 |
| 3-25-97 1540 | 9 | 20.8 | 6.62 | 917 |
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**TERRANEXT**
**GROUND WATER SAMPLING FORM**
**WELL NUMBER: MW-5**

**Job Name:** First Semi-annual Sampling 1997 **Job Number:** 44102069

**Client:** Union Pacific Rail Road **Date Sampled:** 3-26-97

**Site Location:** 4910 Liberty Rd., Houston, Texas **Time Sampled:** 1540

**Weather:** Partly Cloudy, 75°F **Sampled By:** Goldsby/Jones (T)

## EVACUATION DATA

| | |
|---|---|
| **Elevation of Measuring Point (MP):** | 49.35' |
| **Depth to Water (From MP):** | 4.65' |
| **Depth of Well (From MP):** | 27.23' |
| **Volume of Water in Well:** | 3.68 gallons |
| **Volume of Water Evacuated:** | 12 gallons |

## FIELD PARAMETERS FOLLOWING PURGING ACTIVITIES

| | |
|---|---|
| **Temp (°C):** | 21.7 |
| **pH:** | 6.89 |
| **Specific Conductivity ($\mu$mhos/cm):** | 855 |
| **Purge Method:** | Disposable Bailer |
| **Sampling Method:** | Disposable Bailer |
| **Remarks:** | Lab Rep #00060618 |

TerraNext

**FIELD TESTING:**
**WELL ID: MW-5**
**March 26, 1997**

| TIME | WATER PURGED (gallons) | TEMP °C | pH | SPEC COND. ($\mu$mhos/cm) |
|---|---|---|---|---|
| 3-26-97 1135 | - | 20.6 | 7.05 | 717 |
| 3-26-97 1143 | 4 | 21.4 | 6.95 | 821 |
| 3-26-97 1152 | 8 | 21.5 | 6.89 | 793 |
| 3-26-97 1200 | 12 | 21.7 | 6.89 | 855 |
| 3-26-97 1235 | 12 | 21.2 | 6.89 | 749 |
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**TERRANEXT**
**GROUND WATER SAMPLING FORM**
**WELL NUMBER: MW-7**

**Job Name:** First Semi-annual Sampling 1997 **Job Number:** 44102069

**Client:** Union Pacific Rail Road **Date Sampled:** 3-26-97

**Site Location:** 4910 Liberty Rd., Houston, Texas **Time Sampled:** 1125

**Weather:** Partly Cloudy, 75°F **Sampled By:** Goldsby/Jones (T)

## EVACUATION DATA

| | |
|---|---|
| **Elevation of Measuring Point (MP):** | 48.86' |
| **Depth to Water (From MP):** | 4.32' |
| **Depth of Well (From MP):** | 24.61' |
| **Volume of Water in Well:** | 13.25 gallons |
| **Volume of Water Evacuated:** | 40 gallons |

## FIELD PARAMETERS FOLLOWING PURGING ACTIVITIES

| | |
|---|---|
| **Temp (°C):** | 20.8 |
| **pH:** | 6.72 |
| **Specific Conductivity ($\mu$mhos/cm):** | 1003 |
| **Purge Method:** | Disposable Bailer |
| **Sampling Method:** | Disposable Bailer |
| **Remarks:** | Lab Rep #00060618 |

TerraNext

**FIELD TESTING:**
**WELL ID: MW-7**
**March 26, 1997**

| TIME | WATER PURGED (gallons) | TEMP °C | pH | SPEC COND. ($\mu$mhos/cm) |
|---|---|---|---|---|
| 3-26-97 0945 | - | 19.2 | 7.07 | 961 |
| 3-26-97 0953 | 13 | 19.5 | 6.91 | 1047 |
| 3-26-97 0959 | 26 | 20.4 | 6.79 | 1054 |
| 3-26-97 1005 | 40 | 20.8 | 6.72 | 1003 |
| 3-26-97 1025 | 40 | 20.6 | 6.67 | 1001 |
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**TERRANEXT**
**GROUND WATER SAMPLING FORM**
**WELL NUMBER: MW-8**

**Job Name:** First Semi-annual Sampling 1997 **Job Number:** 44102069

**Client:** Union Pacific Rail Road **Date Sampled:** 3-26-97

**Site Location:** 4910 Liberty Rd., Houston, Texas **Time Sampled:** 1050

**Weather:** Partly Cloudy, 75 F **Sampled By:** Goldsby/Jones (T)

## EVACUATION DATA

| | |
|---|---|
| **Elevation of Measuring Point (MP):** | 49.37' |
| **Depth to Water (From MP):** | 4.48' |
| **Depth of Well (From MP):** | 24.91' |
| **Volume of Water in Well:** | 13.34 gallons |
| **Volume of Water Evacuated:** | 40 gallons |

## FIELD PARAMETERS FOLLOWING PURGING ACTIVITIES

| | |
|---|---|
| **Temp (°C):** | 21.8 |
| **pH:** | 6.76 |
| **Specific Conductivity ($\mu$mhos/cm):** | 990 |
| **Purge Method:** | Disposable Bailer |
| **Sampling Method:** | Disposable Bailer |
| **Remarks:** | Lab Rep #00060618 |

TerraNext

**FIELD TESTING:**
**WELL ID: MW-8**
**March 26, 1997**

| TIME | WATER PURGED (gallons) | TEMP °C | pH | SPEC COND. ($\mu$mhos/cm) |
|---|---|---|---|---|
| 3-26-97 0900 | - | 19.7 | 7.49 | 759 |
| 3-26-97 0905 | 13 | 19.5 | 7.18 | 839 |
| 3-26-97 0910 | 26 | 19.6 | 6.94 | 1008 |
| 3-26-97 0917 | 40 | 21.8 | 6.76 | 990 |
| 3-26-97 1100 | 40 | 20.8 | 6.83 | 1023 |
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**TERRANEXT**
**GROUND WATER SAMPLING FORM**
**WELL NUMBER: MW-9**

**Job Name:** First Semi-annual Sampling 1997 **Job Number:** 44102069

**Client:** Union Pacific Rail Road **Date Sampled:** 3-25-97

**Site Location:** 4910 Liberty Rd., Houston, Texas **Time Sampled:** 1310

**Weather:** Partly Cloudy, 75°F **Sampled By:** Goldsby/Jones (T)

## EVACUATION DATA

| | |
|---|---|
| **Elevation of Measuring Point (MP):** | 49.29' |
| **Depth to Water (From MP):** | 4.17' |
| **Depth of Well (From MP):** | 25.25' |
| **Volume of Water in Well:** | 13.77 gallons |
| **Volume of Water Evacuated:** | 42 gallons |

## FIELD PARAMETERS FOLLOWING PURGING ACTIVITIES

| | |
|---|---|
| **Temp (°C):** | 22.7 |
| **pH:** | 6.77 |
| **Specific Conductivity ($\mu$mhos/cm):** | 843 |
| **Purge Method:** | Disposable Bailer |
| **Sampling Method:** | Disposable Bailer |
| **Remarks:** | Lab Rep #00060618 |

TerraNext

**FIELD TESTING:**
**WELL ID: MW-9**
**March 25, 1997**

| TIME | WATER PURGED (gallons) | TEMP °C | pH | SPEC COND. ($\mu$mhos/cm) |
|---|---|---|---|---|
| 3-25-97 1105 | - | 21.3 | 7.02 | 1183 |
| 3-25-97 1125 | 14 | 22.8 | 6.93 | 1197 |
| 3-25-97 1245 | 28 | 23.0 | 6.82 | 1252 |
| 3-25-97 1345 | 42 | 23.0 | 7.00 | 1255 |
| 3-25-97 1500 | 42 | 22.9 | 6.69 | 1270 |
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**TERRANEXT**
**GROUND WATER SAMPLING FORM**
**WELL NUMBER: MW-10a**

**Job Name:** First Semi-annual Sampling 1997 **Job Number:** 44102069

**Client:** Union Pacific Rail Road **Date Sampled:** 3-25-97

**Site Location:** 4910 Liberty Rd., Houston, Texas **Time Sampled:** 1535

**Weather:** Partly Cloudy, 75°F **Sampled By:** Goldsby/Jones (T)

## EVACUATION DATA

| | |
|---|---|
| **Elevation of Measuring Point (MP):** | 49.90' |
| **Depth to Water (From MP):** | 5.01' |
| **Depth of Well (From MP):** | 25.42' |
| **Volume of Water in Well:** | 13.33 gallons |
| **Volume of Water Evacuated:** | 40 gallons |

## FIELD PARAMETERS FOLLOWING PURGING ACTIVITIES

| | |
|---|---|
| **Temp (°C):** | 21.4 |
| **pH:** | 6.63 |
| **Specific Conductivity ($\mu$mhos/cm):** | 1728 |
| **Purge Method:** | Disposable Bailer |
| **Sampling Method:** | Disposable Bailer |
| **Remarks:** | Lab Rep #00060618 |

TerraNext

**FIELD TESTING:**
**WELL ID: MW-10a**
**March 25, 1997**

| TIME | WATER PURGED | TEMP °C | pH | SPEC COND. ($\mu$mhos/cm) |
|---|---|---|---|---|
| 3-25-97 1248 | - | 20.4 | 6.76 | 1639 |
| 3-25-97 1258 | 13 | 19.9 | 6.61 | 1797 |
| 3-25-97 1310 | 26 | 20.5 | 6.75 | 1661 |
| 3-25-97 1355 | 40 | 21.4 | 6.63 | 1728 |
| 3-25-97 1535 | 40 | 21.2 | 6.69 | 1718 |
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**TERRANEXT**
**GROUND WATER SAMPLING FORM**
**WELL NUMBER: MW-10b**

**Job Name:** First Semi-annual Sampling 1997 **Job Number:** 44102069

**Client:** Union Pacific Rail Road **Date Sampled:** 3-25-97

**Site Location:** 4910 Liberty Rd., Houston, Texas **Time Sampled:** 1800

**Weather:** Partly Cloudy, 75°F **Sampled By:** Goldsby/Jones (T)

## EVACUATION DATA

| | |
|---|---|
| **Elevation of Measuring Point (MP):** | 49.97' |
| **Depth to Water (From MP):** | 5.13' |
| **Depth of Well (From MP):** | 46.35' |
| **Volume of Water in Well:** | 26.9 gallons |
| **Volume of Water Evacuated:** | 81 gallons |

## FIELD PARAMETERS FOLLOWING PURGING ACTIVITIES

| | |
|---|---|
| Temp (°C): | 21.3 |
| **pH**: | 6.46 |
| **Specific Conductivity ($\mu$mhos/cm):** | 1531 |
| **Purge Method:** | Disposable Bailer |
| **Sampling Method:** | Disposable Bailer |
| **Remarks:** | Lab Rep #00060618 |

TerraNext

**FIELD TESTING:**
**WELL ID: MW-10b**
**March 25, 1997**

| TIME | WATER PURGED (gallons) | TEMP °C | pH | SPEC COND. ($\mu$mhos/cm) |
|---|---|---|---|---|
| 3-25-97 1217 | | 20.0 | 6.64 | 1536 |
| 3-25-97 1238 | 27 | 21.2 | 6.56 | 1526 |
| 3-25-97 1414 | 54 | 21.8 | 6.51 | 1546 |
| 3-25-97 1613 | 81 | 21.3 | 6.46 | 1531 |
| 3-25-97 1800 | 81 | 20.9 | 6.42 | 1511 |
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**TERRANEXT**
**GROUND WATER SAMPLING FORM**
**WELL NUMBER: MW-11a**

**Job Name:** First Semi-annual Sampling 1997 **Job Number:** 44102069

**Client:** Union Pacific Rail Road **Date Sampled:** 3-25-97

**Site Location:** 4910 Liberty Rd., Houston, Texas **Time Sampled:** 1555

**Weather:** Partly Cloudy, 75°F **Sampled By:** Goldsby/Jones (T)

## EVACUATION DATA

| | |
|---|---|
| **Elevation of Measuring Point (MP):** | 50.04' |
| **Depth to Water (From MP):** | 5.32' |
| **Depth of Well (From MP):** | 23.86' |
| **Volume of Water in Well:** | 12.11 gallons |
| **Volume of Water Evacuated:** | 36 gallons |

## FIELD PARAMETERS FOLLOWING PURGING ACTIVITIES

| | |
|---|---|
| **Temp (°C):** | 21.6 |
| **pH:** | 6.68 |
| **Specific Conductivity ($\mu$mhos/cm):** | 1342 |
| **Purge Method:** | Disposable Bailer |
| **Sampling Method:** | Disposable Bailer |
| **Remarks:** | Lab Rep #00060618 |

TerraNext

**FIELD TESTING:**
**WELL ID: MW-11a**
**March 25, 1997**

| TIME | WATER PURGED (gallons) | TEMP °C | pH | SPEC COND. ($\mu$mhos/cm) |
|---|---|---|---|---|
| 3-25-97 1347 | - | 21.4 | 6.94 | 1398 |
| 3-25-97 1353 | 12 | 21.5 | 7.00 | 1442 |
| 3-25-97 1400 | 24 | 21.6 | 6.71 | 1368 |
| 3-25-97 1403 | 36 | 21.6 | 6.68 | 1342 |
| 3-25-97 1555 | 36 | 21.1 | 6.58 | 1365 |
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**TERRANEXT**
**GROUND WATER SAMPLING FORM**
**WELL NUMBER: MW-11b**

**Job Name:** First Semi-annual Sampling 1997 **Job Number:** 44102069

**Client:** Union Pacific Rail Road **Date Sampled:** 3-25-97

**Site Location:** 4910 Liberty Rd., Houston, Texas **Time Sampled:** 1500

**Weather:** Partly Cloudy, 75°F **Sampled By:** Goldsby/Jones (T)

## EVACUATION DATA

| | |
|---|---|
| **Elevation of Measuring Point (MP):** | 50.19' |
| **Depth to Water (From MP):** | 5.51' |
| **Depth of Well (From MP):** | 46.56' |
| **Volume of Water in Well:** | 26.81 gallons |
| **Volume of Water Evacuated:** | 81 gallons |

## FIELD PARAMETERS FOLLOWING PURGING ACTIVITIES

| | |
|---|---|
| **Temp (°C):** | 23.0 |
| **pH:** | 7.00 |
| **Specific Conductivity ($\mu$mhos/cm):** | 1255 |
| **Purge Method:** | Disposable Bailer |
| **Sampling Method:** | Disposable Bailer |
| **Remarks:** | Lab Rep #00060618 |

TerraNext

**FIELD TESTING:**
**WELL ID: MW-11b**
**March 25, 1997**

| TIME | WATER PURGED (gallons) | TEMP °C | pH | SPEC COND. ($\mu$mhos/cm) |
|---|---|---|---|---|
| 3-25-97 1105 | - | 21.3 | 7.02 | 1183 |
| 3-25-97 1125 | 27 | 22.8 | 6.93 | 1197 |
| 3-25-97 1245 | 54 | 23.0 | 6.82 | 1252 |
| 3-25-97 1345 | 81 | 23.0 | 7.00 | 1255 |
| 3-25-97 1500 | 81 | 22.9 | 6.69 | 1270 |
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**TERRANEXT**
**GROUND WATER SAMPLING FORM**
**PIEZOMETER NUMBER: P-10**

**Job Name:** First Semi-annual Sampling 1997 **Job Number:** 44102069

**Client:** Union Pacific Rail Road **Date Sampled:** 3-26-97

**Site Location:** 4910 Liberty Rd., Houston, Texas **Time Sampled:** 1135

**Weather:** Partly Cloudy, 75°F **Sampled By:** Goldsby/Jones (T)

## EVACUATION DATA

| | |
|---|---|
| **Elevation of Measuring Point (MP):** | 47.72' |
| **Depth to Water (From MP):** | 3.19' |
| **Depth of Piezometer (From MP):** | 42.74' |
| **Volume of Water in Piezometer:** | 6.45 gallons |
| **Volume of Water Evacuated:** | 21 gallons |

## FIELD PARAMETERS FOLLOWING PURGING ACTIVITIES

| | |
|---|---|
| **Temp (°C):** | 21.8 |
| **pH:** | 6.81 |
| **Specific Conductivity ($\mu$mhos/cm):** | 1121 |
| **Purge Method:** | Disposable Bailer |
| **Sampling Method:** | Disposable Bailer |
| **Remarks:** | Lab Rep #00060618 |

