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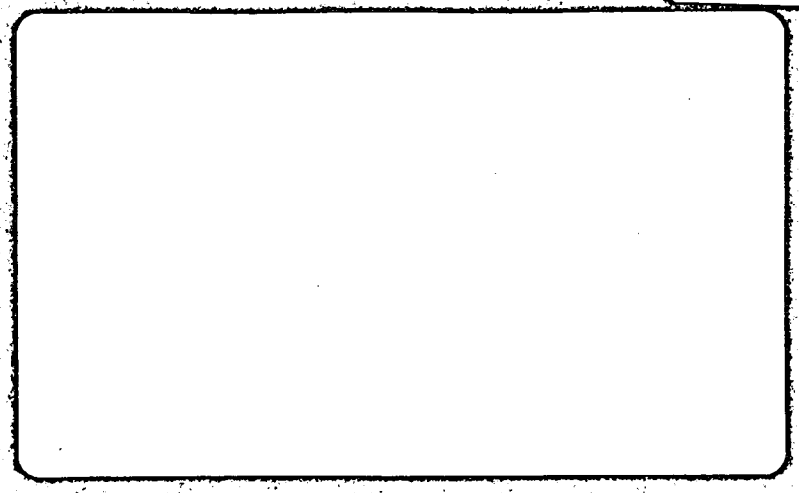

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Remediation Division
Corrective Action Section

PASTOR, BEHLING & WHEELER, LLC

consulting engineers and scientists

T/F/IHW 31547 CO RP
ARTS COMM# 12027916
PROJ. MGR. Marthur

January 9, 2007

Mr. Mark Arthur
Environmental Cleanup Section I, Team 3, Remediation Division
Texas Commission on Environmental Quality
P.O. Box 13087 **MC-127**
Austin, Texas 78711-3087

Subject: Correction Action Monitoring Report: Second 2006 Semi-Annual Event
Houston Wood Preserving Works, Houston, Texas
TCEQ SWR No. 31547; Hazardous Solid Waste Permit No. 50343

Dear Mr. Arthur:

Please find enclosed with this letter two copies of the Corrective Action Monitoring Report: Second 2006 Semi-Annual Event. The report was prepared in accordance with Section VII.C.2 of Compliance Plan No. CP-50343, which was issued in conjunction with Post-Closure Care Permit No. HW-50343, both dated June 10, 2005.

If you have any questions, please feel free to contact me at (281) 350-7197.

Sincerely,

Geoffrey Reeder

Geoffrey B. Reeder, P.G.

GBR/ecm

Received
JAN 18 2007
Remediation Division
Corrective Action Section

cc: Nicole Bealle, TCEQ Region 12 - Houston (w/enclosure)
Ata-ur Rahman, TCEQ I&H Waste Division (Austin) (w/o enclosure)
Eric C. Matzner, P.G., Pastor, Behling & Wheeler, LLC (w/o enclosure)

Geoffrey Reeder, P.G.
Manager, Environmental Site Remediation

UNION PACIFIC RAILROAD
24125 Aldine Westfield Rd., Spring, TX 77373

CORRECTIVE ACTION MONITORING REPORT
2006 SECOND SEMIANNUAL EVENT

FORMER HOUSTON WOOD PRESERVING WORKS
4910 LIBERTY ROAD
HOUSTON, TEXAS

January 9, 2007

Received
JAN 18 2007
Remediation Division
Corrective Action Section

Prepared for:

Mr. Geoffrey Reeder, P.G.
UNION PACIFIC RAILROAD COMPANY

24125 Aldine Westfield Road
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TCEQ
CENTRAL FILE ROOM

Prepared by:

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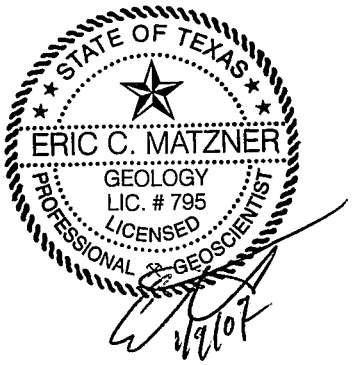

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

1.0 EXECUTIVE SUMMARY

This semi-annual report presents a summary and evaluation of groundwater monitoring data collected at the former Houston Wood Preserving Works facility (the Site) located in Houston, Texas. The groundwater monitoring activities for this period were performed by Environmental Resource Management, Inc. (ERM) in July 2006.

Groundwater elevation data collected during the July 2006 sampling event indicate groundwater flow to the south at a hydraulic gradient of approximately 0.015 ft/ft in the A-Transmissive Zone (A-TZ). The A-TZ groundwater flow direction has varied during the past three monitoring periods with flow to the south-southeast in July 2005, to the west in January 2006 and returning to the south-southeast in July 2006. Groundwater flow in the B-Transmissive Zone (B-TZ) flows to the northwest with a hydraulic gradient of approximately 0.0042 ft/ft. This groundwater flow direction is typical for this zone.

Analytical results were compared to Texas Commission on Environmental Quality (TCEQ) Texas Risk Reduction Program (TRRP) Protective Concentration Limits (PCLs), as designated in Section IV.D of the Compliance Plan, dated June 10, 2005. Analyzed constituent concentrations were below their respective PCLs; therefore, wells are considered to be complaint during this monitoring period.

2.0 INTRODUCTION

This semi-annual report presents a summary and evaluation of groundwater monitoring data collected during the third quarter of 2006 at the former Houston Wood Preserving Works facility (the Site) located at 4910 Liberty Road in Houston, Texas (Figure 1). Routine semi-annual groundwater monitoring is required for the Site as a condition of the Texas Commission on Environmental Quality (TCEQ) Hazardous Waste Permit No. 50343 and associated Compliance Plan (CP) No. 50343, both renewed and issued on June 10, 2005, for the Site. Groundwater monitoring at the Site is performed to monitor groundwater quality beneath the closed surface impoundment Unit No. 001 (Solid Waste Management Unit (SWMU) No. 1).

Environmental Resources Management (ERM) conducted groundwater monitoring activities at the Site from July 27 through July 31, 2006. Groundwater monitoring activities included sampling and gauging the background and point of compliance (POC) wells and piezometers associated with SWMU No. 1. The sampling event, analytical data, and data evaluation provided in this report fulfill the semi-annual reporting requirements for the second half of 2006 as described in the CP, Section VII.C.2. Section VII.C.2 describes the technical information to be provided in each semi-annual report. Those requirements include:

1. A narrative summary of the evaluations made in accordance with CP Sections V, VI, and VII for the preceding six-month period. These periods shall be January 1 through June 30 and July 1 through December 31 (VII.C.2.a.);
2. Summary of Methods utilized for management of recovered/purged water (VII.C.2.b.);
3. An updated table and map of the monitoring and corrective action system wells (VII.C.2.c.);
4. The results of the chemical analyses, submitted in a tabulated format in a form acceptable to the Executive Director, which clearly indicates each parameter that exceeds the Groundwater Protection Standard (GWPS). Copies of the original laboratory report for chemical analyses showing detection limits and quality control and quality assurance data shall be provided if requested by the Executive Director (VII.C.2.d.);
5. Tabulation of the water level elevations (relative to mean sea level), depth to water measurements, and total depth of well measurements collected since the data that was submitted in the previous semiannual report (VII.C.2.e.);
6. Potentiometric surface maps showing the elevation of the water table at the time of sampling and direction of groundwater flow gradients (VII.C.2.f.);
7. A notation of the presence or absence of non-aqueous phase liquids (NAPLs), both light and dense phases, in each well during each sampling event since the last event covered in the previous semiannual report and tabulation of depth and thickness of NAPLs, if detected (VII.C.2.g.);

8. Quarterly tabulations of quantities of recovered groundwater and NAPLs, and graphs of monthly recorded flow rates versus time for the recovery wells during each period. A narrative summary describing and evaluating the NAPL recovery program shall also be included (VII.C.2.h.);
9. Tabulation of the total contaminant mass recovered from each recovery system for each reporting period, if such a system is installed (VII.C.2.i.);
10. Tabulation of the data evaluation results pursuant to Section VI.D and status of each well listed on CP Table V with regard to compliance with the corrective action objectives and compliance with the GWPSs (VII.C.2.j.);
11. Maps of the contaminated area depicting concentrations of constituents listed in Table IV and any newly detected Table III constituents as isopleths contours or discrete concentrations if isopleths contours cannot be inferred (VII.C.2.k.);
12. Maps indicating the extent and thickness of the LNAPLs and DNAPLs, if detected (VII.C.2.l.);
13. An updated schedule summary as required by Section X (VII.C.2.m.);
14. Summary of any changes made to the monitoring/corrective action program and a summary of recovery well inspections, repairs, and any operational difficulties (VII.C.2.n.);
15. A table of the modifications and amendments made to this Compliance Plan with their corresponding approval dates by the executive director or the Commission and a brief description of each action (VII.C.2.o.);
16. Corrective Measures Implementation (CMI) Report to be submitted in accordance with Section VIII.F, if necessary (VII.C.2.p.);
17. Tabulation of well casing elevations in accordance with Attachment B No. 16 (VII.C.2.q.);
18. Recommendation for any changes (VII.C.2.r.);
19. Certification and well installation diagram for any new well installation or replacement and certification for any well plugging and abandonment (VII.C.2.s.);
20. A summary of any activity within an area subject to institutional control (VII.C.2.t.); and
21. Any other items requested by the Executive Director (VII.C.2.u.).

As of July 31, 2006, a recovery system had not been installed at this facility. Therefore, Provisions 8, 9, and 10 that relate to recovery wells or recovery system, are not applicable to this reporting period.

Responses to each of the semi-annual report provisions required by CP Section VII.C.2 are provided in Section 3.0. Conclusions and recommendations are provided in Section 4.0.

3.0 2006 SECOND SEMIANNUAL GROUNDWATER MONITORING EVENT

A discussion of each of the semiannual report provisions required by CP Section VII.C.2, are presented below by reference number to the list of provisions in Section 2.0.

3.1 Narrative Summary of Second Semiannual Activities

The CP requires a narrative summary of evaluations of the Corrective Action Program (Section V), the Groundwater Monitoring Program designed to evaluate the effectiveness of the Corrective Action Program (Section VI) and provisions for response and reporting requirements (Section VII).

3.1.1 Corrective Action Program

Groundwater samples were collected from the Background and POC wells (as detailed in CP Table V, which is provided in Appendix A) to assess potentially affected groundwater quality in the A-Transmissive Zone (A-TZ) and the B-Transmissive Zone (B-TZ). The definitions of the A-TZ and B-TZ are consistent with the Uppermost Transmissive Zone (UTZ) and Second Transmissive Zone (STZ), respectively, as defined in CP Provision I.A:

- A-TZ refers to the first sand unit encountered at approximately 13 feet below ground surface (bgs) and averages 7 feet in thickness; and
- B-TZ refers to the second sand unit encountered at approximately 30 feet bgs and averages 9 feet in thickness.

The following monitor wells were sampled during this event (Figure 2):

- A-TZ POC wells: MW-01A, MW-02, MW-07, MW-10A, and MW-11A;
- A-TZ Background well: MW-08;
- B-TZ POC wells: MW-10B, MW-11B, and P-10; and
- B-TZ background well: P-12.

3.1.2 Groundwater Monitoring

ERM performed quarterly well inspections and semiannual groundwater sampling activities on July 27-28 and July 31, 2006. Groundwater sampling was performed using procedures outlined in a U.S. EPA document titled *Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures* (EPA/540/S-95/504) published in April 1996 and approved in the CP application. Groundwater samples were analyzed for the Detected Hazardous and Solid Waste Constituents (CP, Table III).

The wells are equipped with dedicated polytetrafluoroethylene (PTFE) tubing for groundwater sampling. A Master-Flex® peristaltic pump was used to collect the groundwater samples. An approximate one-foot section of disposable silicon tubing was placed around the pump head and attached to the PTFE tubing for proper operation of the pump. Groundwater was pumped from the screened interval of the well at a flow rate of less than approximately 0.5 L/min. A flow-through cell and field meters were used to measure and evaluate field parameters including temperature, pH, specific conductivity, dissolved oxygen, and turbidity. When the field parameters had stabilized to the EPA-specified criteria, a sample was collected for analysis. The samples were also collected at a flow rate of less than 0.5 L/min. Recorded field parameters are summarized in Appendix B.

For each well, sample bottles were filled directly from the pumping apparatus described above, and were sealed and packed in coolers with sufficient ice to maintain a sample temperature of approximately 4°C. The sample coolers were delivered to Severn Trent Laboratory, in Houston, Texas for analysis. Chain-of-Custody (COC) forms were completed and kept with their respective samples. Copies of the analytical data and COCs are included in Appendix C. Groundwater samples were then analyzed for the Detected Hazardous and Solid Waste Constituents (CP, Table III).

3.2 Purge Water Management

Purge water generated from the July 2006 low-flow groundwater sampling event was containerized in a Department of Transportation (DOT) certified, 55-gallon steel drum and temporarily stored on site in a fenced and locked container storage area (NOR 006) pending removal for off-site disposal. Additional fluid and drummed investigation-derived wastes (IDW)

(i.e. decontamination water, drilling mud, personal protective equipment (PPE)) were added to the container storage area (NOR 006) on August 31, 2006 from an additional investigation at the Site. On November 28, 2006, UPRR requested a 30-day extension to store hazardous waste without a permit from the TCEQ. Drummed purge water and IDW were removed from the site and disposed at the Clean Harbors Deer Park facility on December 15, 2006. Copies of the TCEQ-approved 30-day extension request form are provided in Appendix D.

3.3 Monitoring and Corrective Action System Wells

A summary of the current monitoring and corrective action wells is discussed in Section 3.1.1. Configuration of the current monitoring and corrective action well network is provided as Figure 2.

3.4 Analytical Results

The 2006 semiannual groundwater analytical results from the A-TZ and B-TZ are summarized in Tables 1 and 2, respectively. The analytical results were compared to the Detected Hazardous and Solid Waste Constituent limits, which are taken from the TCEQ TRRP Tier 1 PCLs. If any concentrations exceeded the concentration limits of this report, the concentration is bolded within the table. TRRP PCLs serve as the Groundwater Protection Standard (GWPS), as detailed in Section IV.D and Table III of the CP.

Quality assurance/quality control (QA/QC) samples (field blank, matrix spike and matrix spike duplicate results) are summarized in Table 3.

3.5 Well Measurements

During the sampling event, the following information was recorded at each monitoring well:

Before Sampling

- The presence of light non-aqueous phase liquids (LNAPLs) was evaluated; and
- Depth to groundwater below the top of casing was measured to the nearest 0.01 foot.

After Sampling

- The presence of dense non-aqueous phase liquids (DNAPLs) was evaluated using visual observations and an oil-water interface probe; and
- Total well depths of the wells were measured.

Table 4 provides a summary of these measurements. None of the compliance wells had measurable amounts of LNAPL or DNAPL.

3.6 Potentiometric Surface Maps

The groundwater elevation data recorded during the 2006 second semi-annual monitoring event were used to create potentiometric surface maps of the A-TZ and B-TZ, presented on Figures 3 and 4, respectively.

Groundwater flow in the A-TZ is toward the south-southeast, with an estimated gradient of 0.0025 ft/ft (Figure 3) The groundwater flow direction in the A-TZ, around Unit No. 1 fluctuated during the past three monitoring events:

- July 2005 – Groundwater flow was to the southeast;
- January 2006 – Groundwater flow was to the west; and
- July 2006 – Groundwater flow returned to a southeast direction.

Groundwater flow in the B-TZ in July 2006 was to the northwest, with a gradient of 0.0042 ft/ft (Figure 4). This flow direction in the B-TZ is generally consistent with previous monitoring events.

3.7 Non-Aqueous Phase Liquids

Measurable amounts of LNAPL and/or DNAPL were not observed in any of the compliance wells.

3.8 Recovered Groundwater and NAPL

To date, a recovery system has not been installed at the Unit No. 1; therefore, this provision is not applicable.

3.9 Contaminant Mass Recovered

To date, a recovery system has no been installed at the Unit No. 1; therefore, this provision is not applicable.

3.10 Analytical Data Evaluation

Section VI.D of the CP describes two methods which may be used to determine the compliance status of a given well: 1. Analytical results may be either directly compared with PCLs (CP Table III; included in Appendix A), or 2. Analytical results can be statistically compared PCLs using the Confidence Interval Procedure for the mean concentration based on normal, log-normal, or non-parametric distribution, which the 95% confidence coefficient of the t-distribution will be used in construction of the confidence interval.

Direct comparison to PCLs was used to evaluate the analytical data. Tables 1 and 2 show the results of a direct comparison of data for this sampling event to the respective PCLs. Wells and piezometers are in compliance if each of the constituents listed in the CP Table III was reported at a concentration less than or equal to the PCL. Compliance status for each of the monitoring wells is provided in Table 5. The compliance wells completed in both transmissive zones are compliant with groundwater results below their respective PCLs; therefore the monitoring wells are considered to be complaint for this monitoring period.

Monitoring wells in A-TZ and B-TZ have not exceeded the established CP PCLs since July 2005, during the second semiannual sampling event, at which time dibenzofuran exceeded its respective PCL of 0.098 mg/L in MW-01A (0.11 mg/L). The monitoring wells have been complaint for two consecutive semiannual monitoring events

A QA/QC review and Data Usability Summary (DUS) were prepared for the July 2006 analytical data. Analytical results were flagged based on the review of the QA/QC samples. A summary of flagged data is provided below.

- The following samples were qualified as *Estimated (J)*:
  - P-10 and P-10-DUP for Acenapthylene
  - MW-08 for Anthracene;
  - MW-10A for Dibenzofuran;
  - MW-07 for Fluorene;
  - MW-1A, MW-1A-DUP, and MW-2 for 2-Methylnapthalene
  - MW-1A, MW-1A-DUP, MW-2, MW-11A and MW-10B for Napthalene; and
  - MW-1A, MW-1A-DUP, MW-2 and MW-11A for Phenanthrene.
- The following samples were qualified as *Estimated Low (UJL)*:
  - P-10, P-10-DUP, P-12, MW-10B and MW-11B for Phenol.
- The following samples were qualified as *Not-detected blank affected ($U^{(v)}$)*:
  - P-10, P-10-DUP, MW-1A-DUP, MW-2, MW-8, MW-11A, MW-10B and MW-11B for bis(2-Ethylhexyl)phthalate; and
  - P-10, P-10-DUP, P-12, MW-10B and MW-11B for Di-n-butyl phthalate.

DUSs are included in Appendix C, and qualifiers were added to the data tables (Tables 1 and 2).

3.11 Reported Concentration Maps

Reported concentrations of each constituent analyzed for the 2006 Second Semi-Annual Groundwater Monitoring Event are presented on Figures 5 and 6 for the A-TZ and B-TZ compliance wells, respectively. In the event a constituent exceeded their respective PCL, the value would be highlighted on the figures. There were no exceedances of PCLs for any of the required constituents.

3.12 Extent of NAPL

Measurable amounts of LNAPL or DNAPL were not detected in any of the compliance wells.

3.13 Updated Compliance Schedule

Section X of the CP requires that the Permittee submit a schedule summarizing the activities required by the Compliance Plan issued on June 10, 2005, which was originally submitted to the TCEQ on August 4, 2004. An updated compliance schedule is included as Appendix F of this report.

3.14 Summary of Changes Made to Corrective Action Program

No changes have been made to the corrective action program.

3.15 Modifications and Amendments to Compliance Plan

A compliance plan renewal application was submitted to TCEQ on December 23, 2003 consistent with the renewal requirements for the RCRA permit at the site. The RCRA permit and CP were issued June 10, 2005. There have been no modifications or amendments to the Compliance Plan since the last permit issued.

3.16 Corrective Measures Implementation (CMI) Report

A Response Action Plan (RAP) has not been submitted; therefore, this provision does not apply.

3.17 Well Casing Elevations

Top-of-casing elevations referenced to feet above Mean Sea Level (MSL) for each compliance monitoring well are summarized in Table 4.

3.18 Recommendation for Changes

There are no recommendations for changes to the monitoring program or to the Corrective Action Program.

3.19 Well Installation and/or Abandonment

No monitoring wells were installed or abandoned as part of the monitoring program or the Corrective Action Program during the reporting period.

3.20 Activity Within Area Subject to Institutional Control

No areas are under institutional control; therefore, this provision does not apply.

3.21 Other Requested Items

No other items have been requested by the executive director.

TABLES

Table 1
Summary of Analytical Results for the A-Transmissive Zone (A-TZ)
Semiannual Monitoring Report: Second Semiannual Event 2006

Houston Wood Preserving Works
Houston, Texas

Analyte	PCL (mg/L)	Monitoring Well IDs (Concentrations mg/L)																				
		MW-01A			Dup-2			MW-02			MW-07			MW-08			MW-10A			MW-11A		
		7/28/2006	LQ	VQ	7/28/2006	LQ	VQ	7/28/2006	LQ	VQ	7/28/2006	LQ	VQ	7/28/2006	LQ	VQ	7/28/2006	LQ	VQ	7/28/2006	LQ	VQ
Acenaphthene	1.5	0.163			0.149			0.00980			0.00362			<0.00004	U		0.000327			0.0306		
Acenaphthylene	1.5	0.00182			0.0017			0.000200			<0.00008			<0.00008	U		<0.00008	U		0.000263		
Anthracene	7.3	0.00613			0.00567			0.000783			0.000417			0.000180	J		<0.00004	U		0.000543		
bis(2-ethylhexyl)phthalate	0.006	<0.00009	U		0.000218		U(v)	0.000180	J	U(v)	<0.00009	U		0.000120	J	U(v)	<0.00009	U		0.000140	J	
Dibenzofuran	0.098	0.0639			0.0589			0.00767			<0.00006	U		<0.00006	U		0.000170	J		0.000566		
Di-n-butyl phthalate	2.4	(1)			(1)			(1)			(1)			(1)			(1)			(1)		
Fluoranthene	0.98	0.0079			0.00774			0.00123			0.000275			<0.00004	U		<0.00004	U		0.00362		
Fluorene	0.98	0.0792			0.0769			0.00604			0.000180	J		<0.00004	U		<0.00004	U		0.000657		
2-Methylnaphthalene	0.098	0.0205		J(v)	0.00899		J(v)	0.000622		J(v)	<0.00008	U		<0.00008	U		<0.00008	U		<0.00008	U	
Naphthalene	0.49	0.00292		J(v)	0.00206		J(v)	0.01060		J(v)	<0.00007	U		<0.00007	U		<0.00007	U		0.000120	J	J(v)
Phenanthrene	0.73	0.00698		J(v)	0.00508		J(v)	0.00103		J(v)	<0.00004	U		<0.00004	U		<0.00004	U		0.000180	J	J(v)
Phenol	7.3	(1)			(1)			(1)			(1)			(1)			(1)			(1)		
Pyrene	0.73	0.00376			0.00343			0.000634			0.000532			<0.00004	U		<0.00004	U		0.00186		

Notes:
PCL = Protective Concentration Limit
(1) Based on Tables III and IV of the Compliance Plan (No. 50434), this constituent is not analyzed for A-TZ Wells
The Compliance Plan Section IV.D defines the Groundwater Protection Standard (GWPS) as the PCL
Dup-2 = duplicate sample collected at MW-01A

LQ - Lab Qualifier
J = Estimated value between the SQL and the MDL
U = Value not detected greater than the MDL

VQ - Valid Qualifier
$J^{(v)}$ = Estimated data; The reported sample concentration is approximate due to the exceedance of one or more QC requirements
$U^{(v)}$ = Blank affected; The analyte was not detected above 5x (10x for common contaminants) the level in an associated blank

Table 2
Summary of Analytical Results for the B-Transmissive Zone (B-TZ)
Semiannual Monitoring Report: Second Semiannual Event 2006

