Texas Commission on Environmental Quality

Remediation Division Correspondence Identification Form

SITE & PROGRAM AREA IDENTIFICATION

SITE LOCATION

Site Name: Union Pacific Railroad Houston Wood Preserving Works

Address 1: 4910 Liberty Road

Address 2:

Houston State: **Texas**

Zip Code: 77026 County: Harris

TCEQ Region: Houston - 12

REMEDIATION DIVISION PROGRAM AND FACILITY IDENTIFICATION

Is This Site Being Managed Under A State Lead Contract? ☐ Yes ☑ No

Program Area: IHW Corrective Action

Mail Code: MC-127 (IHW)

Is This A New Site To This Program Area? ☐ Yes ☑ No

Additional Information: SWR No. 31547

Additional Information: Permit/ Compliance Plan No. 50343

DOCUMENT(S) IDENTIFICATION

PHASE OF REMEDIATION	DOCUMENT NAME
1. Miscellanous	2024 2nd Semi-Annual Monitoring Report - SWMU 1
2. Please select a phase of remediatic	
3. Please select a phase of remediatic	
4. Please select a phase of remediatic	
5. Please select a phase of remediatic	

CONTACT INFORMATION

☑ I attest that all work has been done in accordance with TCEQ rules ☑ I certify that I am aware misrepresentation of any claim is a violation.

RESPONSIBLE PARTY/APPLICANT/CUSTOMER INFORMATION (IF APPLICABLE)

Union Pacific Railroad

ENVIRONMENTAL CONSULTANT/REPORT PREPARER/AGENT

WSP USA Inc.

SIGNATURES

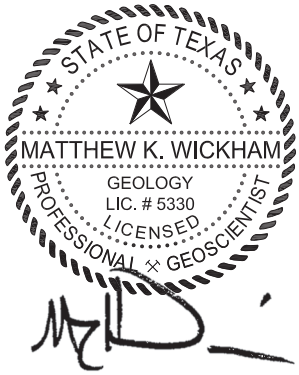
DATABASE CODES

Document No.	TCEQ Database Term	Document No.	TCEQ Database Term
1.		4.	
2.		5.	
3.			

Correction Action Monitoring Report

2024 Second Semi-Annual Event

Closed Surface Impoundment - Solid Waste Management Unit No. 001
Former Houston Wood Preserving Works
4910 Liberty Road
Houston, Texas



01/13/24

Submitted to:

UNION PACIFIC

Submitted by:

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Texas Geoscience Firm No. 50561
Texas Engineering Firm No. 2263

January 16, 2025

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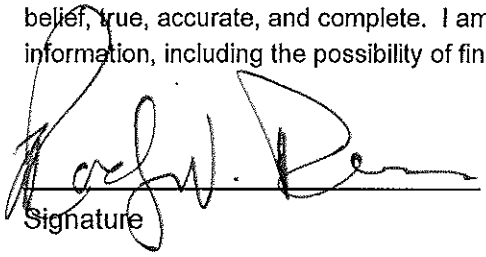
Signature Page

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



Signature

1/16/25

Date

Rodney N. Doerr

Name

VP Safety & Chief Safety Officer

Title

1.0 EXECUTIVE SUMMARY

This semi-annual report presents a summary and evaluation of the Corrective Action Groundwater Monitoring for July through December 2024 for the Closed Surface Impoundment (Solid Waste Management Unit (SWMU) 1) at the former Wood Preserving Works facility (the Site) located in Houston, Texas. The groundwater monitoring activities for this period were performed by WSP USA Inc. (WSP), on behalf of Union Pacific Railroad (UPRR), in July 2024.

The two uppermost groundwater bearing units, the A-Transmissive Zone (A-TZ) and the B-Transmissive Zone (B-TZ), were monitored during this period. Groundwater elevation data collected during the July 2024 sampling event show A-TZ groundwater flow outward from SWMU 1 to the southwest and the northeast at a relatively flat hydraulic gradient of approximately 0.0016 ft/ft. Groundwater flow during the previous event (2024 first semi-annual monitoring event) in the A-TZ was observed to have a hydraulic gradient of approximately 0.013 ft/ft with a general flow towards SWMU 1 from the southeast to the northwest.

Groundwater elevation data collected in the B-TZ during the July 2024 sampling event indicate groundwater flow towards SWMU 1 is from the southeast with a hydraulic gradient of approximately 0.0017 ft/ft. Groundwater flow during the previous event (2024 first semi-annual monitoring event) was observed to have a hydraulic gradient of approximately 0.015 ft/ft with a general flow direction from the east across SWMU 1.

Analytical results from the semi-annual sampling event were compared to Texas Commission on Environmental Quality (TCEQ) Texas Risk Reduction Program (TRRP) Protective Concentration Limits (PCLs) or Groundwater Protection Standards (GWPs), as designated in Section IV.D of the Compliance Plan, dated June 10, 2005. Constituent concentrations were below their respective PCLs during the 2024 second semi-annual monitoring period. All POC monitoring wells in the A-TZ and B-TZ are considered to be compliant for this monitoring period.

2.0 INTRODUCTION

This semi-annual report presents a summary and evaluation of groundwater monitoring data collected during the 2024 second semi-annual monitoring period (July through December) at the Union Pacific Railroad (UPRR) former Houston Wood Preserving Works facility (the Site) located at 4910 Liberty Road in Houston, Texas (Figure 1). 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. Groundwater monitoring at the Site is performed to monitor groundwater quality beneath the Closed Surface Impoundment Unit No. 001 (Solid Waste Management Unit (SWMU) 1).

On behalf of UPRR, WSP USA Inc. (WSP) conducted groundwater monitoring activities at SWMU 1 on July 22 and 23, 2024 (water level measurements and groundwater sampling). Groundwater monitoring activities included sampling and gauging the background and point of compliance (POC) wells and piezometers associated with SWMU 1. The sampling event, analytical data, and data evaluation provided in this report fulfill the semi-annual corrective action reporting requirements for the second half of 2024 as described in the CP, Section VII.C.2. This section requires the following reporting elements:

Semi-Annual Corrective Action Report Requirements	Report Section, Table(s) and/or Figure(s)
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.)	3.0
Summary of Methods utilized for management of recovered/purged water (VII.C.2.b.)	3.2
An updated table and map of the monitoring and corrective action system wells (VII.C.2.c.)	Section 3.1.1 and Figure 2
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.)	Tables 1 & 2 Appendix C
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.)	Table 4
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.)	Figures 3 & 4

Semi-Annual Corrective Action Report Requirements (cont'd)	Report Section, Table(s) and/or Figure(s)
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.)	Not Applicable
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.)	Not Applicable
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.)	Table 5
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.)	Not Applicable
Maps indicating the extent and thickness of the LNAPLs and DNAPLs, if detected (VII.C.2.l.)	Not Detected
An updated schedule summary as required by Section X (VII.C.2.m.)	Appendix D
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.)	None
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.)	None
Corrective Measures Implementation (CMI) Report to be submitted in accordance with Section VIII.F, if necessary (VII.C.2.p.)	Not Applicable
Tabulation of well casing elevations in accordance with Attachment B No. 16 (VII.C.2.q.)	Table 4
Recommendation for any changes (VII.C.2.r.)	None
Certification and well installation diagram for any new well installation or replacement and certification for any well plugging and abandonment (VII.C.2.s.)	Not Applicable
A summary of any activity within an area subject to institutional control (VII.C.2.t.)	None
Any other items requested by the Executive Director (VII.C.2.u.)	None

As of December 2024, a recovery system had not been installed and is not necessary for the regulated unit. Therefore, Provisions 8, 9, and 10 that relate to recovery wells or recovery system, are not applicable for 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.

3.0 2024 SECOND SEMI-ANNUAL GROUNDWATER MONITORING EVENT

A discussion of each of the semi-annual report provisions required by CP Section VII.C.2 is presented below by reference number to the list of provisions in Section 2.0.

3.1 Narrative Summary of Second Semi-Annual Monitoring Activities

The CP requires an evaluation of the Corrective Action Program (Section V) and Groundwater Monitoring Program summarizing the overall effectiveness of the Corrective Action Program (Section VI). This narrative summary includes provisions for response and reporting requirements as detailed in the CP Section VII, as discussed below.

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). These water-bearing zones are defined as:

- 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 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.

The following monitoring 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

WSP performed quarterly inspections of SWMU 1 in July and October 2024 and conducted the second semi-annual groundwater sampling activities on July 22 and 23, 2024. Groundwater sampling was performed using procedures outlined in a U.S. Environmental Protection Agency (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 listed in the CP, Table III (Appendix A).

Monitoring wells are equipped with dedicated polytetrafluoroethylene (PTFE) tubing for groundwater sampling. A peristaltic pump was used to purge and collect 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 each well at a flow rate of less than 0.5 L/min using a flow-through cell. Field parameters including temperature, pH, specific conductivity, dissolved oxygen, and turbidity were measured during purging and sampling activities. When field parameters had

stabilized to the EPA-specified criteria, a sample was then 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 ALS Environmental in Houston, Texas for laboratory analysis. Chain-of-Custody 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 listed in the CP, Table III (Appendix A).

3.2 Purge Water Management

Approximately five gallons of purge water were generated during the 2024 low-flow groundwater sampling event. The purge water was containerized in a Department of Transportation (DOT) certified, 55-gallon steel drum, combined with purge water from site-wide sampling activities, and temporarily stored on site in a fenced and locked container storage area (NOR 007). Wastes generated during the SWMU 1 sampling event in 2024 were transported from the Site by E3 Environmental to the US Ecology Robstown facility, located in Robstown, Texas in October 2024. The waste manifest is provided in Appendix D.

3.3 Monitoring and Corrective Action System Wells

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

3.4 Analytical Results

The 2024 second semi-annual groundwater analytical results from the A-TZ and B-TZ are summarized in Tables 1 and 2, respectively and the laboratory analytical report is provided in Appendix C. The analytical results were compared to the Detected Hazardous and Solid Waste Constituent limits, which are taken from the current TCEQ Texas Risk Reduction Program (TRRP) Tier 1 Protective Concentration Levels (PCLs). TRRP PCLs serve as the Groundwater Protection Standard (GWPS), as detailed in Section IV.D and Table III of the CP. If concentrations exceeded the concentration limits of this report, the concentration is bolded within the table.

Quality assurance/quality control (QA/QC) samples (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 NAPLs 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 or any indication of LNAPL or DNAPL.

3.6 Potentiometric Surface Maps

Groundwater elevation data recorded during the 2024 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.

Based on groundwater elevation data collected in the A-TZ during the July 2024 gauging event, groundwater flows outward from SWMU 1 to the southwest and the northeast at a relatively flat hydraulic gradient of approximately 0.0016 ft/ft. Groundwater flow during the previous event (2024 first semi-annual monitoring event) in the A-TZ was observed to have a hydraulic gradient of approximately 0.013 ft/ft with a general flow direction towards SWMU 1 from the southeast and southwest.

Groundwater elevation data collected in the B-TZ show groundwater flow across SWMU 1 from the southeast with a hydraulic gradient of approximately 0.0017 ft/ft. Groundwater flow during the previous event (2024 first semi-annual monitoring event) was observed to have hydraulic gradient of approximately 0.015 ft/ft with a general flow direction from the east across SWMU 1.

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 nor is necessary at the SWMU 1; therefore, this provision is not applicable.

3.9 Contaminant Mass Recovered

With no groundwater recovery system installed, or necessary, this provision is not applicable for the Site.

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:

- Analytical results may be either directly compared with PCLs (CP Table III; included in Appendix A), or
- Analytical results can be statistically compared with 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 (A-TZ) and 2 (B-TZ) 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.

Based on the analytical results from the monitoring event, the compliance wells completed in both transmissive zones are compliant with GWPSs. Compliance status for each of the monitoring wells is provided in Table 5.

Concentration versus time graphs for COCs in the A-TZ (2-methylnaphthalene (Figure E-1), dibenzofuran (Figure E-2), and naphthalene (Figure E-3)) and the B-TZ (dibenzofuran (Figure E-4) and naphthalene (Figure E-5)) are provided in Appendix E. The graphs demonstrate that COC concentrations in the A-TZ and B-TZ POC wells have shown a steady decrease over time with sporadic detections.

A QA/QC review and Data Usability Summary (DUS) were prepared for the July 2024 analytical data by GHD Services Inc. (Appendix C). The laboratory qualified analytes with concentrations above the sample detection limits (SDLs) but below the method quantitation limits (MQLs) as estimated on analytical tables (Tables 1 and 2). Groundwater samples collected from P10 (WG-1620-P10-20240722 and WG-1620-FD01-20240722) were extracted outside of the established holding time for semi-volatile organic compounds (SVOCs) analysis. The laboratory was contacted and was unable to provide a reason for this exceedance. Associated detected sample results were qualified as estimated; biased low (JL). Associated non-detect sample results were rejected (R).

3.11 Reported Concentration Maps

Reported concentrations of each constituent analyzed for the 2024 second semi-annual monitoring event are presented on Figures 5 and 6 for the A-TZ and B-TZ compliance wells, respectively. Constituent concentrations in the POC and background wells were below PCLs. POC wells have been in compliance with the concentration limits during the last 10 semi-annual sampling events (5 years).

3.12 Extent of NAPL

No measurable amounts of LNAPL or DNAPL were 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. However, a RCRA Part A and Part B Permit Renewal Application with a Major Modification to the Compliance Plan was submitted on December 10, 2014, with revisions dated December 7, 2015, July 29, 2016, June 24, 2017, July 9, 2019, August 31, 2020, October 26, 2020, and January 15, 2021. The TCEQ completed the technical review of the Permit Renewal Application and prepared a preliminary decision and final draft permit. The application is currently in the public comment review period. A Class 1 Permit Modification to update the facility contact information was submitted on February 28, 2018 and approved by the TCEQ in a letter dated March 20, 2018.

3.16 Corrective Measures Implementation (CMI) Report

A Response Action Plan (RAP) was submitted with the Compliance Plan to the TCEQ on December 10, 2014 with revisions dated December 7, 2015, July 29, 2016, June 24, 2017, July 9, 2019, August 31, 2020, October 26, 2020 and January 15, 2021.

3.17 Well Casing Elevations

In accordance with the facility Groundwater Sampling and Analysis Plan (GWSAP) dated May 13, 2004 (Revision 1), which requires SWMU 1 monitoring well elevations to be resurveyed every five years, the six A-TZ and four B-TZ monitoring well elevations were surveyed in December 2020. The top of casing elevations in Table 4 are based on the December 2020 survey.

3.18 Recommendation for Changes

As detailed in a response letter to TCEQ dated August 5, 2020, SWMU 1 will remain in the Corrective Action Program and continue to be evaluated in accordance with Section IV.F.3 of the CP. Once the compliance monitoring objectives are met, UPRR will propose to switch to the compliance monitoring program following issuance of the renewed permit.