TerraNext

**FIELD TESTING:**
**PIEZOMETER ID: P-10**
**March 26, 1997**

| TIME | WATER PURGED (gallons) | TEMP °C | pH | SPEC COND. ($\mu$mhos/cm) |
|---|---|---|---|---|
| 3-26-97 1010 | - | 21.5 | 6.82 | 1133 |
| 3-26-97 1020 | 7 | 21.1 | 6.96 | 1174 |
| 3-26-97 1035 | 14 | 21.8 | 6.80 | 1151 |
| 3-26-97 1050 | 21 | 21.8 | 6.81 | 1121 |
| 3-26-97 1135 | 21 | 21.2 | 6.82 | 877 |
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**TERRANEXT**
**GROUND WATER SAMPLING FORM**
**PIEZOMETER NUMBER: P-11**

**Job Name:** First Semi-annual Sampling Event **Job Number:** 44102069

**Client:** Union Pacific Rail Road **Date Sampled:** 3-26-97

**Site Location:** 4910 Liberty Rd., Houston, Texas **Time Sampled:** 1215

**Weather:** Partly Cloudy, 75°F **Sampled By:** Goldsby/Jones (T)

## EVACUATION DATA

| | |
|---|---|
| **Elevation of Measuring Point (MP):** | 49.02' |
| **Depth to Water (From MP):** | 4.09' |
| **Depth of Piezometer (From MP):** | 42.64' |
| **Volume of Water in Piezometer:** | 6.28 gallons |
| **Volume of Water Evacuated:** | 19 gallons |

## FIELD PARAMETERS FOLLOWING PURGING ACTIVITIES

| | |
|---|---|
| **Temp (°C):** | 23.1 |
| **pH:** | 6.69 |
| **Specific Conductivity ($\mu$mhos/cm):** | 1401 |
| **Purge Method:** | Disposable Bailer |
| **Sampling Method:** | Disposable Bailer |
| **Remarks:** | Lab Rep #00060618 |

TerraNext

**FIELD TESTING:**
**PIEZOMETER ID: P-11**
**March 26, 1997**

| TIME | WATER PURGED (gallons) | TEMP °C | pH | SPEC COND. ($\mu$mhos/cm) |
|---|---|---|---|---|
| 3-26-97 1003 | - | 18.2 | 6.83 | 1368 |
| 3-26-97 1027 | 7 | 21.7 | 6.89 | 1400 |
| 3-26-97 1111 | 13 | 22.9 | 6.72 | 1379 |
| 3-26-97 1119 | 19 | 23.1 | 6.69 | 1401 |
| 3-26-97 1215 | 19 | 22.1 | 6.73 | 1320 |
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**TERRANEXT**
**GROUND WATER SAMPLING FORM**
**PIEZOMETER NUMBER: P-12**

**Job Name:** First Semi-annual Sampling 1997 **Job Number:** 44102069

**Client:** Union Pacific Rail Road **Date Sampled:** 3-26-97

**Site Location:** 4910 Liberty Rd., Houston, Texas **Time Sampled:** 1200

**Weather:** Partly Cloudy, 75°F **Sampled By:** Goldsby/Jones (T)

## EVACUATION DATA

| | |
|---|---|
| **Elevation of Measuring Point (MP):** | 48.82' |
| **Depth to Water (From MP):** | 3.70' |
| **Depth of Piezometer (From MP):** | 42.77' |
| **Volume of Water in Piezometer:** | 6.37 gallons |
| **Volume of Water Evacuated:** | 19 gallons |

## FIELD PARAMETERS FOLLOWING PURGING ACTIVITIES

| | |
|---|---|
| **Temp (°C):** | 20.6 |
| **pH:** | 6.39 |
| **Specific Conductivity ($\mu$mhos/cm):** | 1559 |
| **Purge Method:** | Disposable Bailer |
| **Sampling Method:** | Disposable Bailer |
| **Remarks:** | Lab Rep #00060618 |

TerraNext

**FIELD TESTING:**
**PIEZOMETER ID: P-12**
**March 26, 1997**

| TIME | WATER PURGED (gallons) | TEMP °C | pH | SPEC COND. ($\mu$mhos/cm) |
|---|---|---|---|---|
| 3-26-97 0902 | 1 | 16.7 | 6.77 | 1451 |
| 3-26-97 0914 | 7 | 19.4 | 6.49 | 1512 |
| 3-26-97 0929 | 13 | 20.2 | 6.38 | 1557 |
| 3-26-97 0941 | 19 | 20.6 | 6.39 | 1559 |
| 3-26-97 1010 | 19 | 20.1 | 6.74 | 1492 |
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# APPENDIX C

# POTENTIAL CONTAMINANTS OF CONCERN AND CONCENTRATION LIMITS FOR GROUND WATER PROTECTION STANDARD

POTENTIAL CONTAMINANTS OF CONCERN AND CONCENTRATION LIMITS FOR GROUND WATER PROTECTION STANDARD

| Constituent of Concern | Detection Limits (mg/L) |
|---|---|
| Acenaphthene | ND (0.010) |
| Acenaphthylene | ND (0.010) |
| Anthracene | ND (0.010) |
| Benzene | ND (0.005) |
| Benzo(A)anthracene | ND (0.010) |
| Benzo(A)pyrene | ND (0.010) |
| Bis(2-ethylhexyl)phthalate | ND (0.010) |
| Bis(2-chloroethoxy)methane | ND (0.010) |
| Chlorobenzene | ND (0.005) |
| 2-Chloronaphthalene | ND (0.010) |
| Chrysene | ND (0.010) |
| Dibenzofuran | ND (0.010) |
| 1,2-Dichloroethane | ND (0.005) |
| Dichloromethane (Methylene chloride) | ND (0.005) |
| 2,4-Dimethylphenol | ND (0.010) |
| Di-n-butyl phthalate | ND (0.010) |
| 4,6-Dinitro-o-cresol | ND (0.050) |
| 2,4-Dinitrotoluene | ND (0.010) |
| 2,6-Dinitrotoluene | ND (0.010) |
| 1,2-Diphenylhydrazine | ND (0.010) |
| Ethylbenzene | ND (0.005) |
| Fluoranthene | ND (0.010) |
| Fluorene | ND (0.010) |
| 2-Methylnaphthalene | ND (0.010) |
| Naphthalene | ND (0.010) |
| Nitrobenzene | ND (0.010) |
| 4-Nitrophenol | ND (0.050) |
| N-Nitrosodiphenylamine | ND (0.010) |
| Pentachlorophenol | ND (0.050) |

POTENTIAL CONTAMINANTS OF CONCERN AND CONCENTRATION LIMITS FOR GROUND WATER PROTECTION STANDARD

| Constituent of Concern | Detection Limits (mg/L) |
|---|---|
| Phenanthrene | ND (0.010) |
| Phenol | ND (0.010) |
| Pyrene | ND (0.010) |
| Toluene | ND (0.005) |
| Xylenes | ND (0.005) |

ND Nondetect at Practical Quantitation Limit (PQL) as determined by the analytical methods of the EPA publication SW-846, *Test Methods for Evaluating Solid Waste*, Third Edition, November 1986, and as listed in the July 8, 1987, edition of the *Federal Register* and later editions.

# APPENDIX D

# COMPLIANCE PLAN SCHEDULE REVISION

## COMBINED EOC/RFI SEMI-ANNUAL SCHEDULE REVISION

| ID | Task Name/Permit or CP Section No. | Duration | Start | Finish | Predec | Constraint Type |
|---|---|---|---|---|---|---|
| 1 | **SCHEDULE - COMPLIANCE PLAN/ CP XI. A.** | **97d** | **6/21/94** | **11/3/94** | | **As Soon As Possible** |
| 4 | | | | | | |
| 5 | **OPERATION & MAINTENANCE PLAN/ CP XI. B.** | **145d** | **6/21/94** | **1/10/95** | | **As Soon As Possible** |
| 6 | Submit to TNRCC | 60ed | 6/21/94 | 8/20/94 | | Must Finish On |
| 7 | TNRCC Review Period | 73ed | 8/22/94 | 11/3/94 | 6 | As Soon As Possible |
| 8 | Revise O&M Plan | 43ed | 11/3/94 | 12/16/94 | 7 | Must Finish On |
| 9 | Submit to TNRCC | 0ed | 12/16/94 | 12/16/94 | 8 | Must Start On |
| 10 | TNRCC Review & Approval | 17d | 12/19/94 | 1/10/95 | 9 | Must Finish On |
| 11 | | | | | | |
| 12 | **P.O.C. WELL INSTALLATION/ CP XI. C.** | **104d** | **7/22/94** | **12/14/94** | | **As Soon As Possible** |
| 13 | Notify TNRCC - 30 day advance | 3d | 7/22/94 | 7/26/94 | | Must Finish On |
| 14 | Install P.O.C. Wells | 7d | 9/12/94 | 9/20/94 | 13 | Must Start On |
| 15 | Develop and Sample Wells | 4d | 9/21/94 | 9/26/94 | 14 | As Soon As Possible |
| 16 | Submit Data Report to TNRCC | 57d | 9/27/94 | 12/14/94 | 15 | Must Finish On |
| 17 | | | | | | |
| 18 | | | | | | |
| 19 | **EXTENT OF CONTAMINATION WORK PLAN/ VIII & XI. D.** | **335d** | **6/20/94** | **9/29/95** | | **As Soon As Possible** |
| 20 | Submit to TNRCC | 67d | 6/20/94 | 9/20/94 | | Must Finish On |
| 21 | TNRCC Review Period | 111ed | 9/21/94 | 1/10/95 | 20 | As Soon As Possible |
| 22 | Revise EOC Work Plan | 45ed | 1/10/95 | 2/24/95 | 21 | Must Finish On |
| 23 | Submit to TNRCC | 0ed | 2/24/95 | 2/24/95 | 22 | Must Finish On |
| 24 | TNRCC Review Period | 45ed | 2/27/95 | 4/13/95 | 23 | As Soon As Possible |
| 25 | Revise EOC Work Plan | 30ed | 4/13/95 | 5/13/95 | 24 | As Soon As Possible |
| 26 | Submit to TNRCC | 5ed | 5/14/95 | 5/19/95 | 25 | Must Finish On |
| 27 | TNRCC Approval | 130ed | 5/22/95 | 9/29/95 | 26 | Must Finish On |
| 28 | | | | | | |
| 29 | **RFI WORK PLAN DEVELOPMENT/ Permit VIII.** | **347d** | **6/20/94** | **10/17/95** | | **As Soon As Possible** |
| 30 | Submit to TNRCC | 87d | 6/20/94 | 10/18/94 | | Must Finish On |
| 31 | TNRCC Review Period | 362ed | 10/19/94 | 10/16/95 | 30 | Must Finish On |
| 32 | TNRCC Approval | 1d | 10/17/95 | 10/17/95 | 31 | As Soon As Possible |
| 33 | | | | | | |
| 34 | | | | | | |
| 35 | **EOC IMPLEMENTATION - PHASE I/ CP VIII.** | **288d** | **11/9/94** | **12/15/95** | | **As Soon As Possible** |
| 36 | Wetlands Assessment & Report Preparation | 145d | 11/9/94 | 5/30/95 | | Must Finish On |
| 37 | COE/TNRCC Approval & Access Authorization | 60ed | 5/31/95 | 7/30/95 | 36 | As Soon As Possible |
| 38 | Initiation/Preparation for EOC Investigation | 12ed | 11/2/95 | 11/14/95 | 27 | Must Finish On |
| 39 | CPT Soundings w/ROST real-time data | 9d | 11/14/95 | 11/24/95 | 38 | Must Start On |
| 40 | Hydropunch Sampling & Analyses | 11d | 11/27/95 | 12/11/95 | 39 | As Soon As Possible |
| 41 | Survey Sample Locations | 4d | 12/12/95 | 12/15/95 | 40 | As Soon As Possible |
| 42 | | | | | | |
| 43 | **RFI IMPLEMENTATION - PHASE 1/ Permit VIII.E.** | **27d** | **11/16/95** | **12/22/95** | | **As Soon As Possible** |
| 44 | CPT Soundings w/ROST real-time data | 7d | 11/16/95 | 11/24/95 | | Must Start On |
| 45 | Hydropunch Sampling & Analyses | 18d | 11/29/95 | 12/22/95 | 44 | Must Start On |
| 46 | Surface Soil & Sediment Sampling & Analyses | 15d | 12/4/95 | 12/22/95 | 44 | Must Start On |
| 47 | Survey Sample Locations | 4d | 12/12/95 | 12/15/95 | 40 | As Soon As Possible |
| 48 | | | | | | |
| 49 | | | | | | |
| 50 | **RFI/EOC PHASE 1 INVESTIGATION REPORT** | **284d** | **12/18/95** | **1/16/97** | | **As Soon As Possible** |
| 51 | Submit Phase 1 Assessment Report to TNRCC | 115d | 12/18/95 | 5/24/96 | 47 | As Soon As Possible |
| 52 | TNRCC Review of Phase I Report | 131d | 5/27/96 | 11/25/96 | 51 | As Soon As Possible |
| 53 | TNRCC Approval of Phase 2 Scope of Work - EOC | 1d | 11/26/96 | 11/26/96 | 52 | As Soon As Possible |
| 54 | TNRCC Approval of Phase 2 Scope of Work - RFI | 169d | 5/27/96 | 1/16/97 | 51 | As Soon As Possible |
| 55 | | | | | | |
| 56 | | | | | | |
| 57 | **EOC & RFI IMPLEMENTATION - PHASE 2/ CP VIII/P.VIII.E.** | **117d** | **1/17/97** | **6/30/97** | | **As Soon As Possible** |
| 58 | Off-site access and permitting | 30ed | 1/17/97 | 2/16/97 | 54 | As Soon As Possible |
| 59 | Hydropunch, Soil Borings & Soil Samples | 15ed | 2/17/97 | 3/4/97 | 58 | As Soon As Possible |
| 60 | Groundwater Monitor Well Installation | 20ed | 3/4/97 | 3/24/97 | 59 | As Soon As Possible |
| 61 | Monitoring Well Development | 4ed | 3/24/97 | 3/28/97 | 60 | As Soon As Possible |
| 62 | Monitoring Well Sampling - 1st Event | 3d | 3/28/97 | 4/1/97 | 61 | As Soon As Possible |
| 63 | LSU Well Installation | 15d | 4/2/97 | 4/22/97 | 62 | As Soon As Possible |
| 64 | Slug Tests | 3d | 4/23/97 | 4/25/97 | 63 | As Soon As Possible |
| 65 | Survey Monitoring Wells | 1d | 4/28/97 | 4/28/97 | 64 | As Soon As Possible |
| 66 | Lab Analyses & Data Evaluation | 45d | 4/29/97 | 6/30/97 | 65 | As Soon As Possible |
| 67 | | | | | | |
| 68 | | | | | | |