Houston Wood Preserving Works
Houston, Texas

Analyte	PCL (mg/L)	Monitoring Well IDs (Concentrations mg/L)													
		MW-10B			MW-11B			P-10			DUP-1			P-12		
		7/28/2006	LQ	VQ	7/31/2006	LQ	VQ	7/31/2006	LQ	VQ	7/31/2006	LQ	VQ	7/28/2006	LQ	VQ
Acenaphthene	1.5	0.0802			0.0707			0.0346			0.0309			<0.00004	U	
Acenaphthylene	1.5	0.00107			0.00119			0.00016	J		0.00016	J		<0.00008	U	
Anthracene	7.3	0.00491			0.00345			0.000981			0.00088			<0.00004	U	
bis(2-ethylhexyl)phthalate	0.006	0.00022			0.00026	b	U(v)	0.00016	Jb	U(v)	0.00029	b	U(v)	0.00011	J	
Dibenzofuran	0.098	0.0323			0.0359			0.00945			0.00772			<0.00006	U	
Di-n-butyl phthalate	2.4	0.000196	b	U(v)	0.00042	b	U(v)	0.00032	b	U(v)	0.00037	b	U(v)	0.00170	Jb	U(v)
Fluoranthene	0.98	0.00273			0.00245			0.00092			0.000931			<0.00004	U	
Fluorene	0.98	0.0434			0.0336			0.0115			0.00959			<0.00004	U	
2-Methylnaphthalene	0.098	(1)			(1)			(1)			(1)			(1)		
Naphthalene	0.49	0.0904		J	0.100			0.0620			0.0584			<0.00007	U	
Phenanthrene	0.73	(1)			(1)			(1)			(1)			(1)		
Phenol	7.3	<0.00007	U	UJL	<0.00007	U	UJL	<0.00007	U	UJL	<0.00007	U	UJL	<0.00007	U	UJL
Pyrene	0.73	0.00128			0.00122			0.00046			0.00043			0.00545		

Notes:
PCL = Protective Concentration Limit
(1) Based on Tables III and IV of the Compliance Plan (No. 50434), this constituent is not analyzed for B-TZ Wells
The Compliance Plan Section IV.D defines the Groundwater Protection Standard (GWPS) as the PCL
Dup-1 = duplicate sample collected at P-10

LQ - Lab Qualifier
J = Estimated value between the SQL and the MDL
U = Value not detected greater than the MDL
b = Target analyte was found in method blank at a concentration exceeding the MQL for samples collected on July 31, 2006

VQ - Valid Qualifier
$U^{(v)}$ = Blank affected; The analyte was not detected above 5x (10x for common contaminants) the level in an associated blank
UJL = Analyte was not detected above the SQL; bias in sample result is likely low

Table 3
Summary of Analytical Results for Quality Assurance/Quality Control Samples
Semiannual Monitoring Report: Second Semiannual Event 2006

Houston Wood Preserving Works
Houston, Texas

Analyte	PCL (mg/L)	Sample IDs (Concentrations mg/L)		
		FB-072806	MW-2(MS)[1]	MW-2(MSD)[1]
		Field Blank	Matrix Spike	Matrix Spike Duplicate
		7/28/2006	7/28/2006	7/28/2006
Acenaphthene	1.5	<0.00004 U	0.0168	0.01820
Acenaphthylene	1.5	<0.00008 U	0.00804	0.00849
Anthracene	7.3	<0.00004 U	0.01040	0.01040
bis(2-ethylhexyl)phthalate	0.006	<0.00009 U	0.00884	0.00937
Dibenzofuran	0.098	<0.00006 U	0.01600	0.01570
Di-n-butyl phthalate	2.4	0.00201 b	(2)	(2)
Fluoranthene	0.98	<0.00004 U	0.01010	0.00950
Fluorene	0.98	<0.00004 U	0.01450	0.01480
2-Methylnaphthalene	0.098	<0.00008 U	0.00674	0.00786
Naphthalene	0.49	<0.00007 U	0.01550	0.01700
Phenanthrene	0.73	<0.00004 U	0.00918	0.00887
Phenol	7.3	<0.00007 U	(2)	(2)
Pyrene	0.73	<0.00004 U	0.00994	0.00989

Notes:
PCL = Protective Concentration Limit
(1) = MW-2(MS) and MW-2(MSD) are matrix spike and matrix spike duplicate samples collected at MW-2, respectively.
(2) Based on Tables III and IV, this constituent is not analyzed fro A-Transmissive Zone Wells
The Compliance Plan Section IV.D defines the Groundwater Protection Standard (GWPS) as the PCL
b = Target analyte was found in method blank

Table 4

Water Level Measurements
Semiannual Monitoring Report: Second Semiannual Event 2006

Houston Wood Preserving Works
Houston, Texas

Well ID	Top of Casing Elevation (TOC) (ft MSL)	Date Measured	Water Depth (ft. BTOC)	Total Well Depth as Completed (ft. BTOC)	Total Well Depth (ft. BTOC)	Potentiometric Elevation (ft. MSL)
A-TZ Monitoring Locations						
MW-01A	47.92	7/27/2006	3.10	20.2	19.75	44.82
MW-02	47.97	7/27/2006	2.87	20.3	20.1	45.10
MW-07	48.86	7/27/2006	4.60	NA	24.79	44.26
MW-08	49.33	7/27/2006	4.79	26.8	25.0	44.54
MW-10A	49.86	7/27/2006	5.01	25.9	25.58	44.85
MW-11A	50.05	7/27/2006	5.02	24.4	23.9	45.03
B-TZ Monitoring Locations						
MW-10B	49.94	7/27/2006	5.73	48.8	46.4	44.21
MW-11B	50.18	7/27/2006	5.26	46.8	46.1	44.92
P-10	47.69	7/27/2006	3.46	40.0	42.8	44.23
P-12	48.78	7/27/2006	4.35	40.0	42.8	44.43

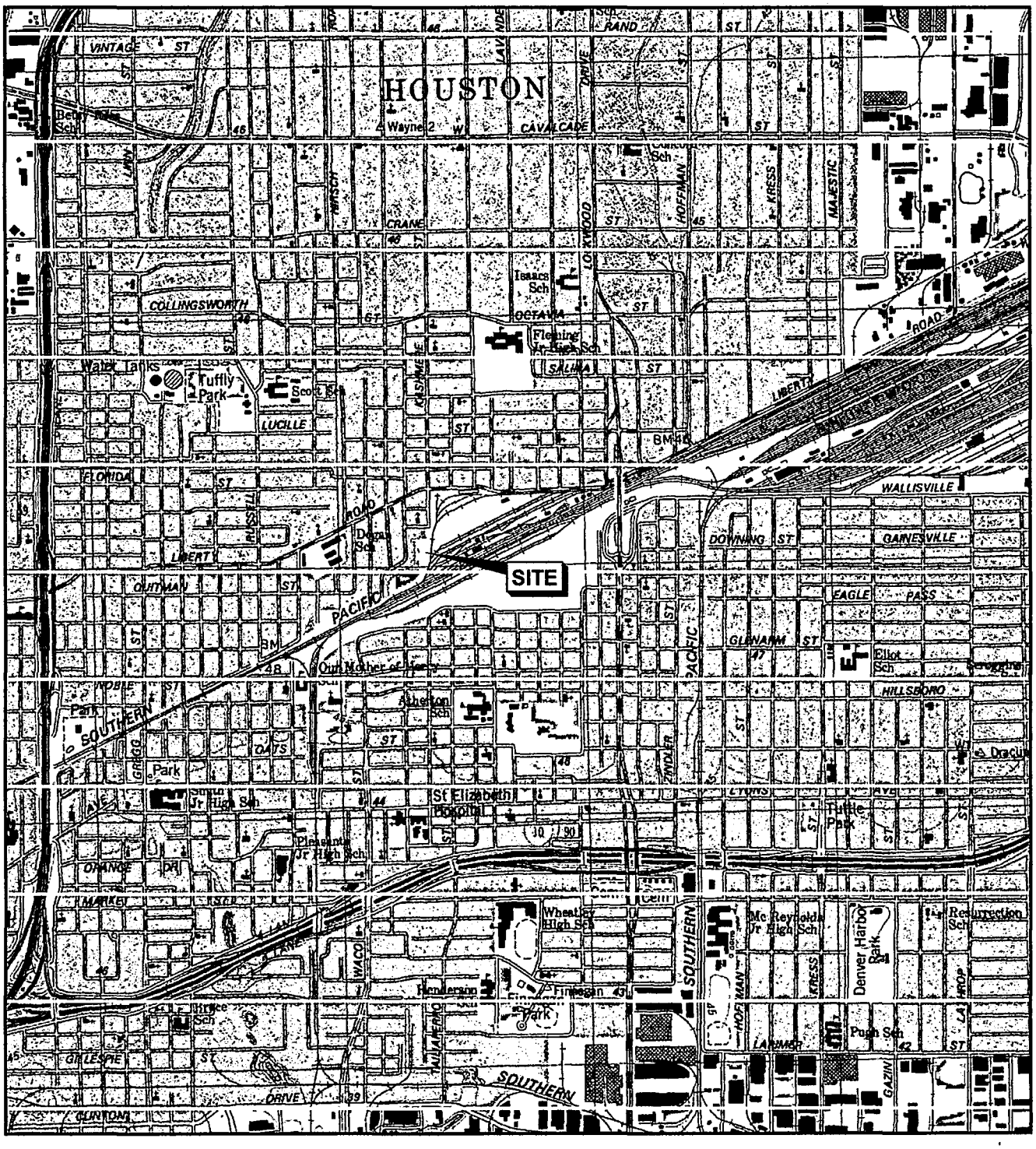
Notes
1. Total well depths obtained from Environmental Resource Management First Semiannual Event 2006
2. BTOC = feet below the top of the well casing
3. ft. MSL = feet above Mean Sea Level
4. NA = Information not available

Table 5
Compliance Status of Wells and Piezometers
Semiannual Monitoring Report: Second Semiannual Event 2006

Houston Wood Preserving Works
Houston, Texas

Zone	Monitoring Well Location	Well Designation	Compliance Status
A-TZ Monitoring Location	MW-01A	Point of Compliance	Compliant
	MW-02	Point of Compliance	Compliant
	MW-07	Point of Compliance	Compliant
	MW-08	Background Well	Compliant
	MW-10A	Point of Compliance	Compliant
	MW-11A	Point of Compliance	Compliant
B-TZ Monitoring Location	MW-10B	Point of Compliance	Compliant
	MW-11B	Point of Compliance	Compliant
	P-10	Point of Compliance	Compliant
	P-12	Background Well	Compliant

FIGURES



Source:
U.S.G.S. 7.5 minute quadrangle, Settegast, Texas, 1982.

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HOUSTON WOOD PRESERVING WORKS

Figure 1

SITE LOCATION MAP

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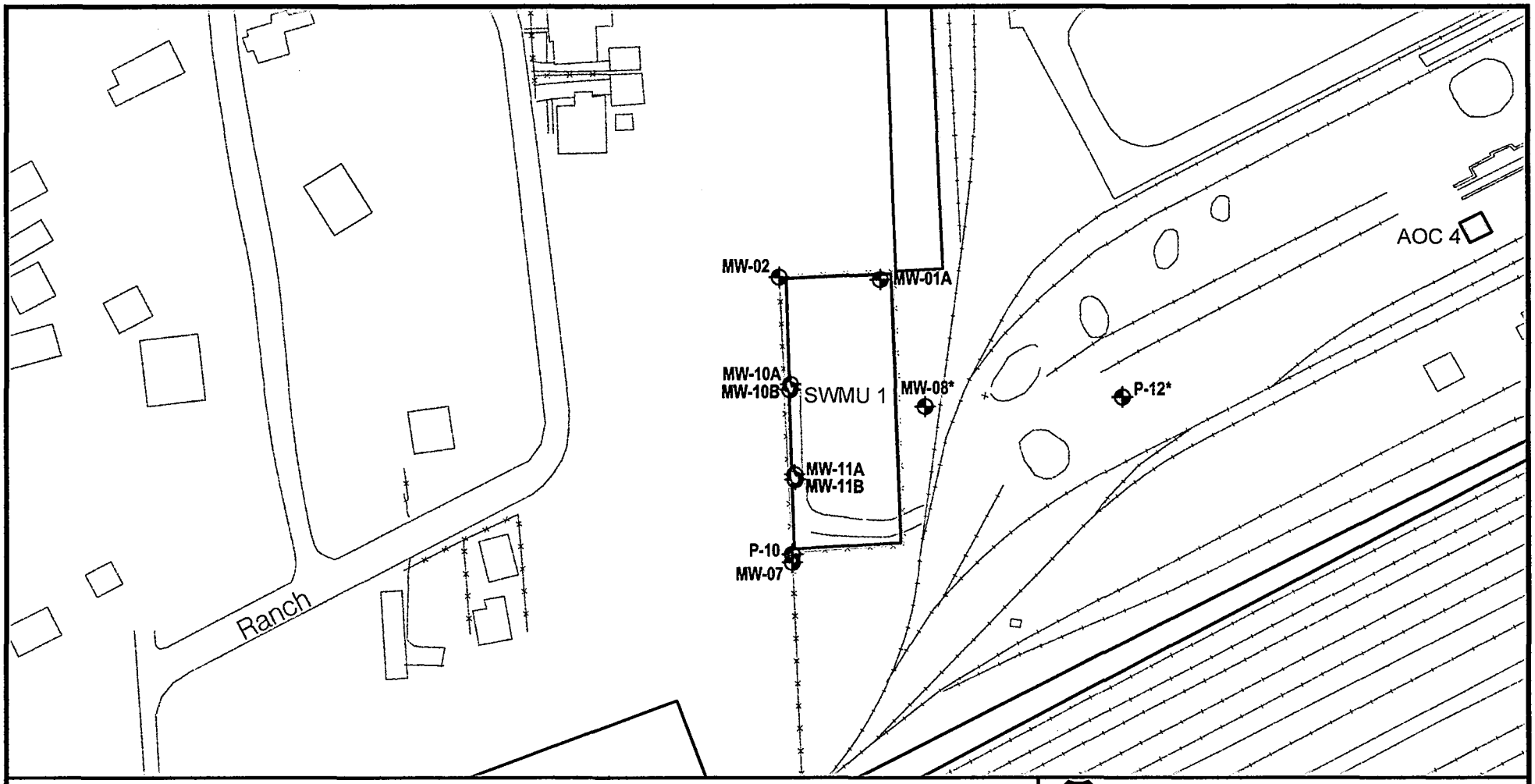

EXPLANATION

- Road, Parking Lot, Sidewalk
- Fence
- Railroad
- Zone A Monitoring Well Location
- Zone B Monitoring Well Location

Note:
* Background well.

N

Approx. Scale in Feet

0 60 120

Source:
Base map from ERM-Southwest, Inc 0014419a310.dwg, 6/19/2006.

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Figure 2

CORRECTIVE ACTION MONITORING WELL NETWORK TCEQ PERMIT UNIT NO. 1

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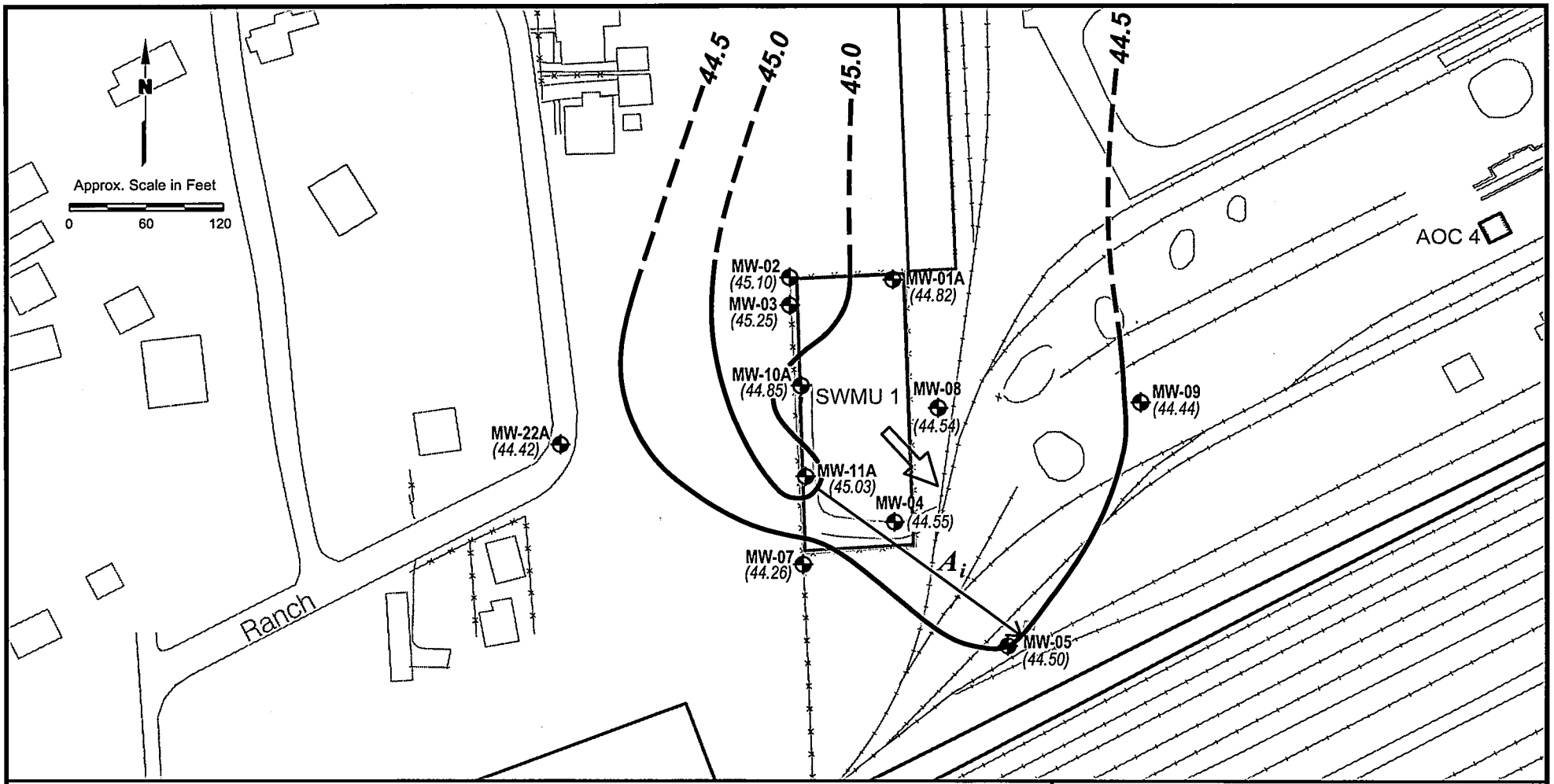

EXPLANATION

- Road, Parking Lot, Sidewalk
- Fence
- Railroad
- Zone A Monitoring Well Location
- (44.26) Groundwater Elevation (Ft, MSL)
- 44.5 Groundwater Elevation Contour (Ft, MSL) C.I.= 0.5 Ft
- General Groundwater Flow Direction

ESTIMATED GRADIENT

$A_i \rightarrow A_i = \frac{0.5ft}{200ft} = 0.0025\ ft/ft$

Source:
Base map from ERM-Southwest, Inc 0014419a310.dwg, 6/19/2006.

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Figure 3

A-TZ POTENTIOMETRIC SURFACE CONTOUR MAP JULY 27, 2006

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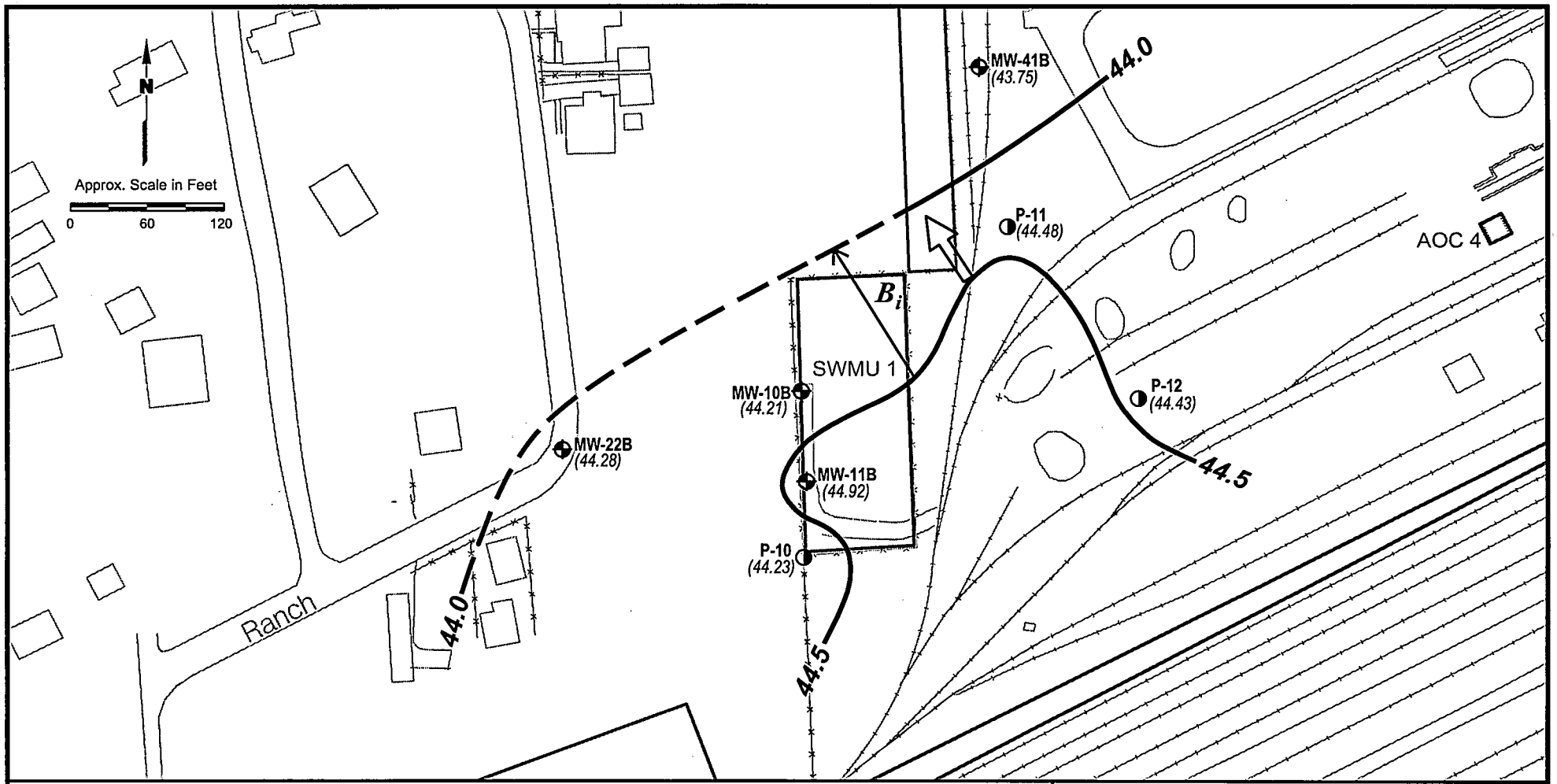

EXPLANATION

- Road, Parking Lot, Sidewalk
- Fence
- Railroad
- Zone B Monitoring Well Location
- Zone B Piezometer Location
- (44.21) Groundwater Elevation (Ft, MSL)
- −44.5− Groundwater Elevation Contour (Ft, MSL) C.I.= 0.5 Ft
- General Groundwater Flow Direction

ESTIMATED GRADIENT

$B_i \rightarrow B_i = \frac{0.5ft}{120ft} = 0.0042\ ft/ft$

Source:
Base map from ERM-Southwest, Inc
0014419a310.dwg, 6/19/2006.