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: 2024 Second Semi-Annual Event

Houston Wood Preserving Works
Houston, Texas

Analyte	PCL (mg/L)	Monitoring Well IDs (Concentrations mg/L)																			
		MW-01A			FD-01 (MW-01A)			MW-02			MW-07			MW-08			MW-10A			MW-11A		
		7/23/2024	LQ	VQ	7/23/2024	LQ	VQ	7/22/2024	LQ	VQ	7/22/2024	LQ	VQ	7/23/2024	LQ	VQ	7/22/2024	LQ	VQ	7/22/2024	LQ	VQ
Acenaphthene	1.5	0.047		J	0.12		J	0.016			0.000027	U	U	0.00033			0.0027			0.000079	J	J
Acenaphthylene	1.5	0.00059		J	0.00095		J	0.00015	U	U	0.000015	U	U	0.000015	U	U	0.000076	J	J	0.000015	U	U
Anthracene	7.3	0.0013		J	0.0024		J	0.00036	J	J	0.000034	J	J	0.000014	U	U	0.000049	J	J	0.00010		
bis(2-ethylhexyl)phthalate	0.006	0.000037	U	UJ	0.00014	J	J	0.00037	U	U	0.000037	U	U	0.000037	U	U	0.000037	U	U	0.000051	J	J
Dibenzofuran	0.098	0.017		J	0.043		J	0.00040	J	J	0.000020	U	U	0.000032	J	J	0.0013			0.00014		
Fluoranthene	0.98	0.0018		J	0.0038		J	0.00076	J	J	0.000010	U	U	0.000010	U	U	0.000010	U	U	0.000010	U	U
Fluorene	0.98	0.024		J	0.060		J	0.0088			0.000030	U	U	0.00016			0.0013			0.000095	J	J
2-Methylnaphthalene	0.098	0.025		J	0.069		J	0.0016			0.000019	U	U	0.000038	J	J	0.00091			0.00016		
Naphthalene	0.49	0.019		J	0.041		J	0.0019			0.000048	J	J	0.00017			0.067			0.00060		
Phenanthrene	0.73	0.0050		J	0.0097		J	0.00063	J	J	0.000021	U	U	0.000021	U	U	0.00030			0.000032	J	J
Pyrene	0.73	0.00074		J	0.0015		J	0.00037	J	J	0.000019	U	U	0.000019	U	U	0.000019	U	U	0.000019	U	U

Notes:
PCL = Protective Concentration Level
The Compliance Plan Section IV.D defines the Groundwater Protection Standard (GWPS) as the PCL
FD-01 = Duplicate sample collected at MW-01A

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

VQ - Validation Qualifier
J = Estimated concentration
U = Non-detect due to low concentrations detected in the associated field blank

Table 2
Summary of Analytical Results for the B-Transmissive Zone (B-TZ)
Semiannual Monitoring Report: 2024 Second Semi-Annual Event

Houston Wood Preserving Works
Houston, Texas

Analyte	PCL (mg/L)	Monitoring Well IDs (Concentrations mg/L)														
		MW-10B			MW-11B			P-10			FD-02 (P-10)			P-12		
		7/22/2024	LQ	VQ	7/22/2024	LQ	VQ	7/22/2024	LQ	VQ	7/22/2024	LQ	VQ	7/23/2024	LQ	VQ
Acenaphthene	1.5	0.020			0.082			0.011	H	JL	0.012	H	JL	0.000028	J	J
Acenaphthylene	1.5	0.00020	J	J	0.0011			0.000043	JH	JL	0.000015	HU	R	0.000015	U	U
Anthracene	7.3	0.00081	J	J	0.0027			0.000095	JH	JL	0.00015	H	JL	0.000028	J	J
bis(2-ethylhexyl)phthalate	0.006	0.00037	U	U	0.000037	U	U	0.000037	HU	R	0.000037	HU	R	0.000037	U	U
Dibenzofuran	0.098	0.0060			0.023			0.00027	H	JL	0.00035	H	JL	0.000056	J	J
Di-n-butyl phthalate	2.4	0.00020	U	U	0.000020	U	U	0.000020	HU	R	0.000020	HU	R	0.000041	J	J
Fluoranthene	0.98	0.0013			0.0046			0.00023	H	JL	0.00027	H	JL	0.000010	U	U
Fluorene	0.98	0.010			0.034			0.00010	H	JL	0.00016	H	JL	0.000031	J	J
Naphthalene	0.49	0.044			0.14			0.00074	H	JL	0.00088	H	JL	0.00027		
Phenol	7.3	0.00035	U	U	0.000035	U	U	0.000035	HU	R	0.000035	HU	R	0.000035	U	U
Pyrene	0.73	0.00062	J	J	0.0026			0.00010	H	JL	0.00013	H	JL	0.000019	U	U

Notes:
PCL = Protective Concentration Level
The Compliance Plan Section IV.D defines the Groundwater Protection Standard (GWPS) as the PCL
FD-02 = Duplicate sample collected at P-10

LQ - Lab Qualifier
J = Estimated value between the SDL and the MDQ
U = Value not detected greater than the MQL
H = Sample analyzed outside of holding time

VQ - Validation Qualifier
J = Estimated concentration
JL = Estimated concentration; biased low.
U = Non-detect due to low concentrations detected in the associated field blank
R = Rejected
The sample and duplicate sample collected at P-10 were extracted outside of the established holding time for semi-volitile organic compounds analysis. Associated detected sample results were qualified as estimated; biased low (JL). Associated non-detect sample results were rejected (R).

Table 3
Summary of Analytical Results for Quality Assurance/Quality Control Samples
Semiannual Monitoring Report: 2024 Second Semi-Annual Event

Houston Wood Preserving Works
Houston, Texas

Analyte	P-12(MS)[1]		P-12(MSD)[1]	
	Matrix Spike		Matrix Spike Duplicate	
	7/23/2024		7/23/2024	
Acenaphthene	3.58		3.733	
Acenaphthylene	3.56		3.713	
Anthracene	3.764		4.053	
bis(2-ethylhexyl)phthalate	4.407		4.344	
Dibenzofuran	3.675		3.79	
Fluoranthene	4.189		4.273	
Fluorene	3.899		3.971	
2-Methylnaphthalene	3.859		4.042	
Naphthalene	3.438		3.552	
Phenanthrene	3.782		3.953	
Pyrene	3.951		3.969	

Notes:
PCL = Protective Concentration Level
(1) = P-12(MS) and P-12(MSD) are matrix spike and matrix spike duplicate samples collected at P-12, respectively.
N = Relative percent difference of the MS and MSD exceeds the control limits.

Table 4
Water Level Measurements
Semiannual Monitoring Report: 2024 Second Semi-Annual Event

Houston Wood Preserving Works
Houston, Texas

Well ID	Top of Casing Elevation (TOC) (ft MSL)*	Date Measured	Water Depth (ft. BTOC)	Depth to NAPL (ft. BTOC)	Total Well Depth as Completed (ft. BTOC)	Total Well Depth (ft. BTOC)	Potentiometric Elevation (ft. MSL)
A-TZ Monitoring Locations							
MW-01A	47.85	7/23/2024	2.59	ND	20.2	19.92	45.26
MW-02	47.93	7/22/2024	2.59	ND	20.3	20.04	45.34
MW-07	48.87	7/22/2024	3.35	ND	25.9	24.87	45.52
MW-08	49.30	7/23/2024	3.84	ND	26.8	25.19	45.46
MW-10A	49.91	7/22/2024	4.47	ND	25.9	25.61	45.44
MW-11A	50.21	7/22/2024	4.69	ND	24.4	24.10	45.52
B-TZ Monitoring Locations							
MW-10B	49.85	7/22/2024	4.60	ND	48.8	46.45	45.25
MW-11B	50.09	7/22/2024	4.80	ND	46.8	46.75	45.29
P-10	47.91	7/22/2024	2.34	ND	40.0	42.90	45.57
P-12	48.65	7/23/2024	2.94	ND	40.0	41.43	45.71

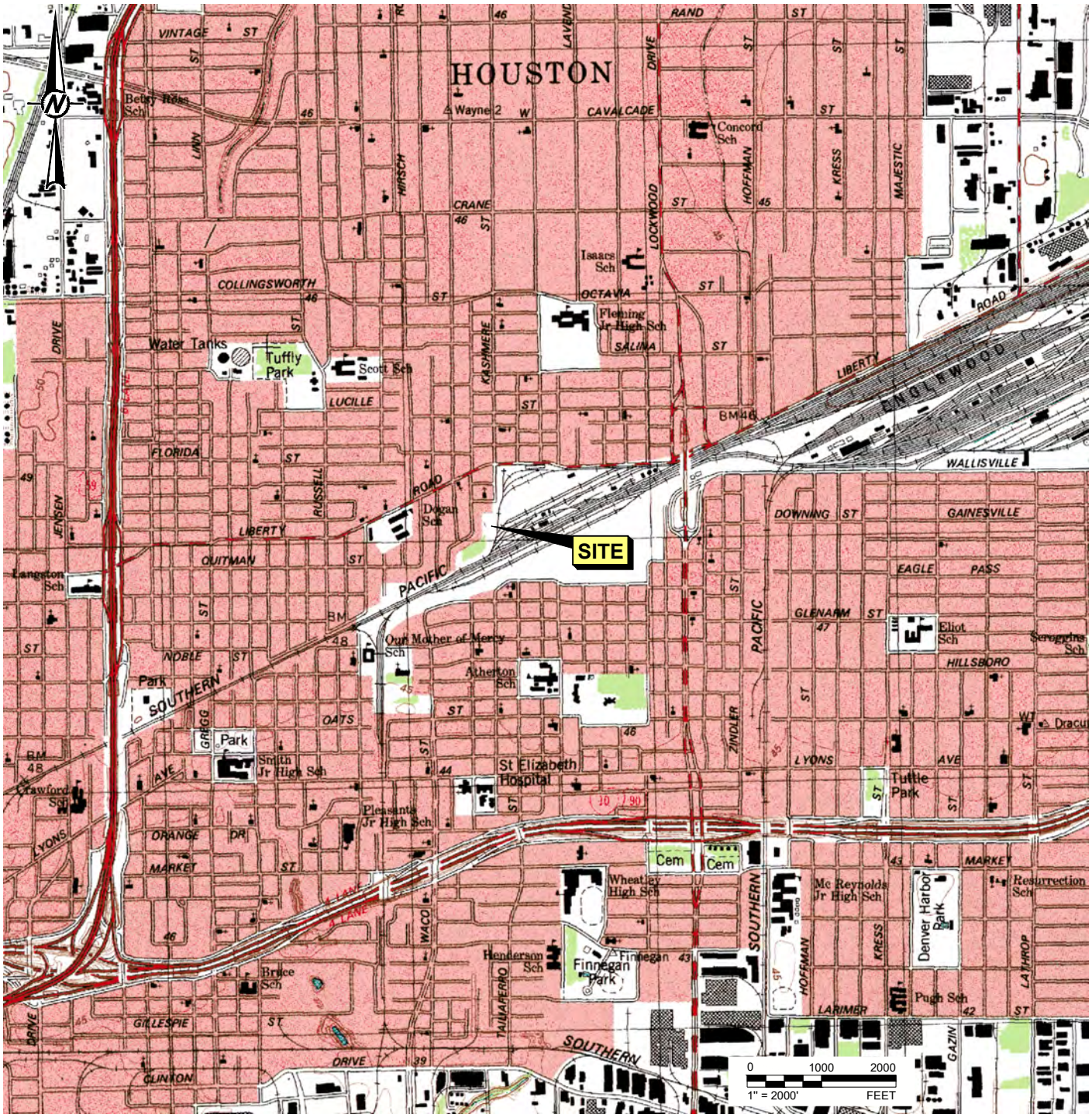
Notes
BTOC = feet below the top of the well casing
ft. MSL = feet above Mean Sea Level
ND = Not Detected
*TOC elevations based on December 2020 survey (see Section 3.17)

Table 5
Compliance Status of Wells and Piezometers
Semiannual Monitoring Report: 2024 First Semi-Annual Event

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



REFERENCE(S)

BASE MAP TAKEN FROM U.S.G.S. 7.5 MINUTE QUADRANGLE, SETTEGAST, TEXAS, 1982

QUADRANGLE LOCATION

CLIENT

UNION PACIFIC RAILROAD CO.

PROJECT

HOUSTON WOOD PRESERVING WORKS

TITLE

SITE LOCATION MAP

CONSULTANT

wsp

YYYY-MM-DD	2024-06-28
DESIGNED	AJD
PREPARED	AJD
REVIEWED	CM
APPROVED	MKW

PROJECT NO. 31406585.016

REV. 0

FIGURE 1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A

0 1 in

Last Edited By: adiamond Date: 2024-06-28 Time:12:35:19 PM | Printed By: adiamond Date: 2024-06-28 Time:12:38:09 PM
Path: \\golder.gds\complexdata\office\Texarkana\Projects - Round Rock_2019\19119232 - HWPWD-Semi-Annual Monitoring Event\SWMU Figures\2024 - 1st Semi-Annual\ | File Name: 001 - Site Location Map.dwg

Last Edited By: adiamond Date: 2024-06-28 Time:12:38:59 PM | Printed By: adiamond Date: 2024-06-28 Time:12:40:49 PM |
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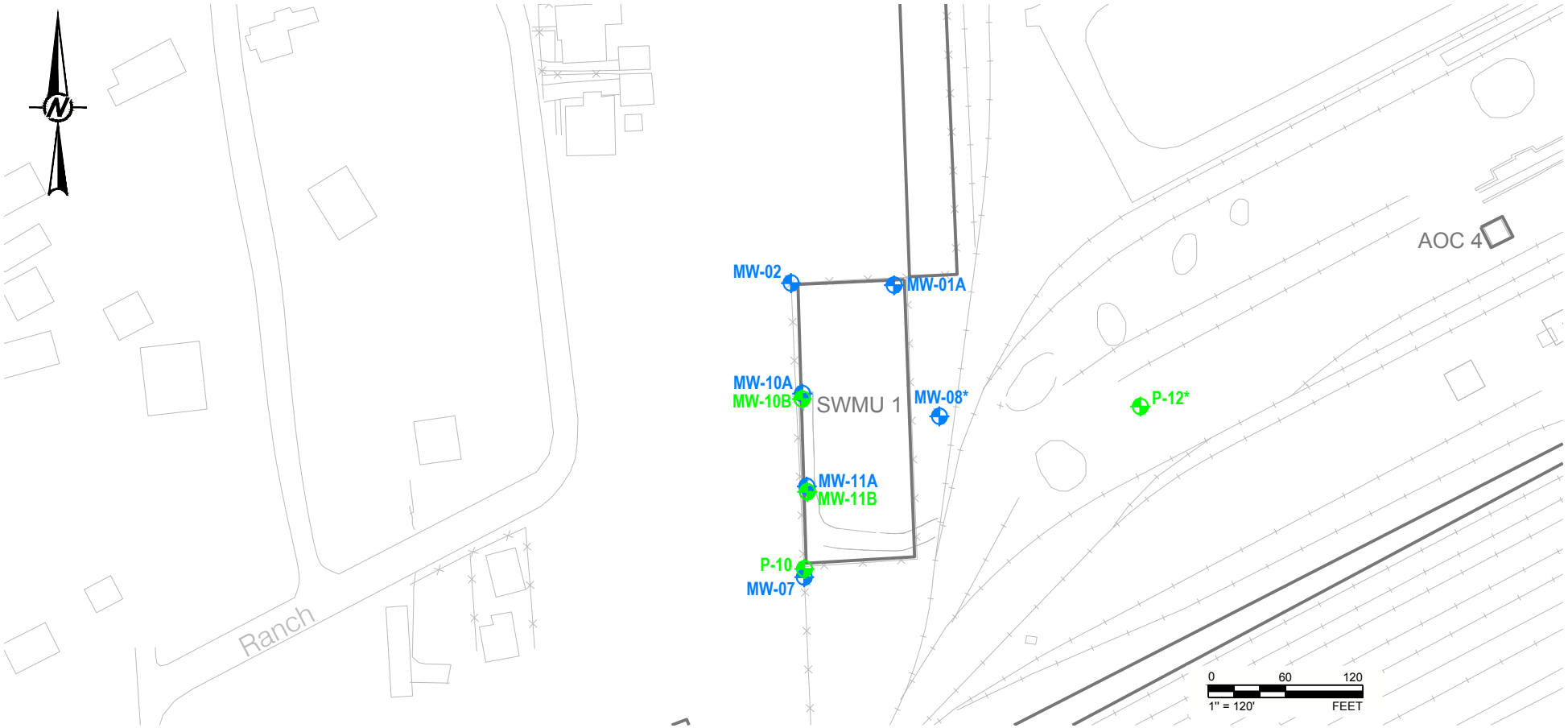


LEGEND

- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION
- B-TZ MONITORING WELL LOCATION

NOTE(S)

1. * BACKGROUND WELL.

REFERENCE(S)

BASE MAP TAKEN FROM ERM-SOUTHWEST, INC 0014419A310.DWG, 6/19/2006.