TerraNext

## COMBINED EOC/RFI SEMI-ANNUAL SCHEDULE REVISION

| ID | Task Name/Permit or CP Section No. | Duration | Start | Finish | Predec | Constraint Type |
|---|---|---|---|---|---|---|
| 69 | **RFI/EOC PHASE 2 REPORT DEVELOPMENT/ VIII.I./VIII. E.** | **195d** | **7/1/97** | **3/30/98** | | **As Soon As Possible** |
| 70 | Submit Draft Phase 2 RFI/EOC Report to TNRCC | 120ed | 7/1/97 | 10/29/97 | 66 | As Soon As Possible |
| 71 | TNRCC Review of Report | 90ed | 10/29/97 | 1/27/98 | 70 | As Soon As Possible |
| 72 | Respond to TNRCC Comments | 30ed | 1/27/98 | 2/26/98 | 71 | As Soon As Possible |
| 73 | Submit (Final) Phase 2 Report to TNRCC | 1d | 2/26/98 | 2/26/98 | 72 | As Soon As Possible |
| 74 | TNRCC Review | 30ed | 2/27/98 | 3/29/98 | 73 | As Soon As Possible |
| 75 | TNRCC Approval | 1d | 3/30/98 | 3/30/98 | 74 | As Soon As Possible |
| 76 | | | | | | |
| 77 | | | | | | |
| 78 | **EOC & RFI IMPLEMENTATION - PHASE 3/ CP VIII/P.VIII.E.** | **133d** | **3/31/98** | **10/2/98** | | **As Soon As Possible** |
| 79 | Off-site access and permitting | 60ed | 3/31/98 | 5/30/98 | 75 | As Soon As Possible |
| 80 | Hydropunch, Soil Borings & Soil Samples | 20ed | 6/1/98 | 6/21/98 | 79 | As Soon As Possible |
| 81 | Groundwater Monitor Well Installation | 24ed | 6/22/98 | 7/16/98 | 80 | As Soon As Possible |
| 82 | Monitoring Well Development | 4ed | 7/16/98 | 7/20/98 | 81 | As Soon As Possible |
| 83 | Monitoring Well Sampling - 1st Event | 3d | 7/20/98 | 7/22/98 | 82 | As Soon As Possible |
| 84 | Slug Tests | 3d | 7/23/98 | 7/27/98 | 83 | As Soon As Possible |
| 85 | Survey Monitoring Wells | 1d | 7/28/98 | 7/28/98 | 84 | As Soon As Possible |
| 86 | Data Evaluation | 25d | 7/29/98 | 9/1/98 | 85 | As Soon As Possible |
| 87 | 30-day Follow-up Sampling (if necessary) | 30ed | 9/2/98 | 10/2/98 | 86 | As Soon As Possible |
| 88 | | | | | | |
| 89 | | | | | | |
| 90 | **RFI/EOC PHASE 3 REPORT DEVELOPMENT/ VIII.I./VIII. E.** | **260d** | **10/2/98** | **9/30/99** | | **As Soon As Possible** |
| 91 | Submit Draft Phase 3 RFI/EOC Report to TNRCC | 150d | 10/2/98 | 4/29/99 | 87 | As Soon As Possible |
| 92 | TNRCC Review of Report | 90ed | 4/30/99 | 7/29/99 | 91 | As Soon As Possible |
| 93 | Respond to TNRCC Comments | 30ed | 7/29/99 | 8/28/99 | 92 | As Soon As Possible |
| 94 | Submit (Final) Phase 3 Report to TNRCC | 1d | 8/30/99 | 8/30/99 | 93 | As Soon As Possible |
| 95 | TNRCC Review | 30ed | 8/31/99 | 9/30/99 | 94 | As Soon As Possible |
| 96 | TNRCC Approval | 1d | 9/30/99 | 9/30/99 | 95 | As Soon As Possible |
| 97 | | | | | | |
| 98 | | | | | | |
| 99 | **(EOC) CA STUDY WORK PLAN/ CP IX.** | **132d** | **10/1/99** | **4/3/00** | | **As Soon As Possible** |
| 100 | Prepare and Submit CA Study Work Plan | 60ed | 10/1/99 | 11/30/99 | 96 | As Soon As Possible |
| 101 | TNRCC Review of Draft Work Plan | 60ed | 11/30/99 | 1/29/00 | 100 | As Soon As Possible |
| 102 | Revise per TNRCC Review | 30ed | 1/31/00 | 3/1/00 | 101 | As Soon As Possible |
| 103 | Submit Revised CA Work Plan to TNRCC | 1ed | 3/1/00 | 3/2/00 | 102 | As Soon As Possible |
| 104 | TNRCC Review | 30ed | 3/2/00 | 4/1/00 | 103 | As Soon As Possible |
| 105 | TNRCC Approval | 1d | 4/3/00 | 4/3/00 | 104 | As Soon As Possible |
| 106 | | | | | | |
| 107 | | | | | | |
| 108 | **(EOC) CORRECTIVE ACTION REPORT/ CP IX.E.** | **306d** | **4/4/00** | **6/5/01** | | **As Soon As Possible** |
| 109 | Pilot Studies/Field Tests | 180ed | 4/4/00 | 10/1/00 | 105 | As Soon As Possible |
| 110 | Submit CA Report to TNRCC | 120ed | 10/2/00 | 1/30/01 | 109 | As Soon As Possible |
| 111 | TNRCC Review of Draft Report | 60ed | 1/30/01 | 3/31/01 | 110 | As Soon As Possible |
| 112 | Revise per TNRCC Review | 30ed | 4/2/01 | 5/2/01 | 111 | As Soon As Possible |
| 113 | Submit Final CA Report to TNRCC | 1ed | 5/2/01 | 5/3/01 | 112 | As Soon As Possible |
| 114 | TNRCC Review | 30ed | 5/3/01 | 6/2/01 | 113 | As Soon As Possible |
| 115 | TNRCC Approval | 2d | 6/4/01 | 6/5/01 | 114 | As Soon As Possible |
| 116 | | | | | | |
| 117 | **(RFI) CORRECTIVE MEASURES STUDY/ Permit VIII.I.3.** | **217d** | **4/30/99** | **2/29/00** | | **As Soon As Possible** |
| 118 | Submit CMS with RFI Report (Option 1 - 120 days) | 120ed | 4/30/99 | 8/28/99 | 91 | As Soon As Possible |
| 119 | TNRCC Review | 90ed | 8/30/99 | 11/28/99 | 118 | As Soon As Possible |
| 120 | TNRCC Approval of RFI & CMS Report combined | 1ed | 11/29/99 | 11/30/99 | 119 | As Soon As Possible |
| 121 | | | | | | |
| 122 | Submit CMS separate from RFI Report (Option 2) | 60ed | 10/1/99 | 11/30/99 | 96 | As Soon As Possible |
| 123 | TNRCC Review | 90ed | 11/30/99 | 2/28/00 | 122 | As Soon As Possible |
| 124 | TNRCC Approval of CMS Report | 1ed | 2/28/00 | 2/29/00 | 123 | As Soon As Possible |
| 125 | | | | | | |
| 126 | | | | | | |
| 127 | **CA IMPLEMENTATION/ X.** | **268d** | **1/5/99** | **1/16/00** | | **As Soon As Possible** |
| 128 | Submit Engineering Plans as Permit Modification | 90ed | 1/5/99 | 4/5/99 | 115 | Must Finish On |
| 129 | TNRCC Review of Plans | 30ed | 4/6/99 | 5/6/99 | 128 | As Soon As Possible |
| 130 | Final Submission of Engineering Plans & Specs. | 90ed | 5/6/99 | 8/4/99 | 129 | As Soon As Possible |
| 131 | TNRCC Review & Approval | 30ed | 8/4/99 | 9/3/99 | 130 | As Soon As Possible |
| 132 | Construction/Installation | 90ed | 9/3/99 | 12/2/99 | 131 | As Soon As Possible |
| 133 | System Start-up/Initial Operation/Permit Mon. | 45ed | 12/2/99 | 1/16/00 | 132 | As Soon As Possible |
| 134 | | | | | | |

## COMBINED EOC/RFI SEMI-ANNUAL SCHEDULE REVISION

| ID | Task Name/Permit or CP Section No. | Duration | Start | Finish | Predec | Constraint Type |
|---|---|---|---|---|---|---|
| 135 | **RFI/CMS CORRECTIVE ACTION** | 300ed | 9/3/99 | 6/29/00 | 131 | As Soon As Possible |
| 136 | | | | | | |
| 137 | | | | | | |
| 138 | **GROUND WATER MONITORING/ VI. & Permit VII.B.** | **912d** | **6/20/94** | **12/17/97** | | **As Soon As Possible** |
| 139 | | | | | | |
| 140 | Sample Existing & POC Wells | 2ed | 1/24/95 | 1/26/95 | | Must Start On |
| 141 | Report Submittal | 58ed | 1/26/95 | 3/25/95 | 140 | As Soon As Possible |
| 142 | | | | | | |
| 143 | Sample Existing & POC Wells | 2ed | 4/12/95 | 4/14/95 | | Must Start On |
| 144 | Report Submittal (2nd Qtr. 1995) | 55ed | 4/14/95 | 6/8/95 | 143 | Must Finish On |
| 145 | | | | | | |
| 146 | Sample Existing & POC Wells | 2ed | 7/11/95 | 7/13/95 | | Must Start On |
| 147 | Report Submittal (3rd Qtr. 1995) | 25ed | 7/14/95 | 8/8/95 | 146 | Must Finish On |
| 148 | | | | | | |
| 149 | Sample Existing & POC Wells | 6ed | 1/22/96 | 1/28/96 | | Start No Earlier Than |
| 150 | Report Submittal (1st semi-annual monitoring) | 53ed | 1/29/96 | 3/22/96 | 149 | As Soon As Possible |
| 151 | | | | | | |
| 152 | Sample Existing & POC Wells | 6ed | 9/16/96 | 9/22/96 | | Start No Earlier Than |
| 153 | Report Submittal (2nd semi-annual monitoring) | 86d | 9/23/96 | 1/20/97 | 152 | Must Finish On |
| 154 | | | | | | |
| 155 | Sample Existing, POC and RFI Wells & Analyze | 6ed | 3/28/97 | 4/3/97 | | Start No Earlier Than |
| 156 | Report Submittal (1st Semi-annual monitoring 1997) | 82d | 3/27/97 | 7/18/97 | 155 | Must Finish On |
| 157 | | | | | | |
| 158 | Sample EOC & RFI Wells | 30ed | 4/28/97 | 5/28/97 | | Start No Earlier Than |
| 159 | | | | | | |
| 160 | Sample Existing, POC, and RFI Wells | 6ed | 9/15/97 | 9/21/97 | | Start No Earlier Than |
| 161 | | | | | | |
| 162 | Sample EOC & RFI Wells | 30ed | 11/17/97 | 12/17/97 | | Start No Earlier Than |
| 163 | | | | | | |
| 164 | **REPORTING 1997/1998** | 1d | 6/20/94 | 6/20/94 | | As Soon As Possible |
| 165 | **Semi-annual Report - January 21, 1997/ VII. B.2.** | **42d** | **11/21/96** | **1/20/97** | | **As Soon As Possible** |
| 166 | Submit Report to TNRCC | 60ed | 11/21/96 | 1/20/97 | | Finish No Earlier Than |
| 167 | | | | | | |
| 168 | **Annual Report - January 25, 1997 (Permit V.F. & III.B.1)** | **44d** | **11/25/96** | **1/24/97** | | **As Soon As Possible** |
| 169 | Submit Report to TNRCC | 60ed | 11/25/96 | 1/24/97 | | Finish No Earlier Than |
| 170 | | | | | | |
| 171 | **Semi-annual Report - July 21, 1997/ VII. B.2.** | **129d** | **1/23/96** | **7/20/96** | | **As Soon As Possible** |
| 172 | Submit Report to TNRCC | 129d | 1/23/96 | 7/20/96 | | Must Finish On |
| 173 | | | | | | |
| 174 | **Semi-annual Report - January 21, 1998/VII.B.2.** | **60d** | **10/29/97** | **1/20/98** | | **As Soon As Possible** |
| 175 | Submit Report to TNRCC | 60d | 10/29/97 | 1/20/98 | | Must Finish On |
| 176 | | | | | | |
| 177 | **Annual Report - January 25, 1998 (Permit V.F. & III.B.1)** | **60d** | **11/3/97** | **1/23/98** | | **As Soon As Possible** |
| 178 | Submit Report to TNRCC | 60d | 11/3/97 | 1/23/98 | | Must Finish On |
| 179 | | | | | | |
| 180 | **Semi-annual Report - July 21, 1998/VII.B.2.** | **127d** | **1/22/98** | **7/17/98** | | **As Soon As Possible** |
| 181 | Submit Report to TNRCC | 127d | 1/22/98 | 7/17/98 | | Must Finish On |
| 182 | | | | | | |
| 183 | **Semi-annual Report - January 21, 1999/VII.B.2.** | **60d** | **10/29/98** | **1/20/99** | | **As Soon As Possible** |
| 184 | Submit Report to TNRCC | 60d | 10/29/98 | 1/20/99 | | Must Finish On |
| 185 | | | | | | |
| 186 | **Annual Report - January 25, 1999 (Permit V.F. & III.B.1)** | **60d** | **11/2/98** | **1/22/99** | | **As Soon As Possible** |
| 187 | Submit Report to TNRCC | 60d | 11/2/98 | 1/22/99 | | Must Finish On |



TerraNext

# APPENDIX E

# INDICATOR PARAMETERS AND CONCENTRATION LIMITS FOR GROUND WATER PROTECTION STANDARD

## INDICATOR PARAMETERS AND CONCENTRATION LIMITS FOR GROUND WATER PROTECTION STANDARD

| Indicator Parameter | Detection Limits (mg/L) |
|---|---|
| Acenaphthene | ND (0.010) |
| Anthracene | ND (0.010) |
| Benzene | ND (0.005) |
| Bis(2-ethylhexyl)phthalate | ND (0.010) |
| Dibenzofuran | ND (0.010) |
| Dichloromethane (Methylene chloride) | ND (0.005) |
| 2,4-Dimethylphenol | ND (0.010) |
| 4,6-Dinitro-o-cresol | ND (0.050) |
| Ethylbenzene | ND (0.005) |
| Fluoranthene | ND (0.010) |
| Fluorene | ND (0.010) |
| 2-Methylnaphthalene | ND (0.010) |
| Naphthalene | ND (0.010) |
| Phenanthrene | ND (0.010) |
| Pyrene | ND (0.010) |
| Toluene | ND (0.005) |
| Xylenes | ND (0.005) |

ND Nondetect at Practical Quantitation Limit (PQL) as determined by the analytical methods of the EPA publication SW-846, *Test Methods for Evaluating Solid Waste*, Third Edition, November 1986, and as listed in the July 8, 1987, edition of the *Federal Register* and later editions.

# APPENDIX F

# LABORATORY ANALYTICAL DATA REPORT

Pace Analytical Services, Inc.
900 Gemini Avenue
Houston, TX 77058
Tel: 713-488-1810
Fax: 713-488-4661

**Pace Analytical**

COPY

April 18, 1997
Report No.: 00060618
Section A Page 1

LABORATORY ANALYSIS REPORT

CLIENT NAME: TERRANEXT
ADDRESS: 6200 ROTHWAY, STE 190
HOUSTON, TX 77040-
ATTENTION: BILL GOLDSBY

LIMS CLIENT: 0717 0007
PACE PROJECT: H44461
PACE CLIENT: 620437
P.O. NO: VERBAL

SAMPLE ID: HWPW-MW2-WISA97-P
SAMPLE NO: H447741
SAMPLE MATRIX: WATER

DATE SAMPLED: 25-MAR-97 1125
DATE RECEIVED: 26-MAR-97
PROJECT MANAGER: Elessa Sommers

| LN | TEST CODE | DETERMINATION | DILUTION FACTOR | RESULT | UNITS |
|---|---|---|---|---|---|
| 1 | OVTCW2 | 8260A TCL Volatiles in Water | | | |
| | | 1,2-Dichloroethane | 1 | < 5 | ug/L |
| | | Benzene | 1 | < 5 | ug/L |
| | | Chlorobenzene | 1 | < 5 | ug/L |
| | | Ethylbenzene | 1 | 10 | ug/L |
| | | Methylene chloride | 1 | < 5 | ug/L |
| | | Toluene | 1 | 7 | ug/L |
| | | Xylenes (total) | 1 | 16 | ug/L |
| 3 | OSVTCW | TCL - Semi-volatile Extractables in Water | | | |
| | | 1,2-Diphenylhydrazine | 1 | < 10 | ug/L |
| | | 2,4-Dimethylphenol | 1 | 16 | ug/L |
| | | 2,4-Dinitrotoluene | 1 | < 10 | ug/L |
| | | 2,6-Dinitrotoluene | 1 | < 10 | ug/L |
| | | 2-Chloronaphthalene | 1 | < 10 | ug/L |
| | | 2-Methylnaphthalene | 1 | < 10 | ug/L |
| | | 4,6-Dinitro-o-cresol | 1 | < 50 | ug/L |
| | | 4-Nitrophenol | 1 | < 50 | ug/L |
| | | Acenaphthene | 1 | 75 | ug/L |
| | | Acenaphthylene | 1 | < 10 | ug/L |
| | | Anthracene | 1 | < 10 | ug/L |
| | | Benzo(a)anthracene | 1 | < 10 | ug/L |
| | | Benzo(a)pyrene | 1 | < 10 | ug/L |
| | | Chrysene | 1 | < 10 | ug/L |
| | | Di-n-butylphthalate | 1 | < 10 | ug/L |
| | | Dibenzofuran | 1 | 50 | ug/L |
| | | Fluoranthene | 1 | < 10 | ug/L |
| | | Fluorene | 1 | 44 | ug/L |
| | | N-Nitrosodiphenylamine | 1 | < 10 | ug/L |
| | | Naphthalene | 10 | 530 | ug/L |
| | | Nitrobenzene | 1 | < 10 | ug/L |
| | | Pentachlorophenol | 1 | < 50 | ug/L |
| | | Phenanthrene | 1 | < 10 | ug/L |
| | | Phenol | 1 | < 10 | ug/L |
| | | Pyrene | 1 | < 10 | ug/L |
| | | bis(2-Chloroethoxy)methane | 1 | < 10 | ug/L |