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Figure 4

B-TZ POTENTIOMETRIC SURFACE CONTOUR MAP JULY 27, 2006

PROJECT: 1358	BY: ZGK	REVISIONS
DATE: JAN., 2007	CHECKED: ECM	

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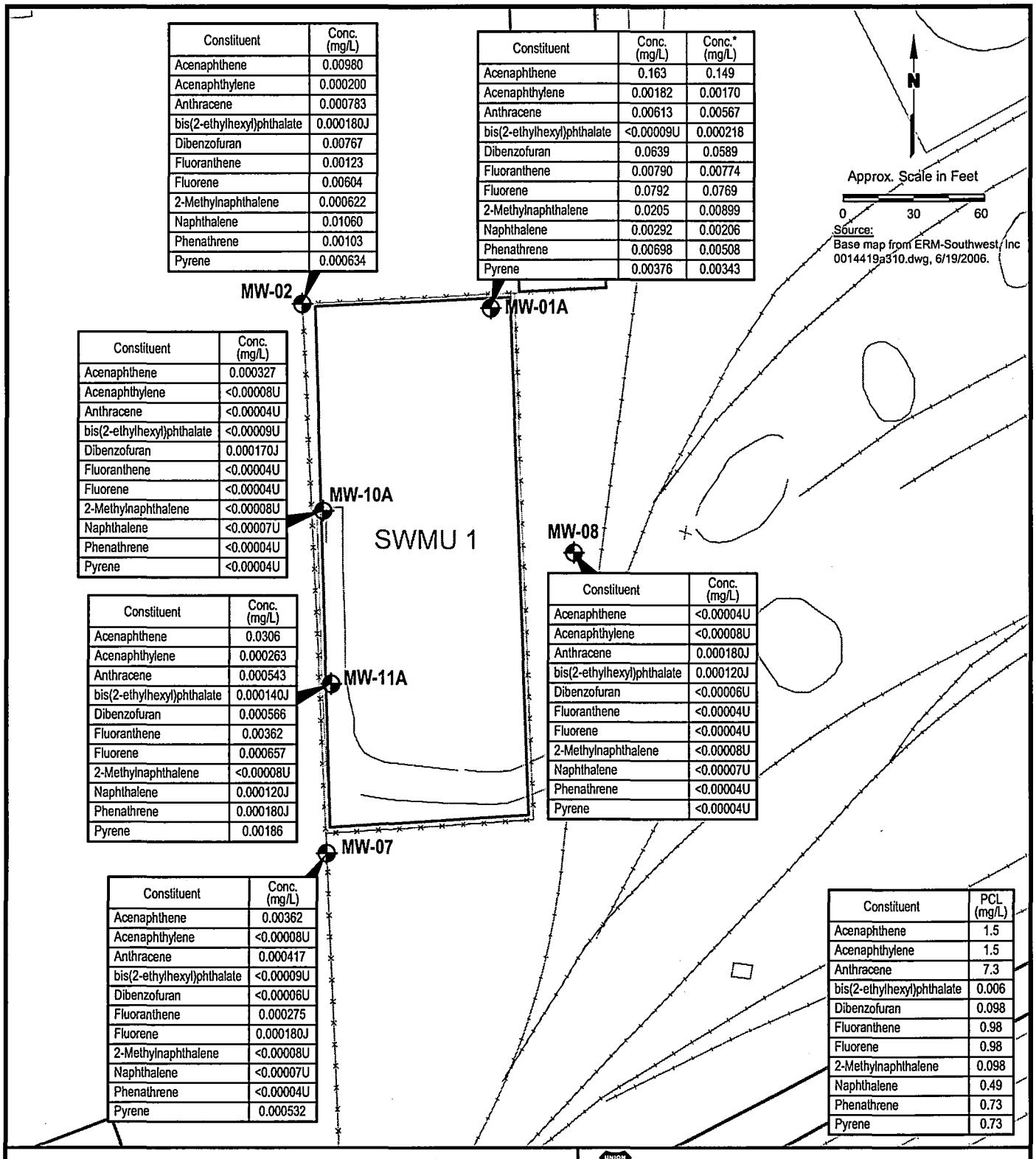

Constituent	Conc. (mg/L)
Acenaphthene	0.00980
Acenaphthylene	0.000200
Anthracene	0.000783
bis(2-ethylhexyl)phthalate	0.000180J
Dibenzofuran	0.00767
Fluoranthene	0.00123
Fluorene	0.00604
2-Methylnaphthalene	0.000622
Naphthalene	0.01060
Phenathrene	0.00103
Pyrene	0.000634

Constituent	Conc. (mg/L)	Conc.* (mg/L)
Acenaphthene	0.163	0.149
Acenaphthylene	0.00182	0.00170
Anthracene	0.00613	0.00567
bis(2-ethylhexyl)phthalate	<0.00009U	0.000218
Dibenzofuran	0.0639	0.0589
Fluoranthene	0.00790	0.00774
Fluorene	0.0792	0.0769
2-Methylnaphthalene	0.0205	0.00899
Naphthalene	0.00292	0.00206
Phenathrene	0.00698	0.00508
Pyrene	0.00376	0.00343

Constituent	Conc. (mg/L)
Acenaphthene	0.000327
Acenaphthylene	<0.00008U
Anthracene	<0.00004U
bis(2-ethylhexyl)phthalate	<0.00009U
Dibenzofuran	0.000170J
Fluoranthene	<0.00004U
Fluorene	<0.00004U
2-Methylnaphthalene	<0.00008U
Naphthalene	<0.00007U
Phenathrene	<0.00004U
Pyrene	<0.00004U

Constituent	Conc. (mg/L)
Acenaphthene	0.0306
Acenaphthylene	0.000263
Anthracene	0.000543
bis(2-ethylhexyl)phthalate	0.000140J
Dibenzofuran	0.000566
Fluoranthene	0.00362
Fluorene	0.000657
2-Methylnaphthalene	<0.00008U
Naphthalene	0.000120J
Phenathrene	0.000180J
Pyrene	0.00186

Constituent	Conc. (mg/L)
Acenaphthene	<0.00004U
Acenaphthylene	<0.00008U
Anthracene	0.000180J
bis(2-ethylhexyl)phthalate	0.000120J
Dibenzofuran	<0.00006U
Fluoranthene	<0.00004U
Fluorene	<0.00004U
2-Methylnaphthalene	<0.00008U
Naphthalene	<0.00007U
Phenathrene	<0.00004U
Pyrene	<0.00004U

Constituent	Conc. (mg/L)
Acenaphthene	0.00362
Acenaphthylene	<0.00008U
Anthracene	0.000417
bis(2-ethylhexyl)phthalate	<0.00009U
Dibenzofuran	<0.00006U
Fluoranthene	0.000275
Fluorene	0.000180J
2-Methylnaphthalene	<0.00008U
Naphthalene	<0.00007U
Phenathrene	<0.00004U
Pyrene	0.000532

Constituent	PCL (mg/L)
Acenaphthene	1.5
Acenaphthylene	1.5
Anthracene	7.3
bis(2-ethylhexyl)phthalate	0.006
Dibenzofuran	0.098
Fluoranthene	0.98
Fluorene	0.98
2-Methylnaphthalene	0.098
Naphthalene	0.49
Phenathrene	0.73
Pyrene	0.73

EXPLANATION

- Fence
- Railroad
- A-TZ Monitoring Well Location

Notes:
1. * Duplicates sample taken at MW-1A.
2. Sample collected on July 28, 2006.
3. J= Estimated value between SQL and MDL.
4. U= Value not detected greater than the MDL.

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Figure 5

A-TZ REPORTED CONCENTRATIONS 2nd 2006 SEMI ANNUAL MONITORING EVENT TCEQ PERMIT UNIT No. 1

PROJECT: 1358	BY: ZGK	REVISIONS
DATE: JAN., 2007	CHECKED: ECM	

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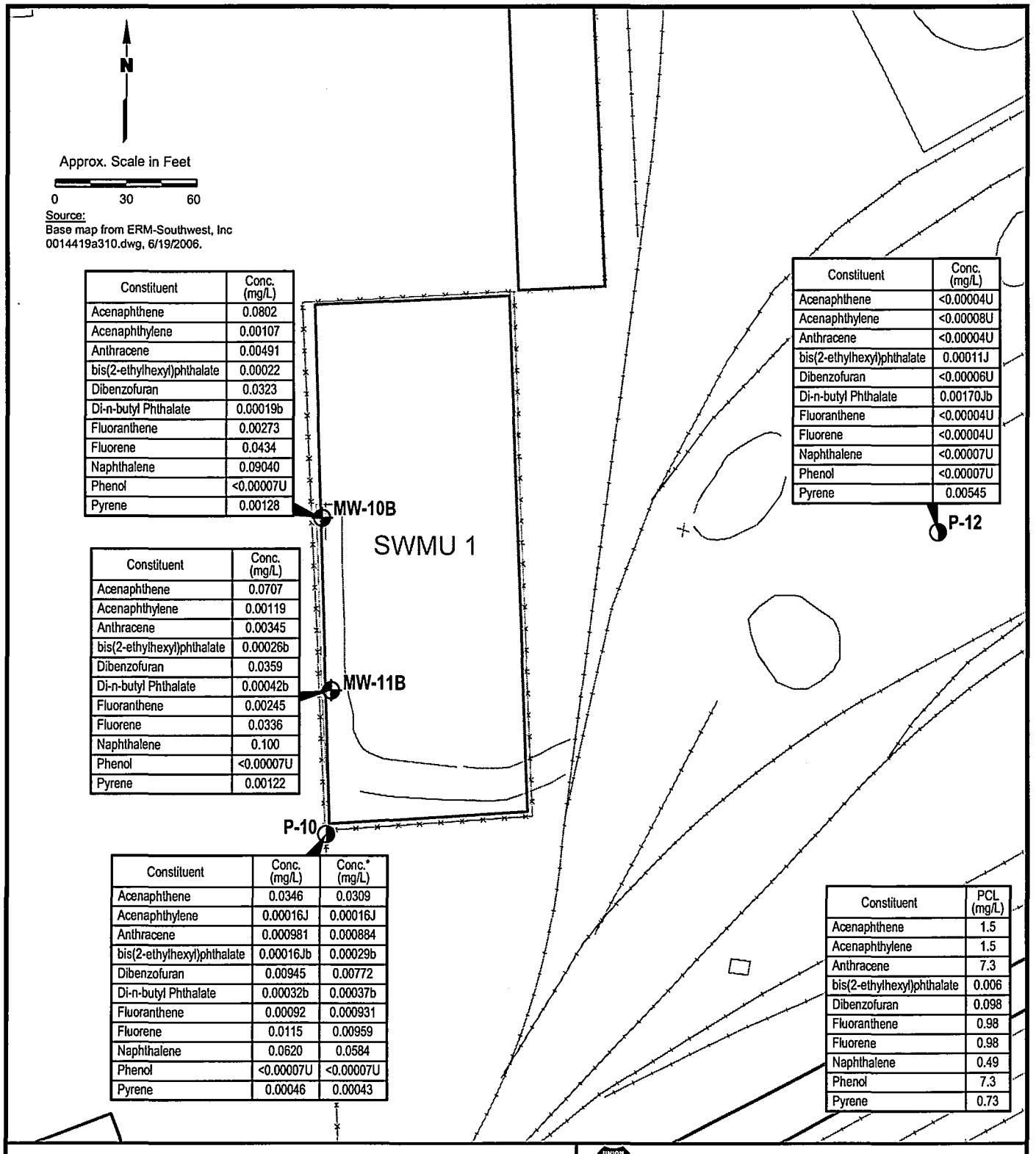

Constituent	Conc. (mg/L)
Acenaphthene	0.0802
Acenaphthylene	0.00107
Anthracene	0.00491
bis(2-ethylhexyl)phthalate	0.00022
Dibenzofuran	0.0323
Di-n-butyl Phthalate	0.00019b
Fluoranthene	0.00273
Fluorene	0.0434
Naphthalene	0.09040
Phenol	<0.00007U
Pyrene	0.00128

Constituent	Conc. (mg/L)
Acenaphthene	0.0707
Acenaphthylene	0.00119
Anthracene	0.00345
bis(2-ethylhexyl)phthalate	0.00026b
Dibenzofuran	0.0359
Di-n-butyl Phthalate	0.00042b
Fluoranthene	0.00245
Fluorene	0.0336
Naphthalene	0.100
Phenol	<0.00007U
Pyrene	0.00122

Constituent	Conc. (mg/L)	Conc.* (mg/L)
Acenaphthene	0.0346	0.0309
Acenaphthylene	0.00016J	0.00016J
Anthracene	0.000981	0.000884
bis(2-ethylhexyl)phthalate	0.00016Jb	0.00029b
Dibenzofuran	0.00945	0.00772
Di-n-butyl Phthalate	0.00032b	0.00037b
Fluoranthene	0.00092	0.000931
Fluorene	0.0115	0.00959
Naphthalene	0.0620	0.0584
Phenol	<0.00007U	<0.00007U
Pyrene	0.00046	0.00043

Constituent	Conc. (mg/L)
Acenaphthene	<0.00004U
Acenaphthylene	<0.00008U
Anthracene	<0.00004U
bis(2-ethylhexyl)phthalate	0.00011J
Dibenzofuran	<0.00006U
Di-n-butyl Phthalate	0.00170Jb
Fluoranthene	<0.00004U
Fluorene	<0.00004U
Naphthalene	<0.00007U
Phenol	<0.00007U
Pyrene	0.00545

Constituent	PCL (mg/L)
Acenaphthene	1.5
Acenaphthylene	1.5
Anthracene	7.3
bis(2-ethylhexyl)phthalate	0.006
Dibenzofuran	0.098
Fluoranthene	0.98
Fluorene	0.98
Naphthalene	0.49
Phenol	7.3
Pyrene	0.73

EXPLANATION

- Fence
- Railroad
- B-TZ Monitoring Well Location
- Piezometer Location

Notes:
1. * Duplicates sample taken at P-10.
2. Sample collected on July 31, 2006.
3. J= Estimated value between SQL and MDL.
4. b= Target analyte was found in method blank.
5. U= Value not detected greater than the MDL.

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Figure 6

B-TZ REPORTED CONCENTRATIONS 2nd 2006 SEMI ANNUAL MONITORING EVENT TCEQ PERMIT UNIT No. 1

PROJECT: 1358	BY: ZGK	REVISIONS
DATE: JAN., 2007	CHECKED: ECM	

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APPENDIX A
COMPLIANCE PLAN TABLES

TABLE IV - CORRECTIVE ACTION PROGRAM
Table of Indicator Parameters and Concentration Limits for the Ground-Water Protection Standard

Closed Surface Impoundment (NOR Unit No. 001, SWMU No. 01)

A-Transmissive Zone		B-Transmissive Zone	
COLUMN A Hazardous Constituents	COLUMN B Concentration Limits (mg/l)	COLUMN A Hazardous Constituents	COLUMN B Concentration Limits (mg/l)
Acenaphthene	1.5[PCL]	Acenaphthene	1.5[PCL]
Acenaphthylene	1.5[PCL]	Acenaphthylene	1.5[PCL]
Anthracene	7.3[PCL]	Anthracene	7.3[PCL]
Dibenzofuran	0.098[PCL]	Dibenzofuran	0.098[PCL]
Bis(2-ethylhexyl)phthalate	0.006[PCL]	Bis(2-ethylhexyl)phthalate	0.006[PCL]
Fluoranthene	0.98[PCL]	Fluoranthene	0.98[PCL]
Fluorene	0.98[PCL]	Fluorene	0.98[PCL]
2-Methylnaphthalene	0.098[PCL]	Di-n-butyl phthalate	2.4[PCL]
Naphthalene	0.49[PCL]	Naphthalene	0.49[PCL]
Phenanthrene	0.73[PCL]	Phenol	7.3[PCL]
Pyrene	0.73[PCL]	Pyrene	0.73[PCL]

PCL Alternate Concentration Limit pursuant to 30 TAC §335.160(b) based upon the Protective Concentration Level determined under Remedy Standard A or B of 30 TAC Chapter 350. The PCL value, Column B, will change as updates to the rule are promulgated. Changes to the rule automatically change the concentration value established in Column B in this table.

TABLE V
Designation of Wells by Function

POINT OF COMPLIANCE WELLS

1. Closed Surface Impoundment (NOR Unit No. 001, SWMU No. 01)
   A-Transmissive Zone: MW-01A, MW-02, MW-07, MW-10A, and MW-11A
   B-Transmissive Zone: MW-10B, MW-11B, and P-10

POINT OF EXPOSURE WELLS

1. Closed Surface Impoundment (NOR Unit No. 001, SWMU No. 01)
   None

BACKGROUND WELLS

1. Closed Surface Impoundment (NOR Unit No. 001, SWMU No. 01)
   A-Transmissive Zone: MW-8
   B-Transmissive Zone: P-12

Note: Wells and piezometers identified on Attachment A maps that are not listed in this table are subject to change, upon approval by the executive director, without modification to the Compliance Plan. The wells and piezometers for the Closed Surface Impoundment are depicted on Attachment A, Sheets 3 and 4.

APPENDIX B
FIELD PARAMETERS

TABLE B-1
Groundwater Sampling Field Parameters
Semiannual Monitoring Report: Second Semiannual Event 2006

Houston Wood Preserving Works
Houston, Texas

Field Parameter	Monitoring Well IDs (Concentrations mg/L)									
	A-Transmissive Zone						B-Transmissive Zone			
	MW-01A	MW-02	MW-07	MW-08	MW-10A	MW-11A	MW-10B	MW-11B	P-10	P-12
	7/28/2006	7/28/2006	7/28/2006	7/28/2006	7/28/2006	7/28/2006	7/28/2006	7/31/2006	7/31/2006	7/28/2006
Time Sampled (hrs CST)	15:50	13:45	16:30	13:10	10:45	9:30	12:15	9:00	19:12	10:55
Temperature (°C)	24.8	25.4	28.5	30.0	29.1	25.5	25.91	26.6	27.8	27.0
pH (Standard Units)	6.65	6.61	6.80	7.00	6.75	6.74	6.77	6.87	6.91	6.73
Specific Conductivity (µS)	1,457	689	0.9	0.7	1.1	1,135	1,364	1,331	1.18	1,395
Dissolved Oxygen (mg/L)	0.0	0.0	-0.2	0.0	-0.7	0.0	0.0	0.0	-0.5	1.2
Turbidity (NTU)	0.0	0.25	0.0	0.0	0.15	0.02	0.85	0.0	0.0	0.0

Notes:
PCL = Protective Concentration Limit
(1) Based on Tables III and IV, this constituent is not analyzed fro A-Transmissive Zone Wells
J = Estimated value between the SQL and the MQL
Dup-2 = duplicate sample collected at MW-01A

APPENDIX C
LABORATORY ANALYTICAL REPORTS and DATA USABILITY SUMMARIES

SITE:	Union Pacific Railroad Company (UPRR) Houston Wood Preserving Works Houston, Texas (PBW Project No. 1358)
CLIENT:	Pastor, Behling & Wheeler, LLC (PBW)
EVENT:	Semi-Annual Compliance Monitoring – July 2006 (2H06)
INTENDED USE:	Ten groundwater samples from background and compliance wells were collected during a semi-annual monitoring event from the closed surface impoundment SWMU No. 1. The analytical data will be used to monitor chemicals of concern (COCs) in the groundwater that have been identified during past investigations and to evaluate whether migration of COCs could result in a risk to human or ecological health.
LABORATORY:	Severn Trent Laboratories, Inc. (Houston, TX) SDG Nos: 320110, 3210124
PARAMETERS/METHODS:	Semivolatile Organics (SVOC) SW-846 3510C/ 8270C
SAMPLES:	Ten groundwater samples Two field duplicates One matrix spike/matrix spike duplicate (MS/MSD) pair One field blank (See Table 1 for a complete listing of samples and target analytes.)

QAA completed a third-party review of the above chemical analysis data for conformance with the requirements of the Texas Risk Reduction Program (TRRP) guidance document, *Review and Reporting of COC Concentration Data* (RGG-366/TRRP-13) and adherence to project objectives. The results of the review are discussed in this Data Usability Summary (DUS).

All samples collected during the event were included in the review. QAA completed the review using the following laboratory submittals and project data:

- the laboratory reportable data as defined in TRRP-13;
- the Laboratory Review Checklists (LRCs) and associated exception reports;
- the laboratory Electronic Data Deliverables (EDDs), which are spreadsheets containing results for all investigative and field QC samples; and
- the field notes on sampling activities.

The review of the reportable data included the Quality Control (QC) parameters listed below, as required per TRRP-13, using the applicable analytical method and project requirements:

- Chain-of-Custody Procedures
- Sample Condition - Holding Time, Preservation, and Containers
- Field Procedures
- Results Reporting Procedures
- Laboratory and Field Blanks
- Laboratory Control Spike and Matrix Spike Recoveries
- Surrogate Recoveries
- Laboratory, Matrix, and Field Duplicate Precision

Additionally, QAA used the LRCs to evaluate the following QC parameters:

- Method Quantitation Limits (MQLs)
- Method Detection Limits (MDLs)
- Instrument Tuning, Calibration and Performance
- Internal Standards

No project specific criteria have been specified for this site and thus the reviewer selected appropriate criteria as follows:

- Organics: 60-140% spike recovery (but not less than 10%) and 40% RPD (for laboratory duplicates) as recommended in TRRP-13
- Aqueous Samples: $\pm$ 2 x MQL difference or 30% RPD (for field duplicates)

The results of the review are summarized in Table 2, which lists all of the qualified sample results. All data usability qualifiers (DUQs) and the reason for qualification were added to the EDDs (320110wQAA.xls and 320124wQAA.xls). The checklists used by the reviewer are included as Attachment 1.

USABILITY SUMMARY

1. Usability Of Unqualified Non-Detects – For all parameters, non-detects are reported as less than the Sample Quantitation Limit (SQL) as required per TRRP. Additionally, according to the LRC, an MDL study was performed for each target analyte and the MDLs were checked for reasonableness. The Levels of Required Performance (LORPs) for the site have been defined by PBW as the Tier 1 Protective Concentration Levels (PCLs), $^{GW}GW_{Ing}$, for residential land use. As needed per TRRP, the Unadjusted MQL stated by the laboratory is at or below the LORP and thus the results can be used to demonstrate conformance with critical PCLs.
2. Usability Of Qualified Data – There are no major QC deficiencies and thus all data is usable for the intended use. Data for various analytes is qualified as estimated (J or UJ) or biased low (JL or UJL) due to minor QC deficiencies (see Table 2). Results that are biased low can be used for determining the presence of the analyte and as an indication that the concentration of the analyte exceeds a given criterion. However, the concentration reported for detects or the SQL for non-detects may be low. Results that are biased high can be used for determining the presence of the analyte and as an indication that the concentration of the analyte is less than a given criterion. However, the concentration reported for detects may be high. Similarly, results that are estimated may be either low or high. Data for bis(2-Ethylhexyl)phthalate and Di-n-butyl phthalate are qualified as blank affected (U) due to the presence of these analytes in a laboratory blank at a comparable level. (Note that Di-n-butyl phthalate was also detected in the field blank at a lower level than in the laboratory blank.) The analytes should be considered not detected at the reported concentration. All of the samples with a detect for these analytes are blank affected.

QAA Reviewer: Taryn G. Scholz (Name) 01/03/2006 (Date)

QC PARAMETER	QC OUTCOME
Chain-of-Custody	Proper sample custody procedures were followed. This confirms that the integrity of the samples was maintained.
Sample Condition	Samples were collected in appropriate containers, properly preserved in the field, and prepared and analyzed within the holding times as required in the analytical methods, which ensures that the samples were not affected by analyte degradation.
Field Procedures	Wells were inspected and gauged and then purged and sampled using a low-flow technique (less than 0.5 liters per minute) and dedicated tubing. Field instruments were calibrated daily. All samples were immediately put on ice and kept on ice until delivered to the laboratory. Two field duplicates (one for each day of sampling), one MS/MSD pair, and one field blank were collected with the ten investigative samples. Readings for pH, temperature, turbidity, dissolved oxygen, and specific conductivity were recorded and wells were purged until the well conditions stabilized (i.e., no parameter measurement varied by more than 10% between two consecutive readings).
Results Reporting	The analytical results (in the hardcopy report and EDD) include a Result, MDL, MQL, and SQL. The MQL is unadjusted, i.e., does not include correction for sample-specific actions such as dilution. Results are reported in mg/L. As required per TRRP, results for non-detects are reported as less than the SQL. The laboratory qualified results for detects between the SQL and the MQL with a J-flag to indicate that the concentration is estimated. The DUQ includes a flag for the concentration being below the MQL plus any other QC deficiencies.
MQLs	The LORPs for the site are defined as the Tier 1 Protective Concentration Levels (PCLs) for residential land use and a Class 2 groundwater resource (i.e., the $^{GW}GW_{Ing}$ in TCEQ Table 3 dated March 31, 2006). For each requested analyte, the unadjusted MQLs are at or below the LORPs.
MDLs	According to the LRC, an MDL study was performed for each target analyte, and the MDLs were checked for reasonableness and either adjusted or supported by the analysis of Detectability Check Standards (DCSs) as required per TRRP-13.
Laboratory Blanks	The laboratory blanks contain the following maximum concentrations, which indicates that contamination may have been introduced in the laboratory:

Batch(es)	Blank Type(s)	Analyte	Max Concentration
160015	Extraction	bis(2-Ethylhexyl)phthalate	0.000109 mg/L
160015	Extraction	Di-n-butyl phthalate	0.000348 mg/L
160022	Extraction	bis(2-Ethylhexyl)phthalate	0.000251 mg/L
160022	Extraction	Di-n-butyl phthalate	0.000230 mg/L

The reviewer qualified any detects in the samples associated with a contaminated blank (extracted in the same batch) at a level comparable to that in the blank (less than or equal to 10 times the blank concentration for these common contaminants)

as blank affected (U). This resulted in qualification of all samples with a detect for these analytes.