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
CORRECTIVE ACTION MONITORING WELL NETWORK
TCEQ PERMIT UNIT NO. 1

CONSULTANT

wsp

YYYY-MM-DD	2024-06-28
DESIGNED	AJD
PREPARED	AJD
REVIEWED	CM
APPROVED	MKW

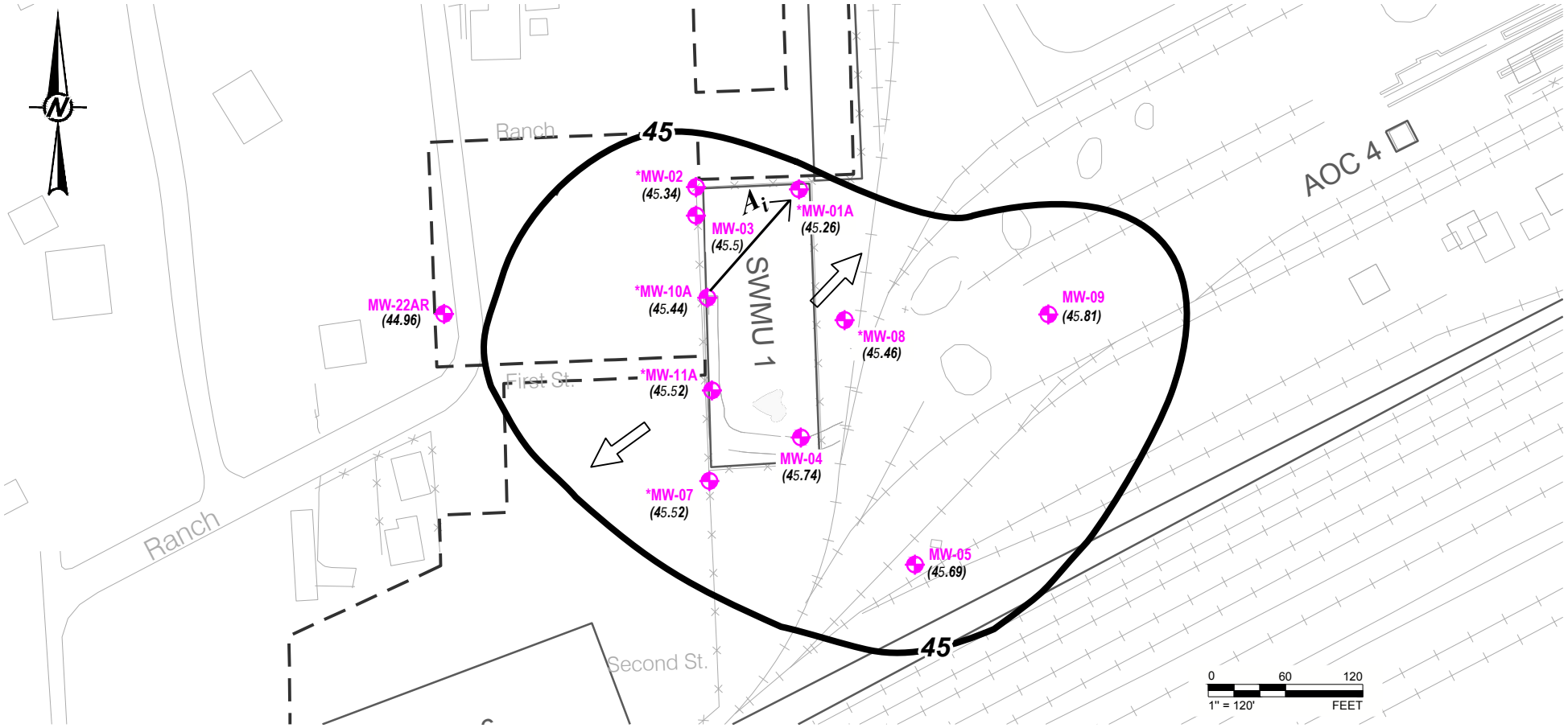
PROJECT NO. 31406585.016 | REV. 0 | FIGURE 2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A

1 in

0

Last Edited By: adiamond Date: 2024-01-04 Time:12:37:18 PM | Printed By: adiamond Date: 2024-01-10 Time:3:44:57 PM |
Path: \\golder.gds\complexdata\office\Texarkana\Projects - Round Rock_2019\19119232 - HWPW\0-Semi-Annual Monitoring Event\SWMU Figures\2023 - 2nd Semi-Annual\ | File Name: 003 - A-TZ Pot Surface Map (SWMU 1) - July 2023.dwg



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION (*-COMPLIANCE WELL)
- (44.62) GROUNDWATER ELEVATION (FT, HVD) (NM = NOT MEASURED)
- 45 GROUNDWATER ELEVATION CONTOUR (FT, HVD) C.I. = 1.0 FT (DASHED WHERE INFERRED)
- INFERRED GROUNDWATER FLOW DIRECTION

ESTIMATED GRADIENT

$A_i \rightarrow A_i = \frac{0.18\ ft}{114\ ft} = 0.0016\ ft/ft$

REFERENCE(S)

BASE MAP TAKEN FROM ERM-SOUTHWEST, INC 0014419a310.DWG, 6/19/2006

STATE OF TEXAS
MATTHEW K. WICKHAM
GEOLOGY
LIC. # 5330
LICENSED
PROFESSIONAL GEOSCIENTIST

01/13/24

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
A-TZ POTENTIOMETRIC SURFACE CONTOUR MAP
JULY 2024

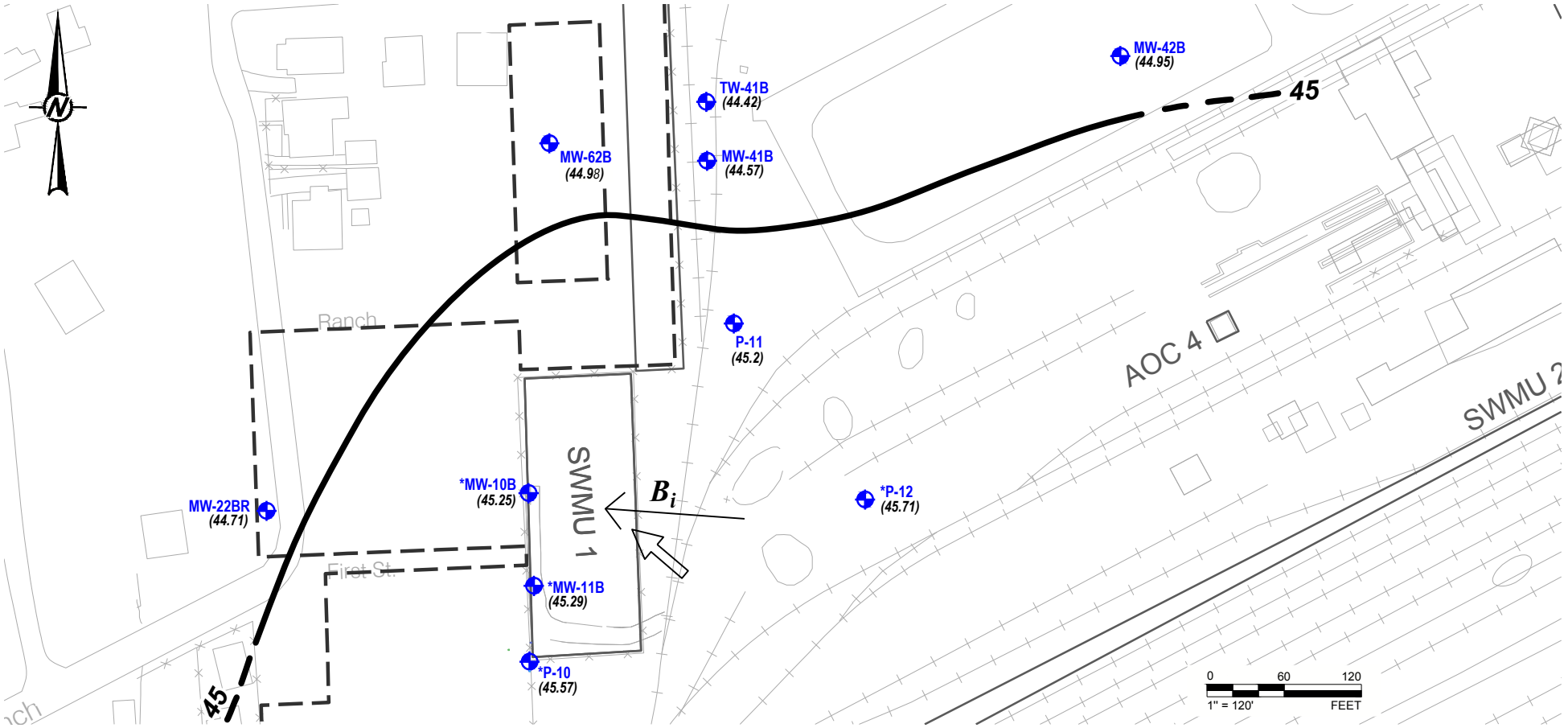
CONSULTANT
wsp
TEXAS GEOSCIENCE FIRM NO. 50561
TEXAS ENGINEERING FIRM NO. 2263

YYYY-MM-DD	2024-12-09
DESIGNED	AJD
PREPARED	RO
REVIEWED	AKS
APPROVED	MWK

PROJECT NO. 31406585.016
REV. 0
FIGURE 3

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A
1 in
0

Last Edited By: adiamond Date: 2024-01-04 Time:12:51:24 PM | Printed By: adiamond Date: 2024-01-10 Time:3:43:28 PM |
Path: \\golder.gds\complexdata\office\Texarkana\Projects - Round Rock_2019\19119232 - HWPW\0-Semi-Annual Monitoring Event\SWMU Figures\2023 - 2nd Semi-Annual\ | File Name: 004 - B-TZ Pot Surface Map (SWMU 1) - July 2023.dwg



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- B-TZ MONITORING WELL LOCATION (*-COMPLIANCE WELL)
- (44.27) GROUNDWATER ELEVATION (FT, HVD) (NM = NOT MEASURED)
- 45 GROUNDWATER ELEVATION CONTOUR (FT, HVD) C.I. = 1.0 FT (DASHED WHERE INFERRED)
- INFERRED GROUNDWATER FLOW DIRECTION

ESTIMATED GRADIENT

$$B_i \rightarrow B_i \quad \frac{0.25\ ft}{144\ ft} = 0.0017\ ft/ft$$

STATE OF TEXAS
MATTHEW K. WICKHAM
GEOLOGY
LIC. # 5330
LICENSED
PROFESSIONAL GEOSCIENTIST

01/13/24

REFERENCE(S)

BASE MAP TAKEN FROM ERM-SOUTHWEST, INC 0014419a310.DWG, 6/19/2006

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

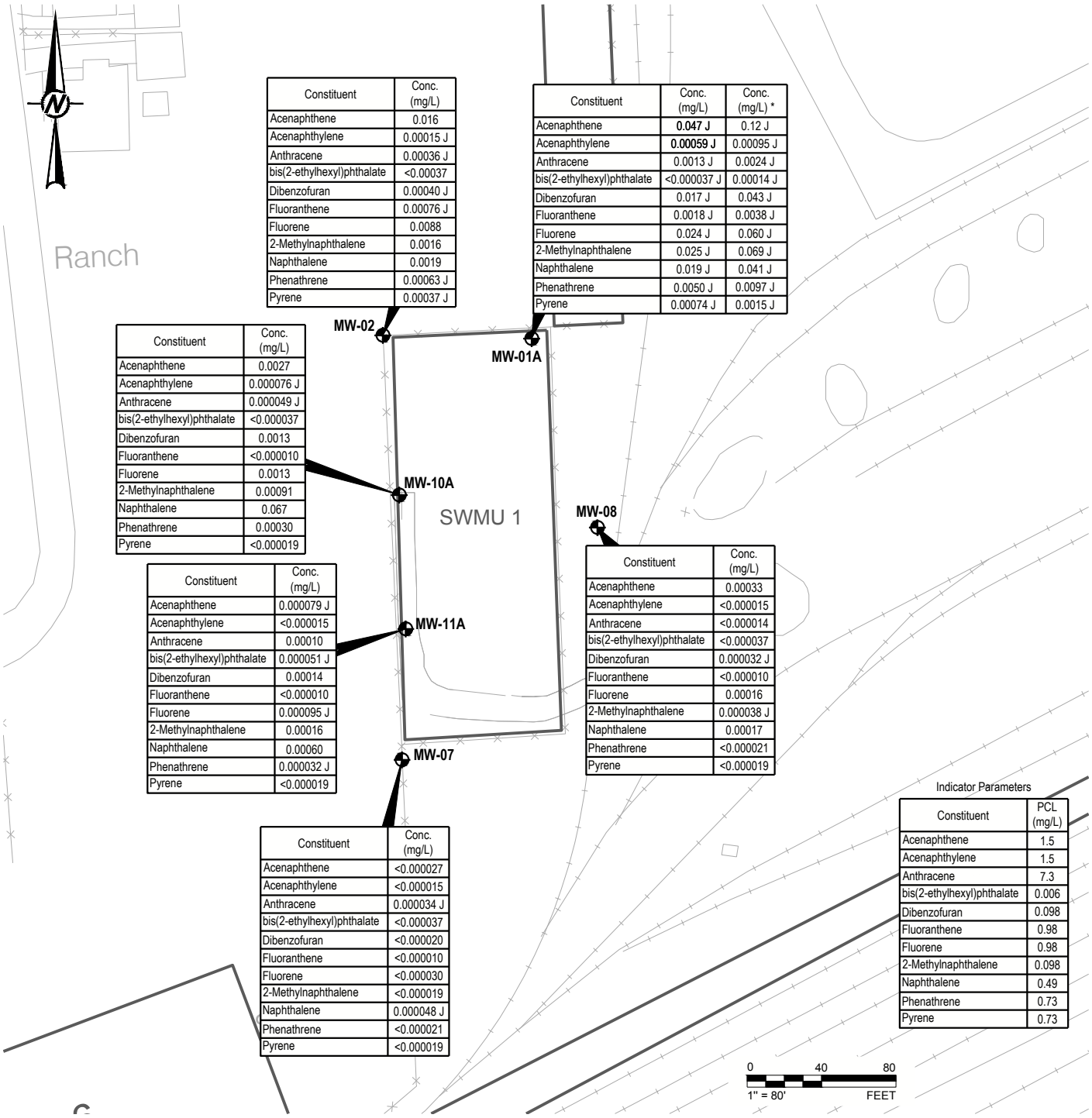
TITLE
B-TZ POTENTIOMETRIC SURFACE CONTOUR MAP
JULY 2024

CONSULTANT
wsp
TEXAS GEOSCIENCE FIRM NO. 50561
TEXAS ENGINEERING FIRM NO. 2263

YYYY-MM-DD	2024-12-09
DESIGNED	AJD
PREPARED	RO
REVIEWED	AKS
APPROVED	MKW

PROJECT NO. 31406585.016
REV. 0
FIGURE 4

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A
1 in
0



Constituent	Conc. (mg/L)
Acenaphthene	0.016
Acenaphthylene	0.00015 J
Anthracene	0.00036 J
bis(2-ethylhexyl)phthalate	<0.00037
Dibenzofuran	0.00040 J
Fluoranthene	0.00076 J
Fluorene	0.0088
2-Methylnaphthalene	0.0016
Naphthalene	0.0019
Phenathrene	0.00063 J
Pyrene	0.00037 J

Constituent	Conc. (mg/L)	Conc. (mg/L) *
Acenaphthene	**0.047 J**	0.12 J
Acenaphthylene	**0.00059 J**	0.00095 J
Anthracene	0.0013 J	0.0024 J
bis(2-ethylhexyl)phthalate	<0.000037 J	0.00014 J
Dibenzofuran	0.017 J	0.043 J
Fluoranthene	0.0018 J	0.0038 J
Fluorene	0.024 J	0.060 J
2-Methylnaphthalene	0.025 J	0.069 J
Naphthalene	0.019 J	0.041 J
Phenathrene	0.0050 J	0.0097 J
Pyrene	0.00074 J	0.0015 J

Constituent	Conc. (mg/L)
Acenaphthene	0.0027
Acenaphthylene	0.000076 J
Anthracene	0.000049 J
bis(2-ethylhexyl)phthalate	<0.000037
Dibenzofuran	0.0013
Fluoranthene	<0.000010
Fluorene	0.0013
2-Methylnaphthalene	0.00091
Naphthalene	0.067
Phenathrene	0.00030
Pyrene	<0.000019

Constituent	Conc. (mg/L)
Acenaphthene	0.000079 J
Acenaphthylene	<0.000015
Anthracene	0.00010
bis(2-ethylhexyl)phthalate	0.000051 J
Dibenzofuran	0.00014
Fluoranthene	<0.000010
Fluorene	0.000095 J
2-Methylnaphthalene	0.00016
Naphthalene	0.00060
Phenathrene	0.000032 J
Pyrene	<0.000019

Constituent	Conc. (mg/L)
Acenaphthene	0.00033
Acenaphthylene	<0.000015
Anthracene	<0.000014
bis(2-ethylhexyl)phthalate	<0.000037
Dibenzofuran	0.000032 J
Fluoranthene	<0.000010
Fluorene	0.00016
2-Methylnaphthalene	0.000038 J
Naphthalene	0.00017
Phenathrene	<0.000021
Pyrene	<0.000019

Constituent	Conc. (mg/L)
Acenaphthene	<0.000027
Acenaphthylene	<0.000015
Anthracene	0.000034 J
bis(2-ethylhexyl)phthalate	<0.000037
Dibenzofuran	<0.000020
Fluoranthene	<0.000010
Fluorene	<0.000030
2-Methylnaphthalene	<0.000019
Naphthalene	0.000048 J
Phenathrene	<0.000021
Pyrene	<0.000019

Indicator Parameters

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

LEGEND

- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION

NOTE(S)

1. SAMPLES COLLECTED IN JULY 2023.
2. J = ESTIMATED VALUE BETWEEN SQL AND MDL.
3. < = VALUE NOT DETECTED GREATER THAN MDL.
4. * = FIELD DUPLICATE.