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Fax: 713-488-4661

April 18, 1997
Report No.: 00060618


LABORATORY ANALYSIS REPORT

CLIENT NAME: TERRANEXT
SAMPLE ID: HWPW-MW2-WISA97-P
SAMPLE NO: H447741

| LN | TEST CODE | DETERMINATION | DILUTION FACTOR | RESULT | UNITS |
|---|---|---|---|---|---|
| | | bis(2-Ethylhexyl)phthalate | 1 | < 10 | ug/L |
| 5 | I590 | Solids, Dissolved at 180C | 1 | 695 | mg/L |

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LABORATORY ANALYSIS REPORT

CLIENT NAME: TERRANEXT
ADDRESS: 6200 ROTHWAY, STE 190
HOUSTON, TX 77040-
ATTENTION: BILL GOLDSBY

LIMS CLIENT: 0717 0007
PACE PROJECT: H44461
PACE CLIENT: 620437
P.O. NO: VERBAL

SAMPLE ID: HWPW-MW9-WISA97-P
SAMPLE NO: H447742
SAMPLE MATRIX: WATER

DATE SAMPLED: 25-MAR-97 1310
DATE RECEIVED: 26-MAR-97
PROJECT MANAGER: Elessa Sommers

| LN | TEST CODE | DETERMINATION | DILUTION FACTOR | RESULT | UNITS |
|---|---|---|---|---|---|
| 1 | OVTCW2 | 8260A TCL Volatiles in Water | | | |
| | | 1,2-Dichloroethane | 1 | < 5 | ug/L |
| | | Benzene | 1 | < 5 | ug/L |
| | | Chlorobenzene | 1 | < 5 | ug/L |
| | | Ethylbenzene | 1 | < 5 | ug/L |
| | | Methylene chloride | 1 | < 5 | ug/L |
| | | Toluene | 1 | < 5 | ug/L |
| | | Xylenes (total) | 1 | < 5 | ug/L |
| 3 | OSVTCW | TCL - Semi-volatile Extractables in Water | | | |
| | | 1,2-Diphenylhydrazine | 1 | < 10 | ug/L |
| | | 2,4-Dimethylphenol | 1 | < 10 | ug/L |
| | | 2,4-Dinitrotoluene | 1 | < 10 | ug/L |
| | | 2,6-Dinitrotoluene | 1 | < 10 | ug/L |
| | | 2-Chloronaphthalene | 1 | < 10 | ug/L |
| | | 2-Methylnaphthalene | 1 | < 10 | ug/L |
| | | 4,6-Dinitro-o-cresol | 1 | < 50 | ug/L |
| | | 4-Nitrophenol | 1 | < 50 | ug/L |
| | | Acenaphthene | 1 | < 10 | ug/L |
| | | Acenaphthylene | 1 | < 10 | ug/L |
| | | Anthracene | 1 | < 10 | ug/L |
| | | Benzo(a)anthracene | 1 | < 10 | ug/L |
| | | Benzo(a)pyrene | 1 | < 10 | ug/L |
| | | Chrysene | 1 | < 10 | ug/L |
| | | Di-n-butylphthalate | 1 | < 10 | ug/L |
| | | Dibenzofuran | 1 | < 10 | ug/L |
| | | Fluoranthene | 1 | < 10 | ug/L |
| | | Fluorene | 1 | < 10 | ug/L |
| | | N-Nitrosodiphenylamine | 1 | < 10 | ug/L |
| | | Naphthalene | 1 | < 10 | ug/L |
| | | Nitrobenzene | 1 | < 10 | ug/L |
| | | Pentachlorophenol | 1 | < 50 | ug/L |
| | | Phenanthrene | 1 | < 10 | ug/L |
| | | Phenol | 1 | < 10 | ug/L |
| | | Pyrene | 1 | < 10 | ug/L |
| | | bis(2-Chloroethoxy)methane | 1 | < 10 | ug/L |

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LABORATORY ANALYSIS REPORT

CLIENT NAME: TERRANEXT
SAMPLE ID: HWPW-MW9-WISA97-P
SAMPLE NO: H447742

| LN | TEST CODE | DETERMINATION | DILUTION FACTOR | RESULT | UNITS |
|---|---|---|---|---|---|
| | | bis(2-Ethylhexyl)phthalate | 1 | < 10 | ug/L |
| 5 | I590 | Solids, Dissolved at 180C | 1 | 487 | mg/L |

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CLIENT NAME: TERRANEXT
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HOUSTON, TX 77040-
ATTENTION: BILL GOLDSBY

LIMS CLIENT: 0717 0007
PACE PROJECT: H44461
PACE CLIENT: 620437
P.O. NO: VERBAL

SAMPLE ID: HWPW-MW3-WISA97-P
SAMPLE NO: H447743
SAMPLE MATRIX: WATER

DATE SAMPLED: 25-MAR-97 1400
DATE RECEIVED: 26-MAR-97
PROJECT MANAGER: Elessa Sommers

| LN | TEST CODE | DETERMINATION | DILUTION FACTOR | RESULT | UNITS |
|---|---|---|---|---|---|
| 1 | OVTCW2 | 8260A TCL Volatiles in Water | | | |
| | | 1,2-Dichloroethane | 1 | < 5 | ug/L |
| | | Benzene | 1 | < 5 | ug/L |
| | | Chlorobenzene | 1 | < 5 | ug/L |
| | | Ethylbenzene | 1 | < 5 | ug/L |
| | | Methylene chloride | 1 | < 5 | ug/L |
| | | Toluene | 1 | < 5 | ug/L |
| | | Xylenes (total) | 1 | < 5 | ug/L |
| 3 | OSVTCW | TCL - Semi-volatile Extractables in Water | | | |
| | | 1,2-Diphenylhydrazine | 10 | < 100 | ug/L |
| | | 2,4-Dimethylphenol | 10 | < 100 | ug/L |
| | | 2,4-Dinitrotoluene | 10 | < 100 | ug/L |
| | | 2,6-Dinitrotoluene | 10 | < 100 | ug/L |
| | | 2-Chloronaphthalene | 10 | < 100 | ug/L |
| | | 2-Methylnaphthalene | 10 | < 100 | ug/L |
| | | 4,6-Dinitro-o-cresol | 10 | < 500 | ug/L |
| | | 4-Nitrophenol | 10 | < 500 | ug/L |
| | | Acenaphthene | 10 | 180 | ug/L |
| | | Acenaphthylene | 10 | < 100 | ug/L |
| | | Anthracene | 10 | < 100 | ug/L |
| | | Benzo(a)anthracene | 10 | < 100 | ug/L |
| | | Benzo(a)pyrene | 10 | < 100 | ug/L |
| | | Chrysene | 10 | < 100 | ug/L |
| | | Di-n-butylphthalate | 10 | < 100 | ug/L |
| | | Dibenzofuran | 10 | 120 | ug/L |
| | | Fluoranthene | 10 | < 100 | ug/L |
| | | Fluorene | 10 | 120 | ug/L |
| | | N-Nitrosodiphenylamine | 10 | < 100 | ug/L |
| | | Naphthalene | 10 | 340 | ug/L |
| | | Nitrobenzene | 10 | < 100 | ug/L |
| | | Pentachlorophenol | 10 | < 500 | ug/L |
| | | Phenanthrene | 10 | < 100 | ug/L |
| | | Phenol | 10 | < 100 | ug/L |
| | | Pyrene | 10 | < 100 | ug/L |
| | | bis(2-Chloroethoxy)methane | 10 | < 100 | ug/L |

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## LABORATORY ANALYSIS REPORT

CLIENT NAME: TERRANEXT
SAMPLE ID: HWPW-MW3-WISA97-P
SAMPLE NO: H447743

| LN | TEST CODE | DETERMINATION | DILUTION FACTOR | RESULT | UNITS |
|---|---|---|---|---|---|
| | | bis(2-Ethylhexyl)phthalate | 10 | < 100 | ug/L |
| 5 | I590 | Solids, Dissolved at 180C | 1 | 877 | mg/L |

COMMENTS: The reporting limits for semi-volatiles are elevated due to the dilution required because of high analyte concentration.

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April 18, 1997
Report No.: 00060618


LABORATORY ANALYSIS REPORT

CLIENT NAME: TERRANEXT
ADDRESS: 6200 ROTHWAY, STE 190
HOUSTON, TX 77040-
ATTENTION: BILL GOLDSBY

SAMPLE ID: HWPW-MW1A-WISA97-P
SAMPLE NO: H447744
SAMPLE MATRIX: WATER

LIMS CLIENT: 0717 0007
PACE PROJECT: H44461
PACE CLIENT: 620437
P.O. NO: VERBAL

DATE SAMPLED: 25-MAR-97 1420
DATE RECEIVED: 26-MAR-97
PROJECT MANAGER: Elessa Sommers

| LN | TEST CODE | DETERMINATION | DILUTION FACTOR | RESULT | UNITS |
|---|---|---|---|---|---|
| 1 | OVTCW2 | 8260A TCL Volatiles in Water | | | |
| | | 1,2-Dichloroethane | 1 | < 5 | ug/L |
| | | Benzene | 1 | 11 | ug/L |
| | | Chlorobenzene | 1 | < 5 | ug/L |
| | | Ethylbenzene | 1 | 28 | ug/L |
| | | Methylene chloride | 1 | < 5 | ug/L |
| | | Toluene | 1 | 5 | ug/L |
| | | Xylenes (total) | 1 | 42 | ug/L |
| 3 | OSVTCW | TCL - Semi-volatile Extractables in Water | | | |
| | | 1,2-Diphenylhydrazine | 10 | < 100 | ug/L |
| | | 2,4-Dimethylphenol | 10 | < 100 | ug/L |
| | | 2,4-Dinitrotoluene | 10 | < 100 | ug/L |
| | | 2,6-Dinitrotoluene | 10 | < 100 | ug/L |
| | | 2-Chloronaphthalene | 10 | < 100 | ug/L |
| | | 2-Methylnaphthalene | 10 | 270 | ug/L |
| | | 4,6-Dinitro-o-cresol | 10 | < 500 | ug/L |
| | | 4-Nitrophenol | 10 | < 500 | ug/L |
| | | Acenaphthene | 10 | 260 | ug/L |
| | | Acenaphthylene | 10 | < 100 | ug/L |
| | | Anthracene | 10 | < 100 | ug/L |
| | | Benzo(a)anthracene | 10 | < 100 | ug/L |
| | | Benzo(a)pyrene | 10 | < 100 | ug/L |
| | | Chrysene | 10 | < 100 | ug/L |
| | | Di-n-butylphthalate | 10 | < 100 | ug/L |
| | | Dibenzofuran | 10 | 160 | ug/L |
| | | Fluoranthene | 10 | < 100 | ug/L |
| | | Fluorene | 10 | 170 | ug/L |
| | | N-Nitrosodiphenylamine | 10 | < 100 | ug/L |
| | | Naphthalene | 10 | 1,600 | ug/L |
| | | Nitrobenzene | 10 | < 100 | ug/L |
| | | Pentachlorophenol | 10 | < 500 | ug/L |
| | | Phenanthrene | 10 | 130 | ug/L |
| | | Phenol | 10 | < 100 | ug/L |
| | | Pyrene | 10 | < 100 | ug/L |
| | | bis(2-Chloroethoxy)methane | 10 | < 100 | ug/L |

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## LABORATORY ANALYSIS REPORT

CLIENT NAME: TERRANEXT
SAMPLE ID: HWPW-MW1A-WISA97-P
SAMPLE NO: H447744

| LN | TEST CODE | DETERMINATION | DILUTION FACTOR | RESULT | UNITS |
|---|---|---|---|---|---|
| | | bis(2-Ethylhexyl)phthalate | 10 | < 100 | ug/L |
| 5 | I590 | Solids, Dissolved at 180C | 1 | 798 | mg/L |

COMMENTS: The reporting limits for semi-volatiles are elevated due to the dilution required because of high analyte concentration.

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## LABORATORY ANALYSIS REPORT

CLIENT NAME: TERRANEXT
ADDRESS: 6200 ROTHWAY, STE 190
HOUSTON, TX 77040-
ATTENTION: BILL GOLDSBY

LIMS CLIENT: 0717 0007
PACE PROJECT: H44461
PACE CLIENT: 620437
P.O. NO: VERBAL

SAMPLE ID: HWPW-MW11B-WISA97-P
SAMPLE NO: H447745
SAMPLE MATRIX: WATER

DATE SAMPLED: 25-MAR-97 1500
DATE RECEIVED: 26-MAR-97
PROJECT MANAGER: Elessa Sommers

| LN | TEST CODE | DETERMINATION | DILUTION FACTOR | RESULT | UNITS |
|---|---|---|---|---|---|
| 1 | OVTCW2 | 8260A TCL Volatiles in Water | | | |
| | | 1,2-Dichloroethane | 1 | < 5 | ug/L |
| | | Benzene | 1 | < 5 | ug/L |
| | | Chlorobenzene | 1 | < 5 | ug/L |
| | | Ethylbenzene | 1 | 9 | ug/L |
| | | Methylene chloride | 1 | < 5 | ug/L |
| | | Toluene | 1 | < 5 | ug/L |
| | | Xylenes (total) | 1 | 10 | ug/L |
| 3 | OSVTCW | TCL - Semi-volatile Extractables in Water | | | |
| | | 1,2-Diphenylhydrazine | 10 | < 100 | ug/L |
| | | 2,4-Dimethylphenol | 10 | < 100 | ug/L |
| | | 2,4-Dinitrotoluene | 10 | < 100 | ug/L |
| | | 2,6-Dinitrotoluene | 10 | < 100 | ug/L |
| | | 2-Chloronaphthalene | 10 | < 100 | ug/L |
| | | 2-Methylnaphthalene | 10 | 260 | ug/L |
| | | 4,6-Dinitro-o-cresol | 10 | < 500 | ug/L |
| | | 4-Nitrophenol | 10 | < 500 | ug/L |
| | | Acenaphthene | 10 | 380 | ug/L |
| | | Acenaphthylene | 10 | 110 | ug/L |
| | | Anthracene | 10 | < 100 | ug/L |
| | | Benzo(a)anthracene | 10 | < 100 | ug/L |
| | | Benzo(a)pyrene | 10 | < 100 | ug/L |
| | | Chrysene | 10 | < 100 | ug/L |
| | | Di-n-butylphthalate | 10 | < 100 | ug/L |
| | | Dibenzofuran | 10 | 250 | ug/L |
| | | Fluoranthene | 10 | < 100 | ug/L |
| | | Fluorene | 10 | 270 | ug/L |
| | | N-Nitrosodiphenylamine | 10 | < 100 | ug/L |
| | | Naphthalene | 10 | 1,400 | ug/L |
| | | Nitrobenzene | 10 | < 100 | ug/L |
| | | Pentachlorophenol | 10 | < 500 | ug/L |
| | | Phenanthrene | 10 | 270 | ug/L |
| | | Phenol | 10 | < 100 | ug/L |
| | | Pyrene | 10 | < 100 | ug/L |
| | | bis(2-Chloroethoxy)methane | 10 | < 100 | ug/L |

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LABORATORY ANALYSIS REPORT

CLIENT NAME: TERRANEXT
SAMPLE ID: HWPW-MW11B-WISA97-P
SAMPLE NO: H447745

| LN | TEST CODE | DETERMINATION | DILUTION FACTOR | RESULT | UNITS |
|---|---|---|---|---|---|
| | | bis(2-Ethylhexyl)phthalate | 10 | < 100 | ug/L |
| 5 | I590 | Solids, Dissolved at 180C | 1 | 741 | mg/L |

COMMENTS: The reporting limits for semi-volatiles are elevated due to the dilution required because of high analyte concentration.