Field Blanks

The field blank contains the following maximum concentration:

Blank	Batch	Analyte	Max Concentration
FB072806	160015	Di-n-butyl phthalate	0.000201 mg/L

All associated sample results are already qualified due to laboratory blank contamination. No additional qualifiers are required.

Laboratory Control Spike Recovery

For all parameters, the laboratory prepared one Laboratory Control Spike (LCS) for each analytical batch and reported the recoveries for all target analytes. The recoveries are within the recommended TRRP limits, which indicates good accuracy for the preparation and analysis technique on a sample free of matrix effects, except as follows:

Batch	Analyte	%Recovery
160015	Phenol	36.4
160022	Phenol	39.8

The reviewer qualified all results in the associated samples (extracted in the sample batch), which are all non-detects, as estimated with a low bias (UJL).

Matrix Spike Recovery

The laboratory prepared a Matrix Spike (MS) and Matrix Spike Duplicate (MSD) using a sample from the site for both analytical batches and reported recoveries for all target analytes. The average recoveries for both MS/MSD pairs are within the recommended TRRP limits, which indicates good accuracy for the preparation/ analysis technique on this particular sample matrix, except as follows:

Batch	MS Sample ID	Analyte	Average %R
160015	MW-2-2SA	Naphthalene	59
160015	MW-2-2SA	Phenol	27
160022	P-10-2SA-DUP	Acenaphthene	39
160022	P-10-2SA-DUP	Naphthalene	-39
160022	P-10-2SA-DUP	Phenol	43

For Acenaphthene and Naphthalene, the check was waived due to a low spiking amount (less than four times the result in the unspiked parent sample) and the reviewer did not apply any qualifiers.

For Phenol, the reviewer qualified all results in the associated samples (extracted in the same batch), which are all non-detects, as estimated with a low bias (UJL).

Surrogate Recovery

Recoveries are within the laboratory limits, which indicates that the accuracy of the preparation and analysis technique is acceptable for each particular sample.

Laboratory Duplicate Precision

The laboratory did not prepare Laboratory Control Spike Duplicates (LCSD) as they are not required per the analytical methods or TRRP. The reviewer used the matrix

and field duplicates to assess precision.

Matrix Duplicate Precision

The laboratory prepared a MSD using a sample from the site for both analytical batches and reported RPDs for all target analytes. The RPDs are all within the recommended TRRP limit, which indicates good precision for the preparation and analysis technique on this particular sample matrix.

Field Duplicate Precision

Two field duplicates were collected with the ten investigative samples. RPDs (or the difference between results for concentrations <5xMQL and non-detects) are within the TRRP criteria for all target analytes, which indicates good precision for the collection, preparation, and analysis techniques on this particular sample matrix, except as follows:

Collection Date	Parent Sample ID	Analyte	RPD
7/28/2006	MW-1A-2SA	2-Methylnaphthalene	78
7/28/2006	MW-1A-2SA	Naphthalene	35
7/28/2006	MW-1A-2SA	Phenanthrene	32

The reviewer qualified all detects in the associated samples (collected on the same date) as estimated (J).

GCMS Tuning

According to the LRCs, tuning data met the criteria for ion abundance in the analytical method.

Instrument Calibration

According to the LRC, initial and continuing calibration data met method requirements. This indicates the instruments were properly calibrated to measure target analyte concentrations.

Internal Standards

According to the LRCs, area counts and retention times were within method requirements.

TABLE 1
UPRR HOUSTON WOOD PRESERVING WORKS
SEMI-ANNUAL COMPLIANCE MONITORING – JULY 2006

SAMPLES COLLECTED

LABORATORY ID	SAMPLE ID	SAMPLE MATRIX	SAMPLE DATE	ANALYTE LIST	QC BATCH
320110-1	MW-10A-2SA	water	7/28/06	A	160015
320110-2	MW-8-2SA	water	7/28/06	A	160015
320110-3	MW-7-2SA	water	7/28/06	A	160015
320110-4	FB072806(1)	water	7/28/06	A & B	160015
320110-5	MW-11A-2SA	water	7/28/06	A	160015
320110-6	P-12-2SA	water	7/28/06	B	160015
320110-7	MW-10B-2SA	water	7/28/06	B	160015
320110-8	MW-2-2SA	water	7/28/06	A	160015
320110-9	MW-2-2SA-MS	water	7/28/06	A	160015
320110-10	MW-2-2SA-MSD	water	7/28/06	A	160015
320110-11	MW-1A-2SA	water	7/28/06	A	160015
320110-12	MW-1A-2SA-DUP(2)	water	7/28/06	A	160015
320124-1	MW-11B-2SA	water	7/31/06	B	160022
320124-2	P-10-2SA	water	7/31/06	B	160022
320124-3	P-10-2SA-DUP(3)	water	7/31/06	B	160022

(1) Field blank collected at MW-7
(2) Field duplicate of MW-1A-2SA
(3) Field duplicate of P-10-2SA

TARGET ANALYTES

A-Transmissive Zone (A list)	B-Transmissive Zone (B list)
2-Methylnaphthalene	Acenaphthene
Acenaphthene	Acenaphthylene
Acenaphthylene	Anthracene
Anthracene	bis(2-ethylhexyl)phthalate
bis(2-ethylhexyl)phthalate	Dibenzofuran
Dibenzofuran	Di-n-butyl Phthalate
Fluoranthene	Fluoranthene
Fluorene	Fluorene
Naphthalene	Naphthalene
Phenanthrene	Phenol
Pyrene	Pyrene

TABLE 2
UPRR HOUSTON WOOD PRESERVING WORKS
SEMI-ANNUAL COMPLIANCE MONITORING – JULY 2006

QUALIFIED SAMPLE RESULTS

SAMPLE(S)	ANALYTE(S)	QUALIFIER	REASON
MW-10A-2SA	Dibenzofuran	J	result is between SQL and MQL
MW-8-2SA	Anthracene	J	result is between SQL and MQL
MW-8-2SA	bis(2-Ethylhexyl)phthalate	U	laboratory blank contamination (0.000109 mg/L); result is between SQL and MQL
MW-7-2SA	Fluorene	J	result is between SQL and MQL
MW-11A-2SA	bis(2-Ethylhexyl)phthalate	U	laboratory blank contamination (0.000109 mg/L); result is between SQL and MQL
MW-11A-2SA	Naphthalene	J	poor field duplicate precision (35 RPD); result is between SQL and MQL
MW-11A-2SA	Phenanthrene	J	poor field duplicate precision (32 RPD); result is between SQL and MQL
P-12-2SA	bis(2-Ethylhexyl)phthalate	U	laboratory blank contamination (0.000109 mg/L); result is between SQL and MQL
P-12-2SA	Di-n-butyl phthalate	U	laboratory blank contamination (0.000348 mg/L); field blank contamination (0.000201 mg/L); result is between SQL and MQL
P-12-2SA	Phenol	UJL	low LCS recovery (36 %); low ave MS/MSD recovery (27%)
MW-10B-2SA	bis(2-Ethylhexyl)phthalate	U	laboratory blank contamination (0.000109 mg/L)
MW-10B-2SA	Di-n-butyl phthalate	U	laboratory blank contamination (0.000348 mg/L); field blank contamination (0.000201 mg/L)
MW-10B-2SA	Naphthalene	J	poor field duplicate precision (35 RPD)
MW-10B-2SA	Phenol	UJL	low LCS recovery (36 %); low ave MS/MSD recovery (27%)
MW-2-2SA	2-Methylnaphthalene	J	poor field duplicate precision (78 RPD)
MW-2-2SA	bis(2-Ethylhexyl)phthalate	U	laboratory blank contamination (0.000109 mg/L); result is between SQL and MQL
MW-2-2SA	Naphthalene	J	poor field duplicate precision (35 RPD)
MW-2-2SA	Phenanthrene	J	poor field duplicate precision (32 RPD)
MW-1A-2SA	2-Methylnaphthalene	J	poor field duplicate precision (78 RPD)
MW-1A-2SA	Naphthalene	J	poor field duplicate precision (35 RPD)
MW-1A-2SA	Phenanthrene	J	poor field duplicate precision (32 RPD)
MW-1A-2SA-DUP*	2-Methylnaphthalene	J	poor field duplicate precision (78 RPD)
MW-1A-2SA-DUP*	bis(2-Ethylhexyl)phthalate	U	laboratory blank contamination (0.000109 mg/L)
MW-1A-2SA-DUP*	Naphthalene	J	poor field duplicate precision (35 RPD)
MW-1A-2SA-DUP*	Phenanthrene	J	poor field duplicate precision (32 RPD)
MW-11B-2SA	bis(2-Ethylhexyl)phthalate	U	laboratory blank contamination (0.000251 mg/L)
MW-11B-2SA	Di-n-butyl phthalate	U	laboratory blank contamination (0.000230 mg/L)

TABLE 2
UPRR HOUSTON WOOD PRESERVING WORKS
SEMI-ANNUAL COMPLIANCE MONITORING – JULY 2006

QUALIFIED SAMPLE RESULTS

SAMPLE(S)	ANALYTE(S)	QUALIFIER	REASON
`MW-11B-2SA	Phenol	UJL	low LCS recovery (40%); low ave MS/MSD recovery (43%)
P-10-2SA	Acenaphthylene	J	result is between SQL and MQL
P-10-2SA	bis(2-Ethylhexyl)phthalate	U	laboratory blank contamination (0.000251 mg/L); result is between SQL and MQL
P-10-2SA	Di-n-butyl phthalate	U	laboratory blank contamination (0.000230 mg/L)
P-10-2SA	Phenol	UJL	low LCS recovery (40%); low ave MS/MSD recovery (43%)
P-10-2SA-DUP*	Acenaphthylene	J	result is between SQL and MQL
P-10-2SA-DUP*	bis(2-Ethylhexyl)phthalate	U	laboratory blank contamination (0.000251 mg/L)
P-10-2SA-DUP*	Di-n-butyl phthalate	U	laboratory blank contamination (0.000230 mg/L)
P-10-2SA-DUP*	Phenol	UJL	low LCS recovery (40%); low ave MS/MSD recovery (43%)

* field duplicate

U – Blank affected; The analyte was not detected above 5x (10x for common contaminants) the level in an associated blank.
UJ – Estimated data; The analyte was not detected above the reported sample quantitation limit (SQL) however, the SQL is approximate due to exceedance of one or more QC requirements.
J – Estimated data; The reported sample concentration is approximate due to exceedance of one or more QC requirements.
R – Rejected data; Serious QC deficiencies make it impossible to verify the absence or presence of this analyte.

H – Bias in sample result is likely to be high
L – Bias in sample result is likely to be low

NOTE: For multiple deficiencies, the reviewer applied the most severe flag. (R>U>J>JL/JH and R>UJ>UJL)

ATTACHMENT 1
REVIEWER CHECKLISTS

Data Usability Review Checklist

Client Name: Pastor, Behling & Wheeler, LLC	Project Number: 1358
Site Name: UPRR HWPW	Project Manager: Eric Matzner
Laboratory: STL Houston	Laboratory Job No: 320110, 320124
Reviewer: Taryn Scholz	Date Checked: 12/1/06
Parameters: SVOC	Methods: 3510C/ 8270C

ITEM	YES	NO	N/A	COMMENTS
Signed Cover Page included?	x			
R1 Date of sample collection included?	x			
R1 Sample temp (2-6 C)?	x			
R1 COCs properly executed *and seals used?*	x			
R1 *Samples rec'd within 2 days of collection?*	x			
R2 Field, Laboratory, and Batch ID included?	x			batch ID on sample results
R3 Date of analysis included?	x			
R3 Date of sample preparation included?	x			
R3 *NDs at SQL and* MQLs included?	x			MQLs are unadjusted, i.e. no dil correction
R3 Holding time to analysis not expired?	x			SVOC - 40 days
R3 Holding time to preparation not expired?	x			SVOC - 7 days
R3 Met Method Quantitation Limits?	x			some TAs reported from dilution due to high conc (NDs at no dilution)
R3 Method references included?	x			
R3 Sample matrix included?	x			
R3 Sample results included?	x			
R3 Soils on dry weight?			x	
R9 Evaluate unadjusted MQLs? *(<LORPs)*	x			
R10 *LRC covers all necessary items?*	x			
R10 Case narrative included, where required *(QC deficiency or elev SQL for 350.51,.79)?*	x			
S10 MDLs reasonable per DCS or LCS?	x			per LRC (used DCS not LCS)
FN1 Field instruments calibrated daily?	x			
FN2 Well conditions constant before sampling?	x			
FN3 Containers and preservative appropriate?	x			(SVOC G, 4 C)
FN4 Samples filtered? If so, give turbid/size		x		
FN5 Sampling sequence from low to high conc?			x	dedicated tubing

Definitions: AA - Atomic Absorption; %D - Percent Difference, ICP - Inductively Coupled Plasma; IDL - Instrument Detection Limit; MDL - Method Detection Limit; %R - Percent Recovery; RF - Response Factor; RPD - Relative Percent Difference; RRT - Relative

COMMENTS

Data Usability Review Checklist: GC/MS

Client Name: Pastor, Behling & Wheeler, LLC				Project Number: 1358		
Site Name: UPRR HWPW				Project Manager: Eric Matzner		
Laboratory: STL Houston				Laboratory Job No: 320110, 320124		
Reviewer: Taryn Scholz				Date Checked: 12/1/06		
Parameters: SVOC (A - 11 TAs, B - 11 TAs (2 different))				Methods: 3510C/ 8270C		
	ITEM		YES	NO	N/A	COMMENTS
R4	Surrogate data included in lab package?		x			
	Required surrogates included?		x			
	%R criteria met? (*lab limits below*) Reject <10%		x			
	Area within limits? (within -50/+100% of last calib chk)?				x	
	RRT within limits? (<30 sec diff from last calib chk?)				x	
R5	Method blank data included in Lab Package?		x			
	Criteria met? (*<MDL*)			x		see attached
	Criteria met for field blanks? (<MDL)			x		see attached
R6	QC check samples/LCS data included in lab package?		x			
	all project COCs or TAs included?		x			
	%R criteria met? (*TRRP 60-140%*) Reject <10%			x		see attached
	RPD criteria met? (*TRRP 40%*)				x	
R7	Matrix spike data included in lab package?		x			
	%R criteria met? (*TRRP 60-140%*) Reject <10%			x		see attached
	RPD criteria met? (*TRRP 40%*)		x			
	Field dup RPD criteria met? (TRRP 50%sol, 30%aq, diff)			x		see attached
S1	Initial calibration documentation included in lab package?			x		
	all target analytes included?		x			per LRC
	RRF met SPCCs/*TAs(0.05/0.01)*? *SPCC* RRF<0.05 reject		x			per LRC
	%RSD criteria met for CCCs/*TAs*? (<30% RSD for CCC, >15% RSD must have fit)		x			per LRC
S2	Calibration verification data included in lab package?			x		
	RRF met SPCCs/*TAs(0.05/0.01)*? *SPCC* RRF<0.05 reject		x			per LRC
	%D criteria met for CCC/*TAs*? (20% Max, Qualify >25%D)		x			per LRC
S3	Instrument Tune for GC/MS included in lab package?			x		
S4	Internal standard data included in lab package?			x		
	Areas within limits (within -50/+100% of last calib check)?		x			per LRC
	RTs within limits (<30 sec diff from last calib check)?		x			per LRC
R4	**Surrogate**	**Control Limits**				
	246TBP	10-123				
	2FBP	43-116				
	2FP	21-100				
	d5NB	35-114				
	d6PH	10-94				
	d14TERP	33-141				

COMMENTS

lab J's -> J plus flagging per attached

SEVERN TRENT STL

ANALYTICAL REPORT

JOB NUMBER: 320110
Project ID: HWPW-0014419 06

Prepared For:

ERM Southwest, Inc. - Houston
15810 Park Ten Place
Suite 300
Houston, TX 77084

Attention: Chris Young

Date: 08/08/2006

Signature

08/08/06
Date

Name: Sachin G. Kudchadkar

Title: Project Manager III

E-Mail: [redacted]

Severn Trent Laboratories
6310 Rothway Drive
Houston, TX 77040

PHONE: 713-690-4444

TOTAL NO. OF PAGES 31

SEVERN TRENT STL

08/08/2006

Chris Young
ERM Southwest, Inc.- Houston
15810 Park Ten Place
Suite 300
Houston, TX 77084

Reference:
Project : HWPW-0014419 06
Project No. : 320110
Date Received : 07/29/2006
STL Job : 320110

Dear Chris Young:

Enclosed are the analytical results for your project referenced above. The following samples are included in the report.

1. MW-10A-2SA
2. MW-8-2SA
3. MW-7-2SA
4. FB072806
5. MW-11A-2SA
6. P-12-2SA
7. MW-10B-2SA
8. MW-2-2SA
9. MW-2-2SA-MS
10. MW-2-2SA-MSD
11. MW-1A-2SA
12. MW-1A-2SA-DUP
13. TRIP BLANK

All holding times were met for the tests performed on these samples.

Enclosed, please find the Quality Control Summary. All quality control results for the QC batch that are applicable to the sample(s) are acceptable except as noted in the QC batch reports.

The test results in this report meet all NELAP requirements for STL Houston's NELAP accredited parameters. Any exceptions to NELAP requirements will be noted and included in a case narrative as a part of this report.

If the report is acceptable, please approve the enclosed invoice and forward it for payment.

Thank you for selecting Severn-Trent Laboratories to serve as your analytical laboratory on this project. If you have any questions concerning these results, please feel free to contact me at any time.

We look forward to working with you on future projects.

Sincerely,

Sachin G. Kudchadkar
Project Manager

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Table 1

Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification	8270C	Comment
MW-10A-2SA	320110-1	X	
MW-8-2SA	320110-2	X	
MW-7-2SA	320110-3	X	
FB072806	320110-4	X	Field Blank
MW-11A-2SA	320110-5	X	
P-12-2SA	320110-6	X	
MW-10B-2SA	320110-7	X	
MW-2-2SA	320110-8	X	
MW-2-2SA-MS	320110-9	X	Matrix Spike of MW-2-2SA
MW-2-2SA-MSD	320110-10	X	Matrix Spike Duplicate of MW-2-2SA
MW-1A-2SA	320110-11	X	
MW-1A-2SA-DUP	320110-12	X	Field Duplicate
TRIP BLANK	320110-13		Trip Blank; Not on C-O-C; No Tests Assigned

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Appendix A Laboratory Data Package Cover Page

This data package consists of:

- This signature page, the laboratory review checklist, and the following reportable data:
- R1 Field chain-of-custody documentation;
- R2 Sample identification cross-reference;
- R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
- R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
- R5 Test reports/summary forms for blank samples;
- R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
- R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
- R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) the amount of analyte measured in the duplicate,
  b) the calculated RPD, and
  c) the laboratory's QC limits for analytical duplicates.
- R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;
- R10 Other problems or anomalies.
- The Exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release Statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By me signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: [ ] This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Norman Flynn		Laboratory Director	8/8/06
Name (Printed)	Signature	Official Title (printed)	Date

Appendix A (cont'd): Laboratory Review Checklist: Reportable Data

Laboratory Name: STL-Houston	LRC Date: 08/07/06
Project Name: HWPW-0014419 06	Laboratory Job Number: 320110
Reviewer Name: ACN	Prep Batch Number(s): 159741-SV

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?			X		
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample quantitation limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?		X			1
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?			X		
		Was the LCSD RPD within QC limits?			X		
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		Were MS/MSD RPDs within laboratory QC limits?		X			2
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SQL to minimize the matrix interference affects on the sample results?	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2. = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Appendix A (cont'd): Laboratory Review Checklist: Reportable Data

Laboratory Name: STL-Houston	LRC Date: 08/07/06
Project Name: HWPW-0014419 06	Laboratory Job Number: 320110
Reviewer Name: ACN	Prep Batch Number(s): 159741-SV

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section					
		Are all the methods used to generate the data documented, verified, and validated, where	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Appendix A (cont'd): Laboratory Review Checklist: Exception Reports	
Laboratory Name: STL-Houston	LRC Date: 08/07/06
Project Name: HWPW-0014419 06	Laboratory Job Number: 320110
Reviewer Name: ACN	Prep Batch Number(s): 159741-SV

ER #[1]	DESCRIPTION
1	Di-n-butyl phthalate was detected above the MQL in the extraction blank. This analyte is a recognized potential laboratory contaminant.
2	The phenol RPD was above acceptance limits due to matrix interference.

ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on the LRC)

SEVERN TRENT STL®

1 of 2

No. 029475

CHAIN OF CUSTODY RECORD

CUSTOMER INFORMATION	PROJECT INFORMATION
COMPANY: ERM-SW	PROJECT NAME/NUMBER: UPRR HWSPW/0014419
SEND REPORT TO: Chris Young	**BILLING INFORMATION**
ADDRESS: 15810 Park Ten Place Suite 300 Houston, TX 77084	BILL TO: UPRR Geoffrey Reeder ADDRESS: 24125 Aldine Westfield Spring, TX 77373
PHONE: 281-600-1097	PHONE: 281-350-7187
FAX: 281-600-1001	FAX: 281-350-7362 PO NO:

LAB JOB NO. 34911 0

SAMPLE NO.	SAMPLE DESCRIPTION	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	CONTAINER	PRESERV.	NUMBER OF CONTAINERS	ANALYSIS/METHOD REQUEST: 8270 Low Level A-TZ COC list	8270 Low Level B-TZ COC list	REMARKS/PRECAUTIONS
	MW-10A-2SA	07/28/06	1045	Water	1000ml Amber	None	2	X		Please, see sample specific COC list attached.
	MW-8-2SA		1310				2	X		"
	MW-7-2SA		1630				2	X		"
	FB072806		1405				2	X	X	Please, Analyze for the Complete list attached.
	MW-11A-2SA		0930				2	X		Please, see sample specific COC list attached.
	P-12-2SA		1055				2		X	"
	MW-10B-2SA		1215				2		X	"
	MW-2-2SA		1345				2	X		"
	MW-2-2SA-MS		1345				2	X		"
	MW-2-2SA-MSD		1345				2	X		"

SAMPLER: Bizuayehu Ayele 07/28/06

SHIPMENT METHOD: Drop Off

AIRBILL NO.:

REQUIRED TURNAROUND* ☐ SAME DAY ☐ 24 HOURS ☐ 48 HOURS ☐ 72 HOURS ☐ 5 DAYS ☐ 10 DAYS ☒ ROUTINE ☐ OTHER

1. RELINQUISHED BY:	DATE	2. RELINQUISHED BY:	DATE	3. RELINQUISHED BY:	DATE
SIGNATURE:	7/29/06	SIGNATURE:		SIGNATURE:	
PRINTED NAME/COMPANY: ERM / Rolando Gomez	TIME 938	PRINTED NAME/COMPANY:	TIME	PRINTED NAME/COMPANY:	TIME
1. RECEIVED BY:	DATE	2. RECEIVED BY:	DATE	3. RECEIVED BY:	DATE
SIGNATURE:	7-29-6	SIGNATURE:		SIGNATURE:	
PRINTED NAME/COMPANY:	TIME 938	PRINTED NAME/COMPANY:	TIME	PRINTED NAME/COMPANY:	TIME

*RUSH TURNAROUND MAY REQUIRE SURCHARGE

STL8222H-600 (0803)

STL Houston
6310 Rothway Drive
Houston, TX 77040

2 of 2

SEVERN TRENT **STL**

No. 014523

CHAIN OF CUSTODY RECORD

CUSTOMER INFORMATION	PROJECT INFORMATION
COMPANY: ERM-SW	PROJECT NAME/NUMBER: UPRR HWPW/0014419
SEND REPORT TO: Chris Young	**BILLING INFORMATION**
ADDRESS: 15810 Park Ten place	BILL TO: UPRR Geoffrey Reeder
Suite 300	ADDRESS: 24125 Aldine Westfield
Houston, TX 77084	Spring, TX 77373
PHONE: 281-600-1097	PHONE: 281-350-7197
FAX: 281-600-1001	FAX: 281-350-7362 PO NO:

LAB JOB NO.: 320110

SAMPLE NO.	SAMPLE DESCRIPTION	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	CONTAINER	PRESERV.	NUMBER OF CONTAINERS	ANALYSIS/METHOD REQUEST: 8270 low level A-TZ COC list	8270 low level B-TZ COC list	REMARKS/PRECAUTIONS
	MW-1A-2SA	07/28/06	1550	Water	1000ml Amber	None		X		Please see sample spec - for COC list attached.
	MW-1A-2SA-DUP	07/28/06	1550	Water	1000 ml Amber	None		X		"

SAMPLER: Bizuayehu Ayele 07/28/06 | SHIPMENT METHOD: Drop Off | AIRBILL NO.:

REQUIRED TURNAROUND* ☐ SAME DAY ☐ 24 HOURS ☐ 48 HOURS ☐ 72 HOURS ☐ 5 DAYS ☐ 10 DAYS ☒ ROUTINE ☐ OTHER _____

1. RELINQUISHED BY:	DATE	2. RELINQUISHED BY:	DATE	3. RELINQUISHED BY:	DATE
SIGNATURE:	7/29/06	SIGNATURE:		SIGNATURE:	
PRINTED NAME/COMPANY: Rolando Gomez ERM	TIME 738	PRINTED NAME/COMPANY:	TIME	PRINTED NAME/COMPANY:	TIME
1. RECEIVED BY:	DATE	2. RECEIVED BY:	DATE	3. RECEIVED BY:	DATE
SIGNATURE:	7-29	SIGNATURE:		SIGNATURE:	
PRINTED NAME/COMPANY:	TIME 9:58	PRINTED NAME/COMPANY:	TIME	PRINTED NAME/COMPANY:	TIME

*RUSH TURNAROUND MAY REQUIRE SURCHARGE

STL8222H-600 (0803)

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6310 Rothway Drive
Houston, TX 77040

8

rpjsckl	Job Sample Receipt Checklist Report	V2

Job Number.: 320110 Location.: 57216 Check List Number.: 1 Description.:
Customer Job ID.....: Job Check List Date.: 07/31/2006 Date of the Report..: 07/31/2006
Project Number.: 99000484 Project Description.: HWPW-0014419 205/240 Project Manager.....: sgk
Customer.....: ERM Southwest, Inc.- Houston Contact.: Chris Young

Questions ?	(Y/N)	Comments
Chain of Custody Received?	Y	
...If "yes", completed properly?	Y	
Custody seal on shipping container?	Y	
...If "yes", custody seal intact?	Y	
Custody seals on sample containers?	N	
...If "yes", custody seal intact?		
Samples chilled?	Y	
Temperature of cooler acceptable? (4 deg C +/- 2).	Y	3.6 3.8
...If "no", is sample an air matrix?(no temp req.)		
Thermometer ID	Y	437
Samples received intact (good condition)?	Y	
Volatile samples acceptable? (no headspace)	Y	
Correct containers used?	Y	
Adequate sample volume provided?	Y	
Samples preserved correctly?		
Samples received within holding-time?	Y	
Agreement between COC and sample labels?	Y	
Radioactivity at or below background levels?		
Additional		
Comments		
Sample Custodian Signature/Date	Y	MT

STL HOUSTON - SAMPLE RECEIPT CHECKLIST

CLIENT NAME: ERM CARRIER/DRIVER NAME: Client

PROJECT: _____ UNPACKED BY: _____

DATE RECEIVED: _____ UNPACKED STAMP: _____

TOTAL # COOLERS RECEIVED: 2

COOLER CHECKLIST

COOLER ID	COC PRESENT (Y/N)	CUSTODY TAPE		COOLER TEMP (°C)	THERM ID	TEMP BLK PRESENT (Y/N)	List Sample Bottles in Each Cooler if out of Temperature
		PRESENT (Y/N)	INTACT (Y/N)				
BG-39	Y	C Y	Y	3.6	437	N	
		B					
BG-38	Y	C		3.8	437	N	
		B Y	Y				
		C					
		B					

C = COOLER B = BOTTLES

COOLER(S) SCREENED FOR RADIATION? Yes ✓ No ____ IF TEMP BLK N, HOW WAS TEMP TAKEN: SX

SHORT HOLD / RUSH SAMPLES (include department delivered to and time delivered)

_____

_____

****

SPECIFIC PROJECT INFORMATION

JOB NUMBER: 326110

VOLATILE HEADSPACE ACCEPTABLE? Yes ____ No ____ NA ____
(If ANY headspace is present, list details in INCONSISTENCIES section)

Marked As Preserved? Yes ____ No ____

Number of VOA Vials: _____

pH OF WATER SAMPLES

PRESERVATION	# BOTTLES	CORRECT pH (Y/N)	If N, List sample ID and Corresponding pH
H2SO4 (<2)			
HNO3 (<2)			
HCL (<2) (Not VOA Vials)			
NaOH – Cyanide (>12)			
NaOH/Zn Acetate – Sulfide (>9)			
Other			

OF NEAT BOTTLES: _____ # OF SOIL JARS: _____

INCONSISTENCIES -- Place in Job Notes as well (CTRL F-12)

_____

_____

_____

_____

ACTION TAKEN

PERSON CONTACTED: _____ DATE: _____

RESOLUTION _____

_____

_____

NOTES _____

_____

_____

(Use back of sheet if necessary)

Project Manager _____

SEVERN TRENT STL

TRRP Laboratory Test Results

Job Number: 320110 Date: 8/8/2006

CUSTOMER: ERM Southwest, Inc. - Houston PROJECT: HWPW.00144.19.06 ATTN: Chris Young

Customer Sample ID: MW-10A-2SA
Laboratory Sample ID: 320110-001
Date/Time Sampled .....: 7/28/2006 10:45
Sample Matrix .....: Water
Date/Time Received .....: 7/29/2006 09:38

TEST METHOD	CAS #	RESULT	Q	FLAG	MDL	MQL	SQL	UNITS	Analysis Date/Time	Batch	D.F.	Analyst
Method: SW-846 3510C, Water												
Separatory Funnel Liq/Liq Extraction	NA	Complete						N/A	8/1/2006 11:00	159741	1.00	fnc
Method: SW-846 8270C, Water												
2-Methylnaphthalene	91-57-6	0.0000800	U		0.0000800	0.000200	0.0000800	mg/L	8/3/2006 14:37	160015	1.00	lgl
Acenaphthene	83-32-9	0.000327			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 14:37	160015	1.00	lgl
Acenaphthylene	208-96-8	0.0000800	U		0.0000800	0.000200	0.0000800	mg/L	8/3/2006 14:37	160015	1.00	lgl
Anthracene	120-12-7	0.0000400	U		0.0000400	0.000200	0.0000400	mg/L	8/3/2006 14:37	160015	1.00	lgl
bis(2-ethylhexyl)phthalate	117-81-7	0.0000900	U		0.0000900	0.000200	0.0000900	mg/L	8/3/2006 14:37	160015	1.00	lgl
Dibenzofuran	132-64-9	0.000170	J		0.0000600	0.000200	0.0000600	mg/L	8/3/2006 14:37	160015	1.00	lgl
Fluoranthene	206-44-0	0.0000400	U		0.0000400	0.000200	0.0000400	mg/L	8/3/2006 14:37	160015	1.00	lgl
Fluorene	86-73-7	0.0000400	U		0.0000400	0.000200	0.0000400	mg/L	8/3/2006 14:37	160015	1.00	lgl
Naphthalene	91-20-3	0.0000700	U		0.0000700	0.000200	0.0000700	mg/L	8/3/2006 14:37	160015	1.00	lgl
Phenanthrene	85-01-8	0.0000400	U		0.0000400	0.000200	0.0000400	mg/L	8/3/2006 14:37	160015	1.00	lgl
Pyrene	129-00-0	0.0000400	U		0.0000400	0.000200	0.0000400	mg/L	8/3/2006 14:37	160015	1.00	lgl

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SEVERN TRENT STL

TRRP Laboratory Test Results

Job Number: 320110 Date: 8/8/2006

CUSTOMER: ERM Southwest, Inc., Houston PROJECT: HWPW-0014419.06 ATTN: Chris Young

Customer Sample ID: MW-8-2SA
Date/Time Sampled .....: 7/28/2006 13:10
Date/Time Received .....: 7/29/2006 09:38

Laboratory Sample ID: 320110-002
Sample Matrix .....: Water

TEST METHOD	CAS #	RESULT	Q	FLAG	MDL	MQL	SQL	UNITS	Analysis Date/Time	Batch	DF	Analyst
Method: SW-846 3510C, Water												
Separatory Funnel Liq/Liq Extraction	NA	Complete						N/A	8/1/2006 11:00	159741	1.00	fnc
Method: SW-846 8270C, Water												
2-Methylnaphthalene	91-57-6	0.0000800	U		0.0000800	0.000200	0.0000800	mg/L	8/3/2006 15:04	160015	1.00	lgl
Acenaphthene	83-32-9	0.0000400	U		0.0000400	0.000200	0.0000400	mg/L	8/3/2006 15:04	160015	1.00	lgl
Acenaphthylene	208-96-8	0.0000800	U		0.0000800	0.000200	0.0000800	mg/L	8/3/2006 15:04	160015	1.00	lgl
Anthracene	120-12-7	0.000180	J		0.0000400	0.000200	0.0000400	mg/L	8/3/2006 15:04	160015	1.00	lgl
bis(2-ethylhexyl)phthalate	117-81-7	0.000120	J		0.0000900	0.000200	0.0000900	mg/L	8/3/2006 15:04	160015	1.00	lgl
Dibenzofuran	132-64-9	0.0000600	U		0.0000600	0.000200	0.0000600	mg/L	8/3/2006 15:04	160015	1.00	lgl
Fluoranthene	206-44-0	0.0000400	U		0.0000400	0.000200	0.0000400	mg/L	8/3/2006 15:04	160015	1.00	lgl
Fluorene	86-73-7	0.0000400	U		0.0000400	0.000200	0.0000400	mg/L	8/3/2006 15:04	160015	1.00	lgl
Naphthalene	91-20-3	0.0000700	U		0.0000700	0.000200	0.0000700	mg/L	8/3/2006 15:04	160015	1.00	lgl
Phenanthrene	85-01-8	0.0000400	U		0.0000400	0.000200	0.0000400	mg/L	8/3/2006 15:04	160015	1.00	lgl
Pyrene	129-00-0	0.0000400	U		0.0000400	0.000200	0.0000400	mg/L	8/3/2006 15:04	160015	1.00	lgl

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SEVERN TRENT STL

TRRP Laboratory Test Results

Job Number: 320110

Date: 8/8/2006

CUSTOMER: ERM-Southwest, Inc. - Houston | PROJECT: HWP W-0014419.06 | A-I-I-N: Chris Young

Customer Sample ID: MW-7-2SA

Date/Time Sampled .....: 7/28/2006 16:30

Date/Time Received .....: 7/29/2006 09:38

Laboratory Sample ID: 320110-003

Sample Matrix .....: Water

TEST METHOD	CAS #	RESULT	Q	FLAG	MDL	MQL	SQL	UNITS	Analysis Date/Time	Batch	DF	Analyst
Method: SW-846 3510C, Water												
Separatory Funnel Liq/Liq Extraction	NA	Complete						N/A	8/1/2006 11:00	159741	1.00	fnc
Method: SW-846 8270C, Water												
2-Methylnaphthalene	91-57-6	0.0000800	U		0.0000800	0.000200	0.0000800	mg/L	8/3/2006 15:31	160015	1.00	lg1
Acenaphthene	83-32-9	0.00362			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 15:31	160015	1.00	lg1
Acenaphthylene	208-96-8	0.0000800	U		0.0000800	0.000200	0.0000800	mg/L	8/3/2006 15:31	160015	1.00	lg1
Anthracene	120-12-7	0.000417			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 15:31	160015	1.00	lg1
bis(2-ethylhexyl)phthalate	117-81-7	0.0000900	U		0.0000900	0.000200	0.0000900	mg/L	8/3/2006 15:31	160015	1.00	lg1
Dibenzofuran	132-64-9	0.0000600	U		0.0000600	0.000200	0.0000600	mg/L	8/3/2006 15:31	160015	1.00	lg1
Fluoranthene	206-44-0	0.000275			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 15:31	160015	1.00	lg1
Fluorene	86-73-7	0.000180	J		0.0000400	0.000200	0.0000400	mg/L	8/3/2006 15:31	160015	1.00	lg1
Naphthalene	91-20-3	0.0000700	U		0.0000700	0.000200	0.0000700	mg/L	8/3/2006 15:31	160015	1.00	lg1
Phenanthrene	85-01-8	0.0000400	U		0.0000400	0.000200	0.0000400	mg/L	8/3/2006 15:31	160015	1.00	lg1
Pyrene	129-00-0	0.000532			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 15:31	160015	1.00	lg1

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SEVERN TRENT STL

TRRP Laboratory Test Results

Job Number: 320110

Date: 8/8/2006

CUSTOMER: ERM-Southwest, Inc. - Houston | PROJECT: HWPW-0014419.06 | ATTN: Chris Young

Customer Sample ID: FB072806

Laboratory Sample ID: 320110-004

Date/Time Sampled .....: 7/28/2006 14:05

Sample Matrix .....: Water

Date/Time Received .....: 7/29/2006 09:38

TEST METHOD	CAS #	RESULT	Q	FLAG	MDL	MQL	SQL	UNITS	Analysis Date/Time	Batch	D.F.	Analyst
Method: SW-846 3510C, Water												
Separatory Funnel Liq/Liq Extraction	NA	Complete						N/A	8/1/2006 11:00	159741	1.00	fnc

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SEVERN TRENT STL

TRRP Laboratory Test Results

Job Number: 320110 Date: 8/8/2006

CUSTOMER: ERM-Southwest, Inc. - Houston PROJECT: HWP-W-0014419.06 ATTN: Chris Young

Customer Sample ID: FB072806
Laboratory Sample ID: 320110-004
Date/Time Sampled .....: 7/28/2006 14:05
Sample Matrix .....: Water
Date/Time Received .....: 7/29/2006 09:38

TEST METHOD	CAS #	RESULT	Q	FLAG	MDL	MQL	SQL	UNITS	Analysis Date/Time	Batch	D.F.	Analyst
Method: SW-846 8270C, Water												
2-Methylnaphthalene	91-57-6	0.0000800	U		0.0000800	0.000200	0.0000800	mg/L	8/3/2006 15:58	160015	1.00	lg1
Acenaphthene	83-32-9	0.0000400	U		0.0000400	0.000200	0.0000400	mg/L	8/3/2006 15:58	160015	1.00	lg1
Acenaphthylene	208-96-8	0.0000800	U		0.0000800	0.000200	0.0000800	mg/L	8/3/2006 15:58	160015	1.00	lg1
Anthracene	120-12-7	0.0000400	U		0.0000400	0.000200	0.0000400	mg/L	8/3/2006 15:58	160015	1.00	lg1
bis(2-ethylhexyl)phthalate	117-81-7	0.0000900	U		0.0000900	0.000200	0.0000900	mg/L	8/3/2006 15:58	160015	1.00	lg1
Dibenzofuran	132-64-9	0.0000600	U		0.0000600	0.000200	0.0000600	mg/L	8/3/2006 15:58	160015	1.00	lg1
Di-n-butyl Phthalate	84-74-2	0.000201		b	0.000110	0.000200	0.000110	mg/L	8/3/2006 15:58	160015	1.00	lg1
Fluoranthene	206-44-0	0.0000400	U		0.0000400	0.000200	0.0000400	mg/L	8/3/2006 15:58	160015	1.00	lg1
Fluorene	86-73-7	0.0000400	U		0.0000400	0.000200	0.0000400	mg/L	8/3/2006 15:58	160015	1.00	lg1
Naphthalene	91-20-3	0.0000700	U		0.0000700	0.000200	0.0000700	mg/L	8/3/2006 15:58	160015	1.00	lg1
Phenanthrene	85-01-8	0.0000400	U		0.0000400	0.000200	0.0000400	mg/L	8/3/2006 15:58	160015	1.00	lg1
Phenol	108-95-2	0.0000700	U		0.0000700	0.000200	0.0000700	mg/L	8/3/2006 15:58	160015	1.00	lg1
Pyrene	129-00-0	0.0000400	U		0.0000400	0.000200	0.0000400	mg/L	8/3/2006 15:58	160015	1.00	lg1

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SEVERN TRENT STL

TRRP Laboratory Test Results

Job Number: 320110 Date: 8/8/2006

CUSTOMER: ERM-Southwest,Inc. - Houston PROJECT: HWPW-00144.19.06 ATTN: Chris Young

Customer Sample ID: MW-11A-2SA
Laboratory Sample ID: 320110-005
Date/Time Sampled .....: 7/28/2006 09:30
Sample Matrix .....: Water
Date/Time Received .....: 7/29/2006 09:38

TEST METHOD	CAS #	RESULT	Q	FLAG	MDL	MOL	SQL	UNITS	Analysis Date/Time	Batch	D.F.	Analyst
Method: SW-846 3510C, Water												
Separatory Funnel Liq/Liq Extraction	NA	Complete						N/A	8/1/2006 11:00	159741	1.00	fnc
Method: SW-846 8270C, Water												
2-Methylnaphthalene	91-57-6	0.0000800	U		0.0000800	0.000200	0.0000800	mg/L	8/3/2006 16:25	160015	1.00	lgl
Acenaphthene	83-32-9	0.0306			0.0000400	0.000200	0.0000800	mg/L	8/4/2006 11:50	160015	2.00	lgl
Acenaphthylene	208-96-8	0.000263			0.0000800	0.000200	0.0000800	mg/L	8/3/2006 16:25	160015	1.00	lgl
Anthracene	120-12-7	0.000543			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 16:25	160015	1.00	lgl
bis(2-ethylhexyl)phthalate	117-81-7	0.000140	J		0.0000900	0.000200	0.0000900	mg/L	8/3/2006 16:25	160015	1.00	lgl
Dibenzofuran	132-64-9	0.000566			0.0000600	0.000200	0.0000600	mg/L	8/3/2006 16:25	160015	1.00	lgl
Fluoranthene	206-44-0	0.00362			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 16:25	160015	1.00	lgl
Fluorene	86-73-7	0.000657			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 16:25	160015	1.00	lgl
Naphthalene	91-20-3	0.000120	J		0.0000700	0.000200	0.0000700	mg/L	8/3/2006 16:25	160015	1.00	lgl
Phenanthrene	85-01-8	0.000180	J		0.0000400	0.000200	0.0000400	mg/L	8/3/2006 16:25	160015	1.00	lgl
Pyrene	129-00-0	0.00186			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 16:25	160015	1.00	lgl

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SEVERN TRENT STL

TRRP Laboratory Test Results

Job Number: 320110

Date: 8/8/2006

CUSTOMER: ERM Southwest, Inc., Houston PROJECT: HWPW-0014419.06 ATTN: Chris Young

Customer Sample ID: P-12-2SA

Laboratory Sample ID: 320110-006

Date/Time Sampled .....: 7/28/2006 10:55

Sample Matrix .....: Water

Date/Time Received .....: 7/29/2006 09:38

TEST METHOD	CAS #	RESULT	Q	FLAG	MDL	MQL	SQL	UNITS	Analysis Date/Time	Batch	DF	Analyst
Method: SW-846 3510C, Water												
Separatory Funnel Liq/Liq Extraction	NA	Complete						N/A	8/1/2006 11:00	159741	1.00	fnc
Method: SW-846 8270C, Water												
Acenaphthene	83-32-9	0.0000400	U		0.0000400	0.000200	0.0000400	mg/L	8/3/2006 16:52	160015	1.00	lgl
Acenaphthylene	208-96-8	0.0000800	U		0.0000800	0.000200	0.0000800	mg/L	8/3/2006 16:52	160015	1.00	lgl
Anthracene	120-12-7	0.0000400	U		0.0000400	0.000200	0.0000400	mg/L	8/3/2006 16:52	160015	1.00	lgl
bis(2-ethylhexyl)phthalate	117-81-7	0.000110	J		0.0000900	0.000200	0.0000900	mg/L	8/3/2006 16:52	160015	1.00	lgl
Dibenzofuran	132-64-9	0.0000600	U		0.0000600	0.000200	0.0000600	mg/L	8/3/2006 16:52	160015	1.00	lgl
Di-n-butyl Phthalate	84-74-2	0.000170	J	b	0.000110	0.000200	0.000110	mg/L	8/3/2006 16:52	160015	1.00	lgl
Fluoranthene	206-44-0	0.0000400	U		0.0000400	0.000200	0.0000400	mg/L	8/3/2006 16:52	160015	1.00	lgl
Fluorene	86-73-7	0.0000400	U		0.0000400	0.000200	0.0000400	mg/L	8/3/2006 16:52	160015	1.00	lgl
Naphthalene	91-20-3	0.0000700	U		0.0000700	0.000200	0.0000700	mg/L	8/3/2006 16:52	160015	1.00	lgl
Phenol	108-95-2	0.0000700	U		0.0000700	0.000200	0.0000700	mg/L	8/3/2006 16:52	160015	1.00	lgl
Pyrene	129-00-0	0.00545			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 16:52	160015	1.00	lgl

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SEVERN TRENT STL

TRRP Laboratory Test Results

Job Number: 320110

Date: 8/8/2006

CUSTOMER: ERM-Southwest, Inc. - Houston | PROJECT: HWPW-0014419.06 | ATTN: Chris Young

Customer Sample ID: MW-10B-2SA

Laboratory Sample ID: 320110-007

Date/Time Sampled .....: 7/28/2006 12:15

Sample Matrix .....: Water

Date/Time Received .....: 7/29/2006 09:38

TEST METHOD	CAS #	RESULT	Q	FLAG	MDL	MQL	SQL	UNITS	Analysis Date/Time	Batch	D.F.	Analyst
Method: SW-846 3510C, Water												
Separatory Funnel Liq/Liq Extraction	NA	Complete						N/A	8/1/2006 11:00	159741	1.00	fnc
Method: SW-846 8270C, Water												
Acenaphthene	83-32-9	0.0802			0.0000400	0.000200	0.000200	mg/L	8/4/2006 12:17	160015	5.00	lg1
Acenaphthylene	208-96-8	0.00107			0.0000800	0.000200	0.0000800	mg/L	8/3/2006 17:18	160015	1.00	lg1
Anthracene	120-12-7	0.00491			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 17:18	160015	1.00	lg1
bis(2-ethylhexyl)phthalate	117-81-7	0.000220			0.0000900	0.000200	0.0000900	mg/L	8/3/2006 17:18	160015	1.00	lg1
Dibenzofuran	132-64-9	0.0323			0.0000600	0.000200	0.000300	mg/L	8/4/2006 12:17	160015	5.00	lg1
Di-n-butyl Phthalate	84-74-2	0.000196		b	0.000110	0.000200	0.000110	mg/L	8/3/2006 17:18	160015	1.00	lg1
Fluoranthene	206-44-0	0.00273			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 17:18	160015	1.00	lg1
Fluorene	86-73-7	0.0434			0.0000400	0.000200	0.000200	mg/L	8/4/2006 12:17	160015	5.00	lg1
Naphthalene	91-20-3	0.0904			0.0000700	0.000200	0.000300	mg/L	8/4/2006 12:17	160015	5.00	lg1
Phenol	108-95-2	0.0000700	U		0.0000700	0.000200	0.0000700	mg/L	8/3/2006 17:18	160015	1.00	lg1
Pyrene	129-00-0	0.00128			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 17:18	160015	1.00	lg1