REFERENCE(S)

BASE MAP TAKEN FROM ERM-SOUTHWEST, INC 0014419a310.DWG, 6/19/2006.

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
A-TZ REPORTED CONCENTRATIONS
2024 2ND SEMI-ANNUAL MONITORING EVENT

CONSULTANT

TEXAS GEOSCIENCE FIRM NO. 50561
TEXAS ENGINEERING FIRM NO. 2263

YYYY-MM-DD	2024-12-09
DESIGNED	AJD
PREPARED	RO
REVIEWED	AKS
APPROVED	MKW

PROJECT NO. 31406585.016 | REV. 0 | FIGURE 5

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A

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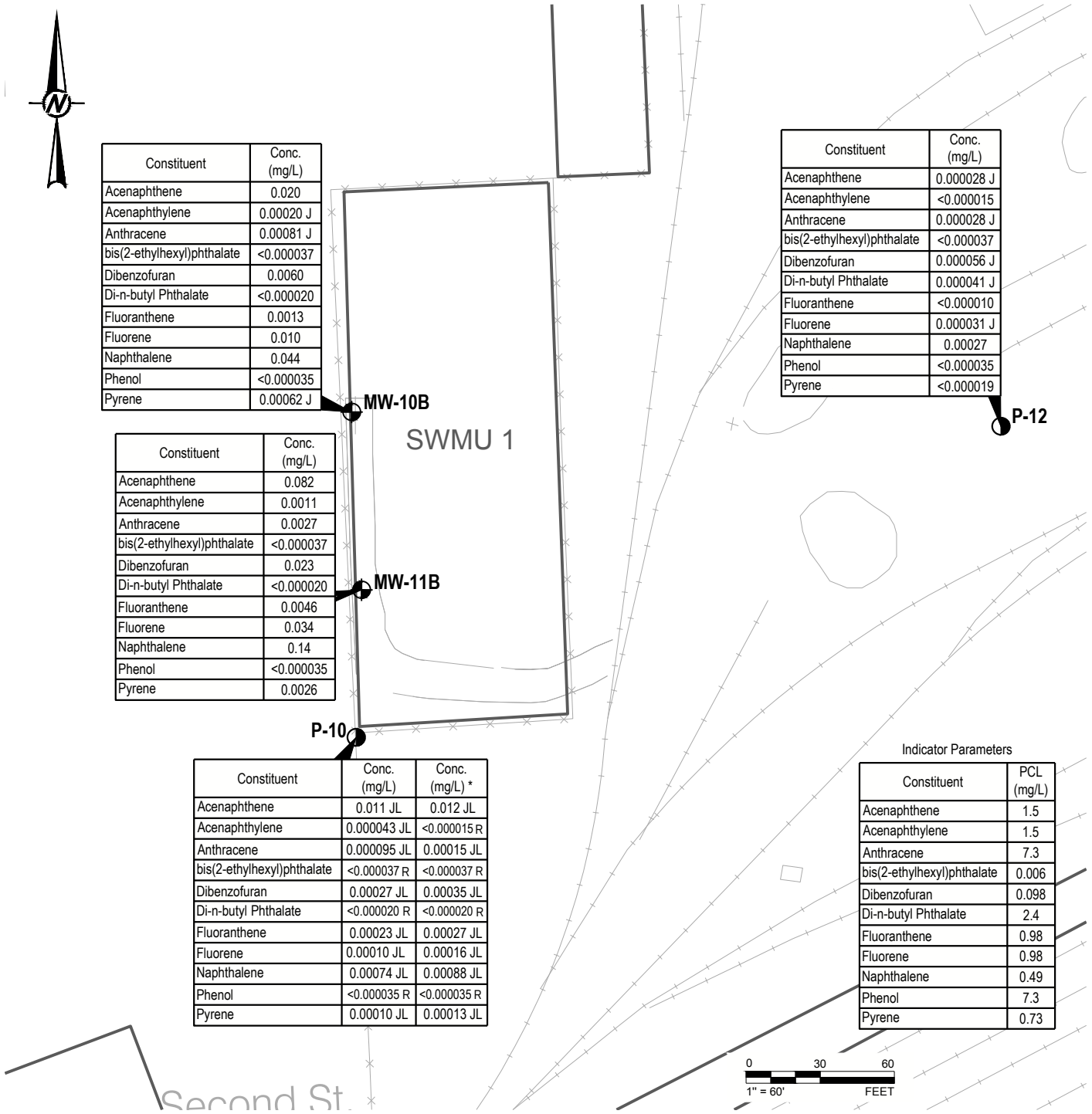

Constituent	Conc. (mg/L)
Acenaphthene	0.020
Acenaphthylene	0.00020 J
Anthracene	0.00081 J
bis(2-ethylhexyl)phthalate	<0.000037
Dibenzofuran	0.0060
Di-n-butyl Phthalate	<0.000020
Fluoranthene	0.0013
Fluorene	0.010
Naphthalene	0.044
Phenol	<0.000035
Pyrene	0.00062 J

Constituent	Conc. (mg/L)
Acenaphthene	0.082
Acenaphthylene	0.0011
Anthracene	0.0027
bis(2-ethylhexyl)phthalate	<0.000037
Dibenzofuran	0.023
Di-n-butyl Phthalate	<0.000020
Fluoranthene	0.0046
Fluorene	0.034
Naphthalene	0.14
Phenol	<0.000035
Pyrene	0.0026

Constituent	Conc. (mg/L)	Conc. (mg/L) *
Acenaphthene	0.011 JL	0.012 JL
Acenaphthylene	0.000043 JL	<0.000015 R
Anthracene	0.000095 JL	0.00015 JL
bis(2-ethylhexyl)phthalate	<0.000037 R	<0.000037 R
Dibenzofuran	0.00027 JL	0.00035 JL
Di-n-butyl Phthalate	<0.000020 R	<0.000020 R
Fluoranthene	0.00023 JL	0.00027 JL
Fluorene	0.00010 JL	0.00016 JL
Naphthalene	0.00074 JL	0.00088 JL
Phenol	<0.000035 R	<0.000035 R
Pyrene	0.00010 JL	0.00013 JL

Constituent	Conc. (mg/L)
Acenaphthene	0.000028 J
Acenaphthylene	<0.000015
Anthracene	0.000028 J
bis(2-ethylhexyl)phthalate	<0.000037
Dibenzofuran	0.000056 J
Di-n-butyl Phthalate	0.000041 J
Fluoranthene	<0.000010
Fluorene	0.000031 J
Naphthalene	0.00027
Phenol	<0.000035
Pyrene	<0.000019

Indicator Parameters

Constituent	PCL (mg/L)
Acenaphthene	1.5
Acenaphthylene	1.5
Anthracene	7.3
bis(2-ethylhexyl)phthalate	0.006
Dibenzofuran	0.098
Di-n-butyl Phthalate	2.4
Fluoranthene	0.98
Fluorene	0.98
Naphthalene	0.49
Phenol	7.3
Pyrene	0.73

LEGEND

- FENCE
- RAILROAD
- B-TZ MONITORING WELL LOCATION
- PIEZOMETER LOCATION

NOTE(S)

1. SAMPLES COLLECTED IN JULY 2024.
2. J = ESTIMATED VALUE BETWEEN SQL AND MDL.
3. JL = ESTIMATED VALUE BETWEEN SQL AND MDL; BIASED LOW.
4. R = VALUE NOT DETECTED GRATER THAN MDL; REJECTED.
5. < = VALUE NOT DETECTED GREATER THAN MDL.
6. * = FIELD DUPLICATE.
7. THE SAMPLE AND DUPLICATE SAMPLE COLLECTED AT P-10 WERE EXTRACTED OUTSIDE OF THE ESTABLISHED HOLDING TIME FOR SEMI-VOLITILE ORGANIC COMPOUNDS ANALYSIS. ASSOCIATED DETECTED SAMPLE RESULTS WERE QUALIFIED AS ESTIMATED; BIASED LOW (JL). ASSOCIATED NON-DETECT SAMPLE RESULTS WERE REJECTED (R).

REFERENCE(S)

BASE MAP TAKEN FROM ERM-SOUTHWEST, INC 0014419a310.DWG, 6/19/2006.

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
B-TZ REPORTED CONCENTRATIONS
2024 2ND SEMI-ANNUAL MONITORING EVENT

CONSULTANT
wsp
TEXAS GEOSCIENCE FIRM NO. 50561
TEXAS ENGINEERING FIRM NO. 2263

YYYY-MM-DD	2024-12-09
DESIGNED	AJD
PREPARED	RO
REVIEWED	AKS
APPROVED	MKW

PROJECT NO. 31406585.016
REV. 0
FIGURE 6

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A

Last Edited By: adiamond Date: 2023-12-04 Time:1:50:59 PM | Printed By: adiamond Date: 2024-01-03 Time:9:22:28 AM
Path: \\golder.gds\complexdata\office\Texarkana\Projects - Round Rock_2019\19119232 - HWPWD-Semi-Annual Monitoring Event\SWMU Figures\2023 - 2nd Semi-Annual\ | File Name: 006 - B-TZ Reported Concentrations 2023 2nd SAME.dwg

APPENDIX A

Compliance Plan Tables

TABLE III - CORRECTIVE ACTION PROGRAM
Table of Detected Hazardous and Solid Waste Constituents 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 30 TAC Chapter 350 for Residential Land Use. 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: 2024 Second Semi-Annual Event

Houston Wood Preserving Works
Houston, Texas

Field Parameter	Monitoring Well IDs									
	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
	7/23/2024	7/22/2024	7/22/2024	7/23/2024	7/22/2024	7/22/2024	7/22/2024	7/22/2024	7/22/2024	7/23/2024
Time Sampled (hrs CST)	7:40	8:15	13:00	9:05	15:50	15:05	16:20	14:35	12:35	9:45
Temperature (ºC)	25.30	24.00	24.73	24.69	25.16	27.48	25.26	25.01	26.41	25.04
pH (Standard Units)	6.17	6.15	6.06	6.42	6.43	6.42	6.45	6.23	6.29	6.63
Specific Conductivity (mmhos/cm)	967	450	809	714	919	799	1,004	948	946	1,040
Dissolved Oxygen (mg/L)	2.31	1.42	1.12	0.99	8.58	0.59	0.54	4.27	0.90	3.40
Turbidity (NTU)	2.1	22.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

APPENDIX C

Laboratory Analytical Reports and Data Usability Summaries

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

August 07, 2024

Manny Higa
WSP Austin
1601 S. MoPac Expressway
Suite 325D
Austin, TX 78746

Work Order: **HS24071389**

Laboratory Results for: **Houston TX-Wood Preserve Works**

Dear Manny Higa ,

ALS Environmental received 12 sample(s) on Jul 23, 2024 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: DAYNA.FISHER
Luis.Aguilar

Client:	WSP Austin	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserve Works	
WorkOrder:	**HS24071389**	

This data package consists of all or some of the following as applicable:

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 Chapter 5,
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) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	WSP Austin
Project:	Houston TX-Wood Preserve Works
WorkOrder:	**HS24071389**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Luis.Aguilar

Laboratory Review Checklist: Reportable Data								
Laboratory Name: ALS Laboratory Group			LRC Date: 08/05/2024					
Project Name: CITGO East Plant GMP 40591508			Laboratory Job Number: HS24041231					
Reviewer Name: Luis Aguilar			Prep Batch Number(s): 210710, R465317, R465436					
#[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 detection 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			
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			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					
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 SDLs?	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					
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 and DCSs 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				1	
		Were all necessary corrective actions performed for the reported data?	X					
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				2	
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				3	

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 08/05/2024				
Project Name: CITGO East Plant GMP 40591508			Laboratory Job Number: HS24041231				
Reviewer Name: Luis Aguilar			Prep Batch Number(s): 210710, R465317, R465436				
#[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 blank (CCB)**					
		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 method?			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 studies?	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 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

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.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 08/05/2024
Project Name: CITGO East Plant GMP 40591508	Laboratory Job Number: HS24041231
Reviewer Name: Luis Aguilar	Prep Batch Number(s): 210710, R465317, R465436

ER#[5]	Description
1	This report was revised 08/05/24 to update to TRRP reporting per client request.
2	Batch R465436, Volatiles by method SW8260, Multiple Samples: Lowest practical dilution due to sample matrix and/or high concentration of non-target analyte(s).
3	Semivolatile Organics Method SW8270; With the exception of 1-Methylnaphthalene, ALS is NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package. Because TCEQ does not offer accreditation for this compound, the results are flagged with n

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.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: WSP Austin
Project: Houston TX-Wood Preserve Works
Work Order: HS24071389

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS24071389-01	WG-1620-P12-20240723	Groundwater		23-Jul-2024 09:45	23-Jul-2024 15:15	☐
HS24071389-02	WG-1620-MW08-20240723	Groundwater		23-Jul-2024 09:05	23-Jul-2024 15:15	☐
HS24071389-03	WG-1620-MW02-20240722	Groundwater		22-Jul-2024 08:15	23-Jul-2024 15:15	☐
HS24071389-04	WS-1620-MW01A-20240723	Groundwater		23-Jul-2024 07:45	23-Jul-2024 15:15	☐
HS24071389-05	WG-1620-FD02-20240723	Groundwater		23-Jul-2024 07:50	23-Jul-2024 15:15	☐
HS24071389-06	WG-1620-MW10B-20240722	Groundwater		22-Jul-2024 16:20	23-Jul-2024 15:15	☐
HS24071389-07	WG-1620-MW11A-20240722	Groundwater		22-Jul-2024 15:05	23-Jul-2024 15:15	☐
HS24071389-08	WG-1620-MW10A-20240722	Groundwater		22-Jul-2024 15:50	23-Jul-2024 15:15	☐
HS24071389-09	WG-1620-MW11B-20240722	Groundwater		22-Jul-2024 14:35	23-Jul-2024 15:15	☐
HS24071389-10	WG-1620-MW07-20240722	Groundwater		22-Jul-2024 13:00	23-Jul-2024 15:15	☐
HS24071389-11	WG-1620-P10-20240722	Groundwater		22-Jul-2024 12:30	23-Jul-2024 15:15	☐
HS24071389-12	WG-1620-FD01-20240722	Groundwater		22-Jul-2024 12:30	23-Jul-2024 15:15	☐

Client: WSP Austin
Project: Houston TX-Wood Preserve Works
Sample ID: WG-1620-P12-20240723
Collection Date: 23-Jul-2024 09:45

ANALYTICAL REPORT
WorkOrder:HS24071389
Lab ID:HS24071389-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 26-Jul-2024		Analyst: EC
Acenaphthene	**0.000028**	J	**0.000027**	**0.00010**	**mg/L**	1	03-Aug-2024 23:56
Acenaphthylene	< 0.000015		0.000015	0.00010	mg/L	1	03-Aug-2024 23:56
Anthracene	**0.000028**	J	**0.000014**	**0.00010**	**mg/L**	1	03-Aug-2024 23:56
Bis(2-ethylhexyl)phthalate	< 0.000037		0.000037	0.00020	mg/L	1	03-Aug-2024 23:56
Dibenzofuran	**0.000056**	J	**0.000020**	**0.00010**	**mg/L**	1	03-Aug-2024 23:56
Di-n-butyl phthalate	**0.000041**	J	**0.000020**	**0.00020**	**mg/L**	1	03-Aug-2024 23:56
Fluoranthene	< 0.000010		0.000010	0.00010	mg/L	1	03-Aug-2024 23:56
Fluorene	**0.000031**	J	**0.000030**	**0.00010**	**mg/L**	1	03-Aug-2024 23:56
Naphthalene	**0.00027**		**0.000020**	**0.00010**	**mg/L**	1	03-Aug-2024 23:56
Phenol	< 0.000035		0.000035	0.00020	mg/L	1	03-Aug-2024 23:56
Pyrene	< 0.000019		0.000019	0.00010	mg/L	1	03-Aug-2024 23:56
Surr: 2,4,6-Tribromophenol	*96.6*			*34-129*	*%REC*	*1*	*03-Aug-2024 23:56*
Surr: 2-Fluorobiphenyl	*85.4*			*40-125*	*%REC*	*1*	*03-Aug-2024 23:56*
Surr: 2-Fluorophenol	*67.8*			*20-120*	*%REC*	*1*	*03-Aug-2024 23:56*
Surr: 4-Terphenyl-d14	*95.7*			*40-135*	*%REC*	*1*	*03-Aug-2024 23:56*
Surr: Nitrobenzene-d5	*69.8*			*41-120*	*%REC*	*1*	*03-Aug-2024 23:56*
Surr: Phenol-d6	*76.5*			*20-120*	*%REC*	*1*	*03-Aug-2024 23:56*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Austin
Project: Houston TX-Wood Preserve Works
Sample ID: WG-1620-MW08-20240723
Collection Date: 23-Jul-2024 09:05