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## LABORATORY ANALYSIS REPORT

CLIENT NAME: TERRANEXT
ADDRESS: 6200 ROTHWAY, STE 190
HOUSTON, TX 77040-
ATTENTION: BILL GOLDSBY

SAMPLE ID: HWPW-MW10A-WISA97-P
SAMPLE NO: H447746
SAMPLE MATRIX: WATER

LIMS CLIENT: 0717 0007
PACE PROJECT: H44461
PACE CLIENT: 620437
P.O. NO: VERBAL

DATE SAMPLED: 25-MAR-97 1535
DATE RECEIVED: 26-MAR-97
PROJECT MANAGER: Elessa Sommers

| LN | TEST CODE | DETERMINATION | DILUTION FACTOR | RESULT | UNITS |
|---|---|---|---|---|---|
| 1 | OVTCW2 | 8260A TCL Volatiles in Water | | | |
| | | 1,2-Dichloroethane | 1 | < 5 | ug/L |
| | | Benzene | 1 | < 5 | ug/L |
| | | Chlorobenzene | 1 | < 5 | ug/L |
| | | Ethylbenzene | 1 | < 5 | ug/L |
| | | Methylene chloride | 1 | < 5 | ug/L |
| | | Toluene | 1 | < 5 | ug/L |
| | | Xylenes (total) | 1 | < 5 | ug/L |
| 3 | OSVTCW | TCL - Semi-volatile Extractables in Water | | | |
| | | 1,2-Diphenylhydrazine | 1 | < 10 | ug/L |
| | | 2,4-Dimethylphenol | 1 | < 10 | ug/L |
| | | 2,4-Dinitrotoluene | 1 | < 10 | ug/L |
| | | 2,6-Dinitrotoluene | 1 | < 10 | ug/L |
| | | 2-Chloronaphthalene | 1 | < 10 | ug/L |
| | | 2-Methylnaphthalene | 1 | < 10 | ug/L |
| | | 4,6-Dinitro-o-cresol | 1 | < 50 | ug/L |
| | | 4-Nitrophenol | 1 | < 50 | ug/L |
| | | Acenaphthene | 1 | 64 | ug/L |
| | | Acenaphthylene | 1 | < 10 | ug/L |
| | | Anthracene | 1 | < 10 | ug/L |
| | | Benzo(a)anthracene | 1 | < 10 | ug/L |
| | | Benzo(a)pyrene | 1 | < 10 | ug/L |
| | | Chrysene | 1 | < 10 | ug/L |
| | | Di-n-butylphthalate | 1 | < 10 | ug/L |
| | | Dibenzofuran | 1 | 15 | ug/L |
| | | Fluoranthene | 1 | < 10 | ug/L |
| | | Fluorene | 1 | 31 | ug/L |
| | | N-Nitrosodiphenylamine | 1 | < 10 | ug/L |
| | | Naphthalene | 1 | 63 | ug/L |
| | | Nitrobenzene | 1 | < 10 | ug/L |
| | | Pentachlorophenol | 1 | < 50 | ug/L |
| | | Phenanthrene | 1 | < 10 | ug/L |
| | | Phenol | 1 | < 10 | ug/L |
| | | Pyrene | 1 | < 10 | ug/L |
| | | bis(2-Chloroethoxy)methane | 1 | < 10 | ug/L |

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LABORATORY ANALYSIS REPORT

CLIENT NAME: TERRANEXT
SAMPLE ID: HWPW-MW10A-WISA97-P
SAMPLE NO: H447746

| LN | TEST CODE | DETERMINATION | DILUTION FACTOR | RESULT | UNITS |
|---|---|---|---|---|---|
| | | bis(2-Ethylhexyl)phthalate | 1 | < 10 | ug/L |
| 5 | I590 | Solids, Dissolved at 180C | 1 | 1,069 | mg/L |

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LABORATORY ANALYSIS REPORT

CLIENT NAME: TERRANEXT
ADDRESS: 6200 ROTHWAY, STE 190
HOUSTON, TX 77040-
ATTENTION: BILL GOLDSBY

LIMS CLIENT: 0717 0007
PACE PROJECT: H44461
PACE CLIENT: 620437
P.O. NO: VERBAL

SAMPLE ID: HWPW-MW4-WISA97-P
SAMPLE NO: H447747
SAMPLE MATRIX: WATER

DATE SAMPLED: 25-MAR-97 1540
DATE RECEIVED: 26-MAR-97
PROJECT MANAGER: Elessa Sommers

| LN | TEST CODE | DETERMINATION | DILUTION FACTOR | RESULT | UNITS |
|---|---|---|---|---|---|
| 1 | OVTCW2 | 8260A TCL Volatiles in Water | | | |
| | | 1,2-Dichloroethane | 1 | < 5 | ug/L |
| | | Benzene | 1 | < 5 | ug/L |
| | | Chlorobenzene | 1 | < 5 | ug/L |
| | | Ethylbenzene | 1 | < 5 | ug/L |
| | | Methylene chloride | 1 | < 5 | ug/L |
| | | Toluene | 1 | < 5 | ug/L |
| | | Xylenes (total) | 1 | < 5 | ug/L |
| 3 | OSVTCW | TCL - Semi-volatile Extractables in Water | | | |
| | | 1,2-Diphenylhydrazine | 1 | < 10 | ug/L |
| | | 2,4-Dimethylphenol | 1 | < 10 | ug/L |
| | | 2,4-Dinitrotoluene | 1 | < 10 | ug/L |
| | | 2,6-Dinitrotoluene | 1 | < 10 | ug/L |
| | | 2-Chloronaphthalene | 1 | < 10 | ug/L |
| | | 2-Methylnaphthalene | 1 | < 10 | ug/L |
| | | 4,6-Dinitro-o-cresol | 1 | < 50 | ug/L |
| | | 4-Nitrophenol | 1 | < 50 | ug/L |
| | | Acenaphthene | 1 | < 10 | ug/L |
| | | Acenaphthylene | 1 | < 10 | ug/L |
| | | Anthracene | 1 | < 10 | ug/L |
| | | Benzo(a)anthracene | 1 | < 10 | ug/L |
| | | Benzo(a)pyrene | 1 | < 10 | ug/L |
| | | Chrysene | 1 | < 10 | ug/L |
| | | Di-n-butylphthalate | 1 | < 10 | ug/L |
| | | Dibenzofuran | 1 | < 10 | ug/L |
| | | Fluoranthene | 1 | < 10 | ug/L |
| | | Fluorene | 1 | < 10 | ug/L |
| | | N-Nitrosodiphenylamine | 1 | < 10 | ug/L |
| | | Naphthalene | 1 | < 10 | ug/L |
| | | Nitrobenzene | 1 | < 10 | ug/L |
| | | Pentachlorophenol | 1 | < 50 | ug/L |
| | | Phenanthrene | 1 | < 10 | ug/L |
| | | Phenol | 1 | < 10 | ug/L |
| | | Pyrene | 1 | < 10 | ug/L |
| | | bis(2-Chloroethoxy)methane | 1 | < 10 | ug/L |

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LABORATORY ANALYSIS REPORT

CLIENT NAME: TERRANEXT
SAMPLE ID: HWPW-MW4-WISA97-P
SAMPLE NO: H447747

| LN | TEST CODE | DETERMINATION | DILUTION FACTOR | RESULT | UNITS |
|---|---|---|---|---|---|
| | | bis(2-Ethylhexyl)phthalate | 1 | < 10 | ug/L |
| 5 | I590 | Solids, Dissolved at 180C | 1 | 610 | mg/L |

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April 18, 1997
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LABORATORY ANALYSIS REPORT

CLIENT NAME: TERRANEXT
ADDRESS: 6200 ROTHWAY, STE 190
HOUSTON, TX 77040-
ATTENTION: BILL GOLDSBY

SAMPLE ID: HWPW-MW11A-WISA97-P
SAMPLE NO: H447748
SAMPLE MATRIX: WATER

LIMS CLIENT: 0717 0007
PACE PROJECT: H44461
PACE CLIENT: 620437
P.O. NO: VERBAL

DATE SAMPLED: 25-MAR-97 1555
DATE RECEIVED: 26-MAR-97
PROJECT MANAGER: Elessa Sommers

| LN | TEST CODE | DETERMINATION | DILUTION FACTOR | RESULT | UNITS |
|---|---|---|---|---|---|
| 1 | OVTCW2 | 8260A TCL Volatiles in Water | | | |
| | | 1,2-Dichloroethane | 1 | < 5 | ug/L |
| | | Benzene | 1 | < 5 | ug/L |
| | | Chlorobenzene | 1 | < 5 | ug/L |
| | | Ethylbenzene | 1 | 7 | ug/L |
| | | Methylene chloride | 1 | < 5 | ug/L |
| | | Toluene | 1 | < 5 | ug/L |
| | | Xylenes (total) | 1 | 10 | ug/L |
| 3 | OSVTCW | TCL - Semi-volatile Extractables in Water | | | |
| | | 1,2-Diphenylhydrazine | 10 | < 100 | ug/L |
| | | 2,4-Dimethylphenol | 10 | < 100 | ug/L |
| | | 2,4-Dinitrotoluene | 10 | < 100 | ug/L |
| | | 2,6-Dinitrotoluene | 10 | < 100 | ug/L |
| | | 2-Chloronaphthalene | 10 | < 100 | ug/L |
| | | 2-Methylnaphthalene | 10 | < 100 | ug/L |
| | | 4,6-Dinitro-o-cresol | 10 | < 500 | ug/L |
| | | 4-Nitrophenol | 10 | < 500 | ug/L |
| | | Acenaphthene | 10 | 190 | ug/L |
| | | Acenaphthylene | 10 | < 100 | ug/L |
| | | Anthracene | 10 | < 100 | ug/L |
| | | Benzo(a)anthracene | 10 | < 100 | ug/L |
| | | Benzo(a)pyrene | 10 | < 100 | ug/L |
| | | Chrysene | 10 | < 100 | ug/L |
| | | Di-n-butylphthalate | 10 | < 100 | ug/L |
| | | Dibenzofuran | 10 | < 100 | ug/L |
| | | Fluoranthene | 10 | < 100 | ug/L |
| | | Fluorene | 10 | < 100 | ug/L |
| | | N-Nitrosodiphenylamine | 10 | < 100 | ug/L |
| | | Naphthalene | 10 | 1,100 | ug/L |
| | | Nitrobenzene | 10 | < 100 | ug/L |
| | | Pentachlorophenol | 10 | < 500 | ug/L |
| | | Phenanthrene | 10 | < 100 | ug/L |
| | | Phenol | 10 | < 100 | ug/L |
| | | Pyrene | 10 | < 100 | ug/L |
| | | bis(2-Chloroethoxy)methane | 10 | < 100 | ug/L |

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LABORATORY ANALYSIS REPORT

CLIENT NAME: TERRANEXT
SAMPLE ID: HWPW-MW11A-WISA97-P
SAMPLE NO: H447748

| LN | TEST CODE | DETERMINATION | DILUTION FACTOR | RESULT | UNITS |
|---|---|---|---|---|---|
| | | bis(2-Ethylhexyl)phthalate | 10 | < 100 | ug/L |
| 5 | I590 | Solids, Dissolved at 180C | 1 | 793 | mg/L |

COMMENTS: The reporting limits for semi-volatiles are elevated due to the dilution required because of high analyte concentration.

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## LABORATORY ANALYSIS REPORT

CLIENT NAME: TERRANEXT
ADDRESS: 6200 ROTHWAY, STE 190
HOUSTON, TX 77040-
ATTENTION: BILL GOLDSBY

SAMPLE ID: HWPW-MW10B-WISA97-P
SAMPLE NO: H447749
SAMPLE MATRIX: WATER

LIMS CLIENT: 0717 0007
PACE PROJECT: H44461
PACE CLIENT: 620437
P.O. NO: VERBAL

DATE SAMPLED: 25-MAR-97 1800
DATE RECEIVED: 26-MAR-97
PROJECT MANAGER: Elessa Sommers

| LN | TEST CODE | DETERMINATION | DILUTION FACTOR | RESULT | UNITS |
|---|---|---|---|---|---|
| 1 | OVTCW2 | 8260A TCL Volatiles in Water | | | |
| | | 1,2-Dichloroethane | 1 | < 5 | ug/L |
| | | Benzene | 1 | < 5 | ug/L |
| | | Chlorobenzene | 1 | < 5 | ug/L |
| | | Ethylbenzene | 1 | 9 | ug/L |
| | | Methylene chloride | 1 | < 5 | ug/L |
| | | Toluene | 1 | < 5 | ug/L |
| | | Xylenes (total) | 1 | 15 | ug/L |
| 3 | OSVTCW | TCL - Semi-volatile Extractables in Water | | | |
| | | 1,2-Diphenylhydrazine | 1 | < 10 | ug/L |
| | | 2,4-Dimethylphenol | 1 | < 10 | ug/L |
| | | 2,4-Dinitrotoluene | 1 | < 10 | ug/L |
| | | 2,6-Dinitrotoluene | 1 | < 10 | ug/L |
| | | 2-Chloronaphthalene | 1 | < 10 | ug/L |
| | | 2-Methylnaphthalene | 1 | 97 | ug/L |
| | | 4,6-Dinitro-o-cresol | 1 | < 50 | ug/L |
| | | 4-Nitrophenol | 1 | < 50 | ug/L |
| | | Acenaphthene | 5 | 230 | ug/L |
| | | Acenaphthylene | 1 | < 10 | ug/L |
| | | Anthracene | 1 | 28 | ug/L |
| | | Benzo(a)anthracene | 1 | < 10 | ug/L |
| | | Benzo(a)pyrene | 1 | < 10 | ug/L |
| | | Chrysene | 1 | < 10 | ug/L |
| | | Di-n-butylphthalate | 1 | < 10 | ug/L |
| | | Dibenzofuran | 5 | 130 | ug/L |
| | | Fluoranthene | 1 | 20 | ug/L |
| | | Fluorene | 5 | 150 | ug/L |
| | | N-Nitrosodiphenylamine | 1 | < 10 | ug/L |
| | | Naphthalene | 5 | 650 | ug/L |
| | | Nitrobenzene | 1 | < 10 | ug/L |
| | | Pentachlorophenol | 1 | < 50 | ug/L |
| | | Phenanthrene | 5 | 140 | ug/L |
| | | Phenol | 1 | < 10 | ug/L |
| | | Pyrene | 1 | < 10 | ug/L |
| | | bis(2-Chloroethoxy)methane | 1 | < 10 | ug/L |

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LABORATORY ANALYSIS REPORT

CLIENT NAME: TERRANEXT
SAMPLE ID: HWPW-MW10B-WISA97-P
SAMPLE NO: H447749

| LN | TEST CODE | DETERMINATION | DILUTION FACTOR | RESULT | UNITS |
|---|---|---|---|---|---|
| 5 | I590 | bis(2-Ethylhexyl)phthalate | 1 | < 10 | ug/L |
| | | Solids, Dissolved at 180C | 1 | 887 | mg/L |

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Report No.: 00060618


LABORATORY ANALYSIS REPORT

CLIENT NAME: TERRANEXT
ADDRESS: 6200 ROTHWAY, STE 190
HOUSTON, TX 77040-
ATTENTION: BILL GOLDSBY

LIMS CLIENT: 0717 0007
PACE PROJECT: H44461
PACE CLIENT: 620437
P.O. NO: VERBAL

SAMPLE ID: HWPW-MW8-WISA97-P
SAMPLE NO: H447750
SAMPLE MATRIX: WATER

DATE SAMPLED: 26-MAR-97 1050
DATE RECEIVED: 26-MAR-97
PROJECT MANAGER: Elessa Sommers

| LN | TEST CODE | DETERMINATION | DILUTION FACTOR | RESULT | UNITS |
|---|---|---|---|---|---|
| 1 | OVTCW2 | 8260A TCL Volatiles in Water | | | |
| | | 1,2-Dichloroethane | 1 | < 5 | ug/L |
| | | Benzene | 1 | < 5 | ug/L |
| | | Chlorobenzene | 1 | < 5 | ug/L |
| | | Ethylbenzene | 1 | 7 | ug/L |
| | | Methylene chloride | 1 | < 5 | ug/L |
| | | Toluene | 1 | 5 | ug/L |
| | | Xylenes (total) | 1 | 13 | ug/L |
| 3 | OSVTCW | TCL - Semi-volatile Extractables in Water | | | |
| | | 1,2-Diphenylhydrazine | 4 | < 40 | ug/L |
| | | 2,4-Dimethylphenol | 4 | < 40 | ug/L |
| | | 2,4-Dinitrotoluene | 4 | < 40 | ug/L |
| | | 2,6-Dinitrotoluene | 4 | < 40 | ug/L |
| | | 2-Chloronaphthalene | 4 | < 40 | ug/L |
| | | 2-Methylnaphthalene | 4 | 110 | ug/L |
| | | 4,6-Dinitro-o-cresol | 4 | < 200 | ug/L |
| | | 4-Nitrophenol | 4 | < 200 | ug/L |
| | | Acenaphthene | 4 | 170 | ug/L |
| | | Acenaphthylene | 4 | < 40 | ug/L |
| | | Anthracene | 4 | < 40 | ug/L |
| | | Benzo(a)anthracene | 4 | < 40 | ug/L |
| | | Benzo(a)pyrene | 4 | < 40 | ug/L |
| | | Chrysene | 4 | < 40 | ug/L |
| | | Di-n-butylphthalate | 4 | < 40 | ug/L |
| | | Dibenzofuran | 4 | 140 | ug/L |
| | | Fluoranthene | 4 | < 40 | ug/L |
| | | Fluorene | 4 | 190 | ug/L |
| | | N-Nitrosodiphenylamine | 4 | < 40 | ug/L |
| | | Naphthalene | 4 | 640 | ug/L |
| | | Nitrobenzene | 4 | < 40 | ug/L |
| | | Pentachlorophenol | 4 | < 200 | ug/L |
| | | Phenanthrene | 4 | 51 | ug/L |
| | | Phenol | 4 | < 40 | ug/L |
| | | Pyrene | 4 | < 40 | ug/L |
| | | bis(2-Chloroethoxy)methane | 4 | < 40 | ug/L |

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LABORATORY ANALYSIS REPORT

CLIENT NAME: TERRANEXT
SAMPLE ID: HWPW-MW8-WISA97-P
SAMPLE NO: H447750

| LN | TEST CODE | DETERMINATION | DILUTION FACTOR | RESULT | UNITS |
|---|---|---|---|---|---|
| | | bis(2-Ethylhexyl)phthalate | 4 | < 40 | ug/L |
| 5 | I590 | Solids, Dissolved at 180C | 1 | 636 | mg/L |

COMMENTS: The reporting limits for semi-volatiles are elevated due to the dilution required because of high analyte concentration.