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SEVERN TRENT STL

TRRP Laboratory Test Results

Job Number: 320110 Date: 8/8/2006

CUSTOMER: ERM Southwest, Inc. - Houston PROJECT: HWPW-0014419.06 ATTN: Chris Young

Customer Sample ID: MW-2-2SA
Laboratory Sample ID: 320110-008
Date/Time Sampled .....: 7/28/2006 13:45
Sample Matrix .....: Water
Date/Time Received .....: 7/29/2006 09:38

TEST METHOD	CAS #	RESULT	Q	FLAG	MDL	MQL	SQL	UNITS	Analysis Date/Time	Batch	D.F.	Analyst
Method: SW-846 3510C, Water												
Separatory Funnel Liq/Liq Extraction	NA	Complete						N/A	8/1/2006 11:00	159741	1.00	fnc
Method: SW-846 8270C, Water												
2-Methylnaphthalene	91-57-6	0.000622			0.0000800	0.000200	0.0000800	mg/L	8/3/2006 13:17	160015	1.00	lgl
Acenaphthene	83-32-9	0.00980			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 13:17	160015	1.00	lgl
Acenaphthylene	208-96-8	0.000200			0.0000800	0.000200	0.0000800	mg/L	8/3/2006 13:17	160015	1.00	lgl
Anthracene	120-12-7	0.000783			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 13:17	160015	1.00	lgl
bis(2-ethylhexyl)phthalate	117-81-7	0.000180	J		0.0000900	0.000200	0.0000900	mg/L	8/3/2006 13:17	160015	1.00	lgl
Dibenzofuran	132-64-9	0.00767			0.0000600	0.000200	0.0000600	mg/L	8/3/2006 13:17	160015	1.00	lgl
Fluoranthene	206-44-0	0.00123			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 13:17	160015	1.00	lgl
Fluorene	86-73-7	0.00604			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 13:17	160015	1.00	lgl
Naphthalene	91-20-3	0.0106			0.0000700	0.000200	0.0000700	mg/L	8/3/2006 13:17	160015	1.00	lgl
Phenanthrene	85-01-8	0.00103			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 13:17	160015	1.00	lgl
Pyrene	129-00-0	0.000634			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 13:17	160015	1.00	lgl

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SEVERN TRENT STL

TRRP Laboratory Test Results

Job Number: 320110 Date: 8/8/2006

CUSTOMER: ERM Southwest Inc. - Houston PROJECT: HWP-W-0014419.06 ATTN: Chris Young

Customer Sample ID: MW-2-2SA-MS
Laboratory Sample ID: 320110-009
Date/Time Sampled .....: 7/28/2006 13:45
Sample Matrix .....: Water
Date/Time Received .....: 7/29/2006 09:38

TEST METHOD	CAS #	RESULT	Q	FLAG	MDL	MQL	SQL	UNITS	Analysis Date/Time	Batch	D.F.	Analyst
Method: SW-846 3510C, Water												
Separatory Funnel Liq/Liq Extraction	NA	Complete						N/A	8/1/2006 11:00	159741	1.00	fnc
Method: SW-846 8270C, Water												
2-Methylnaphthalene	91-57-6	0.00674			0.0000800	0.000200	0.0000800	mg/L	8/3/2006 13:44	160015	1.00	lg1
Acenaphthene	83-32-9	0.0168			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 13:44	160015	1.00	lg1
Acenaphthylene	208-96-8	0.00804			0.0000800	0.000200	0.0000800	mg/L	8/3/2006 13:44	160015	1.00	lg1
Anthracene	120-12-7	0.0104			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 13:44	160015	1.00	lg1
bis(2-ethylhexyl)phthalate	117-81-7	0.00884			0.0000900	0.000200	0.0000900	mg/L	8/3/2006 13:44	160015	1.00	lg1
Dibenzofuran	132-64-9	0.0160			0.0000600	0.000200	0.0000600	mg/L	8/3/2006 13:44	160015	1.00	lg1
Fluoranthene	206-44-0	0.0101			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 13:44	160015	1.00	lg1
Fluorene	86-73-7	0.0145			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 13:44	160015	1.00	lg1
Naphthalene	91-20-3	0.0155			0.0000700	0.000200	0.0000700	mg/L	8/3/2006 13:44	160015	1.00	lg1
Phenanthrene	85-01-8	0.00918			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 13:44	160015	1.00	lg1
Pyrene	129-00-0	0.00994			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 13:44	160015	1.00	lg1

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SEVERN TRENT STL

TRRP Laboratory Test Results

Job Number: 320110

Date: 8/8/2006

CUSTOMER: ERM-Southwest, Inc. - Houston | PROJECT: HWPW-001441906 | ATTN: Chris Young

Customer Sample ID: MW-2-2SA-MSD

Laboratory Sample ID: 320110-010

Date/Time Sampled .....: 7/28/2006 13:45

Sample Matrix .....: Water

Date/Time Received .....: 7/29/2006 09:38

TEST METHOD	CAS #	RESULT	Q	FLAG	MDL	MQL	SQL	UNITS	Analysis Date/Time	Batch	D.F.	Analyst
Method: SW-846 3510C, Water												
Separatory Funnel Liq/Liq Extraction	NA	Complete						N/A	8/1/2006 11:00	159741	1.00	fnc
Method: SW-846 8270C, Water												
2-Methylnaphthalene	91-57-6	0.00786			0.0000800	0.000200	0.0000800	mg/L	8/3/2006 14:11	160015	1.00	lgl
Acenaphthene	83-32-9	0.0182			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 14:11	160015	1.00	lgl
Acenaphthylene	208-96-8	0.00849			0.0000800	0.000200	0.0000800	mg/L	8/3/2006 14:11	160015	1.00	lgl
Anthracene	120-12-7	0.0104			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 14:11	160015	1.00	lgl
bis(2-ethylhexyl)phthalate	117-81-7	0.00937			0.0000900	0.000200	0.0000900	mg/L	8/3/2006 14:11	160015	1.00	lgl
Dibenzofuran	132-64-9	0.0157			0.0000600	0.000200	0.0000600	mg/L	8/3/2006 14:11	160015	1.00	lgl
Fluoranthene	206-44-0	0.00950			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 14:11	160015	1.00	lgl
Fluorene	86-73-7	0.0148			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 14:11	160015	1.00	lgl
Naphthalene	91-20-3	0.0170			0.0000700	0.000200	0.0000700	mg/L	8/3/2006 14:11	160015	1.00	lgl
Phenanthrene	85-01-8	0.00887			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 14:11	160015	1.00	lgl
Pyrene	129-00-0	0.00989			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 14:11	160015	1.00	lgl

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SEVERN TRENT STL

TRRP Laboratory Test Results

Job Number: 320110 Date: 8/8/2006

CUSTOMER: ERM Southwest, Inc. - Houston PROJECT: HWPW-0014419.06 ATTN: Chris Young

Customer Sample ID: MW-1A-2SA
Laboratory Sample ID: 320110-011
Date/Time Sampled .....: 7/28/2006 15:50
Sample Matrix .....: Water
Date/Time Received .....: 7/29/2006 09:38

TEST METHOD	CAS #	RESULT	Q	FLAG	MDL	MQL	SQL	UNITS	Analysis Date/Time	Batch	D.F.	Analyst
Method: SW-846 3510C, Water												
Separatory Funnel Liq/Liq Extraction	NA	Complete						N/A	8/1/2006 11:00	159741	1.00	fnc
Method: SW-846 8270C, Water												
2-Methylnaphthalene	91-57-6	0.0205			0.0000800	0.000200	0.0000800	mg/L	8/3/2006 17:45	160015	1.00	lgl
Acenaphthene	83-32-9	0.163			0.0000400	0.000200	0.000400	mg/L	8/4/2006 14:04	160015	10.0	lgl
Acenaphthylene	208-96-8	0.00182			0.0000800	0.000200	0.0000800	mg/L	8/3/2006 17:45	160015	1.00	lgl
Anthracene	120-12-7	0.00613			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 17:45	160015	1.00	lgl
bis(2-ethylhexyl)phthalate	117-81-7	0.0000900	U		0.0000900	0.000200	0.0000900	mg/L	8/3/2006 17:45	160015	1.00	lgl
Dibenzofuran	132-64-9	0.0639			0.0000600	0.000200	0.000300	mg/L	8/4/2006 12:44	160015	5.00	lgl
Fluoranthene	206-44-0	0.00790			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 17:45	160015	1.00	lgl
Fluorene	86-73-7	0.0792			0.0000400	0.000200	0.000200	mg/L	8/4/2006 12:44	160015	5.00	lgl
Naphthalene	91-20-3	0.00292			0.0000700	0.000200	0.0000700	mg/L	8/3/2006 17:45	160015	1.00	lgl
Phenanthrene	85-01-8	0.00698			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 17:45	160015	1.00	lgl
Pyrene	129-00-0	0.00376			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 17:45	160015	1.00	lgl

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SEVERN TRENT STL

TRRP Laboratory Test Results

Job Number: 320110 Date: 8/8/2006

CUSTOMER: ERM-Southwest, Inc. - Houston PROJECT: HWPW-0014419.06 ATTN: Chris Young

Customer Sample ID: MW-1A-2SA-DUP
Laboratory Sample ID: 320110-012
Date/Time Sampled .....: 7/28/2006 15:50
Sample Matrix .....: Water
Date/Time Received .....: 7/29/2006 09:38

TEST METHOD	CAS #	RESULT	Q	FLAG	MDL	MQL	SQL	UNITS	Analysis Date/Time	Batch	D.F.	Analyst
Method: SW-846 3510C, Water												
Separatory Funnel Liq/Liq Extraction	NA	Complete						N/A	8/1/2006 11:00	159741	1.00	fnc
Method: SW-846 8270C, Water												
2-Methylnaphthalene	91-57-6	0.00899			0.0000800	0.000200	0.0000800	mg/L	8/3/2006 18:12	160015	1.00	lgl
Acenaphthene	83-32-9	0.149			0.0000400	0.000200	0.000400	mg/L	8/4/2006 13:10	160015	10.0	lgl
Acenaphthylene	208-96-8	0.00170			0.0000800	0.000200	0.0000800	mg/L	8/3/2006 18:12	160015	1.00	lgl
Anthracene	120-12-7	0.00567			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 18:12	160015	1.00	lgl
bis(2-ethylhexyl)phthalate	117-81-7	0.000218			0.0000900	0.000200	0.0000900	mg/L	8/3/2006 18:12	160015	1.00	lgl
Dibenzofuran	132-64-9	0.0589			0.0000600	0.000200	0.000600	mg/L	8/4/2006 13:10	160015	10.0	lgl
Fluoranthene	206-44-0	0.00774			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 18:12	160015	1.00	lgl
Fluorene	86-73-7	0.0769			0.0000400	0.000200	0.000400	mg/L	8/4/2006 13:10	160015	10.0	lgl
Naphthalene	91-20-3	0.00206			0.0000700	0.000200	0.0000700	mg/L	8/3/2006 18:12	160015	1.00	lgl
Phenanthrene	85-01-8	0.00508			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 18:12	160015	1.00	lgl
Pyrene	129-00-0	0.00343			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 18:12	160015	1.00	lgl

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SEVERN TRENT STL

QUALITY CONTROL RESULTS

Job Number.: 320110 Report Date.: 08/08/2006

CUSTOMER: ERM Southwest, Inc.- Houston PROJECT: HWPW-0014419 06 ATTN: Chris Young

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: SW-846 8270C Units.....: ug/L Analyst...: lg1
Method Description.: Semivolatile Organics, Low Level Batch(s)...: 159883 160015

LCS	Laboratory Control Sample	SVS072706A	159741		08/02/2006	1744

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	F
Acenaphthene, Water	9.05574		10.0		90.6		32-165	
Acenaphthylene, Water	9.41703		10.0		94.2		10-150	
Anthracene, Water	9.65092		10.0		96.5		23-178	
bis(2-ethylhexyl)phthalate, Water	10.8563		10.0		108.6		25-173	
Dibenzofuran, Water	9.16333		10.0		91.6		35-153	
Di-n-butyl Phthalate, Water	10.7062		10.0		107.1		28-185	
Fluoranthene, Water	10.5849		10.0		105.8		28-180	
Fluorene, Water	9.33336		10.0		93.3		30-189	
2-Methylnaphthalene, Water	8.73896		10.0		87.4		26-168	
Naphthalene, Water	8.56455		10.0		85.6		36-139	
Phenanthrene, Water	9.76795		10.0		97.7		26-166	
Pyrene, Water	9.91688		10.0		99.2		28-173	
Phenol, Water	3.64019		10.0		36.4		20-83	

MB	Method Blank	SVS061306D	159741		08/02/2006	1717

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	F
Acenaphthene, Water	0							
Acenaphthylene, Water	0							
Anthracene, Water	0							
bis(2-ethylhexyl)phthalate, Water	0.10868							
Dibenzofuran, Water	0							
Di-n-butyl Phthalate, Water	0.34769							b
Fluoranthene, Water	0							
Fluorene, Water	0							
2-Methylnaphthalene, Water	0							
Naphthalene, Water	0							
Phenanthrene, Water	0							
Pyrene, Water	0							
Phenol, Water	0							

MS	Matrix Spike	SVS072706A	320110-9		08/03/2006	1344

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	F
Acenaphthene, Water	17.4244		10.0	10.1905	72		46-118	
Acenaphthylene, Water	8.35569		10.0	0.20816	81		30-130	
Anthracene, Water	10.7659		10.0	0.81433	100		30-130	
bis(2-ethylhexyl)phthalate, Water	9.19302		10.0	0.18204	90		60-140	
Dibenzofuran, Water	16.6497		10.0	7.96930	87		30-130	
Di-n-butyl Phthalate, Water	9.66529		10.0	0.43137	92		30-130	
Fluoranthene, Water	10.5171		10.0	1.27871	92		30-130	
Fluorene, Water	15.1009		10.0	6.27855	88		30-130	
2-Methylnaphthalene, Water	7.01140		10.0	0.64622	64		60-140	
Naphthalene, Water	16.0643		10.0	10.9712	51		30-130	
Phenanthrene, Water	9.54074		10.0	1.06761	85		30-130	
Pyrene, Water	10.3296		10.0	0.65903	97		26-115	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

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SEVERN TRENT STL

QUALITY CONTROL RESULTS

Job Number.: 320110 Report Date.: 08/08/2006

CUSTOMER: ERM Southwest, Inc.- Houston PROJECT: HWPW-0014419 06 ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MS	Matrix Spike	SVS072706A	320110-9		08/03/2006	1344

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	F
Phenol, Water	2.32431		10.0	0	23		10-112	

MSD	Matrix Spike Duplicate	SVS072706A	320110-10		08/03/2006	1411

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	F
Acenaphthene, Water	18.9597	17.4244	10.0	10.1905	88		46-118	
					8.4		31.0	
Acenaphthylene, Water	8.82552	8.35569	10.0	0.20816	86		30-130	
					5.5		50.0	
Anthracene, Water	10.7644	10.7659	10.0	0.81433	100		30-130	
					0.0		50.0	
bis(2-ethylhexyl)phthalate, Water	9.73818	9.19302	10.0	0.18204	96		60-140	
					5.8		30.0	
Dibenzofuran, Water	16.3231	16.6497	10.0	7.96930	84		30-130	
					2.0		50.0	
Di-n-butyl Phthalate, Water	9.30163	9.66529	10.0	0.43137	89		30-130	
					3.8		50.0	
Fluoranthene, Water	9.87486	10.5171	10.0	1.27871	86		30-130	
					6.3		50.0	
Fluorene, Water	15.4230	15.1009	10.0	6.27855	91		30-130	
					2.1		50.0	
2-Methylnaphthalene, Water	8.16687	7.01140	10.0	0.64622	75		60-140	
					15.2		30.0	
Naphthalene, Water	17.6826	16.0643	10.0	10.9712	67		30-130	
					9.6		50.0	
Phenanthrene, Water	9.21903	9.54074	10.0	1.06761	82		30-130	
					3.4		50.0	
Pyrene, Water	10.2821	10.3296	10.0	0.65903	96		26-115	
					0.5		31.0	
Phenol, Water	3.03393	2.32431	10.0	0	30		10-112	
					26.5		23.0	r

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SEVERN TRENT STL

SURROGATE RECOVERIES REPORT

Job Number.: 320110 Report Date.: 08/08/2006

CUSTOMER: ERM Southwest, Inc.- Houston PROJECT: HWPW-0014419 06 ATTN: Chris Young

Method.....: Semivolatile Organics, Low Level Method Code...: 8270LL Prep Batch....: 159741
Batch(s).....: 159883 160015 Test Matrix...: Water Equipment Code: EGCMS07

Lab ID	DT	Sample ID	Date	246TBP	2FLUBP	2FLUPH	NITRD5	PHEND6	TERD14
320110- 1		MW-10A-2SA	08/03/2006	83.9	77.5	47.7	76.9	23.6	87.4
320110- 2		MW-8-2SA	08/03/2006	82.8	56.7	38.8	55.0	15.9	73.4
320110- 3		MW-7-2SA	08/03/2006	107.5	67.8	39.0	77.5	21.5	90.3
320110- 4		FB072806	08/03/2006	107.8	82.4	60.0	96.2	29.3	94.9
320110- 5		MW-11A-2SA	08/03/2006	97.0	61.4	45.8	72.4	23.0	82.0
320110- 5		MW-11A-2SA	08/04/2006	94.0	76.1	58.7	81.6	28.0	92.9
320110- 6		P-12-2SA	08/03/2006	81.6	68.5	46.2	70.0	21.5	79.7
320110- 7		MW-10B-2SA	08/03/2006	92.5	80.9	44.1	69.0	18.7	92.6
320110- 7		MW-10B-2SA	08/04/2006	101.6	84.9	51.5	78.3	21.1	99.4
320110- 8		MW-2-2SA	08/03/2006	91.4	69.4	34.8	61.6	22.2	86.4
320110- 9	MS	MW-2-2SA-MS	08/03/2006	104.4	78.4	36.2	63.7	21.2	101.5
320110- 10	MSD	MW-2-2SA-MSD	08/03/2006	101.8	85.0	37.9	77.2	27.4	97.0
320110- 11		MW-1A-2SA	08/03/2006	95.7	90.8	49.4	84.1	22.6	93.9
320110- 11		MW-1A-2SA	08/04/2006	98.3	86.8	63.0	88.5	31.5	104.5
320110- 11		MW-1A-2SA	08/04/2006	100.3	95.8	56.0	92.0	29.3	102.9
320110- 12		MW-1A-2SA-DUP	08/03/2006	94.2	71.5	45.6	87.8	27.9	93.0
320110- 12		MW-1A-2SA-DUP	08/04/2006	104.0	89.5	66.5	90.7	31.0	115.0
159741--21	LCS		08/02/2006	101.6	96.1	57.2	93.4	39.2	107.9
159741--21	MB		08/02/2006	92.3	94.6	52.3	83.8	28.5	97.7

Test	Test Description	Limits
246TBP	2,4,6-Tribromophenol	10 - 123
2FLUBP	2-Fluorobiphenyl	43 - 116
2FLUPH	2-Fluorophenol	21 - 100
NITRD5	Nitrobenzene-d5	35 - 114
PHEND6	Phenol-d6	10 - 94
TERD14	Terphenyl-d14	33 - 141

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QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 08/08/2006

REPORT COMMENTS

1) All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.
2) Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.
3) According to 40CFR Part 136.3, pH, Chlorine Residual, and Dissolved Oxygen analyses are to be performed immediately after aqueous sample collection. When these parameters are not indicated as field,(e.g. pH Field) they were not analyzed immediately, but as soon as possible on laboratory receipt.
4) For all USACE projects, the QC limits are based on "mean +/- 2 sigma", which are the warning limits.

General Information:

- Cresylic Acid is the combination of o,m and p-Cresol. The combination is reportesd as the final result.
- m-Cresol and p-Cresol co-elute. The result of the two is reported as either m&p-cresol or as p-cresol.
- m-Xylene and p-Xylene co-elute. The result of the two is reported as m,p-Xylene.
- N-Nitrosodiphenylamine decomposes in the gas chromatograph inlet forming dipheylamine and, consequently, may be detected as diphenylamine.
- Methylene Chloride and Acetone are recognized potential laboratory contaminants. Its presence in the sample up to five times the amount reported in the blank may be attributed to laboratory contamination.
- Trimethysilyl(Diazomethane) is used to esterify acid herbicides in Method SW-846 8151A.
- For Inorganic analyses, duplicate QC limits are determined as follows: If the sample result is less than or equal to 5 times the reporting limit, the RPD limit is equal to the reporting limit. If the sample result is greater than 5 times the reporting limit, the RPD limit is the method defined RPD.
- For TRRP reports, the header on the column RL is equivalent to a MQL/PQL.

Explanation of Qualifiers:

U - This qualifier indicates that the analyte was analyzed but not detected.
J - (Organics only) This qualifier indicates that the analyte is an estimated value between the RL and the MDL.
B - (Inorganics only) This Qualifier indicates that the analyte is an estimated value between the RL and the MDL.
N - (Organics only) This flag indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic charachterization of a TIC, such as "chlorinated hydrocarbon", the "N" flag is not used.

Explanation of General QC Outliers:

A - Matrix interference present in sample.
a - MS/MSD analyses yielded comparable poor recoveries, indicating a possible matrix interference. Method performance is demonstrated by acceptable LCS recoveries.
b - Target analyte was found in the method blank.
M - QC sample analysis yielded recoveries outside QC acceptance criteria. This sample was reanalyzed.
L - LCS analysis yielded high recoveries, indicating a potential high bias. No target analytes were observed above the RL in the associated samples.
G - Marginal outlier within 1% of acceptance criteria.
r - RPD value is outside method acceptance criteria.
C - Poor RPD values observed due to the non-homogenous nature of the sample.
O - Sample required dilution due to matrix interference.
D - Sample reported from a dilution.
d - Spike and/or surrogate diluted.
P - The recovery of this analyte is outside default QC limits. The data is accepted and will be used to calculate in-house statistical limits.
E - The reported concentration exceeds the instrument calibration.
F - The analyte is outside QC limits. The sample data is accepted since this analyte is not reported in associated samples.
H - Continuing Calibration Verification (CCV) standard is not associated with the samples reported.

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QUALITY ASSURANCE METHODS
REFERENCES AND NOTES

Report Date: 08/08/2006

q - See the subcontract final report for qualifier explanation.
W - The MS/MSD recoveries are outside QC acceptance criteria because the amount spiked is much less than the amount found in the sample.
K - High recovery will not affect the quality of reported results.
Z - See case narrative.

Explanation of Organic QC Outliers:

e - Method blank analysis yielded phthalate concentrations above the RL. Phthlates are recognized potential laboratory contaminants. Its presence in the sample up to five times the amount reported in the blank may be attributed to laboratory contamination.
S - Sample reanalyzed/reextracted due to poor surrogate recovery. Reanalysis confirmed original analysis indicating a possible matrix interference.
T - Sample analysis yielded poor surrogate recovery.
R - The RPD between the two GC columns is greater than 40% and no anomalies are present. The higher result is reported as per EPA Method 8000B.
I - The RPD between the two GC columns is greater than 40% and anomalies are present. The lower of the two results has been reported.
X - Gaseous compound. In-house QC limits are advisory.
Y - Ketone compounds have poor purge efficiency. In-house QC limits are advisory.
f - Surrogate not associated with reported analytes.