ANALYTICAL REPORT
WorkOrder:HS24071389
Lab ID:HS24071389-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 26-Jul-2024		Analyst: EC
2-Methylnaphthalene	**0.000038**	J	**0.000019**	**0.00010**	**mg/L**	1	03-Aug-2024 23:33
Acenaphthene	**0.00033**		**0.000027**	**0.00010**	**mg/L**	1	03-Aug-2024 23:33
Acenaphthylene	< 0.000015		0.000015	0.00010	mg/L	1	03-Aug-2024 23:33
Anthracene	< 0.000014		0.000014	0.00010	mg/L	1	03-Aug-2024 23:33
Bis(2-ethylhexyl)phthalate	< 0.000037		0.000037	0.00020	mg/L	1	03-Aug-2024 23:33
Dibenzofuran	**0.000032**	J	**0.000020**	**0.00010**	**mg/L**	1	03-Aug-2024 23:33
Fluoranthene	< 0.000010		0.000010	0.00010	mg/L	1	03-Aug-2024 23:33
Fluorene	**0.00016**		**0.000030**	**0.00010**	**mg/L**	1	03-Aug-2024 23:33
Naphthalene	**0.00017**		**0.000020**	**0.00010**	**mg/L**	1	03-Aug-2024 23:33
Phenanthrene	< 0.000021		0.000021	0.00010	mg/L	1	03-Aug-2024 23:33
Pyrene	< 0.000019		0.000019	0.00010	mg/L	1	03-Aug-2024 23:33
Surr: 2-Fluorobiphenyl	*67.9*			*40-125*	*%REC*	*1*	*03-Aug-2024 23:33*
Surr: 4-Terphenyl-d14	*77.9*			*40-135*	*%REC*	*1*	*03-Aug-2024 23:33*
Surr: Nitrobenzene-d5	*55.6*			*41-120*	*%REC*	*1*	*03-Aug-2024 23:33*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Austin
Project: Houston TX-Wood Preserve Works
Sample ID: WG-1620-MW02-20240722
Collection Date: 22-Jul-2024 08:15

ANALYTICAL REPORT
WorkOrder:HS24071389
Lab ID:HS24071389-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 26-Jul-2024		Analyst: EC
2-Methylnaphthalene	**0.0016**		**0.00019**	**0.0010**	**mg/L**	10	06-Aug-2024 16:59
Acenaphthene	**0.016**		**0.00027**	**0.0010**	**mg/L**	10	06-Aug-2024 16:59
Acenaphthylene	< 0.00015		0.00015	0.0010	mg/L	10	06-Aug-2024 16:59
Anthracene	**0.00036**	J	**0.00014**	**0.0010**	**mg/L**	10	06-Aug-2024 16:59
Bis(2-ethylhexyl)phthalate	< 0.00037		0.00037	0.0020	mg/L	10	06-Aug-2024 16:59
Dibenzofuran	**0.00040**	J	**0.00020**	**0.0010**	**mg/L**	10	06-Aug-2024 16:59
Fluoranthene	**0.00076**	J	**0.00010**	**0.0010**	**mg/L**	10	06-Aug-2024 16:59
Fluorene	**0.0088**		**0.00030**	**0.0010**	**mg/L**	10	06-Aug-2024 16:59
Naphthalene	**0.0019**		**0.00020**	**0.0010**	**mg/L**	10	06-Aug-2024 16:59
Phenanthrene	**0.00063**	J	**0.00021**	**0.0010**	**mg/L**	10	06-Aug-2024 16:59
Pyrene	**0.00037**	J	**0.00019**	**0.0010**	**mg/L**	10	06-Aug-2024 16:59
Surr: 2-Fluorobiphenyl	*101*			*40-125*	*%REC*	*10*	*06-Aug-2024 16:59*
Surr: 4-Terphenyl-d14	*116*			*40-135*	*%REC*	*10*	*06-Aug-2024 16:59*
Surr: Nitrobenzene-d5	*84.1*			*41-120*	*%REC*	*10*	*06-Aug-2024 16:59*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Austin
Project: Houston TX-Wood Preserve Works
Sample ID: WS-1620-MW01A-20240723
Collection Date: 23-Jul-2024 07:45

ANALYTICAL REPORT
WorkOrder:HS24071389
Lab ID:HS24071389-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 26-Jul-2024		Analyst: EC
2-Methylnaphthalene	**0.025**		**0.00038**	**0.0020**	**mg/L**	20	06-Aug-2024 17:45
Acenaphthene	**0.047**		**0.00054**	**0.0020**	**mg/L**	20	06-Aug-2024 17:45
Acenaphthylene	**0.00059**		**0.000015**	**0.00010**	**mg/L**	1	06-Aug-2024 16:12
Anthracene	**0.0013**		**0.000014**	**0.00010**	**mg/L**	1	06-Aug-2024 16:12
Bis(2-ethylhexyl)phthalate	< 0.000037		0.000037	0.00020	mg/L	1	06-Aug-2024 16:12
Dibenzofuran	**0.017**		**0.00040**	**0.0020**	**mg/L**	20	06-Aug-2024 17:45
Fluoranthene	**0.0018**		**0.000010**	**0.00010**	**mg/L**	1	06-Aug-2024 16:12
Fluorene	**0.024**		**0.00060**	**0.0020**	**mg/L**	20	06-Aug-2024 17:45
Naphthalene	**0.019**		**0.00040**	**0.0020**	**mg/L**	20	06-Aug-2024 17:45
Phenanthrene	**0.0050**		**0.000021**	**0.00010**	**mg/L**	1	06-Aug-2024 16:12
Pyrene	**0.00074**		**0.000019**	**0.00010**	**mg/L**	1	06-Aug-2024 16:12
Surr: 2-Fluorobiphenyl	*69.2*			*40-125*	*%REC*	*1*	*06-Aug-2024 16:12*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*20*	*06-Aug-2024 17:45*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*20*	*06-Aug-2024 17:45*
Surr: 4-Terphenyl-d14	*83.0*			*40-135*	*%REC*	*1*	*06-Aug-2024 16:12*
Surr: Nitrobenzene-d5	*59.1*			*41-120*	*%REC*	*1*	*06-Aug-2024 16:12*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*20*	*06-Aug-2024 17:45*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Austin
Project: Houston TX-Wood Preserve Works
Sample ID: WG-1620-FD02-20240723
Collection Date: 23-Jul-2024 07:50

ANALYTICAL REPORT
WorkOrder:HS24071389
Lab ID:HS24071389-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 26-Jul-2024		Analyst: EC
2-Methylnaphthalene	**0.069**		**0.00095**	**0.0050**	**mg/L**	50	06-Aug-2024 17:22
Acenaphthene	**0.12**		**0.0014**	**0.0050**	**mg/L**	50	06-Aug-2024 17:22
Acenaphthylene	**0.00095**		**0.000015**	**0.00010**	**mg/L**	1	06-Aug-2024 16:35
Anthracene	**0.0024**		**0.000014**	**0.00010**	**mg/L**	1	06-Aug-2024 16:35
Bis(2-ethylhexyl)phthalate	**0.00014**	J	**0.000037**	**0.00020**	**mg/L**	1	06-Aug-2024 16:35
Dibenzofuran	**0.043**		**0.0010**	**0.0050**	**mg/L**	50	06-Aug-2024 17:22
Fluoranthene	**0.0038**		**0.000010**	**0.00010**	**mg/L**	1	06-Aug-2024 16:35
Fluorene	**0.060**		**0.0015**	**0.0050**	**mg/L**	50	06-Aug-2024 17:22
Naphthalene	**0.041**		**0.0010**	**0.0050**	**mg/L**	50	06-Aug-2024 17:22
Phenanthrene	**0.0097**		**0.000021**	**0.00010**	**mg/L**	1	06-Aug-2024 16:35
Pyrene	**0.0015**		**0.000019**	**0.00010**	**mg/L**	1	06-Aug-2024 16:35
Surr: 2-Fluorobiphenyl	*78.9*			*40-125*	*%REC*	*1*	*06-Aug-2024 16:35*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*50*	*06-Aug-2024 17:22*
Surr: 4-Terphenyl-d14	*82.4*			*40-135*	*%REC*	*1*	*06-Aug-2024 16:35*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*50*	*06-Aug-2024 17:22*
Surr: Nitrobenzene-d5	*67.3*			*41-120*	*%REC*	*1*	*06-Aug-2024 16:35*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*50*	*06-Aug-2024 17:22*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Austin
Project: Houston TX-Wood Preserve Works
Sample ID: WG-1620-MW10B-20240722
Collection Date: 22-Jul-2024 16:20

ANALYTICAL REPORT
WorkOrder:HS24071389
Lab ID:HS24071389-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 26-Jul-2024		Analyst: EC
Acenaphthene	**0.020**		**0.00027**	**0.0010**	**mg/L**	10	05-Aug-2024 19:42
Acenaphthylene	**0.00020**	J	**0.00015**	**0.0010**	**mg/L**	10	05-Aug-2024 19:42
Anthracene	**0.00081**	J	**0.00014**	**0.0010**	**mg/L**	10	05-Aug-2024 19:42
Bis(2-ethylhexyl)phthalate	< 0.00037		0.00037	0.0020	mg/L	10	05-Aug-2024 19:42
Dibenzofuran	**0.0060**		**0.00020**	**0.0010**	**mg/L**	10	05-Aug-2024 19:42
Di-n-butyl phthalate	< 0.00020		0.00020	0.0020	mg/L	10	05-Aug-2024 19:42
Fluoranthene	**0.0013**		**0.00010**	**0.0010**	**mg/L**	10	05-Aug-2024 19:42
Fluorene	**0.010**		**0.00030**	**0.0010**	**mg/L**	10	05-Aug-2024 19:42
Naphthalene	**0.044**		**0.00020**	**0.0010**	**mg/L**	10	05-Aug-2024 19:42
Phenol	< 0.00035		0.00035	0.0020	mg/L	10	05-Aug-2024 19:42
Pyrene	**0.00062**	J	**0.00019**	**0.0010**	**mg/L**	10	05-Aug-2024 19:42
Surr: 2,4,6-Tribromophenol	*115*			*34-129*	*%REC*	*10*	*05-Aug-2024 19:42*
Surr: 2-Fluorobiphenyl	*96.1*			*40-125*	*%REC*	*10*	*05-Aug-2024 19:42*
Surr: 2-Fluorophenol	*78.8*			*20-120*	*%REC*	*10*	*05-Aug-2024 19:42*
Surr: 4-Terphenyl-d14	*128*			*40-135*	*%REC*	*10*	*05-Aug-2024 19:42*
Surr: Nitrobenzene-d5	*76.0*			*41-120*	*%REC*	*10*	*05-Aug-2024 19:42*
Surr: Phenol-d6	*87.3*			*20-120*	*%REC*	*10*	*05-Aug-2024 19:42*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Austin
Project: Houston TX-Wood Preserve Works
Sample ID: WG-1620-MW11A-20240722
Collection Date: 22-Jul-2024 15:05

ANALYTICAL REPORT
WorkOrder:HS24071389
Lab ID:HS24071389-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 26-Jul-2024		Analyst: EC
2-Methylnaphthalene	**0.00016**		**0.000019**	**0.00010**	**mg/L**	1	04-Aug-2024 01:51
Acenaphthene	**0.000079**	J	**0.000027**	**0.00010**	**mg/L**	1	04-Aug-2024 01:51
Acenaphthylene	< 0.000015		0.000015	0.00010	mg/L	1	04-Aug-2024 01:51
Anthracene	**0.00010**		**0.000014**	**0.00010**	**mg/L**	1	04-Aug-2024 01:51
Bis(2-ethylhexyl)phthalate	**0.000051**	J	**0.000037**	**0.00020**	**mg/L**	1	04-Aug-2024 01:51
Dibenzofuran	**0.00014**		**0.000020**	**0.00010**	**mg/L**	1	04-Aug-2024 01:51
Fluoranthene	< 0.000010		0.000010	0.00010	mg/L	1	04-Aug-2024 01:51
Fluorene	**0.000095**	J	**0.000030**	**0.00010**	**mg/L**	1	04-Aug-2024 01:51
Naphthalene	**0.00060**		**0.000020**	**0.00010**	**mg/L**	1	04-Aug-2024 01:51
Phenanthrene	**0.000032**	J	**0.000021**	**0.00010**	**mg/L**	1	04-Aug-2024 01:51
Pyrene	< 0.000019		0.000019	0.00010	mg/L	1	04-Aug-2024 01:51
Surr: 2-Fluorobiphenyl	*75.3*			*40-125*	*%REC*	*1*	*04-Aug-2024 01:51*
Surr: 4-Terphenyl-d14	*85.4*			*40-135*	*%REC*	*1*	*04-Aug-2024 01:51*
Surr: Nitrobenzene-d5	*62.1*			*41-120*	*%REC*	*1*	*04-Aug-2024 01:51*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Austin
Project: Houston TX-Wood Preserve Works
Sample ID: WG-1620-MW10A-20240722
Collection Date: 22-Jul-2024 15:50

ANALYTICAL REPORT
WorkOrder:HS24071389
Lab ID:HS24071389-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 26-Jul-2024		Analyst: EC
2-Methylnaphthalene	**0.00091**		**0.000019**	**0.00010**	**mg/L**	1	04-Aug-2024 02:14
Acenaphthene	**0.0027**		**0.000027**	**0.00010**	**mg/L**	1	04-Aug-2024 02:14
Acenaphthylene	**0.000076**	J	**0.000015**	**0.00010**	**mg/L**	1	04-Aug-2024 02:14
Anthracene	**0.000049**	J	**0.000014**	**0.00010**	**mg/L**	1	04-Aug-2024 02:14
Bis(2-ethylhexyl)phthalate	< 0.000037		0.000037	0.00020	mg/L	1	04-Aug-2024 02:14
Dibenzofuran	**0.0013**		**0.000020**	**0.00010**	**mg/L**	1	04-Aug-2024 02:14
Fluoranthene	< 0.000010		0.000010	0.00010	mg/L	1	04-Aug-2024 02:14
Fluorene	**0.0013**		**0.000030**	**0.00010**	**mg/L**	1	04-Aug-2024 02:14
Naphthalene	**0.067**		**0.0010**	**0.0050**	**mg/L**	50	06-Aug-2024 18:08
Phenanthrene	**0.00030**		**0.000021**	**0.00010**	**mg/L**	1	04-Aug-2024 02:14
Pyrene	< 0.000019		0.000019	0.00010	mg/L	1	04-Aug-2024 02:14
Surr: 2-Fluorobiphenyl	*79.1*			*40-125*	*%REC*	*1*	*04-Aug-2024 02:14*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*50*	*06-Aug-2024 18:08*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*50*	*06-Aug-2024 18:08*
Surr: 4-Terphenyl-d14	*99.9*			*40-135*	*%REC*	*1*	*04-Aug-2024 02:14*
Surr: Nitrobenzene-d5	*67.1*			*41-120*	*%REC*	*1*	*04-Aug-2024 02:14*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*50*	*06-Aug-2024 18:08*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Austin
Project: Houston TX-Wood Preserve Works
Sample ID: WG-1620-MW11B-20240722
Collection Date: 22-Jul-2024 14:35