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LABORATORY ANALYSIS REPORT

CLIENT NAME: TERRANEXT
ADDRESS: 6200 ROTHWAY, STE 190
HOUSTON, TX 77040-
ATTENTION: BILL GOLDSBY

LIMS CLIENT: 0717 0007
PACE PROJECT: H44461
PACE CLIENT: 620437
P.O. NO: VERBAL

SAMPLE ID: HWPW-MW8B-WISA97-P
SAMPLE NO: H447751
SAMPLE MATRIX: WATER

DATE SAMPLED: 26-MAR-97 1100
DATE RECEIVED: 26-MAR-97
PROJECT MANAGER: Elessa Sommers

| LN | TEST CODE | DETERMINATION | DILUTION FACTOR | RESULT | UNITS |
|---|---|---|---|---|---|
| 1 | OVTCW2 | 8260A TCL Volatiles in Water | | | |
| | | 1,2-Dichloroethane | 1 | < 5 | ug/L |
| | | Benzene | 1 | < 5 | ug/L |
| | | Chlorobenzene | 1 | < 5 | ug/L |
| | | Ethylbenzene | 1 | 8 | ug/L |
| | | Methylene chloride | 1 | < 5 | ug/L |
| | | Toluene | 1 | 7 | ug/L |
| | | Xylenes (total) | 1 | 17 | ug/L |
| 3 | OSVTCW | TCL - Semi-volatile Extractables in Water | | | |
| | | 1,2-Diphenylhydrazine | 1 | < 10 | ug/L |
| | | 2,4-Dimethylphenol | 1 | < 10 | ug/L |
| | | 2,4-Dinitrotoluene | 1 | < 10 | ug/L |
| | | 2,6-Dinitrotoluene | 1 | < 10 | ug/L |
| | | 2-Chloronaphthalene | 1 | < 10 | ug/L |
| | | 2-Methylnaphthalene | 1 | 71 | ug/L |
| | | 4,6-Dinitro-o-cresol | 1 | < 50 | ug/L |
| | | 4-Nitrophenol | 1 | < 50 | ug/L |
| | | Acenaphthene | 1 | 140 | ug/L |
| | | Acenaphthylene | 1 | < 10 | ug/L |
| | | Anthracene | 1 | 16 | ug/L |
| | | Benzo(a)anthracene | 1 | < 10 | ug/L |
| | | Benzo(a)pyrene | 1 | < 10 | ug/L |
| | | Chrysene | 1 | < 10 | ug/L |
| | | Di-n-butylphthalate | 1 | < 10 | ug/L |
| | | Dibenzofuran | 1 | 120 | ug/L |
| | | Fluoranthene | 1 | 15 | ug/L |
| | | Fluorene | 1 | 120 | ug/L |
| | | N-Nitrosodiphenylamine | 1 | < 10 | ug/L |
| | | Naphthalene | 50 | 970 | ug/L |
| | | Nitrobenzene | 1 | < 10 | ug/L |
| | | Pentachlorophenol | 1 | < 50 | ug/L |
| | | Phenanthrene | 1 | 47 | ug/L |
| | | Phenol | 1 | < 10 | ug/L |
| | | Pyrene | 1 | < 10 | ug/L |
| | | bis(2-Chloroethoxy)methane | 1 | < 10 | ug/L |

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LABORATORY ANALYSIS REPORT

CLIENT NAME: TERRANEXT
SAMPLE ID: HWPW-MW8B-WISA97-P
SAMPLE NO: H447751

| LN | TEST CODE | DETERMINATION | DILUTION FACTOR | RESULT | UNITS |
|---|---|---|---|---|---|
| | | bis(2-Ethylhexyl)phthalate | 1 | < 10 | ug/L |

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## LABORATORY ANALYSIS REPORT

CLIENT NAME: TERRANEXT
ADDRESS: 6200 ROTHWAY, STE 190
HOUSTON, TX 77040-
ATTENTION: BILL GOLDSBY

LIMS CLIENT: 0717 0007
PACE PROJECT: H44461
PACE CLIENT: 620437
P.O. NO: VERBAL

SAMPLE ID: HWPW-P12-WISA97-P
SAMPLE NO: H447752
SAMPLE MATRIX: WATER

DATE SAMPLED: 26-MAR-97 1010
DATE RECEIVED: 26-MAR-97
PROJECT MANAGER: Elessa Sommers

| LN | TEST CODE | DETERMINATION | DILUTION FACTOR | RESULT | UNITS |
|---|---|---|---|---|---|
| 1 | OVTCW2 | 8260A TCL Volatiles in Water | | | |
| | | 1,2-Dichloroethane | 1 | < 5 | ug/L |
| | | Benzene | 1 | < 5 | ug/L |
| | | Chlorobenzene | 1 | < 5 | ug/L |
| | | Ethylbenzene | 1 | < 5 | ug/L |
| | | Methylene chloride | 1 | < 5 | ug/L |
| | | Toluene | 1 | < 5 | ug/L |
| | | Xylenes (total) | 1 | < 5 | ug/L |
| 3 | OSVTCW | TCL - Semi-volatile Extractables in Water | | | |
| | | 1,2-Diphenylhydrazine | 1 | < 10 | ug/L |
| | | 2,4-Dimethylphenol | 1 | < 10 | ug/L |
| | | 2,4-Dinitrotoluene | 1 | < 10 | ug/L |
| | | 2,6-Dinitrotoluene | 1 | < 10 | ug/L |
| | | 2-Chloronaphthalene | 1 | < 10 | ug/L |
| | | 2-Methylnaphthalene | 1 | < 10 | ug/L |
| | | 4,6-Dinitro-o-cresol | 1 | < 50 | ug/L |
| | | 4-Nitrophenol | 1 | < 50 | ug/L |
| | | Acenaphthene | 1 | < 10 | ug/L |
| | | Acenaphthylene | 1 | < 10 | ug/L |
| | | Anthracene | 1 | < 10 | ug/L |
| | | Benzo(a)anthracene | 1 | < 10 | ug/L |
| | | Benzo(a)pyrene | 1 | < 10 | ug/L |
| | | Chrysene | 1 | < 10 | ug/L |
| | | Di-n-butylphthalate | 1 | < 10 | ug/L |
| | | Dibenzofuran | 1 | < 10 | ug/L |
| | | Fluoranthene | 1 | < 10 | ug/L |
| | | Fluorene | 1 | < 10 | ug/L |
| | | N-Nitrosodiphenylamine | 1 | < 10 | ug/L |
| | | Naphthalene | 1 | < 10 | ug/L |
| | | Nitrobenzene | 1 | < 50 | ug/L |
| | | Pentachlorophenol | 1 | < 10 | ug/L |
| | | Phenanthrene | 1 | < 10 | ug/L |
| | | Phenol | 1 | < 10 | ug/L |
| | | Pyrene | 1 | < 10 | ug/L |
| | | bis(2-Chloroethoxy)methane | 1 | < 10 | ug/L |

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## LABORATORY ANALYSIS REPORT

CLIENT NAME: TERRANEXT
SAMPLE ID: HWPW-P12-WISA97-P
SAMPLE NO: H447752

| LN | TEST CODE | DETERMINATION | DILUTION FACTOR | RESULT | UNITS |
|---|---|---|---|---|---|
| | | bis(2-Ethylhexyl)phthalate | 1 | < 10 | ug/L |
| 5 | I590 | Solids, Dissolved at 180C | 1 | 901 | mg/L |

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## LABORATORY ANALYSIS REPORT

CLIENT NAME: TERRANEXT
ADDRESS: 6200 ROTHWAY, STE 190
HOUSTON, TX 77040-
ATTENTION: BILL GOLDSBY

LIMS CLIENT: 0717 0007
PACE PROJECT: H44461
PACE CLIENT: 620437
P.O. NO: VERBAL

SAMPLE ID: HWPW-MW7-WISA97-P
SAMPLE NO: H447753
SAMPLE MATRIX: WATER

DATE SAMPLED: 26-MAR-97 1125
DATE RECEIVED: 26-MAR-97
PROJECT MANAGER: Elessa Sommers

| LN | TEST CODE | DETERMINATION | DILUTION FACTOR | RESULT | UNITS |
|---|---|---|---|---|---|
| 1 | OVTCW2 | 8260A TCL Volatiles in Water | | | |
| | | 1,2-Dichloroethane | 1 | < 5 | ug/L |
| | | Benzene | 1 | < 5 | ug/L |
| | | Chlorobenzene | 1 | < 5 | ug/L |
| | | Ethylbenzene | 1 | < 5 | ug/L |
| | | Methylene chloride | 1 | < 5 | ug/L |
| | | Toluene | 1 | < 5 | ug/L |
| | | Xylenes (total) | 1 | < 5 | ug/L |
| 3 | OSVTCW | TCL - Semi-volatile Extractables in Water | | | |
| | | 1,2-Diphenylhydrazine | 1 | < 10 | ug/L |
| | | 2,4-Dimethylphenol | 1 | < 10 | ug/L |
| | | 2,4-Dinitrotoluene | 1 | < 10 | ug/L |
| | | 2,6-Dinitrotoluene | 1 | < 10 | ug/L |
| | | 2-Chloronaphthalene | 1 | < 10 | ug/L |
| | | 2-Methylnaphthalene | 1 | < 10 | ug/L |
| | | 4,6-Dinitro-o-cresol | 1 | < 50 | ug/L |
| | | 4-Nitrophenol | 1 | < 50 | ug/L |
| | | Acenaphthene | 1 | 110 | ug/L |
| | | Acenaphthylene | 1 | < 10 | ug/L |
| | | Anthracene | 1 | < 10 | ug/L |
| | | Benzo(a)anthracene | 1 | < 10 | ug/L |
| | | Benzo(a)pyrene | 1 | < 10 | ug/L |
| | | Chrysene | 1 | < 10 | ug/L |
| | | Di-n-butylphthalate | 1 | < 10 | ug/L |
| | | Dibenzofuran | 1 | < 10 | ug/L |
| | | Fluoranthene | 1 | < 10 | ug/L |
| | | Fluorene | 1 | 81 | ug/L |
| | | N-Nitrosodiphenylamine | 1 | < 10 | ug/L |
| | | Naphthalene | 1 | < 10 | ug/L |
| | | Nitrobenzene | 1 | < 10 | ug/L |
| | | Pentachlorophenol | 1 | < 50 | ug/L |
| | | Phenanthrene | 1 | < 10 | ug/L |
| | | Phenol | 1 | < 10 | ug/L |
| | | Pyrene | 1 | < 10 | ug/L |
| | | bis(2-Chloroethoxy)methane | 1 | < 10 | ug/L |

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## LABORATORY ANALYSIS REPORT

CLIENT NAME: TERRANEXT
SAMPLE ID: HWPW-MW7-WISA97-P
SAMPLE NO: H447753

| LN | TEST CODE | DETERMINATION | DILUTION FACTOR | RESULT | UNITS |
|---|---|---|---|---|---|
| | | bis(2-Ethylhexyl)phthalate | 1 | < 10 | ug/L |
| 5 | I590 | Solids, Dissolved at 180C | 1 | 626 | mg/L |

COMMENTS: The semi-volatiles were re-extracted out of hold time due to surrogate failures on the original extract. The reported results are from the re-extraction.

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LABORATORY ANALYSIS REPORT

CLIENT NAME: TERRANEXT
ADDRESS: 6200 ROTHWAY, STE 190
HOUSTON, TX 77040-
ATTENTION: BILL GOLDSBY

LIMS CLIENT: 0717 0007
PACE PROJECT: H44461
PACE CLIENT: 620437
P.O. NO: VERBAL

SAMPLE ID: HWPW-P10-WISA97-P
SAMPLE NO: H447754
SAMPLE MATRIX: WATER

DATE SAMPLED: 26-MAR-97 1135
DATE RECEIVED: 26-MAR-97
PROJECT MANAGER: Elessa Sommers

| LN | TEST CODE | DETERMINATION | DILUTION FACTOR | RESULT | UNITS |
|---|---|---|---|---|---|
| 1 | OVTCW2 | 8260A TCL Volatiles in Water | | | |
| | | 1,2-Dichloroethane | 1 | < 5 | ug/L |
| | | Benzene | 1 | < 5 | ug/L |
| | | Chlorobenzene | 1 | < 5 | ug/L |
| | | Ethylbenzene | 1 | 24 | ug/L |
| | | Methylene chloride | 1 | < 5 | ug/L |
| | | Toluene | 1 | < 5 | ug/L |
| | | Xylenes (total) | 1 | 20 | ug/L |
| 3 | OSVTCW | TCL - Semi-volatile Extractables in Water | | | |
| | | 1,2-Diphenylhydrazine | 1 | < 10 | ug/L |
| | | 2,4-Dimethylphenol | 1 | < 10 | ug/L |
| | | 2,4-Dinitrotoluene | 1 | < 10 | ug/L |
| | | 2,6-Dinitrotoluene | 1 | 19 | ug/L |
| | | 2-Chloronaphthalene | 1 | < 10 | ug/L |
| | | 2-Methylnaphthalene | 50 | 150 J | ug/L |
| | | 4,6-Dinitro-o-cresol | 1 | < 50 | ug/L |
| | | 4-Nitrophenol | 1 | < 50 | ug/L |
| | | Acenaphthene | 1 | 160 | ug/L |
| | | Acenaphthylene | 1 | < 10 | ug/L |
| | | Anthracene | 1 | 11 | ug/L |
| | | Benzo(a)anthracene | 1 | < 10 | ug/L |
| | | Benzo(a)pyrene | 1 | < 10 | ug/L |
| | | Chrysene | 1 | < 10 | ug/L |
| | | Di-n-butylphthalate | 1 | < 10 | ug/L |
| | | Dibenzofuran | 1 | 40 | ug/L |
| | | Fluoranthene | 1 | 10 | ug/L |
| | | Fluorene | 1 | 100 | ug/L |
| | | N-Nitrosodiphenylamine | 1 | < 10 | ug/L |
| | | Naphthalene | 50 | 2,800 | ug/L |
| | | Nitrobenzene | 1 | < 10 | ug/L |
| | | Pentachlorophenol | 1 | < 50 | ug/L |
| | | Phenanthrene | 1 | 49 | ug/L |
| | | Phenol | 1 | < 10 | ug/L |
| | | Pyrene | 1 | < 10 | ug/L |
| | | bis(2-Chloroethoxy)methane | 1 | < 10 | ug/L |

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LABORATORY ANALYSIS REPORT

CLIENT NAME: TERRANEXT
SAMPLE ID: HWPW-P10-WISA97-P
SAMPLE NO: H447754

| LN | TEST CODE | DETERMINATION | DILUTION FACTOR | RESULT | UNITS |
|---|---|---|---|---|---|
| | | bis(2-Ethylhexyl)phthalate | 1 | < 10 | ug/L |
| 5 | I590 | Solids, Dissolved at 180C | 1 | 678 | mg/L |

COMMENTS: J - The reported result is below the reporting limit for the target.