Explanation of Inorganic QC Outliers:

Q - Method blank analysis yielded target analytes above the RL. Associated sample results are greater than 10 times the concentrations observed in the method blank.
V - The RPD control limit for sample results less than 5 times the RL is +/- the RL value. Sample and duplicate results are within method acceptance criteria.
e - Serial dilution failed due to matrix interference.
g - Sample result quantitated by Method of Standard Additions (MSA) due to the analytical spike recovery being below 85 percent. The correlation coefficent for the MSA is greater than or equal to 0.995.
s - BOD/cBOD seed value is not within method acceptance criteria. Due to the nature of the test method, the sample cannot be reanalyzed.
l - BOD/cBOD LCS value is not within method acceptance criteria. Due to the nature of the test method, sample cannot be reanalyzed.
N - Spiked sample recovery is not within control limits.
n - Sample result quantitated by Method of Standard Additions (MSA) due to the analytical spike recovery being below 85 percent. The correlation coefficient for the MSA is less than 0.995.
* - Duplicate analysis is not within control limits.

Abbreviations:

Batch - Designation given to identify a specific extraction, digestion, preparation, or analysis set.
CCV - Continuing Calibration Verification
CRA - Low level standard check - GFAA, Mercury
CRI - Low level standard check - ICP
Dil Fac - Dilution Factor - Secondary dilution analysis
DLFac - Detection Limit Factor
DU - Duplicate
EB - Extraction Blank (TCLP, SPLP, etc.)
ICAL - Initial Calibration
ICB - Initial Calibration Blank
ICV - Initial Calibration Verification
ISA - Interference Check Sample A - ICP
ISB - Interference Check Sample B - ICP
LCD - Laboratory Control Duplicate
LCS - Laboratory Control Sample

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QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 08/08/2006

MB - Method Blank
MD - Method Duplicate
MDL - Method Detection Limit
MQL - Method Quantitation Limit (TRRP)
MS - Matrix Spike
MSD - Matrix Spike Duplicate
ND - Not Detected
PB - Preparation Blank
PREPF - Preparation Factor
RL - Reporting Limit
RPD - Relative Percent Difference
RRF - Relative Response Factor
RT - Retention Time
SQL - Sample Quantitation Limit (TRRP)
TIC - Tentatively Identified Compound

Method References:

(1) EPA 600/4-79-020 Methods for the Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-94-111 Methods for the Determination of MEtals in Environmental Samples, Supplement I, May 1994.
(3) EPA SW846 Test Methods for Evaluating Solid Waste, Third Edition, September 1986; Update I July 1992; Update II, September 1994, Update IIA August 1993; Update IIB, January 1995; Update III, December 1996, Update IVA January 1998, Update IVB November 2000.
(4) Standard Methods for the Examination of Water and Wastewater, 16th Edition (1985), 17th Edition (1989), 18th Edition (1992), 19th Edition (1995), 20th Edition (1998).
(5) HACH Water Analysis Handbook 3rd Edition (1997).
(6) Federal Register, July 1, 1990 (40 CFR Part 136 Appendix A).
(7) Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, 2nd Edition, January 1997.

(9) Diagnosis and Improvement of Saline and Alkali Soils, Agriculture Handbook No. 60, United States Department of Agriculture, 1954.

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SEVERN TRENT STL

LABORATORY CHRONICLE

Job Number: 320110 Date: 08/08/2006

CUSTOMER: ERM Southwest, Inc.- Houston PROJECT: HWPW-0014419 06 ATTN: Chris Young

Lab ID: 320110-1 Client ID: MW-10A-2SA Date Recvd: 07/29/2006 Sample Date: 07/28/2006

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED	DILUTION
	Data Package Validation	1	160096		08/08/2006 0000	
	Electronic Data Deliverables	1				
SW-846 3510C	Extraction (Sep. Funnel) SVOC Low Level	1	159741		08/01/2006 1100	
	GC/MS Semi-Volatile Package Production	1	160021		08/07/2006 0830	
SW-846 8270C	Semivolatile Organics, Low Level	1	160015	159741	08/03/2006 1437	1.00000

Lab ID: 320110-2 Client ID: MW-8-2SA Date Recvd: 07/29/2006 Sample Date: 07/28/2006

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED	DILUTION
SW-846 3510C	Extraction (Sep. Funnel) SVOC Low Level	1	159741		08/01/2006 1100	
SW-846 8270C	Semivolatile Organics, Low Level	1	160015	159741	08/03/2006 1504	1.00000

Lab ID: 320110-3 Client ID: MW-7-2SA Date Recvd: 07/29/2006 Sample Date: 07/28/2006

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED	DILUTION
SW-846 3510C	Extraction (Sep. Funnel) SVOC Low Level	1	159741		08/01/2006 1100	
SW-846 8270C	Semivolatile Organics, Low Level	1	160015	159741	08/03/2006 1531	1.00000

Lab ID: 320110-4 Client ID: FB072806 Date Recvd: 07/29/2006 Sample Date: 07/28/2006

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED	DILUTION
SW-846 3510C	Extraction (Sep. Funnel) SVOC Low Level	1	159741		08/01/2006 1100	
SW-846 8270C	Semivolatile Organics, Low Level	1	160015	159741	08/03/2006 1558	1.00000

Lab ID: 320110-5 Client ID: MW-11A-2SA Date Recvd: 07/29/2006 Sample Date: 07/28/2006

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED	DILUTION
SW-846 3510C	Extraction (Sep. Funnel) SVOC Low Level	1	159741		08/01/2006 1100	
SW-846 8270C	Semivolatile Organics, Low Level	1	160015	159741	08/03/2006 1625	1.00000
SW-846 8270C	Semivolatile Organics, Low Level	1	160015	159741	08/04/2006 1150	2.00000

Lab ID: 320110-6 Client ID: P-12-2SA Date Recvd: 07/29/2006 Sample Date: 07/28/2006

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED	DILUTION
SW-846 3510C	Extraction (Sep. Funnel) SVOC Low Level	1	159741		08/01/2006 1100	
SW-846 8270C	Semivolatile Organics, Low Level	1	160015	159741	08/03/2006 1652	1.00000

Lab ID: 320110-7 Client ID: MW-10B-2SA Date Recvd: 07/29/2006 Sample Date: 07/28/2006

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED	DILUTION
SW-846 3510C	Extraction (Sep. Funnel) SVOC Low Level	1	159741		08/01/2006 1100	
SW-846 8270C	Semivolatile Organics, Low Level	1	160015	159741	08/03/2006 1718	1.00000
SW-846 8270C	Semivolatile Organics, Low Level	1	160015	159741	08/04/2006 1217	5.00000

Lab ID: 320110-8 Client ID: MW-2-2SA Date Recvd: 07/29/2006 Sample Date: 07/28/2006

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED	DILUTION
SW-846 3510C	Extraction (Sep. Funnel) SVOC Low Level	1	159741		08/01/2006 1100	
SW-846 8270C	Semivolatile Organics, Low Level	1	160015	159741	08/03/2006 1317	1.00000

Lab ID: 320110-9 Client ID: MW-2-2SA-MS Date Recvd: 07/29/2006 Sample Date: 07/28/2006

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED	DILUTION
SW-846 3510C	Extraction (Sep. Funnel) SVOC Low Level	1	159741		08/01/2006 1100	
SW-846 8270C	Semivolatile Organics, Low Level	1	160015	159741	08/03/2006 1344	1.00000

Lab ID: 320110-10 Client ID: MW-2-2SA-MSD Date Recvd: 07/29/2006 Sample Date: 07/28/2006

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED	DILUTION
SW-846 3510C	Extraction (Sep. Funnel) SVOC Low Level	1	159741		08/01/2006 1100	
SW-846 8270C	Semivolatile Organics, Low Level	1	160015	159741	08/03/2006 1411	1.00000

Lab ID: 320110-11 Client ID: MW-1A-2SA Date Recvd: 07/29/2006 Sample Date: 07/28/2006

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED	DILUTION
SW-846 3510C	Extraction (Sep. Funnel) SVOC Low Level	1	159741		08/01/2006 1100	

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SEVERN TRENT STL

LABORATORY CHRONICLE

Job Number: 320110 Date: 08/08/2006

CUSTOMER: ERM Southwest, Inc. - Houston PROJECT: HWPW-0014419 06 ATTN: Chris Young

Lab ID: 320110-11 Client ID: MW-1A-2SA Date Recvd: 07/29/2006 Sample Date: 07/28/2006

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
SW-846 8270C	Semivolatile Organics, Low Level	1	160015	159741	08/03/2006	1745	1.00000
SW-846 8270C	Semivolatile Organics, Low Level	1	160015	159741	08/04/2006	1244	5.00000
SW-846 8270C	Semivolatile Organics, Low Level	1	160015	159741	08/04/2006	1404	10.0000

Lab ID: 320110-12 Client ID: MW-1A-2SA-DUP Date Recvd: 07/29/2006 Sample Date: 07/28/2006

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
SW-846 3510C	Extraction (Sep. Funnel) SVOC Low Level	1	159741		08/01/2006	1100	
SW-846 8270C	Semivolatile Organics, Low Level	1	160015	159741	08/03/2006	1812	1.00000
SW-846 8270C	Semivolatile Organics, Low Level	1	160015	159741	08/04/2006	1310	10.0000

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SEVERN TRENT STL

ANALYTICAL REPORT

JOB NUMBER: 320124
Project ID: HWPW-0014419 06

Prepared For:

ERM Southwest, Inc.- Houston
15810 Park Ten Place
Suite 300
Houston, TX 77084

Attention: Chris Young

Date: 08/09/2006

Signature

Name: Sachin G. Kudchadkar

Title: Project Manager III

E-Mail: [redacted]

08/09/06
Date

Severn Trent Laboratories
6310 Rothway Drive
Houston, TX 77040

PHONE: 713-690-4444

TOTAL NO. OF PAGES 19

SEVERN TRENT STL

08/09/2006

Chris Young
ERM Southwest, Inc.- Houston
15810 Park Ten Place
Suite 300
Houston, TX 77084

Reference:
Project : HWPW-0014419 06
Project No. : 320124
Date Received : 07/31/2006
STL Job : 320124

Dear Chris Young:

Enclosed are the analytical results for your project referenced above. The following samples are included in the report.

1. MW-11B-2SA
2. P-10-2SA
3. P-10-2SA-DUP
4. TRIP BLANK

All holding times were met for the tests performed on these samples.

Enclosed, please find the Quality Control Summary. All quality control results for the QC batch that are applicable to the sample(s) are acceptable except as noted in the QC batch reports.

The test results in this report meet all NELAP requirements for STL Houston's NELAP accredited parameters. Any exceptions to NELAP requirements will be noted and included in a case narrative as a part of this report.

If the report is acceptable, please approve the enclosed invoice and forward it for payment.

Thank you for selecting Severn-Trent Laboratories to serve as your analytical laboratory on this project. If you have any questions concerning these results, please feel free to contact me at any time.

We look forward to working with you on future projects.

Sincerely,

Sachin G. Kudchadkar
Project Manager

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Table 1

Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification	8270C	Comment
MW-11B-2SA	320124-1	X	
P-10-2SA	320124-2	X	
P-10-2SA-DUP	320124-3	X	Field Duplicate
TRIP BLANK	320124-4		Trip Blank; Not on C-O-C; No Tests Assigned

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Appendix A Laboratory Data Package Cover Page

This data package consists of:

- This signature page, the laboratory review checklist, and the following reportable data:
- R1 Field chain-of-custody documentation;
- R2 Sample identification cross-reference;
- R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
- R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
- R5 Test reports/summary forms for blank samples;
- R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
- R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
- R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) the amount of analyte measured in the duplicate,
  b) the calculated RPD, and
  c) the laboratory's QC limits for analytical duplicates.
- R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;
- R10 Other problems or anomalies.
- The Exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release Statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By me signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: [ ] This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Norman Flynn		Laboratory Director	2006-08-10
Name (Printed)	Signature	Official Title (printed)	Date

Appendix A (cont'd): Laboratory Review Checklist: Reportable Data

Laboratory Name: STL-Houston	LRC Date: 08/07/06
Project Name: HWPW-0014419 06	Laboratory Job Number: 320124
Reviewer Name: ACN	Prep Batch Number(s): 159743-SV

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-custody (C-O-C)					
R1	OI	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?			X		
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample quantitation limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?		X			1
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?			X		
		Was the LCSD RPD within QC limits?			X		
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			2
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SQL to minimize the matrix interference affects on the sample results?	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2. = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Appendix A (cont'd): Laboratory Review Checklist: Reportable Data

Laboratory Name: STL-Houston	LRC Date: 08/07/06
Project Name: HWPW-0014419 06	Laboratory Job Number: 320124
Reviewer Name: ACN	Prep Batch Number(s): 159743-SV

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section					
		Are all the methods used to generate the data documented, verified, and validated, where	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Appendix A (cont'd): Laboratory Review Checklist: Exception Reports	
Laboratory Name: STL-Houston	LRC Date: 08/07/06
Project Name: HWPW-0014419 06	Laboratory Job Number: 320124
Reviewer Name: ACN	Prep Batch Number(s): 159743-SV

ER #[1]	DESCRIPTION
1	Di-n-butyl phthalate and bis(2-ethylhexyl)phthalate were detected above the MQL in the extraction blank. These analytes are recognized potential laboratory contaminants.
2	The acenaphthene recovery in the MSD and the naphthalene recoveries in the MS/MSD were below acceptance limits due to matrix interference.

ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on the LRC)

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No. 029476

CHAIN OF CUSTODY RECORD

CUSTOMER INFORMATION	PROJECT INFORMATION
COMPANY: ERM-SW	PROJECT NAME/NUMBER: UPRR HWPW/0014419
SEND REPORT TO: Chris Young	**BILLING INFORMATION**
ADDRESS: 15810 Park Ten Place	BILL TO: UPRR - Geoffrey Keeder
Suite 300	ADDRESS: 24125 Aldine Westfield
Houston, TX, 77084	Spring, TX 77373
PHONE: 281-600-1097	PHONE: 281-350-7197
FAX: 281-600-1001	FAX: 281-350-7362 PO NO:

LAB JOB NO.: 32014

SAMPLE NO.	SAMPLE DESCRIPTION	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	CONTAINER	PRESERV.	NUMBER OF CONTAINERS	ANALYSIS/METHOD REQUEST: 8270 low level A-TZ CoC list	8270 low level B-TZ CoC list	REMARKS/PRECAUTIONS
	MW-11B-25A	7/31/06	900	water	2-1L Amber	—	2		X	see attached sample specific CoC list
	P-10-25A		905	water	2-1L Amber	—	2		X	
	P-10-25A-Dup		910	water	2-1L Amber	—	2		X	

SAMPLER: Rolando Gomez / Bizu Ayele | SHIPMENT METHOD: Drop off | AIRBILL NO.:

REQUIRED TURNAROUND* ☐ SAME DAY ☐ 24 HOURS ☐ 48 HOURS ☐ 72 HOURS ☐ 5 DAYS ☐ 10 DAYS ☒ ROUTINE ☐ OTHER

1. RELINQUISHED BY:	DATE	2. RELINQUISHED BY:	DATE	3. RELINQUISHED BY:	DATE
SIGNATURE:	7/31/06	SIGNATURE:		SIGNATURE:	
PRINTED NAME/COMPANY: Rolando Gomez / ERM	TIME 1133A	PRINTED NAME/COMPANY:	TIME	PRINTED NAME/COMPANY:	TIME
1. RECEIVED BY:	DATE	2. RECEIVED BY:	DATE	3. RECEIVED BY:	DATE
SIGNATURE:	7-31-06	SIGNATURE:		SIGNATURE:	
PRINTED NAME/COMPANY: STL	TIME 1153	PRINTED NAME/COMPANY:	TIME	PRINTED NAME/COMPANY:	TIME

*RUSH TURNAROUND MAY REQUIRE SURCHARGE

STL8222H-600 (0803)

STL Houston
6310 Rothway Drive
Houston, TX 77040

rpjsckl | Job Sample Receipt Checklist Report | V2

Job Number.: 320124 Location.: 57216 Check List Number.: 1 Description.:
Customer Job ID.....: Job Check List Date.: 07/31/2006 Date of the Report..: 07/31/2006
Project Number.: 99000484 Project Description.: HWPW-0014419 205/240 Project Manager.....: sgk
Customer.....: ERM Southwest, Inc.- Houston Contact.: Chris Young

Questions ?	(Y/N)	Comments
Chain of Custody Received?	Y	
...If "yes", completed properly?	Y	
Custody seal on shipping container?	Y	
...If "yes", custody seal intact?	Y	
Custody seals on sample containers?	N	
...If "yes", custody seal intact?		
Samples chilled?	Y	
Temperature of cooler acceptable? (4 deg C +/- 2).	Y	2.3
...If "no", is sample an air matrix?(no temp req.)		
Thermometer ID	Y	438
Samples received intact (good condition)?	Y	
Volatile samples acceptable? (no headspace)		
Correct containers used?	Y	
Adequate sample volume provided?	Y	
Samples preserved correctly?	Y	
Samples received within holding-time?	Y	
Agreement between COC and sample labels?		
Radioactivity at or below background levels?		
Additional		
Comments		
Sample Custodian Signature/Date	Y	mt

7-31-06

JUL 11 13:

STL HOUSTON - SAMPLE RECEIPT CHECKLIST

CLIENT NAME: ERM CARRIER/DRIVER NAME: C/nA

PROJECT: UNPACKED BY:

DATE RECEIVED: UNPACKED STAMP:

TOTAL # COOLERS RECEIVED: 1

COOLER CHECKLIST

COOLER ID	COC PRESENT (Y/N)	CUSTODY TAPE		COOLER TEMP (°C)	THERM ID	TEMP BLK PRESENT (Y/N)	List Sample Bottles in Each Cooler if out of Temperature
		PRESENT (Y/N)	INTACT (Y/N)				
B/O	Y	C Y	Y	23	Y3E	N	
		B					
		C					
		B					
		C					
		B					

C = COOLER B = BOTTLES

COOLER(S) SCREENED FOR RADIATION? Yes X No ___ IF TEMP BLK N, HOW WAS TEMP TAKEN: ___

SHORT HOLD / RUSH SAMPLES (include department delivered to and time delivered)

****

SPECIFIC PROJECT INFORMATION

JOB NUMBER: 320107

VOLATILE HEADSPACE ACCEPTABLE? Yes ___ No ___ NA ___
(If ANY headspace is present, list details in INCONSISTENCIES section)

Marked As Preserved? Yes ___ No ___

Number of VOA Vials: ___

pH OF WATER SAMPLES

PRESERVATION	# BOTTLES	CORRECT pH (Y/N)	If N, List sample ID and Corresponding pH
H2SO4 (<2)			
HNO3 (<2)			
HCL (<2) (Not VOA Vials)			
NaOH – Cyanide (>12)			
NaOH/Zn Acetate – Sulfide (>9)			
Other			

OF NEAT BOTTLES: ___ # OF SOIL JARS: ___

INCONSISTENCIES – Place in Job Notes as well (CTRL F-12)

ACTION TAKEN

PERSON CONTACTED: DATE:

RESOLUTION

NOTES

(Use back of sheet if necessary)

Project Manager

09

SEVERN TRENT STL

TRRP Laboratory Test Results

Job Number: 320124

Date: 8/9/2006

CUSTOMER: ERM-Southwest, Inc., Houston | PROJECT: HWPW-001441906 | ATTN: Chris Young

Customer Sample ID: MW-11B-2SA

Laboratory Sample ID: 320124-001

Date/Time Sampled .....: 7/31/2006 09:00

Sample Matrix .....: Water

Date/Time Received .....: 7/31/2006 11:33

TEST METHOD	CAS #	RESULT	Q	FLAG	MDL	MQL	SQL	UNITS	Analysis Date/Time	Batch	D.F.	Analyst
Method: SW-846 3510C, Water												
Separatory Funnel Liq/Liq Extraction	NA	Complete						N/A	8/1/2006 15:00	159743	1.00	fnc
Method: SW-846 8270C, Water												
Acenaphthene	83-32-9	0.0707			0.0000400	0.000200	0.000200	mg/L	8/4/2006 10:29	160022	5.00	lgl
Acenaphthylene	208-96-8	0.00119			0.0000800	0.000200	0.0000800	mg/L	8/3/2006 11:56	160022	1.00	lgl
Anthracene	120-12-7	0.00345			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 11:56	160022	1.00	lgl
bis(2-ethylhexyl)phthalate	117-81-7	0.000260		b	0.0000900	0.000200	0.0000900	mg/L	8/3/2006 11:56	160022	1.00	lgl
Dibenzofuran	132-64-9	0.0359			0.0000600	0.000200	0.000300	mg/L	8/4/2006 10:29	160022	5.00	lgl
Di-n-butyl Phthalate	84-74-2	0.000420		b	0.000110	0.000200	0.000100	mg/L	8/3/2006 11:56	160022	1.00	lgl
Fluoranthene	206-44-0	0.00245			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 11:56	160022	1.00	lgl
Fluorene	86-73-7	0.0336			0.0000400	0.000200	0.000200	mg/L	8/4/2006 10:29	160022	5.00	lgl
Naphthalene	91-20-3	0.100			0.0000700	0.000200	0.000300	mg/L	8/4/2006 10:29	160022	5.00	lgl
Phenol	108-95-2	0.0000700	U		0.0000700	0.000200	0.0000700	mg/L	8/3/2006 11:56	160022	1.00	lgl
Pyrene	129-00-0	0.00122			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 11:56	160022	1.00	lgl

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SEVERN TRENT STL

TRRP Laboratory Test Results

Job Number: 320124 Date: 8/9/2006

CUSTOMER: ERM Southwest, Inc. - Houston PROJECT: HWPW-001441.9.06 ATTN: Chris Young

Customer Sample ID: P-10-2SA
Date/Time Sampled .....: 7/31/2006 09:05
Date/Time Received .....: 7/31/2006 11:33

Laboratory Sample ID: 320124-002
Sample Matrix .....: Water

TEST METHOD	CAS #	RESULT	Q	FLAG	MDL	MQL	SQL	UNITS	Analysis Date/Time	Batch	D.F.	Analyst
Method: SW-846 3510C, Water												
Separatory Funnel Liq/Liq Extraction	NA	Complete						N/A	8/1/2006 15:00	159743	1.00	fnc
Method: SW-846 8270C, Water												
Acenaphthene	83-32-9	0.0346			0.0000400	0.000200	0.000200	mg/L	8/4/2006 10:56	160022	4.00	lg1
Acenaphthylene	208-96-8	0.000160	J		0.0000800	0.000200	0.0000800	mg/L	8/3/2006 12:23	160022	1.00	lg1
Anthracene	120-12-7	0.000981			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 12:23	160022	1.00	lg1
bis(2-ethylhexyl)phthalate	117-81-7	0.000160	J	b	0.0000900	0.000200	0.0000900	mg/L	8/3/2006 12:23	160022	1.00	lg1
Dibenzofuran	132-64-9	0.00945			0.0000600	0.000200	0.0000600	mg/L	8/3/2006 12:23	160022	1.00	lg1
Di-n-butyl Phthalate	84-74-2	0.000320		b	0.000110	0.000200	0.000100	mg/L	8/3/2006 12:23	160022	1.00	lg1
Fluoranthene	206-44-0	0.000924			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 12:23	160022	1.00	lg1
Fluorene	86-73-7	0.0115			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 12:23	160022	1.00	lg1
Naphthalene	91-20-3	0.0620			0.0000700	0.000200	0.000300	mg/L	8/4/2006 10:56	160022	4.00	lg1
Phenol	108-95-2	0.0000700	U		0.0000700	0.000200	0.0000700	mg/L	8/3/2006 12:23	160022	1.00	lg1
Pyrene	129-00-0	0.000460			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 12:23	160022	1.00	lg1

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SEVERN TRENT STL

TRRP Laboratory Test Results

Job Number: 320124

Date: 8/9/2006

CUSTOMER: ERM-Southwest, Inc., Houston PROJECT: HWPW.00144.19.06 ATTN: Chris Young