ANALYTICAL REPORT
WorkOrder:HS24071389
Lab ID:HS24071389-09
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 26-Jul-2024		Analyst: EC
Acenaphthene	**0.082**		**0.0014**	**0.0050**	**mg/L**	50	05-Aug-2024 18:56
Acenaphthylene	**0.0011**		**0.000015**	**0.00010**	**mg/L**	1	03-Aug-2024 21:15
Anthracene	**0.0027**		**0.000014**	**0.00010**	**mg/L**	1	03-Aug-2024 21:15
Bis(2-ethylhexyl)phthalate	< 0.000037		0.000037	0.00020	mg/L	1	03-Aug-2024 21:15
Dibenzofuran	**0.023**		**0.0010**	**0.0050**	**mg/L**	50	05-Aug-2024 18:56
Di-n-butyl phthalate	< 0.000020		0.000020	0.00020	mg/L	1	03-Aug-2024 21:15
Fluoranthene	**0.0046**		**0.000010**	**0.00010**	**mg/L**	1	03-Aug-2024 21:15
Fluorene	**0.034**		**0.0015**	**0.0050**	**mg/L**	50	05-Aug-2024 18:56
Naphthalene	**0.14**		**0.0010**	**0.0050**	**mg/L**	50	05-Aug-2024 18:56
Phenol	< 0.000035		0.000035	0.00020	mg/L	1	03-Aug-2024 21:15
Pyrene	**0.0026**		**0.000019**	**0.00010**	**mg/L**	1	03-Aug-2024 21:15
Surr: 2,4,6-Tribromophenol	*101*			*34-129*	*%REC*	*1*	*03-Aug-2024 21:15*
Surr: 2-Fluorobiphenyl	*78.5*			*40-125*	*%REC*	*1*	*03-Aug-2024 21:15*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*50*	*05-Aug-2024 18:56*
Surr: 2-Fluorophenol	*64.5*			*20-120*	*%REC*	*1*	*03-Aug-2024 21:15*
Surr: 4-Terphenyl-d14	*98.7*			*40-135*	*%REC*	*1*	*03-Aug-2024 21:15*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*50*	*05-Aug-2024 18:56*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*50*	*05-Aug-2024 18:56*
Surr: Nitrobenzene-d5	*70.4*			*41-120*	*%REC*	*1*	*03-Aug-2024 21:15*
Surr: Phenol-d6	*74.9*			*20-120*	*%REC*	*1*	*03-Aug-2024 21:15*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Austin
Project: Houston TX-Wood Preserve Works
Sample ID: WG-1620-MW07-20240722
Collection Date: 22-Jul-2024 13:00

ANALYTICAL REPORT
WorkOrder:HS24071389
Lab ID:HS24071389-10
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 26-Jul-2024		Analyst: EC
2-Methylnaphthalene	< 0.000019		0.000019	0.00010	mg/L	1	03-Aug-2024 21:38
Acenaphthene	< 0.000027		0.000027	0.00010	mg/L	1	03-Aug-2024 21:38
Acenaphthylene	< 0.000015		0.000015	0.00010	mg/L	1	03-Aug-2024 21:38
Anthracene	**0.000034**	J	**0.000014**	**0.00010**	**mg/L**	1	03-Aug-2024 21:38
Bis(2-ethylhexyl)phthalate	< 0.000037		0.000037	0.00020	mg/L	1	03-Aug-2024 21:38
Dibenzofuran	< 0.000020		0.000020	0.00010	mg/L	1	03-Aug-2024 21:38
Fluoranthene	< 0.000010		0.000010	0.00010	mg/L	1	03-Aug-2024 21:38
Fluorene	< 0.000030		0.000030	0.00010	mg/L	1	03-Aug-2024 21:38
Naphthalene	**0.000048**	J	**0.000020**	**0.00010**	**mg/L**	1	03-Aug-2024 21:38
Phenanthrene	< 0.000021		0.000021	0.00010	mg/L	1	03-Aug-2024 21:38
Pyrene	< 0.000019		0.000019	0.00010	mg/L	1	03-Aug-2024 21:38
Surr: 2-Fluorobiphenyl	*89.6*			*40-125*	*%REC*	*1*	*03-Aug-2024 21:38*
Surr: 4-Terphenyl-d14	*103*			*40-135*	*%REC*	*1*	*03-Aug-2024 21:38*
Surr: Nitrobenzene-d5	*75.8*			*41-120*	*%REC*	*1*	*03-Aug-2024 21:38*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Austin
Project: Houston TX-Wood Preserve Works
Sample ID: WG-1620-P10-20240722
Collection Date: 22-Jul-2024 12:30

ANALYTICAL REPORT
WorkOrder:HS24071389
Lab ID:HS24071389-11
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 31-Jul-2024		Analyst: GEY
Acenaphthene	**0.011**	H	**0.00027**	**0.0010**	**mg/L**	10	02-Aug-2024 16:32
Acenaphthylene	**0.000043**	JH	**0.000015**	**0.00010**	**mg/L**	1	01-Aug-2024 19:13
Anthracene	**0.000095**	JH	**0.000014**	**0.00010**	**mg/L**	1	01-Aug-2024 19:13
Bis(2-ethylhexyl)phthalate	< 0.000037	H	0.000037	0.00020	mg/L	1	01-Aug-2024 19:13
Dibenzofuran	**0.00027**	H	**0.000020**	**0.00010**	**mg/L**	1	01-Aug-2024 19:13
Di-n-butyl phthalate	< 0.000020	H	0.000020	0.00020	mg/L	1	01-Aug-2024 19:13
Fluoranthene	**0.00023**	H	**0.000010**	**0.00010**	**mg/L**	1	01-Aug-2024 19:13
Fluorene	**0.00010**	H	**0.000030**	**0.00010**	**mg/L**	1	01-Aug-2024 19:13
Naphthalene	**0.00074**	H	**0.000020**	**0.00010**	**mg/L**	1	01-Aug-2024 19:13
Phenol	< 0.000035	H	0.000035	0.00020	mg/L	1	01-Aug-2024 19:13
Pyrene	**0.00010**	H	**0.000019**	**0.00010**	**mg/L**	1	01-Aug-2024 19:13
Surr: 2,4,6-Tribromophenol	*47.9*			*34-129*	*%REC*	*10*	*02-Aug-2024 16:32*
Surr: 2,4,6-Tribromophenol	*87.0*			*34-129*	*%REC*	*1*	*01-Aug-2024 19:13*
Surr: 2-Fluorobiphenyl	*78.2*			*40-125*	*%REC*	*1*	*01-Aug-2024 19:13*
Surr: 2-Fluorobiphenyl	*68.8*			*40-125*	*%REC*	*10*	*02-Aug-2024 16:32*
Surr: 2-Fluorophenol	*48.6*			*20-120*	*%REC*	*10*	*02-Aug-2024 16:32*
Surr: 2-Fluorophenol	*62.1*			*20-120*	*%REC*	*1*	*01-Aug-2024 19:13*
Surr: 4-Terphenyl-d14	*71.8*			*40-135*	*%REC*	*10*	*02-Aug-2024 16:32*
Surr: 4-Terphenyl-d14	*73.9*			*40-135*	*%REC*	*1*	*01-Aug-2024 19:13*
Surr: Nitrobenzene-d5	*64.8*			*41-120*	*%REC*	*1*	*01-Aug-2024 19:13*
Surr: Nitrobenzene-d5	*75.0*			*41-120*	*%REC*	*10*	*02-Aug-2024 16:32*
Surr: Phenol-d6	*71.9*			*20-120*	*%REC*	*10*	*02-Aug-2024 16:32*
Surr: Phenol-d6	*61.8*			*20-120*	*%REC*	*1*	*01-Aug-2024 19:13*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: WSP Austin
Project: Houston TX-Wood Preserve Works
Sample ID: WG-1620-FD01-20240722
Collection Date: 22-Jul-2024 12:30

ANALYTICAL REPORT
WorkOrder:HS24071389
Lab ID:HS24071389-12
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 31-Jul-2024		Analyst: GEY
Acenaphthene	**0.012**	H	**0.00027**	**0.0010**	**mg/L**	10	02-Aug-2024 16:54
Acenaphthylene	< 0.000015	H	0.000015	0.00010	mg/L	1	01-Aug-2024 19:36
Anthracene	**0.00015**	H	**0.000014**	**0.00010**	**mg/L**	1	01-Aug-2024 19:36
Bis(2-ethylhexyl)phthalate	< 0.000037	H	0.000037	0.00020	mg/L	1	01-Aug-2024 19:36
Dibenzofuran	**0.00035**	H	**0.000020**	**0.00010**	**mg/L**	1	01-Aug-2024 19:36
Di-n-butyl phthalate	< 0.000020	H	0.000020	0.00020	mg/L	1	01-Aug-2024 19:36
Fluoranthene	**0.00027**	H	**0.000010**	**0.00010**	**mg/L**	1	01-Aug-2024 19:36
Fluorene	**0.00016**	H	**0.000030**	**0.00010**	**mg/L**	1	01-Aug-2024 19:36
Naphthalene	**0.00088**	H	**0.000020**	**0.00010**	**mg/L**	1	01-Aug-2024 19:36
Phenol	< 0.000035	H	0.000035	0.00020	mg/L	1	01-Aug-2024 19:36
Pyrene	**0.00013**	H	**0.000019**	**0.00010**	**mg/L**	1	01-Aug-2024 19:36
Surr: 2,4,6-Tribromophenol	*82.1*			*34-129*	*%REC*	*1*	*01-Aug-2024 19:36*
Surr: 2,4,6-Tribromophenol	*56.4*			*34-129*	*%REC*	*10*	*02-Aug-2024 16:54*
Surr: 2-Fluorobiphenyl	*82.3*			*40-125*	*%REC*	*10*	*02-Aug-2024 16:54*
Surr: 2-Fluorobiphenyl	*79.3*			*40-125*	*%REC*	*1*	*01-Aug-2024 19:36*
Surr: 2-Fluorophenol	*49.0*			*20-120*	*%REC*	*1*	*01-Aug-2024 19:36*
Surr: 2-Fluorophenol	*44.4*			*20-120*	*%REC*	*10*	*02-Aug-2024 16:54*
Surr: 4-Terphenyl-d14	*75.1*			*40-135*	*%REC*	*10*	*02-Aug-2024 16:54*
Surr: 4-Terphenyl-d14	*89.5*			*40-135*	*%REC*	*1*	*01-Aug-2024 19:36*
Surr: Nitrobenzene-d5	*61.3*			*41-120*	*%REC*	*1*	*01-Aug-2024 19:36*
Surr: Nitrobenzene-d5	*70.2*			*41-120*	*%REC*	*10*	*02-Aug-2024 16:54*
Surr: Phenol-d6	*44.6*			*20-120*	*%REC*	*10*	*02-Aug-2024 16:54*
Surr: Phenol-d6	*53.5*			*20-120*	*%REC*	*1*	*01-Aug-2024 19:36*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: WSP Austin
Project: Houston TX-Wood Preserve Works
WorkOrder: HS24071389

Batch ID: 215352 **Start Date:** 26 Jul 2024 13:31 **End Date:** 26 Jul 2024 13:31
Method: SV AQ SEP FUN EXTRACT-LOWLEV - 3510C **Prep Code:** 3510_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS24071389-01	1	1000 (mL)	1 (mL)	0.001	1-liter amber glass, Neat
HS24071389-02	1	1000 (mL)	1 (mL)	0.001	1-liter amber glass, Neat
HS24071389-03		1000 (mL)	1 (mL)	0.001	1-liter amber glass, Neat
HS24071389-04	1	1000 (mL)	1 (mL)	0.001	1-liter amber glass, Neat
HS24071389-05	1	1000 (mL)	1 (mL)	0.001	1-liter amber glass, Neat
HS24071389-06	1	1000 (mL)	1 (mL)	0.001	1-liter amber glass, Neat
HS24071389-07	1	1000 (mL)	1 (mL)	0.001	1-liter amber glass, Neat
HS24071389-08	1	1000 (mL)	1 (mL)	0.001	1-liter amber glass, Neat
HS24071389-09	1	1000 (mL)	1 (mL)	0.001	1-liter amber glass, Neat
HS24071389-10	1	1000 (mL)	1 (mL)	0.001	1-liter amber glass, Neat

Batch ID: 215549 **Start Date:** 31 Jul 2024 11:22 **End Date:** 31 Jul 2024 11:22
Method: SV AQ SEP FUN EXTRACT-LOWLEV - 3510C **Prep Code:** 3510_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS24071389-11	1	1000 (mL)	1 (mL)	0.001	1-liter amber glass, Neat
HS24071389-12	1	1000 (mL)	1 (mL)	0.001	1-liter amber glass, Neat

Client: WSP Austin
Project: Houston TX-Wood Preserve Works
WorkOrder: HS24071389

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 215352 (1)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Groundwater	
HS24071389-01	WG-1620-P12-20240723	23 Jul 2024 09:45		26 Jul 2024 13:31	03 Aug 2024 23:56	1
HS24071389-02	WG-1620-MW08-20240723	23 Jul 2024 09:05		26 Jul 2024 13:31	03 Aug 2024 23:33	1
HS24071389-03	WG-1620-MW02-20240722	22 Jul 2024 08:15		26 Jul 2024 07:00	06 Aug 2024 16:59	10
HS24071389-04	WS-1620-MW01A-20240723	23 Jul 2024 07:45		26 Jul 2024 13:31	06 Aug 2024 17:45	20
HS24071389-04	WS-1620-MW01A-20240723	23 Jul 2024 07:45		26 Jul 2024 13:31	06 Aug 2024 16:12	1
HS24071389-05	WG-1620-FD02-20240723	23 Jul 2024 07:50		26 Jul 2024 13:31	06 Aug 2024 17:22	50
HS24071389-05	WG-1620-FD02-20240723	23 Jul 2024 07:50		26 Jul 2024 13:31	06 Aug 2024 16:35	1
HS24071389-06	WG-1620-MW10B-20240722	22 Jul 2024 16:20		26 Jul 2024 13:31	05 Aug 2024 19:42	10
HS24071389-07	WG-1620-MW11A-20240722	22 Jul 2024 15:05		26 Jul 2024 13:31	04 Aug 2024 01:51	1
HS24071389-08	WG-1620-MW10A-20240722	22 Jul 2024 15:50		26 Jul 2024 13:31	06 Aug 2024 18:08	50
HS24071389-08	WG-1620-MW10A-20240722	22 Jul 2024 15:50		26 Jul 2024 13:31	04 Aug 2024 02:14	1
HS24071389-09	WG-1620-MW11B-20240722	22 Jul 2024 14:35		26 Jul 2024 13:31	05 Aug 2024 18:56	50
HS24071389-09	WG-1620-MW11B-20240722	22 Jul 2024 14:35		26 Jul 2024 13:31	03 Aug 2024 21:15	1
HS24071389-10	WG-1620-MW07-20240722	22 Jul 2024 13:00		26 Jul 2024 13:31	03 Aug 2024 21:38	1
Batch ID: 215549 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Groundwater	
HS24071389-11	WG-1620-P10-20240722	22 Jul 2024 12:30		31 Jul 2024 11:22	02 Aug 2024 16:32	10
HS24071389-11	WG-1620-P10-20240722	22 Jul 2024 12:30		31 Jul 2024 11:22	01 Aug 2024 19:13	1
HS24071389-12	WG-1620-FD01-20240722	22 Jul 2024 12:30		31 Jul 2024 11:22	02 Aug 2024 16:54	10
HS24071389-12	WG-1620-FD01-20240722	22 Jul 2024 12:30		31 Jul 2024 11:22	01 Aug 2024 19:36	1

WorkOrder: HS24071389
InstrumentID: SV-8
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Acenaphthene	83-32-9	0.000050	0.00014	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.00014	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.00014	0.000014	0.00010
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.000048	0.000037	0.00020
A	Dibenzofuran	132-64-9	0.000050	0.00014	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.000055	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.00014	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.00014	0.000030	0.00010
A	Naphthalene	91-20-3	0.000050	0.00014	0.000020	0.00010
A	Phenol	108-95-2	0.00010	0.000061	0.000035	0.00020
A	Pyrene	129-00-0	0.000050	0.00014	0.000019	0.00010
A	2-Methylnaphthalene	91-57-6	0.00010	0.000060	0.000019	0.00010
A	Phenanthrene	85-01-8	0.000050	0.00014	0.000021	0.00010
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0.00020
S	2-Fluorobiphenyl	321-60-8	0	0	0	0.00020
S	2-Fluorophenol	367-12-4	0	0	0	0.00020
S	4-Terphenyl-d14	1718-51-0	0	0	0	0.00020
S	Nitrobenzene-d5	4165-60-0	0	0	0	0.00020
S	Phenol-d6	13127-88-3	0	0	0	0.00020