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## LABORATORY ANALYSIS REPORT

CLIENT NAME: TERRANEXT
ADDRESS: 6200 ROTHWAY, STE 190
HOUSTON, TX 77040-
ATTENTION: BILL GOLDSBY

LIMS CLIENT: 0717 0007
PACE PROJECT: H44461
PACE CLIENT: 620437
P.O. NO: VERBAL

SAMPLE ID: HWPW-MW5-WISA97-P
SAMPLE NO: H447755
SAMPLE MATRIX: WATER

DATE SAMPLED: 26-MAR-97 1235
DATE RECEIVED: 26-MAR-97
PROJECT MANAGER: Elessa Sommers

| LN | TEST CODE | DETERMINATION | DILUTION FACTOR | RESULT | UNITS |
|---|---|---|---|---|---|
| 1 | OVTCW2 | 8260A TCL Volatiles in Water | | | |
| | | 1,2-Dichloroethane | 1 | < 5 | ug/L |
| | | Benzene | 1 | < 5 | ug/L |
| | | Chlorobenzene | 1 | < 5 | ug/L |
| | | Ethylbenzene | 1 | < 5 | ug/L |
| | | Methylene chloride | 1 | < 5 | ug/L |
| | | Toluene | 1 | < 5 | ug/L |
| | | Xylenes (total) | 1 | < 5 | ug/L |
| 3 | OSVTCW | TCL - Semi-volatile Extractables in Water | | | |
| | | 1,2-Diphenylhydrazine | 1 | < 10 | ug/L |
| | | 2,4-Dimethylphenol | 1 | < 10 | ug/L |
| | | 2,4-Dinitrotoluene | 1 | < 10 | ug/L |
| | | 2,6-Dinitrotoluene | 1 | < 10 | ug/L |
| | | 2-Chloronaphthalene | 1 | < 10 | ug/L |
| | | 2-Methylnaphthalene | 1 | < 10 | ug/L |
| | | 4,6-Dinitro-o-cresol | 1 | < 50 | ug/L |
| | | 4-Nitrophenol | 1 | < 50 | ug/L |
| | | Acenaphthene | 1 | 26 | ug/L |
| | | Acenaphthylene | 1 | < 10 | ug/L |
| | | Anthracene | 1 | < 10 | ug/L |
| | | Benzo(a)anthracene | 1 | < 10 | ug/L |
| | | Benzo(a)pyrene | 1 | < 10 | ug/L |
| | | Chrysene | 1 | < 10 | ug/L |
| | | Di-n-butylphthalate | 1 | < 10 | ug/L |
| | | Dibenzofuran | 1 | < 10 | ug/L |
| | | Fluoranthene | 1 | < 10 | ug/L |
| | | Fluorene | 1 | 13 | ug/L |
| | | N-Nitrosodiphenylamine | 1 | < 10 | ug/L |
| | | Naphthalene | 1 | 23 | ug/L |
| | | Nitrobenzene | 1 | < 10 | ug/L |
| | | Pentachlorophenol | 1 | < 50 | ug/L |
| | | Phenanthrene | 1 | < 10 | ug/L |
| | | Phenol | 1 | < 10 | ug/L |
| | | Pyrene | 1 | < 10 | ug/L |
| | | bis(2-Chloroethoxy)methane | 1 | < 10 | ug/L |

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## LABORATORY ANALYSIS REPORT

CLIENT NAME: TERRANEXT
SAMPLE ID: HWPW-MW5-WISA97-P
SAMPLE NO: H447755

| LN | TEST CODE | DETERMINATION | DILUTION FACTOR | RESULT | UNITS |
|---|---|---|---|---|---|
| | | bis(2-Ethylhexyl)phthalate | 1 | < 10 | ug/L |
| 5 | I590 | Solids, Dissolved at 180C | 1 | 493 | mg/L |

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LABORATORY ANALYSIS REPORT

CLIENT NAME: TERRANEXT
ADDRESS: 6200 ROTHWAY, STE 190
HOUSTON, TX 77040-
ATTENTION: BILL GOLDSBY

LIMS CLIENT: 0717 0007
PACE PROJECT: H44461
PACE CLIENT: 620437
P.O. NO: VERBAL

SAMPLE ID: HWPW-P11-WISA97-P
SAMPLE NO: H447756
SAMPLE MATRIX: WATER

DATE SAMPLED: 26-MAR-97 1215
DATE RECEIVED: 26-MAR-97
PROJECT MANAGER: Elessa Sommers

| LN | TEST CODE | DETERMINATION | DILUTION FACTOR | RESULT | UNITS |
|---|---|---|---|---|---|
| 1 | OVTCW2 | 8260A TCL Volatiles in Water | | | |
| | | 1,2-Dichloroethane | 1 | < 5 | ug/L |
| | | Benzene | 1 | < 5 | ug/L |
| | | Chlorobenzene | 1 | < 5 | ug/L |
| | | Ethylbenzene | 1 | < 5 | ug/L |
| | | Methylene chloride | 1 | < 5 | ug/L |
| | | Toluene | 1 | < 5 | ug/L |
| | | Xylenes (total) | 1 | < 5 | ug/L |
| 3 | OSVTCW | TCL - Semi-volatile Extractables in Water | | | |
| | | 1,2-Diphenylhydrazine | 1 | < 10 | ug/L |
| | | 2,4-Dimethylphenol | 1 | < 10 | ug/L |
| | | 2,4-Dinitrotoluene | 1 | < 10 | ug/L |
| | | 2,6-Dinitrotoluene | 1 | < 10 | ug/L |
| | | 2-Chloronaphthalene | 1 | < 10 | ug/L |
| | | 2-Methylnaphthalene | 1 | < 10 | ug/L |
| | | 4,6-Dinitro-o-cresol | 1 | < 50 | ug/L |
| | | 4-Nitrophenol | 1 | < 50 | ug/L |
| | | Acenaphthene | 1 | 34 | ug/L |
| | | Acenaphthylene | 1 | < 10 | ug/L |
| | | Anthracene | 1 | < 10 | ug/L |
| | | Benzo(a)anthracene | 1 | < 10 | ug/L |
| | | Benzo(a)pyrene | 1 | < 10 | ug/L |
| | | Chrysene | 1 | < 10 | ug/L |
| | | Di-n-butylphthalate | 1 | < 10 | ug/L |
| | | Dibenzofuran | 1 | < 10 | ug/L |
| | | Fluoranthene | 1 | < 10 | ug/L |
| | | Fluorene | 1 | 17 | ug/L |
| | | N-Nitrosodiphenylamine | 1 | < 10 | ug/L |
| | | Naphthalene | 1 | < 10 | ug/L |
| | | Nitrobenzene | 1 | < 10 | ug/L |
| | | Pentachlorophenol | 1 | < 50 | ug/L |
| | | Phenanthrene | 1 | < 10 | ug/L |
| | | Phenol | 1 | < 10 | ug/L |
| | | Pyrene | 1 | < 10 | ug/L |
| | | bis(2-Chloroethoxy)methane | 1 | < 10 | ug/L |

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LABORATORY ANALYSIS REPORT

CLIENT NAME: TERRANEXT
SAMPLE ID: HWPW-P11-WISA97-P
SAMPLE NO: H447756

| LN | TEST CODE | DETERMINATION | DILUTION FACTOR | RESULT | UNITS |
|---|---|---|---|---|---|
| | | bis(2-Ethylhexyl)phthalate | 1 | < 10 | ug/L |
| 5 | I590 | Solids, Dissolved at 180C | 1 | 792 | mg/L |

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## LABORATORY ANALYSIS REPORT

CLIENT NAME: TERRANEXT
ADDRESS: 6200 ROTHWAY, STE 190
HOUSTON, TX 77040-
ATTENTION: BILL GOLDSBY

SAMPLE ID: HWPW-EB-WISA97-P
SAMPLE NO: H447757
SAMPLE MATRIX: WATER

LIMS CLIENT: 0717 0007
PACE PROJECT: H44461
PACE CLIENT: 620437
P.O. NO: VERBAL

DATE SAMPLED: 26-MAR-97 0955
DATE RECEIVED: 26-MAR-97
PROJECT MANAGER: Elessa Sommers

| LN | TEST CODE | DETERMINATION | DILUTION FACTOR | RESULT | UNITS |
|---|---|---|---|---|---|
| 1 | OVTCW2 | 8260A TCL Volatiles in Water | | | |
| | | 1,2-Dichloroethane | 1 | < 5 | ug/L |
| | | Benzene | 1 | < 5 | ug/L |
| | | Chlorobenzene | 1 | < 5 | ug/L |
| | | Ethylbenzene | 1 | < 5 | ug/L |
| | | Methylene chloride | 1 | < 5 | ug/L |
| | | Toluene | 1 | < 5 | ug/L |
| | | Xylenes (total) | 1 | < 5 | ug/L |

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LABORATORY ANALYSIS REPORT

CLIENT NAME: TERRANEXT
ADDRESS: 6200 ROTHWAY, STE 190
HOUSTON, TX 77040-
ATTENTION: BILL GOLDSBY

SAMPLE ID: HWPW-FB-WISA97-P
SAMPLE NO: H447810
SAMPLE MATRIX: WATER

LIMS CLIENT: 0717 0007
PACE PROJECT: H44461
PACE CLIENT: 620437
P.O. NO: VERBAL

DATE SAMPLED: 26-MAR-97
DATE RECEIVED: 26-MAR-97
PROJECT MANAGER: Elessa Sommers

| LN | TEST CODE | DETERMINATION | DILUTION FACTOR | RESULT | UNITS |
|---|---|---|---|---|---|

COMMENTS: Sample was not analyzed due to lab error in storage placement.

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## SUPPLEMENTAL INFORMATION

| LN | TEST CODE | LCSR BLNK BATCH | DUP/MS MS/MSD BATCH | SAMPLE PREPARATION LR-METHOD | SAMPLE PREPARATION DATE/TIME | SAMPLE PREPARATION ANALYST | SAMPLE ANALYSIS LR-METHOD | SAMPLE ANALYSIS DATE/TIME | SAMPLE ANALYSIS ANALYST | SAMPLE ANALYSIS INSTRUMENT |
|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLE ID: HWPW-MW2-WISA97-P | | | | | | | | | SAMPLE NO: | H447741 |
| 1 | OVTCW2 | 73079 | 73079 | NA | | | 19-8260A | 03-APR-97 1515 | JC | GCMSB |
| 5 | I590 | 72960 | 72960 | NA | | | 02-160.1 | 31-MAR-97 1855 | C P | 008WAT |
| 3 | OSVTCW | 72849 | 72813 | 19-3510B | 28-MAR-97 0800 | A M | 19-8270B | 02-APR-96 1723 | EAY | GCMSA |
| SAMPLE ID: HWPW-MW9-WISA97-P | | | | | | | | | SAMPLE NO: | H447742 |
| 1 | OVTCW2 | 73079 | 73079 | NA | | | 19-8260A | 03-APR-97 1554 | JC | GCMSB |
| 5 | I590 | 72960 | 72960 | NA | | | 02-160.1 | 31-MAR-97 1855 | C P | 008WAT |
| 3 | OSVTCW | 72849 | 72813 | 19-3510B | 28-MAR-97 0800 | A M | 19-8270B | 02-APR-96 1823 | EAY | GCMSA |
| SAMPLE ID: HWPW-MW3-WISA97-P | | | | | | | | | SAMPLE NO: | H447743 |
| 1 | OVTCW2 | 73079 | 73079 | NA | | | 19-8260A | 03-APR-97 1621 | JC | GCMSB |
| 5 | I590 | 72960 | 72960 | NA | | | 02-160.1 | 31-MAR-97 1855 | C P | 008WAT |
| 3 | OSVTCW | 72849 | 72813 | 19-3510B | 28-MAR-97 0800 | A M | 19-8270B | 03-APR-96 1713 | EAY | GCMSA |
| SAMPLE ID: HWPW-MW1A-WISA97-P | | | | | | | | | SAMPLE NO: | H447744 |
| 1 | OVTCW2 | 73079 | 73079 | NA | | | 19-8260A | 03-APR-97 1648 | JC | GCMSB |
| 5 | I590 | 72960 | 72960 | NA | | | 02-160.1 | 31-MAR-97 1855 | C P | 008WAT |
| 3 | OSVTCW | 72849 | 72813 | 19-3510B | 28-MAR-97 0800 | A M | 19-8270B | 03-APR-96 1802 | EAY | GCMSA |
| SAMPLE ID: HWPW-MW11B-WISA97-P | | | | | | | | | SAMPLE NO: | H447745 |
| 1 | OVTCW2 | 73079 | 73079 | NA | | | 19-8260A | 03-APR-97 1715 | JC | GCMSB |
| 5 | I590 | 72960 | 72960 | NA | | | 02-160.1 | 31-MAR-97 1855 | C P | 008WAT |
| 3 | OSVTCW | 72849 | 72813 | 19-3510B | 28-MAR-97 0800 | A M | 19-8270B | 17-APR-97 1402 | JC | GCMSZ |
| SAMPLE ID: HWPW-MW10A-WISA97-P | | | | | | | | | SAMPLE NO: | H447746 |
| 1 | OVTCW2 | 73079 | 73079 | NA | | | 19-8260A | 03-APR-97 1742 | JC | GCMSB |
| 5 | I590 | 72960 | 72960 | NA | | | 02-160.1 | 31-MAR-97 1855 | C P | 008WAT |
| 3 | OSVTCW | 72849 | 72813 | 19-3510B | 28-MAR-97 0800 | A M | 19-8270B | 02-APR-96 2130 | EAY | GCMSA |
| SAMPLE ID: HWPW-MW4-WISA97-P | | | | | | | | | SAMPLE NO: | H447747 |
| 1 | OVTCW2 | 73079 | 73079 | NA | | | 19-8260A | 03-APR-97 1810 | JC | GCMSB |
| 5 | I590 | 72961 | 72961 | NA | | | 02-160.1 | 31-MAR-97 1945 | C P | 008WAT |
| 3 | OSVTCW | 72849 | 72813 | 19-3510B | 28-MAR-97 0800 | A M | 19-8270B | 02-APR-96 2219 | EAY | GCMSA |