Customer Sample ID: P-10-2SA-DUP

Date/Time Sampled .....: 7/31/2006 09:10

Date/Time Received .....: 7/31/2006 11:33

Laboratory Sample ID: 320124-003

Sample Matrix .....: Water

TEST METHOD	CAS #	RESULT	Q	FLAG	MDL	MQL	SQL	UNITS	Analysis Date/Time	Batch	D.F.	Analyst
Method: SW-846 3510C, Water												
Separatory Funnel Liq/Liq Extraction	NA	Complete						N/A	8/1/2006 15:00	159743	1.00	fnc
Method: SW-846 8270C, Water												
Acenaphthene	83-32-9	0.0309			0.0000400	0.000200	0.000200	mg/L	8/4/2006 11:23	160022	5.00	lgl
Acenaphthylene	208-96-8	0.000160	J		0.0000800	0.000200	0.0000800	mg/L	8/3/2006 10:36	160022	1.00	lgl
Anthracene	120-12-7	0.000884			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 10:36	160022	1.00	lgl
bis(2-ethylhexyl)phthalate	117-81-7	0.000290		b	0.0000900	0.000200	0.0000900	mg/L	8/3/2006 10:36	160022	1.00	lgl
Dibenzofuran	132-64-9	0.00772			0.0000600	0.000200	0.0000600	mg/L	8/3/2006 10:36	160022	1.00	lgl
Di-n-butyl Phthalate	84-74-2	0.000370		b	0.000110	0.000200	0.000110	mg/L	8/3/2006 10:36	160022	1.00	lgl
Fluoranthene	206-44-0	0.000931			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 10:36	160022	1.00	lgl
Fluorene	86-73-7	0.00959			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 10:36	160022	1.00	lgl
Naphthalene	91-20-3	0.0584			0.0000700	0.000200	0.000400	mg/L	8/4/2006 11:23	160022	5.00	lgl
Phenol	108-95-2	0.0000700	U		0.0000700	0.000200	0.0000700	mg/L	8/3/2006 10:36	160022	1.00	lgl
Pyrene	129-00-0	0.000430			0.0000400	0.000200	0.0000400	mg/L	8/3/2006 10:36	160022	1.00	lgl

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SEVERN TRENT STL

QUALITY CONTROL RESULTS

Job Number.: 320124 Report Date.: 08/09/2006

CUSTOMER: ERM Southwest, Inc.- Houston PROJECT: HWPW-0014419 06 ATTN: Chris Young

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Test Method.....: SW-846 8270C Units.....: ug/L Analyst...: lg1
Method Description.: Semivolatile Organics, Low Level Batch(s)...: 160022

LCS	Laboratory Control Sample	SVS072706A	159743		08/03/2006	1009

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	F
Acenaphthene, Water	9.30285		10.0		93.0		32-165	
Acenaphthylene, Water	9.69441		10.0		96.9		10-150	
Anthracene, Water	9.32515		10.0		93.3		23-178	
bis(2-ethylhexyl)phthalate, Water	10.9887		10.0		109.9		25-173	
Dibenzofuran, Water	9.41489		10.0		94.1		35-153	
Di-n-butyl Phthalate, Water	10.2156		10.0		102.2		28-185	
Fluoranthene, Water	9.44065		10.0		94.4		28-180	
Fluorene, Water	9.32258		10.0		93.2		30-189	
Naphthalene, Water	8.60758		10.0		86.1		36-139	
Pyrene, Water	9.99551		10.0		100.0		28-173	
Phenol, Water	3.98071		10.0		39.8		20-83	

MB	Method Blank	SVS061306D	159743		08/03/2006	0942

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	F
Acenaphthene, Water	0							
Acenaphthylene, Water	0							
Anthracene, Water	0							
bis(2-ethylhexyl)phthalate, Water	0.25125							b
Dibenzofuran, Water	0							
Di-n-butyl Phthalate, Water	0.23048							b
Fluoranthene, Water	0							
Fluorene, Water	0							
Naphthalene, Water	0							
Pyrene, Water	0							
Phenol, Water	0							

MS	Matrix Spike	SVS072706A	320124-3		08/03/2006	1103

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	F
Acenaphthene, Water	31.1728		10.0	25.3608	58		46-118	
Acenaphthylene, Water	7.96565		10.0	0.15888	78		30-130	
Anthracene, Water	9.33193		10.0	0.88360	84		30-130	
bis(2-ethylhexyl)phthalate, Water	9.80950		10.0	0.29401	95		60-140	
Dibenzofuran, Water	14.7865		10.0	7.72352	71		30-130	
Di-n-butyl Phthalate, Water	9.22205		10.0	0.37400	88		30-130	
Fluoranthene, Water	9.35431		10.0	0.93124	84		30-130	
Fluorene, Water	17.0422		10.0	9.58579	75		30-130	
Naphthalene, Water	40.3347		10.0	41.3007	-10		30-130	A
Pyrene, Water	9.24518		10.0	0.43021	88		26-115	
Phenol, Water	4.24364		10.0	0	42		10-112	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

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SEVERN TRENT STL

QUALITY CONTROL RESULTS

Job Number.: 320124 Report Date.: 08/09/2006

CUSTOMER: ERM Southwest, Inc. - Houston PROJECT: HWPW-0014419.06 ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MSD	Matrix Spike Duplicate	SVS072706A	320124-3		08/03/2006	1129

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	F
Acenaphthene, Water	27.3248	31.1728	10.0	25.3608	20		46-118	A
					13.2		31.0	
Acenaphthylene, Water	7.64876	7.96565	10.0	0.15888	75		30-130	
					4.1		50.0	
Anthracene, Water	8.83701	9.33193	10.0	0.88360	80		30-130	
					5.4		50.0	
bis(2-ethylhexyl)phthalate, Water	9.54924	9.80950	10.0	0.29401	93		60-140	
					2.7		30.0	
Dibenzofuran, Water	13.4208	14.7865	10.0	7.72352	57		30-130	
					9.7		50.0	
Di-n-butyl Phthalate, Water	9.00878	9.22205	10.0	0.37400	86		30-130	
					2.3		50.0	
Fluoranthene, Water	9.40660	9.35431	10.0	0.93124	85		30-130	
					0.6		50.0	
Fluorene, Water	15.7039	17.0422	10.0	9.58579	61		30-130	
					8.2		50.0	
Naphthalene, Water	34.5148	40.3347	10.0	41.3007	-68		30-130	A
					15.6		50.0	
Pyrene, Water	8.82763	9.24518	10.0	0.43021	84		26-115	
					4.6		31.0	
Phenol, Water	4.33343	4.24364	10.0	0	43		10-112	
					2.1		23.0	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

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SEVERN TRENT STL

SURROGATE RECOVERIES REPORT

Job Number.: 320124 Report Date.: 08/09/2006

CUSTOMER: ERM Southwest, Inc.- Houston PROJECT: HWPW-0014419 06 ATTN: Chris Young

Method.....: Semivolatile Organics, Low Level Method Code...: 8270LL Prep Batch....: 159743
Batch(s).....: 160022 Test Matrix...: Water Equipment Code: EGCMS07

Lab ID	DT	Sample ID	Date	246TBP	2FLUBP	2FLUPH	NITRD5	PHEND6	TERD14
320124- 1		MW-11B-2SA	08/03/2006	109.2	92.3	52.8	75.9	31.4	102.1
320124- 1		MW-11B-2SA	08/04/2006	115.9	97.8	55.7	82.8	33.1	108.6
320124- 2		P-10-2SA	08/03/2006	103.9	90.1	49.6	78.5	27.9	106.5
320124- 2		P-10-2SA	08/04/2006	107.3	98.1	63.6	85.5	36.9	113.1
320124- 3		P-10-2SA-DUP	08/03/2006	84.3	68.2	45.7	54.9	34.7	89.9
320124- 3		P-10-2SA-DUP	08/04/2006	99.8	74.5	66.6	64.8	40.1	94.7
320124- 3	MS	P-10-2SA-DUP	08/03/2006	96.6	74.7	48.4	64.0	36.3	95.5
320124- 3	MSD	P-10-2SA-DUP	08/03/2006	91.2	69.6	55.7	61.8	40.7	93.4
159743--21	LCS		08/03/2006	106.6	97.8	51.3	91.1	36.7	109.1
159743--21	MB		08/03/2006	95.1	90.7	48.0	79.3	31.6	104.0

Test	Test Description	Limits
246TBP	2,4,6-Tribromophenol	10 - 123
2FLUBP	2-Fluorobiphenyl	43 - 116
2FLUPH	2-Fluorophenol	21 - 100
NITRD5	Nitrobenzene-d5	35 - 114
PHEND6	Phenol-d6	10 - 94
TERD14	Terphenyl-d14	33 - 141

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QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 08/09/2006

REPORT COMMENTS

1) All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.
2) Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.
3) According to 40CFR Part 136.3, pH, Chlorine Residual, and Dissolved Oxygen analyses are to be performed immediately after aqueous sample collection. When these parameters are not indicated as field,(e.g. pH Field) they were not analyzed immediately, but as soon as possible on laboratory receipt.
4) For all USACE projects, the QC limits are based on "mean +/- 2 sigma", which are the warning limits.

General Information:

- Cresylic Acid is the combination of o,m and p-Cresol. The combination is reportesd as the final result.
- m-Cresol and p-Cresol co-elute. The result of the two is reported as either m&p-cresol or as p-cresol.
- m-Xylene and p-Xylene co-elute. The result of the two is reported as m,p-Xylene.
- N-Nitrosodiphenylamine decomposes in the gas chromatograph inlet forming dipheylamine and, consequently, may be detected as diphenylamine.
- Methylene Chloride and Acetone are recognized potential laboratory contaminants. Its presence in the sample up to five times the amount reported in the blank may be attributed to laboratory contamination.
- Trimethysilyl(Diazomethane) is used to esterify acid herbicides in Method SW-846 8151A.
- For Inorganic analyses, duplicate QC limits are determined as follows: If the sample result is less than or equal to 5 times the reporting limit, the RPD limit is equal to the reporting limit. If the sample result is greater than 5 times the reporting limit, the RPD limit is the method defined RPD.
- For TRRP reports, the header on the column RL is equivalent to a MQL/PQL.

Explanation of Qualifiers:

U - This qualifier indicates that the analyte was analyzed but not detected.
J - (Organics only) This qualifier indicates that the analyte is an estimated value between the RL and the MDL.
B - (Inorganics only) This Qualifier indicates that the analyte is an estimated value between the RL and the MDL.
N - (Organics only) This flag indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic charachterization of a TIC, such as "chlorinated hydrocarbon", the "N" flag is not used.

Explanation of General QC Outliers:

A - Matrix interference present in sample.
a - MS/MSD analyses yielded comparable poor recoveries, indicating a possible matrix interference. Method performance is demonstrated by acceptable LCS recoveries.
b - Target analyte was found in the method blank.
M - QC sample analysis yielded recoveries outside QC acceptance criteria. This sample was reanalyzed.
L - LCS analysis yielded high recoveries, indicating a potential high bias. No target analytes were observed above the RL in the associated samples.
G - Marginal outlier within 1% of acceptance criteria.
r - RPD value is outside method acceptance criteria.
C - Poor RPD values observed due to the non-homogenous nature of the sample.
O - Sample required dilution due to matrix interference.
D - Sample reported from a dilution.
d - Spike and/or surrogate diluted.
P - The recovery of this analyte is outside default QC limits. The data is accepted and will be used to calculate in-house statistical limits.
E - The reported concentration exceeds the instrument calibration.
F - The analyte is outside QC limits. The sample data is accepted since this analyte is not reported in associated samples.
H - Continuing Calibration Verification (CCV) standard is not associated with the samples reported.

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QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 08/09/2006

q - See the subcontract final report for qualifier explanation.
W - The MS/MSD recoveries are outside QC acceptance criteria because the amount spiked is much less than the amount found in the sample.
K - High recovery will not affect the quality of reported results.
Z - See case narrative.

Explanation of Organic QC Outliers:

e - Method blank analysis yielded phthalate concentrations above the RL. Phthlates are recognized potential laboratory contaminants. Its presence in the sample up to five times the amount reported in the blank may be attributed to laboratory contamination.
S - Sample reanalyzed/reextracted due to poor surrogate recovery. Reanalysis confirmed original analysis indicating a possible matrix interference.
T - Sample analysis yielded poor surrogate recovery.
R - The RPD between the two GC columns is greater than 40% and no anomalies are present. The higher result is reported as per EPA Method 8000B.
I - The RPD between the two GC columns is greater than 40% and anomalies are present. The lower of the two results has been reported.
X - Gaseous compound. In-house QC limits are advisory.
Y - Ketone compounds have poor purge efficiency. In-house QC limits are advisory.
f - Surrogate not associated with reported analytes.

Explanation of Inorganic QC Outliers:

Q - Method blank analysis yielded target analytes above the RL. Associated sample results are greater than 10 times the concentrations observed in the method blank.
V - The RPD control limit for sample results less than 5 times the RL is +/- the RL value. Sample and duplicate results are within method acceptance criteria.
e - Serial dilution failed due to matrix interference.
g - Sample result quantitated by Method of Standard Additions (MSA) due to the analytical spike recovery being below 85 percent. The correlation coefficent for the MSA is greater than or equal to 0.995.
s - BOD/cBOD seed value is not within method acceptance criteria. Due to the nature of the test method, the sample cannot be reanalyzed.
l - BOD/cBOD LCS value is not within method acceptance criteria. Due to the nature of the test method, sample cannot be reanalyzed.
N - Spiked sample recovery is not within control limits.
n - Sample result quantitated by Method of Standard Additions (MSA) due to the analytical spike recovery being below 85 percent. The correlation coefficient for the MSA is less than 0.995.
* - Duplicate analysis is not within control limits.

Abbreviations:

Batch - Designation given to identify a specific extraction, digestion, preparation, or analysis set.
CCV - Continuing Calibration Verification
CRA - Low level standard check - GFAA, Mercury
CRI - Low level standard check - ICP
Dil Fac - Dilution Factor - Secondary dilution analysis
DLFac - Detection Limit Factor
DU - Duplicate
EB - Extraction Blank (TCLP, SPLP, etc.)
ICAL - Initial Calibration
ICB - Initial Calibration Blank
ICV - Initial Calibration Verification
ISA - Interference Check Sample A - ICP
ISB - Interference Check Sample B - ICP
LCD - Laboratory Control Duplicate
LCS - Laboratory Control Sample

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QUALITY ASSURANCE METHODS
REFERENCES AND NOTES

Report Date: 08/09/2006

MB - Method Blank
MD - Method Duplicate
MDL - Method Detection Limit
MQL - Method Quantitation Limit (TRRP)
MS - Matrix Spike
MSD - Matrix Spike Duplicate
ND - Not Detected
PB - Preparation Blank
PREPF - Preparation Factor
RL - Reporting Limit
RPD - Relative Percent Difference
RRF - Relative Response Factor
RT - Retention Time
SQL - Sample Quantitation Limit (TRRP)
TIC - Tentatively Identified Compound

Method References:

(1) EPA 600/4-79-020 Methods for the Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-94-111 Methods for the Determination of MEtals in Environmental Samples, Supplement I, May 1994.
(3) EPA SW846 Test Methods for Evaluating Solid Waste, Third Edition, September 1986; Update I July 1992; Update II, September 1994, Update IIA August 1993; Update IIB, January 1995; Update III, December 1996, Update IVA January 1998, Update IVB November 2000.
(4) Standard Methods for the Examination of Water and Wastewater, 16th Edition (1985), 17th Edition (1989), 18th Edition (1992), 19th Edition (1995), 20th Edition (1998).
(5) HACH Water Analysis Handbook 3rd Edition (1997).
(6) Federal Register, July 1, 1990 (40 CFR Part 136 Appendix A).
(7) Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, 2nd Edition, January 1997.

(9) Diagnosis and Improvement of Saline and Alkali Soils, Agriculture Handbook No. 60, United States Department of Agriculture, 1954.

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SEVERN TRENT STL

LABORATORY CHRONICLE

Job Number: 320124 Date: 08/09/2006

CUSTOMER: ERM Southwest, Inc.- Houston PROJECT: HWPW-0014419.06 ATTN: Chris Young

Lab ID: 320124-1 Client ID: MW-11B-2SA Date Recvd: 07/31/2006 Sample Date: 07/31/2006

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
	Data Package Validation	1	160186		08/09/2006	0000	
SW-846 3510C	Extraction (Sep. Funnel) SVOC Low Level	1	159743		08/01/2006	1500	
	GC/MS Semi-Volatile Package Production	1	160024		08/07/2006	0900	
SW-846 8270C	Semivolatile Organics, Low Level	1	160022	159743	08/03/2006	1156	1.00000
SW-846 8270C	Semivolatile Organics, Low Level	1	160022	159743	08/04/2006	1029	5.00000

Lab ID: 320124-2 Client ID: P-10-2SA Date Recvd: 07/31/2006 Sample Date: 07/31/2006

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
SW-846 3510C	Extraction (Sep. Funnel) SVOC Low Level	1	159743		08/01/2006	1500	
SW-846 8270C	Semivolatile Organics, Low Level	1	160022	159743	08/03/2006	1223	1.00000
SW-846 8270C	Semivolatile Organics, Low Level	1	160022	159743	08/04/2006	1056	4.00000

Lab ID: 320124-3 Client ID: P-10-2SA-DUP Date Recvd: 07/31/2006 Sample Date: 07/31/2006

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED		DILUTION
SW-846 3510C	Extraction (Sep. Funnel) SVOC Low Level	1	159743		08/01/2006	1500	
SW-846 8270C	Semivolatile Organics, Low Level	1	160022	159743	08/03/2006	1036	1.00000
SW-846 8270C	Semivolatile Organics, Low Level	1	160022	159743	08/04/2006	1123	5.00000

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APPENDIX D
TCEQ APPROVED 30-DAY EXTENSION REQUEST FORMS

REQUEST FOR 30 DAY EXTENSION TO STORE HAZARDOUS WASTE WITHOUT A PERMIT

(Please allow ten (10) working days for processing)

1. Solid Waste Registration No.						3	1	5	4	7
2. Texas Waste Code No.				0	9	0	9	1	0	1	H
3. EPA Hazardous Waste No.		F	0	3	4		K	0	0	1
4. Intended waste shipment date	1	2		2	8		2	0	0	6
5. Expiration date of storage	1	1		2	9		2	0	0	6

INFORMATION NEEDED	REQUESTOR'S RESPONSE
6. Facility name	Union Pacific Railroad - Houston Tie Plant
7. Facility contact person (name, phone and fax numbers)	Mr. Geoffrey Reeder, P.G. Phone: 281-350-7197 Fax: 402-233-2351
8. Waste description (amount and type)	Aqueous waste from site investigation activities (i.e., drilling mud).
9. Location of storage facility for waste	near Container Storage Area - NOR 004
10. Description of storage conditions for the waste	25 cubic yard roll-off box, sealed and covered
11. Detailed reason for 30-day extension request*	Site investigative-derived wastes (IDW) were combined during an investigation; confusion over generation source (i.e., in former process areas); IDW did not qualify for "contained-out" determination.
12. TCEQ Regional personnel contacted (if any)	
13. Arrangement for waste shipment (status and Transporter's name)	USA Environment, pending final profile and manifest (est. T&D by 12/28/06).
14. Preventive measures for storage beyond 90 days	Waste stored in secure 25-yd roll-off box, sealed and covered.

**If additional space is needed for response, please attach a separate sheet.*

GENERATOR/REPRESENTATIVE

Date: 112806
Printed Name: Geoffrey Reeder, P.G.
Signature: Geoffrey Reeder Title: Manager of Environmental Site Remediation
Company: Union Pacific Railroad Company
Phone: 281-350-7197 Fax: 402-233-2351
Mailing Address: 24125 Aldine Westfield Road, Spring State: Texas Zip Code: 77373

Please submit the completed form to the I&H Waste Permits Section by facsimile (512) 239-6383) OR mail to I&HW Permits Section, MC-130, Waste Permits Division, TCEQ, P.O. Box 13087, Austin, TX 78711-3087.

TCEQ USE ONLY

Processed by: Jose Martinez
Title: EQS IV
I&HW Permits Section, Waste Permits Division

☑ Granted ☐ Denied
Reason(s) for denial

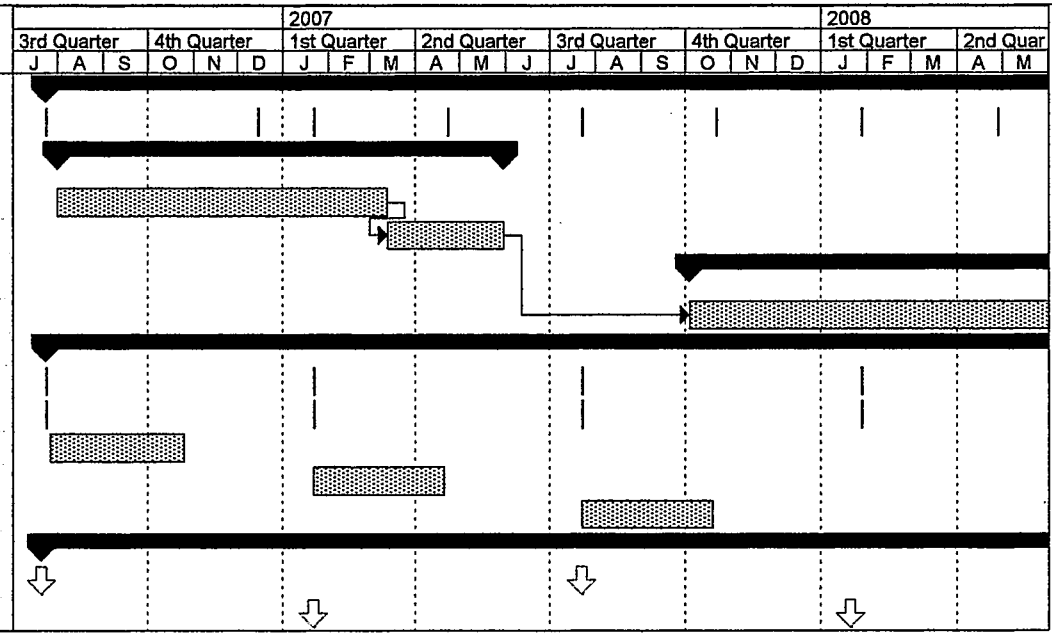
Processed date: 12/04/06
Signature: M. Smith for m

☑ Copy to the TCEQ Region 12 Office of Waste Program

TCEQ-0319 (09/2004)

APPENDIX E
UPDATED COMPLIANCE SCHEDULE

ID	Task Name/Permit or CP Section No.
1	**Facility Management**
2	General Inspection Requirements (quaterly) [Permit Section III.D; Table III.D]
26	**Addendum to the Affected Property Assessment Report (APAR) [Permit Section IX.A; CP Section VIII.D]**
27	Field Investigation Activities
28	Prepare and Submit Addendum to the APAR
29	**Corrective Measures Implementation (CMI)/Response Action Plan (RAP) [CP Section VIII.F]**
30	Prepare and Submit Response Action Plan (RAP)
31	**Ground-Water Monitoring Program [Permit Section VI.A.; CP Section VI.]**
32	Water Level Measurements (Semiannually) [CP Section VI.C.4.a]1
45	Monitoring Well Inspections (Semiannually) [CP Section VI.C.4.a]1
68	Ground Water Sampling and Data Evaluation (2nd 2006 Semiannual) [CP Setion VI.C.2]
69	Ground Water Sampling and Data Evaluation (1st Semiannual) [CP Setion VI.C.2]
70	Ground Water Sampling and Data Evaluation (2nd Semiannual) [CP Setion VI.C.2]
71	**Response and Reporting [Permit Section II.B.7; CP Section VII.)**
72	First Semi-Annual GW Monitoring Report - July 21 [CP Section VII.C.2]
79	Second Semi-Annual GW Monitoring Report - January 21 [CP Section VII.C.2]



Compliance Schedule
UPRR Houston Wood Preserving Works Site
Houston, Texas

Task
Progress
Milestone
Summary
Rolled Up Task
Rolled Up Milestone
Rolled Up Progress
Split
External Tasks
Project Summary
External Milestone
Deadline