WorkOrder: HS24071389
InstrumentID: SV-7
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Acenaphthene	83-32-9	0.00010	0.00010	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.00010	0.00010	0.000015	0.00010
A	Anthracene	120-12-7	0.00010	0.00013	0.000014	0.00010
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.000087	0.000037	0.00020
A	Dibenzofuran	132-64-9	0.00010	0.00011	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.00012	0.000020	0.00020
A	Fluoranthene	206-44-0	0.00010	0.00014	0.000010	0.00010
A	Fluorene	86-73-7	0.00010	0.00011	0.000030	0.00010
A	Naphthalene	91-20-3	0.00010	0.00011	0.000020	0.00010
A	Phenol	108-95-2	0.00010	0.000095	0.000035	0.00020
A	Pyrene	129-00-0	0.00010	0.00013	0.000019	0.00010
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0.00020
S	2-Fluorobiphenyl	321-60-8	0	0	0	0.00020
S	2-Fluorophenol	367-12-4	0	0	0	0.00020
S	4-Terphenyl-d14	1718-51-0	0	0	0	0.00020
S	Nitrobenzene-d5	4165-60-0	0	0	0	0.00020
S	Phenol-d6	13127-88-3	0	0	0	0.00020

Client: WSP Austin
Project: Houston TX-Wood Preserve Works
WorkOrder: HS24071389

QC BATCH REPORT

Batch ID: 215352 (1) **Instrument: SV-8** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-215352** Units: **ug/L** Analysis Date: **05-Aug-2024 12:48**
Client ID: Run ID: **SV-8_473690** SeqNo: **8175688** PrepDate: **26-Jul-2024** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	< 0.019	0.10								
Acenaphthene	< 0.027	0.10								
Acenaphthylene	< 0.015	0.10								
Anthracene	< 0.014	0.10								
Bis(2-ethylhexyl)phthalate	< 0.037	0.20								
Dibenzofuran	< 0.020	0.10								
Di-n-butyl phthalate	< 0.020	0.20								
Fluoranthene	< 0.010	0.10								
Fluorene	< 0.030	0.10								
Naphthalene	< 0.020	0.10								
Phenanthrene	< 0.021	0.10								
Phenol	< 0.035	0.20								
Pyrene	< 0.019	0.10								
Surr: 2,4,6-Tribromophenol	*5.056*	*0.20*	*5*	*0*	*101*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.721*	*0.20*	*5*	*0*	*94.4*	*40 - 125*				
Surr: 2-Fluorophenol	*4.056*	*0.20*	*5*	*0*	*81.1*	*20 - 120*				
Surr: 4-Terphenyl-d14	*5.009*	*0.20*	*5*	*0*	*100*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.969*	*0.20*	*5*	*0*	*79.4*	*41 - 120*				
Surr: Phenol-d6	*4.491*	*0.20*	*5*	*0*	*89.8*	*20 - 120*				

Client: WSP Austin
Project: Houston TX-Wood Preserve Works
WorkOrder: HS24071389

QC BATCH REPORT

Batch ID: 215352 (1) **Instrument: SV-8** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCS Sample ID: **LCS-215352** Units: **ug/L** Analysis Date: **05-Aug-2024 13:11**
Client ID: Run ID: **SV-8_473690** SeqNo: **8175689** PrepDate: **26-Jul-2024** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	4.131	0.10	5	0	82.6	50 - 120				
Acenaphthene	3.808	0.10	5	0	76.2	45 - 120				
Acenaphthylene	3.91	0.10	5	0	78.2	47 - 120				
Anthracene	4.101	0.10	5	0	82.0	45 - 120				
Bis(2-ethylhexyl)phthalate	4.394	0.20	5	0	87.9	40 - 139				
Dibenzofuran	3.936	0.10	5	0	78.7	50 - 120				
Di-n-butyl phthalate	4.499	0.20	5	0	90.0	45 - 123				
Fluoranthene	4.17	0.10	5	0	83.4	45 - 125				
Fluorene	4.1	0.10	5	0	82.0	49 - 120				
Naphthalene	3.684	0.10	5	0	73.7	45 - 120				
Phenanthrene	3.992	0.10	5	0	79.8	45 - 121				
Phenol	3.784	0.20	5	0	75.7	20 - 124				
Pyrene	3.873	0.10	5	0	77.5	40 - 130				
Surr: 2,4,6-Tribromophenol	*4.719*	*0.20*	*5*	*0*	*94.4*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.153*	*0.20*	*5*	*0*	*83.1*	*40 - 125*				
Surr: 2-Fluorophenol	*3.602*	*0.20*	*5*	*0*	*72.0*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.383*	*0.20*	*5*	*0*	*87.7*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.554*	*0.20*	*5*	*0*	*71.1*	*41 - 120*				
Surr: Phenol-d6	*3.872*	*0.20*	*5*	*0*	*77.4*	*20 - 120*				

Client: WSP Austin
Project: Houston TX-Wood Preserve Works
WorkOrder: HS24071389

QC BATCH REPORT

Batch ID: 215352 (1) **Instrument: SV-8** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MS Sample ID: **HS24071213-09MS** Units: **ug/L** Analysis Date: **05-Aug-2024 15:29**
Client ID: Run ID: **SV-8_473690** SeqNo: **8176487** PrepDate: **26-Jul-2024** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	3.859	0.10	5	0	77.2	50 - 120				
Acenaphthene	3.58	0.10	5	0	71.6	45 - 120				
Acenaphthylene	3.56	0.10	5	0	71.2	47 - 120				
Anthracene	3.764	0.10	5	0	75.3	45 - 120				
Bis(2-ethylhexyl)phthalate	4.407	0.20	5	0	88.1	40 - 139				
Dibenzofuran	3.675	0.10	5	0	73.5	50 - 120				
Di-n-butyl phthalate	4.451	0.20	5	0	89.0	45 - 123				
Fluoranthene	4.189	0.10	5	0	83.8	45 - 125				
Fluorene	3.899	0.10	5	0	78.0	49 - 120				
Naphthalene	3.438	0.10	5	0.02299	68.3	45 - 120				
Phenanthrene	3.782	0.10	5	0	75.6	45 - 121				
Phenol	2.084	0.20	5	0	41.7	20 - 124				
Pyrene	3.951	0.10	5	0	79.0	40 - 130				
Surr: 2,4,6-Tribromophenol	*4.903*	*0.20*	*5*	*0*	*98.1*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.01*	*0.20*	*5*	*0*	*80.2*	*40 - 125*				
Surr: 2-Fluorophenol	*3.558*	*0.20*	*5*	*0*	*71.2*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.632*	*0.20*	*5*	*0*	*92.6*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.581*	*0.20*	*5*	*0*	*71.6*	*41 - 120*				
Surr: Phenol-d6	*1.577*	*0.20*	*5*	*0*	*31.5*	*20 - 120*				

Client: WSP Austin
Project: Houston TX-Wood Preserve Works
WorkOrder: HS24071389

QC BATCH REPORT

Batch ID: 215352 (1) **Instrument: SV-8** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MSD Sample ID: **HS24071213-09MSD** Units: **ug/L** Analysis Date: **05-Aug-2024 15:52**
Client ID: Run ID: **SV-8_473690** SeqNo: **8176488** PrepDate: **26-Jul-2024** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
2-Methylnaphthalene	4.042	0.10	5	0	80.8	50 - 120	3.859	4.63	20	
Acenaphthene	3.733	0.10	5	0	74.7	45 - 120	3.58	4.18	20	
Acenaphthylene	3.713	0.10	5	0	74.3	47 - 120	3.56	4.2	20	
Anthracene	4.053	0.10	5	0	81.1	45 - 120	3.764	7.39	20	
Bis(2-ethylhexyl)phthalate	4.344	0.20	5	0	86.9	40 - 139	4.407	1.45	20	
Dibenzofuran	3.79	0.10	5	0	75.8	50 - 120	3.675	3.1	20	
Di-n-butyl phthalate	4.502	0.20	5	0	90.0	45 - 123	4.451	1.16	20	
Fluoranthene	4.273	0.10	5	0	85.5	45 - 125	4.189	1.98	20	
Fluorene	3.971	0.10	5	0	79.4	49 - 120	3.899	1.83	20	
Naphthalene	3.552	0.10	5	0.02299	70.6	45 - 120	3.438	3.28	20	
Phenanthrene	3.953	0.10	5	0	79.1	45 - 121	3.782	4.42	20	
Phenol	3.542	0.20	5	0	70.8	20 - 124	2.084	51.8	20	R
Pyrene	3.969	0.10	5	0	79.4	40 - 130	3.951	0.464	20	
Surr: 2,4,6-Tribromophenol	*5.088*	*0.20*	*5*	*0*	*102*	*34 - 129*	*4.903*	*3.7*	*20*	
Surr: 2-Fluorobiphenyl	*4.06*	*0.20*	*5*	*0*	*81.2*	*40 - 125*	*4.01*	*1.24*	*20*	
Surr: 2-Fluorophenol	*3.556*	*0.20*	*5*	*0*	*71.1*	*20 - 120*	*3.558*	*0.0592*	*20*	
Surr: 4-Terphenyl-d14	*4.351*	*0.20*	*5*	*0*	*87.0*	*40 - 135*	*4.632*	*6.25*	*20*	
Surr: Nitrobenzene-d5	*3.43*	*0.20*	*5*	*0*	*68.6*	*41 - 120*	*3.581*	*4.3*	*20*	
Surr: Phenol-d6	*3.852*	*0.20*	*5*	*0*	*77.0*	*20 - 120*	*1.577*	*83.8*	*20*	R

The following samples were analyzed in this batch:

HS24071389-01	HS24071389-02	HS24071389-03	HS24071389-04
HS24071389-05	HS24071389-06	HS24071389-07	HS24071389-08
HS24071389-09	HS24071389-10		

Client: WSP Austin
Project: Houston TX-Wood Preserve Works
WorkOrder: HS24071389

QC BATCH REPORT

Batch ID: 215549 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-215549** Units: **ug/L** Analysis Date: **01-Aug-2024 15:28**
Client ID: Run ID: **SV-7_473554** SeqNo: **8173139** PrepDate: **31-Jul-2024** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	< 0.027	0.10								
Acenaphthylene	< 0.015	0.10								
Anthracene	< 0.014	0.10								
Bis(2-ethylhexyl)phthalate	< 0.037	0.20								
Dibenzofuran	< 0.020	0.10								
Di-n-butyl phthalate	< 0.020	0.20								
Fluoranthene	< 0.010	0.10								
Fluorene	< 0.030	0.10								
Naphthalene	< 0.020	0.10								
Phenol	< 0.035	0.20								
Pyrene	< 0.019	0.10								
Surr: 2,4,6-Tribromophenol	*2.781*	*0.20*	*5*	*0*	*55.6*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.758*	*0.20*	*5*	*0*	*75.2*	*40 - 125*				
Surr: 2-Fluorophenol	*3.518*	*0.20*	*5*	*0*	*70.4*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.251*	*0.20*	*5*	*0*	*85.0*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.138*	*0.20*	*5*	*0*	*62.8*	*41 - 120*				
Surr: Phenol-d6	*3.275*	*0.20*	*5*	*0*	*65.5*	*20 - 120*				

Client: WSP Austin
Project: Houston TX-Wood Preserve Works
WorkOrder: HS24071389

QC BATCH REPORT

Batch ID: 215549 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCS Sample ID: **LCS-215549** Units: **ug/L** Analysis Date: **01-Aug-2024 15:51**
Client ID: Run ID: **SV-7_473554** SeqNo: **8173228** PrepDate: **31-Jul-2024** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	3.809	0.10	5	0	76.2	45 - 120				
Acenaphthylene	3.84	0.10	5	0	76.8	47 - 120				
Anthracene	3.732	0.10	5	0	74.6	45 - 120				
Bis(2-ethylhexyl)phthalate	3.774	0.20	5	0	75.5	40 - 139				
Dibenzofuran	4.029	0.10	5	0	80.6	50 - 120				
Di-n-butyl phthalate	3.714	0.20	5	0	74.3	45 - 123				
Fluoranthene	3.835	0.10	5	0	76.7	45 - 125				
Fluorene	4.25	0.10	5	0	85.0	49 - 120				
Naphthalene	3.591	0.10	5	0	71.8	45 - 120				
Phenol	4.197	0.20	5	0	83.9	20 - 124				
Pyrene	3.533	0.10	5	0	70.7	40 - 130				
Surr: 2,4,6-Tribromophenol	*4.678*	*0.20*	*5*	*0*	*93.6*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.259*	*0.20*	*5*	*0*	*85.2*	*40 - 125*				
Surr: 2-Fluorophenol	*3.809*	*0.20*	*5*	*0*	*76.2*	*20 - 120*				
Surr: 4-Terphenyl-d14	*3.718*	*0.20*	*5*	*0*	*74.4*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.216*	*0.20*	*5*	*0*	*84.3*	*41 - 120*				
Surr: Phenol-d6	*3.993*	*0.20*	*5*	*0*	*79.9*	*20 - 120*				

Client: WSP Austin
Project: Houston TX-Wood Preserve Works
WorkOrder: HS24071389

QC BATCH REPORT

Batch ID: 215549 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCSD Sample ID: **LCSD-215549** Units: **ug/L** Analysis Date: **01-Aug-2024 16:15**
Client ID: Run ID: **SV-7_473554** SeqNo: **8173229** PrepDate: **31-Jul-2024** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Acenaphthene	3.875	0.10	5	0	77.5	45 - 120	3.809	1.72	20	
Acenaphthylene	3.795	0.10	5	0	75.9	47 - 120	3.84	1.17	20	
Anthracene	3.971	0.10	5	0	79.4	45 - 120	3.732	6.2	20	
Bis(2-ethylhexyl)phthalate	3.591	0.20	5	0	71.8	40 - 139	3.774	4.98	20	
Dibenzofuran	3.948	0.10	5	0	79.0	50 - 120	4.029	2.03	20	
Di-n-butyl phthalate	3.674	0.20	5	0	73.5	45 - 123	3.714	1.08	20	
Fluoranthene	3.742	0.10	5	0	74.8	45 - 125	3.835	2.46	20	
Fluorene	4.182	0.10	5	0	83.6	49 - 120	4.25	1.61	20	
Naphthalene	3.584	0.10	5	0	71.7	45 - 120	3.591	0.21	20	
Phenol	4.088	0.20	5	0	81.8	20 - 124	4.197	2.63	20	
Pyrene	3.524	0.10	5	0	70.5	40 - 130	3.533	0.254	20	
Surr: 2,4,6-Tribromophenol	*4.279*	*0.20*	*5*	*0*	*85.6*	*34 - 129*	*4.678*	*8.91*	*20*	
Surr: 2-Fluorobiphenyl	*4.093*	*0.20*	*5*	*0*	*81.9*	*40 - 125*	*4.259*	*3.97*	*20*	
Surr: 2-Fluorophenol	*3.548*	*0.20*	*5*	*0*	*71.0*	*20 - 120*	*3.809*	*7.1*	*20*	
Surr: 4-Terphenyl-d14	*3.802*	*0.20*	*5*	*0*	*76.0*	*40 - 135*	*3.718*	*2.23*	*20*	
Surr: Nitrobenzene-d5	*4.128*	*0.20*	*5*	*0*	*82.6*	*41 - 120*	*4.216*	*2.1*	*20*	
Surr: Phenol-d6	*3.967*	*0.20*	*5*	*0*	*79.3*	*20 - 120*	*3.993*	*0.656*	*20*	

The following samples were analyzed in this batch: HS24071389-11 HS24071389-12

Client: WSP Austin
Project: Houston TX-Wood Preserve Works
WorkOrder: **HS24071389**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arizona	AZ0793	27-May-2025
Arkansas	88-00356_2024	27-Mar-2025
California	2919; 2025	30-Apr-2025
Illinois	2000322023-11	31-Jul-2025
Kentucky	123043	30-Apr-2025
Louisiana	03087 2023-2024	30-Jun-2025
Maine	2024017	23-Jun-2026
Michigan	9971	30-Apr-2025
Nebraska	NE-OS-25-13	30-Apr-2025
New Jersey	TX008	30-Jun-2025
North Carolina	624 - 2024	31-Dec-2024
Oklahoma	2023-140	31-Aug-2024
Pennsylvania	018	30-Jun-2025
Tennessee	04016	30-Apr-2025
Texas	T104704231 TX-C24-00130	30-Apr-2025
Utah	TX026932023-14	31-Jul-2025

Sample Receipt Checklist

Work Order ID: HS24071389 **Date/Time Received:** **23-Jul-2024 15:15**

Client Name: PBW **Received by:** **Donald Gilmore**

Completed By:	/S/ Nilesh D. Ranchod	24-Jul-2024 17:44	**Reviewed by:**	/S/ Luis.Aguilar	29-Jul-2024 10:20
	eSignature	Date/Time		eSignature	Date/Time