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## SUPPLEMENTAL INFORMATION

| LN | TEST CODE | LCSR BLNK BATCH | DUP/MS MS/MSD BATCH | SAMPLE PREPARATION LR-METHOD | SAMPLE PREPARATION DATE/TIME | SAMPLE PREPARATION ANALYST | SAMPLE ANALYSIS LR-METHOD | SAMPLE ANALYSIS DATE/TIME | SAMPLE ANALYSIS ANALYST | SAMPLE ANALYSIS INSTRUMENT |
|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLE ID: HWPW-MW11A-WISA97-P | | | | | | | | SAMPLE NO: H447748 | | |
| 1 | OVTCW2 | 73079 | 73079 | NA | | | 19-8260A | 03-APR-97 1837 | JC | GCMSB |
| 5 | I590 | 72961 | 72961 | NA | | | 02-160.1 | 31-MAR-97 1945 | C P | 008WAT |
| 3 | OSVTCW | 72849 | 72813 | 19-3510B | 28-MAR-97 0800 | A M | 19-8270B | 03-APR-96 1852 | EAY | GCMSA |
| SAMPLE ID: HWPW-MW10B-WISA97-P | | | | | | | | SAMPLE NO: H447749 | | |
| 1 | OVTCW2 | 73079 | 73079 | NA | | | 19-8260A | 03-APR-97 1904 | JC | GCMSB |
| 5 | I590 | 72961 | 72961 | NA | | | 02-160.1 | 31-MAR-97 1945 | C P | 008WAT |
| 3 | OSVTCW | 72849 | 72813 | 19-3510B | 28-MAR-97 0800 | A M | 19-8270B | 02-APR-96 2358 | EAY | GCMSA |
| SAMPLE ID: HWPW-MW8-WISA97-P | | | | | | | | SAMPLE NO: H447750 | | |
| 1 | OVTCW2 | 73079 | 73079 | NA | | | 19-8260A | 03-APR-97 1931 | JC | GCMSB |
| 5 | I590 | 73004 | 73004 | NA | | | 02-160.1 | 01-APR-97 1645 | C P | 008WAT |
| 3 | OSVTCW | 72907 | 72907 | 19-3510B | 31-MAR-97 0900 | A M | 19-8270B | 17-APR-97 0157 | EAY | GCMSA |
| SAMPLE ID: HWPW-MW8B-WISA97-P | | | | | | | | SAMPLE NO: H447751 | | |
| 1 | OVTCW2 | 73079 | 73079 | NA | | | 19-8260A | 03-APR-97 2030 | JC | GCMSB |
| 3 | OSVTCW | 72907 | 72907 | 19-3510B | 31-MAR-97 0900 | A M | 19-8270B | 11-APR-97 0922 | EAY | GCMSA |
| SAMPLE ID: HWPW-P12-WISA97-P | | | | | | | | SAMPLE NO: H447752 | | |
| 1 | OVTCW2 | 73079 | 73079 | NA | | | 19-8260A | 03-APR-97 2057 | JC | GCMSB |
| 5 | I590 | 73004 | 73004 | NA | | | 02-160.1 | 01-APR-97 1645 | C P | 008WAT |
| 3 | OSVTCW | 72907 | 72907 | 19-3510B | 31-MAR-97 0900 | A M | 19-8270B | 11-APR-97 1012 | EAY | GCMSA |
| SAMPLE ID: HWPW-MW7-WISA97-P | | | | | | | | SAMPLE NO: H447753 | | |
| 1 | OVTCW2 | 73079 | 73079 | NA | | | 19-8260A | 03-APR-97 2124 | JC | GCMSB |
| 5 | I590 | 73004 | 73004 | NA | | | 02-160.1 | 01-APR-97 1645 | C P | 008WAT |
| 3 | OSVTCW | 72907 | 72907 | 19-3510B | 31-MAR-97 0900 | A M | 19-8270B | 18-APR-97 1032 | EAY | GCMSA |
| SAMPLE ID: HWPW-P10-WISA97-P | | | | | | | | SAMPLE NO: H447754 | | |
| 1 | OVTCW2 | 73079 | 73079 | NA | | | 19-8260A | 03-APR-97 2151 | JC | GCMSB |
| 5 | I590 | 73004 | 73004 | NA | | | 02-160.1 | 01-APR-97 1645 | C P | 008WAT |
| 3 | OSVTCW | 72907 | 72907 | 19-3510B | 31-MAR-97 0900 | A M | 19-8270B | 15-APR-97 1106 | EAY | GCMSA |

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## SUPPLEMENTAL INFORMATION

| LN | TEST CODE | LCSR BLNK BATCH | DUP/MS MS/MSD BATCH | SAMPLE PREPARATION LR-METHOD | SAMPLE PREPARATION DATE/TIME | SAMPLE PREPARATION ANALYST | SAMPLE ANALYSIS LR-METHOD | SAMPLE ANALYSIS DATE/TIME | SAMPLE ANALYSIS ANALYST | SAMPLE ANALYSIS INSTRUMENT |
|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLE ID: HWPW-MW5-WISA97-P | | | | | | | | | SAMPLE NO: H447755 | |
| 1 | OVTCW2 | 73079 | 73079 | NA | | | 19-8260A | 03-APR-97 2218 | JC | GCMSB |
| 5 | I590 | 73004 | 73004 | NA | | | 02-160.1 | 01-APR-97 1645 | C P | 008WAT |
| 3 | OSVTCW | 72907 | 72907 | 19-3510B | 31-MAR-97 0900 | A M | 19-8270B | 15-APR-97 1155 | EAY | GCMSA |
| SAMPLE ID: HWPW-P11-WISA97-P | | | | | | | | | SAMPLE NO: H447756 | |
| 1 | OVTCW2 | 73176 | 73079 | NA | | | 19-8260A | 07-APR-97 1440 | JC | GCMSY |
| 5 | I590 | 73004 | 73004 | NA | | | 02-160.1 | 01-APR-97 1645 | C P | 008WAT |
| 3 | OSVTCW | 72907 | 72907 | 19-3510B | 31-MAR-97 0900 | A M | 19-8270B | 15-APR-97 1244 | EAY | GCMSA |
| SAMPLE ID: HWPW-EB-WISA97-P | | | | | | | | | SAMPLE NO: H447757 | |
| 1 | OVTCW2 | 73176 | 73079 | NA | | | 19-8260A | 07-APR-97 1407 | JC | GCMSY |
| SAMPLE ID: HWPW-FB-WISA97-P | | | | | | | | | SAMPLE NO: H447810 | |

LR Method Literature Reference

02 EPA-Methods for Chemical Analysis of Water & Wastes, 1984.
19 EPA-Test Methods for Evaluating Solid Waste, 3rd ed, Nov. 1986 and updates

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## SURROGATE STANDARD RECOVERY

| LN | TEST CODE | SURROGATE COMPOUND | PERCENT RECOVERY | ACCEPTANCE LIMITS | REF LN |
|---|---|---|---|---|---|
| SAMPLE ID: HWPW-MW2-WISA97-P | | | | SAMPLE NO: H447741 | |
| 2 | $VOA2W | GC/MS Volatiles Surrogates (8260) | | | 1 |
| | | 1,2-Dichloroethane | 89 | - | |
| | | 4-Bromofluorobenzene | 102 | - | |
| | | Toluene-d8 | 95 | - | |
| 4 | $BNAW | GC/MS BNA Surrogates | | | 3 |
| | | 2,4,6-Tribromophenol | 95 | - | |
| | | 2-Fluorobiphenyl | 110 | - | |
| | | 2-Fluorophenol | 55 | - | |
| | | Nitrobenzene-d5 | 92 | - | |
| | | Phenol-d5 | 45 | - | |
| | | p-Terphenyl-d14 | 95 | - | |
| SAMPLE ID: HWPW-MW9-WISA97-P | | | | SAMPLE NO: H447742 | |
| 2 | $VOA2W | GC/MS Volatiles Surrogates (8260) | | | 1 |
| | | 1,2-Dichloroethane | 91 | - | |
| | | 4-Bromofluorobenzene | 106 | - | |
| | | Toluene-d8 | 93 | - | |
| 4 | $BNAW | GC/MS BNA Surrogates | | | 3 |
| | | 2,4,6-Tribromophenol | 37 | - | |
| | | 2-Fluorobiphenyl | 43 | - | |
| | | 2-Fluorophenol | 28 | - | |
| | | Nitrobenzene-d5 | 35 | - | |
| | | Phenol-d5 | 24 | - | |
| | | p-Terphenyl-d14 | 51 | - | |
| SAMPLE ID: HWPW-MW3-WISA97-P | | | | SAMPLE NO: H447743 | |
| 2 | $VOA2W | GC/MS Volatiles Surrogates (8260) | | | 1 |
| | | 1,2-Dichloroethane | 91 | - | |
| | | 4-Bromofluorobenzene | 106 | - | |
| | | Toluene-d8 | 94 | - | |
| 4 | $BNAW | GC/MS BNA Surrogates | | | 3 |
| | | 2,4,6-Tribromophenol | * | - | |
| | | 2-Fluorobiphenyl | * | - | |
| | | 2-Fluorophenol | * | - | |
| | | Nitrobenzene-d5 | * | - | |
| | | Phenol-d5 | * | - | |
| | | p-Terphenyl-d14 | * | - | |

*The surrogates were not recovered due to the dilution required by high analyte concentration.

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## SURROGATE STANDARD RECOVERY

| LN | TEST CODE | SURROGATE COMPOUND | PERCENT RECOVERY | ACCEPTANCE LIMITS | REF LN |
|---|---|---|---|---|---|
| SAMPLE ID: HWPW-MW1A-WISA97-P | | | | SAMPLE NO: H447744 | |
| | | | | | 1 |
| 2 | $VOA2W | GC/MS Volatiles Surrogates (8260) | | | |
| | | 1,2-Dichloroethane | 84 | - | |
| | | 4-Bromofluorobenzene | 109 | - | |
| | | Toluene-d8 | 93 | - | |
| | | | | | 3 |
| 4 | $BNAW | GC/MS BNA Surrogates | | | |
| | | 2,4,6-Tribromophenol | * | - | |
| | | 2-Fluorobiphenyl | * | - | |
| | | 2-Fluorophenol | * | - | |
| | | Nitrobenzene-d5 | * | - | |
| | | Phenol-d5 | * | - | |
| | | p-Terphenyl-d14 | * | - | |
| | | *The surrogates were not recovered due to the dilution required by high analyte concentration. | | | |
| SAMPLE ID: HWPW-MW11B-WISA97-P | | | | SAMPLE NO: H447745 | |
| | | | | | 1 |
| 2 | $VOA2W | GC/MS Volatiles Surrogates (8260) | | | |
| | | 1,2-Dichloroethane-d4 | 87 | - | |
| | | 4-Bromofluorobenzene | 110 | - | |
| | | Toluene-d8 | 92 | - | |
| | | | | | 3 |
| 4 | $BNAW | GC/MS BNA Surrogates | | | |
| | | 2,4,6-Tribromophenol | * | - | |
| | | 2-Fluorobiphenyl | * | - | |
| | | 2-Fluorophenol | * | - | |
| | | Nitrobenzene-d5 | * | - | |
| | | Phenol-d5 | * | - | |
| | | p-Terphenyl-d14 | * | - | |
| | | *The surrogates were not recovered due to the dilution required by high analyte concentration. | | | |
| SAMPLE ID: HWPW-MW10A-WISA97-P | | | | SAMPLE NO: H447746 | |
| | | | | | 1 |
| 2 | $VOA2W | GC/MS Volatiles Surrogates (8260) | | | |
| | | 1,2-Dichloroethane | 87 | - | |
| | | 4-Bromofluorobenzene | 104 | - | |
| | | Toluene-d8 | 91 | - | |
| | | | | | 3 |
| 4 | $BNAW | GC/MS BNA Surrogates | | | |
| | | 2,4,6-Tribromophenol | 11 | - | |
| | | 2-Fluorobiphenyl | 100 | - | |
| | | 2-Fluorophenol | 3* | - | |
| | | Nitrobenzene-d5 | 85 | - | |
| | | Phenol-d5 | 8* | - | |

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## SURROGATE STANDARD RECOVERY

| LN | TEST CODE | SURROGATE COMPOUND | PERCENT RECOVERY | ACCEPTANCE LIMITS | REF LN |
|---|---|---|---|---|---|
| SAMPLE ID: HWPW-MW10A-WISA97-P | | | | SAMPLE NO: H447746 | |
| | | p-Terphenyl-d14 | 61 | - | |
| | | * The surrogate recoveries were outside of QC acceptance limits due to matrix interference. | | | |
| SAMPLE ID: HWPW-MW4-WISA97-P | | | | SAMPLE NO: H447747 | |
| 2 | $VOA2W | GC/MS Volatiles Surrogates (8260) | | | 1 |
| | | 1,2-Dichloroethane | 87 | - | |
| | | 4-Bromofluorobenzene | 102 | - | |
| | | Toluene-d8 | 92 | - | |
| 4 | $BNAW | GC/MS BNA Surrogates | | | 3 |
| | | 2,4,6-Tribromophenol | 13 | - | |
| | | 2-Fluorobiphenyl | 100 | - | |
| | | 2-Fluorophenol | 21 | - | |
| | | Nitrobenzene-d5 | 100 | - | |
| | | Phenol-d5 | 12 | - | |
| | | p-Terphenyl-d14 | 81 | - | |
| SAMPLE ID: HWPW-MW11A-WISA97-P | | | | SAMPLE NO: H447748 | |
| 2 | $VOA2W | GC/MS Volatiles Surrogates (8260) | | | 1 |
| | | 1,2-Dichloroethane | 86 | - | |
| | | 4-Bromofluorobenzene | 105 | - | |
| | | Toluene-d8 | 94 | - | |
| 4 | $BNAW | GC/MS BNA Surrogates | | | 3 |
| | | 2,4,6-Tribromophenol | * | - | |
| | | 2-Fluorobiphenyl | * | - | |
| | | 2-Fluorophenol | * | - | |
| | | Nitrobenzene-d5 | * | - | |
| | | Phenol-d5 | * | - | |
| | | p-Terphenyl-d14 | * | - | |
| | | *The surrogates were not recovered due to the dilution required by high analyte concentration. | | | |
| SAMPLE ID: HWPW-MW10B-WISA97-P | | | | SAMPLE NO: H447749 | |
| 2 | $VOA2W | GC/MS Volatiles Surrogates (8260) | | | 1 |
| | | 1,2-Dichloroethane | 85 | - | |
| | | 4-Bromofluorobenzene | 108 | - | |
| | | Toluene-d8 | 95 | - | |

## REPORT OF LABORATORY ANALYSIS

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## SURROGATE STANDARD RECOVERY

| LN | TEST CODE | SURROGATE COMPOUND | PERCENT RECOVERY | ACCEPTANCE LIMITS | REF LN |
|---|---|---|---|---|---|
| SAMPLE ID: HWPW-MW10B-WISA97-P | | | | SAMPLE NO: H447749 | |
| 4 | $BNAW | GC/MS BNA Surrogates | | | 3 |
| | | 2,4,6-Tribromophenol | 70 | - | |
| | | 2-Fluorobiphenyl | 110 | - | |
| | | 2-Fluorophenol | 39 | - | |
| | | Nitrobenzene-d5 | 92 | - | |
| | | Phenol-d5 | 25 | - | |
| | | p-Terphenyl-d14 | 64 | - | |
| SAMPLE ID: HWPW-MW8-WISA97-P | | | | SAMPLE NO: H447750 | |
| 2 | $VOA2W | GC/MS Volatiles Surrogates (8260) | | | 1 |
| | | 4-Bromofluorobenzene | 107 | - | |
| | | Dibromofluoromethane | 90 | - | |
| | | Toluene-d8 | 93 | - | |
| 4 | $BNAW | GC/MS BNA Surrogates | | | 3 |
| | | 2,4,6-Tribromophenol | 95 | - | |
| | | 2-Fluorobiphenyl | 116 | - | |
| | | 2-Fluorophenol | 43 | - | |
| | | Nitrobenzene-d5 | 88 | - | |
| | | Phenol-d5 | 41 | - | |
| | | p-Terphenyl-d14 | 81 | - | |
| | | The surrogate recoveries were outside of QC acceptance limits in the original sample analysis. The sample was re-extracted outside of the recommended hold time and re-analyzed. The reported recoveries are those of the re-extract. | | | |
| SAMPLE ID: HWPW-MW8B-WISA97-P | | | | SAMPLE NO: H447751 | |
| 2 | $VOA2W | GC/MS Volatiles Surrogates (8260) | | | 1 |
| | | 1,2-Dichloroethane | 90 | - | |
| | | 4-Bromofluorobenzene | 107 | - | |
| | | Toluene-d8 | 96 | - | |
| 4 | $BNAW | GC/MS BNA Surrogates | | | 3 |
| | | 2,4,6-Tribromophenol | 20 | - | |
| | | 2-Fluorobiphenyl | 95 | - | |
| | | 2-Fluorophenol | 1* | - | |
| | | Nitrobenzene-d5 | 75 | - | |
| | | Phenol-d5 | 8* | - | |
| | | p-Terphenyl-d14 | 84 | - | |
| | | * The surrogate recoveries were outside of QC acceptance limits. The sample was re-extracted outside of the recommended hold time and re-analyzed. | | | |

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## DUPLICATE AND MATRIX SPIKE DATA

| TEST CODE | DETERMINATION | ORIGINAL RESULT | DUPLICATE RESULT | UNITS | RANGE / RPD | MS RESULT | MS % RCVRY |
|---|---|---|---|---|---|---|---|
| BATCH NO: 72960 | | | | | | SAMPLE NO: H447587 | |
| I590 | Solids, Dissolved at 180C | 211 | 213 | mg/L | 0.9 | | |
| BATCH NO: 72960 | | | | | | SAMPLE NO: H447599 | |
| I590 | Solids, Dissolved at 180C | 18,740 | 19,100 | mg/L | 1.9 | | |
| BATCH NO: 72961 | | | | | | SAMPLE NO: H447747 | |
| I590 | Solids, Dissolved at 180C | 610 | 606 | mg/L | 0.7 | | |
| BATCH NO: 73004 | | | | | | SAMPLE NO: H447750 | |
| I590 | Solids, Dissolved at 180C | 636 | 673 | mg/L | 5.6 | | |
| BATCH NO: 73004 | | | | | | SAMPLE NO: H447806 | |
| I590 | Solids, Dissolved at 180C | 68 | 69 | mg/L | 0.0 | | |