Matrices: **WATER** Carrier name: **ALS Courier**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:058013
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.6c/1.6c , 0.9c/0.9c UC/C	IR 34	
Cooler(s)/Kit(s):	52369/51836		
Date/Time sample(s) sent to storage:	07/24/2024 18:00		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

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Holland, MI +1 616 399 6070

Chain of Custody Form

Page 1 of 1

COC ID: 058013

WSP Austin
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information			
Purchase Order		Project Name	Houston TX Wood Preserving Works	A	ATZ Site Wide
Work Order		Project Number	1620-20 SR 92688	B	BTZ Site Wide
Company Name	WSP / Golder	Bill To Company	Union Pacific Railroad	C	
Send Report To	Eric Mortenson Emanuel Higa	Invoice Attn	Accounts Payable	D	
Address		Address	1400 Douglas St Stop 0750	E	
				F	
City/State/Zip		City/State/Zip		G	
Phone		Phone		H	
Fax		Fax		I	
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	W6-1620-P12-20240723	7/23/24	945	GW		2	X	X									
2	W6-1620-MW08-20240723	7/23/24	905			2	X	X									
3	W6-1620-MW02-20240723	7/22/24	815			2	X	X									
4	W6-1620-MW10A-20240723	7/23/24	745			2	X	X									
5	W6-1620-FD02-20240723	7/23/24	750			2	X	X									
6	W6-1620-MW10B-20240723	7/23/24	1620			2	X	X									
7	W6-1620-MW11A-20240722	7/22/24	1505			2	X	X									
8	W6-1620-MW10A-20240722	7/22/24	1550			2	X	X									
9	W6-1620-MW11B-20240722	7/22/24	1435			2	X	X									
10	W6-1620-MW07-20240722	7/22/24	1300	GW		2	X	X									

Sampler(s) Please Print & Sign: Leon St Rose

Shipment Method: Pick up

Turnaround Time in Business Days (BD): ☐ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
	7/23/24	1345	
Relinquished by:	Date:	Time:	Received by (Laboratory):
	7.23.24	1515	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes:

Cooler ID	Cooler Temp.
51836	0.9
52369	1.6

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Date ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other _____

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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York, PA +1 717 505 5280

Chain of Custody Form

Page 1 of 1

COC ID: 057977

ALS Project Manager:		ALS Work Order #:	

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Houston TX Wood Preserving	A	ATZ Site wide
Work Order		Project Number	1620-20 SR92685	B	BTZ Site wide
Company Name	WSP Golder	Bill To Company	Union Pacific Railroad	C	
Send Report To	Eric Materner	Invoice Attn	Accounts payable A/P	D	
Address	Emanuel Hig e	Address	1400 Douglas St Stop 0750	E	
				F	
City/State/Zip		City/State/Zip		G	
Phone		Phone		H	
Fax		Fax		I	
e-Mail Address		e-Mail Address		J	

HS2407138 9
WSP Austin
Houston TX-Wood Preserve Works

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H
1	WG-1620-PID-20240722	7/22/24	1230	GW	—	2	X	X						
2	WG-1620-FD01-20240722	7/22/24	1230	GW	—	2	X	X						
3														
4														
5														
6														
7														
8														
9														
10														

Sampler(s) Please Print & Sign: Leon Stayer

Shipment Method: Pickup

Turnaround Time in Business Days (BD): ☐ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
	7/23/24	1345	
Relinquished by:	Date:	Time:	Received by (Laboratory):
	7·23·24	1515	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

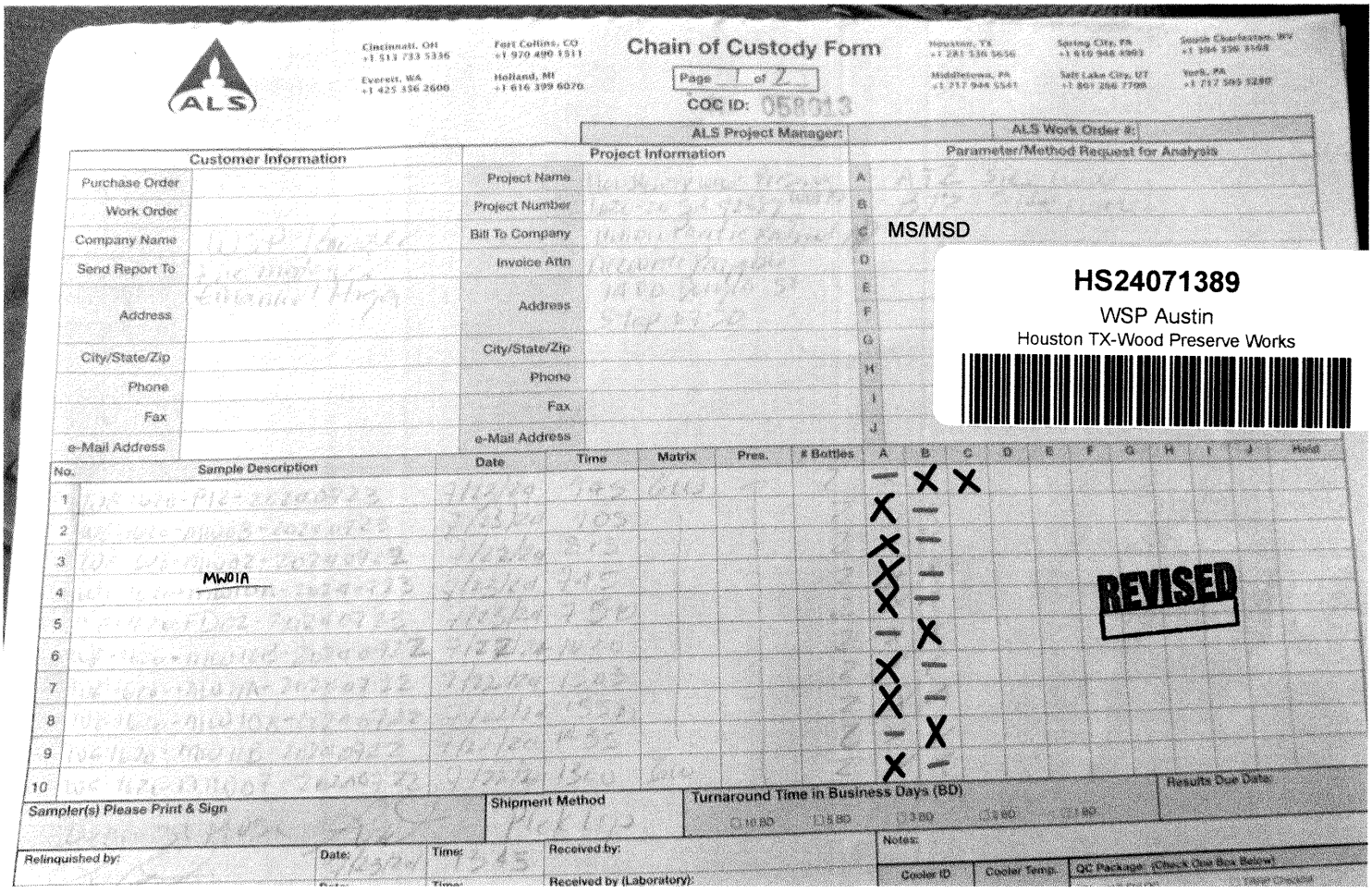
Notes:

Cooler ID	Cooler Temp.
52364	1.6
51836	0.9

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Date ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.



ALS

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Chain of Custody Form

Page 1 of 2

COC ID: 058013

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis
Purchase Order		Project Name		A
Work Order		Project Number		B
Company Name		Bill To Company		C MS/MSD
Send Report To		Invoice Attn		D
Address		Address		E
				F
City/State/Zip		City/State/Zip		G
Phone		Phone		H
Fax		Fax		I
e-Mail Address		e-Mail Address		J

HS24071389

WSP Austin

Houston TX-Wood Preserve Works

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1							—	X	X								
2							X	—									
3							X	—									
4	MW01A						X	—									
5							—	X									
6							X	—									
7							X	—									
8							—	X									
9							X	—									
10																	

REVISED

Sampler(s) Please Print & Sign	Shipment Method	Turnaround Time in Business Days (BD)	Results Due Date:
		☐ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD	

Relinquished by:	Date:	Time:	Received by:	Notes:
			Received by (Laboratory):	Cooler ID / Cooler Temp. / QC Package: (Check One Box Below)

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Salt Lake City, UT +1 801 266 7700
South Charleston, WV +1 304 356 3168
York, PA +1 717 505 5280

Chain of Custody Form

COC ID: 057977

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name		A	
Work Order		Project Number		B	
Company Name		Bill To Company		C	
Send Report To		Invoice Attn		D	
Address		Address		E	
				F	
City/State/Zip		City/State/Zip		G	
Phone		Phone		H	
Fax		Fax		I	
e-Mail Address		e-Mail Address		J	

HS24071389
WSP Austin
Houston TX-Wood Preserve Works

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1								X									
2								X									
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

REVISED

Sampler(s) Please Print & Sign | Shipment Method | Turnaround Time in Business Days (BD) ☐ 10 BD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD | Results Due Date:

Relinquished by:	Date:	Time:	Received by:	Notes:
Relinquished by:	Date:	Time:	Received by (Laboratory):	Cooler ID / Cooler Temp.
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	QC Package: (Check One Box Below) ☐ Level II Std QC ☐ Level II Std QC/Raw Data ☐ Level IV SW846/CLP ☐ TRRP Checklist ☐ TRRP Level IV ☐ Other

Data Validation Report

November 15, 2024

To	Matthew Wickham (matthew.wickham@wsp.com)	**Project No.**	12653513.06.1620
Copy to	Jesse Orth, Julie Lidstone	**DVR No.**	20
From	Chris G. Knight/eew	**Contact No.**	512-777-5833
Project Name	UPRR - Various Data Mgmt	**Email**	christopher.knight@ghd.com
Subject	Data Usability Summary HWPW - Semiannual SWMU No. 1 Monitoring Event Union Pacific Railroad (UPRR)/Houston TX-Wood Preserving Works Houston, Texas July 2024		

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

1. Scope of Data Usability Summary

This document details a Data Usability Summary (DUS) of analytical results for samples collected in support of the HWPW - Semiannual SWMU No. 1 Monitoring Event at the UPRR/Houston TX-Wood Preserving Works site during July 2024. Samples were submitted to ALS Global, located in Houston, Texas and are reported in data packages HS24071389 and HS24071568. The intended use of the data is to support the HWPW - Semiannual SWMU No. 1 Monitoring Event at the site by providing current concentrations of chemicals of concern.

Data were reviewed and validated by Chris G. Knight of GHD Services Inc. (GHD)., in accordance with Title 30 of the Texas Risk Reduction Program (TRRP) Texas Administrative Code Section 350.54 (30 TAC 350.54) as described in the Texas Commission on Environmental Quality (TCEQ) Regulatory Guidance document entitled "Review and Reporting of COC Concentration Data under TRRP", (RG-366/TRRP-13), revised May 2010, herein referred to as "TRRP-13 Guidance". Evaluation of the data was based on information obtained from the chain of custody forms, finished report forms, method blank data, recovery data from surrogate spikes/laboratory control samples (LCS)/matrix spikes (MS), field quality assurance/quality control (QA/QC) samples, the laboratory review checklist (LRC), and the laboratory exception reports (ER).

A sample collection and analysis summary are presented in Table 1. This summary provides a cross-reference of field sample identification numbers and location identification. Each sample is assigned a unique field identification number.

The validated sample results are presented in Table 2. A summary of the analytical methodology is presented in Table 3. Each data packages includes a cross-reference list of field sample identifications to laboratory sample designations.

2. Laboratory Qualifications

The Laboratory's quality assurance program is consistent with the quality standards outlined in the National Environmental Laboratory Accreditation Program (NELAP). This laboratory was accredited under Texas Certification number # T104704231 at the time the analysis was performed, and the certificate is included in Attachment A.

3. Project Objectives

3.1 Sampling/Analytical QA/QC Objectives

The QA/QC program was designed to identify contamination resulting from the sampling, sample transport and analytical process through the analysis of a field blank sample, field duplicate sample sets, and method blanks. The QA/QC program was designed to evaluate the quality of the resulting data with respect to bias and precision through analysis of LCS and MS analyses.

4. Data Review/Validation Results

4.1 Sample Holding Time and Preservation

Samples were shipped with chains of custody and the paperwork was filled out properly. All samples were properly preserved, delivered on ice, and stored by the laboratory at the required temperature (0-6°C).

Sample chain of custody documents and analytical reports were used to determine sample holding times. Most samples were prepared and analyzed within the required holding times. The following exceptions were noted (see Table 4):

i.) WG-1620-P10-20240722 and WG-1620-FD01-20240722 were extracted outside of the established holding time for semi-volatile organic compounds (SVOCs) analysis. The laboratory was contacted and was unable to provide a reason for this exceedance. Associated detected sample results were qualified as estimated; biased low (JL). Associated non-detect sample results were rejected (R).

4.2 Sample Containers

Sample containers used were certified pre-cleaned glass containers provided by the laboratory. These containers meet or exceed analyte specifications established in the United States Environmental Protection Agency (USEPA) *Specifications and Guidance for Contaminant-Free Sample Containers*.

4.3 Calibrations

According to the LRC, initial calibration and continuing calibration data met the criteria for the selected methods.

4.4 Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures. As these were not discrete samples managed in the field, these blanks are not listed on the sample identification cross-reference list found in the data packages.

For this summary, laboratory method blanks were analyzed at a minimum frequency of one per analytical batch and results are reported in the laboratory data packages.

The method blank results were non-detect or below the method quantitation limit (MQL), indicating that laboratory contamination was not a factor for this investigation.

4.5 Internal Standard and Surrogate Spike Recoveries

Recoveries of internal standards are addressed in the LRC of the data packages. All internal standard recoveries associated with the compounds of interest were acceptable per the LRC.

In accordance with the methods employed, all samples, blanks, and QC samples analyzed for organic determinations are spiked with the appropriate number of surrogate compounds prior to sample extraction and analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project. Each individual surrogate compound is expected to meet the laboratory control limits. According to the TRRP-13 Guidelines, one outlying surrogate is acceptable for methods with multiple surrogate spike compounds if the recovery is at least ten percent.

Surrogate recoveries were assessed against laboratory control limits and/or the guidance in TRRP-13. Samples analyzed at elevated sample dilutions (five times or greater) were not assessed. All surrogate recoveries met the above criteria.

4.6 Laboratory Control Sample Analyses

LCS or LCS/laboratory control sample duplicates (LCSD) are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects. The relative percent difference (RPD) of the LCS/LCSD recoveries is used to evaluate analytical precision.

For this study, LCS or LCS/LCSD were analyzed at a minimum frequency of one per analytical batch.

The LCS or LCS/LCSD contained all compounds of interest. All LCS recoveries and RPDs were within the laboratory control limits, demonstrating acceptable analytical accuracy and/or precision (where applicable).

4.7 Matrix Spike Analyses

To evaluate the effects of sample matrices on the preparation process, measurement procedures, and accuracy of a particular analysis, samples are spiked with a known concentration of the analytes of concern and analyzed as MS/matrix spike duplicate (MSD) samples. The RPD between the MS and MSD is used to assess analytical precision.

The laboratory performed MS/MSD analyses on non-site samples. These cannot be used to assess accuracy and precision for the site samples.

4.8 Field QA/QC Samples

The field QA/QC consisted of one field blank sample and two field duplicate sample sets.

Field Blank Sample Analysis

To assess ambient conditions at the site, one field blank samples were submitted for SVOCs analysis. All results were non-detect for the compounds of interest.

Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, two field duplicate sample sets were collected and submitted to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples must be less than thirty percent for water samples. The RPDs are only used when sample concentrations are above the estimated regions of detection.

Field duplicate summary data are presented in Table 2. Most field duplicate results met the above criteria demonstrating acceptable sampling and analytical precision. The following outliers were noted (see Table 5):

i.) WG-1620-P10-20240722 and WG-1620-FD01-20240722 were reported with variability in the following compounds: acenaphthylene, anthracene, and fluoranthene. All associated sample results were qualified as estimated. Results where both compound results were previously rejected were not assessed.

ii.) WS-1620-MW01A-20240723 and WG-1620-FD02-20240723 were reported with variability in the multiple SVOCs. All associated sample results were qualified as estimated.

4.9 Field Procedures

WSP USA, Inc. collected groundwater and surface water samples in accordance with their Standard Operating Procedures (SOP) for sample collection.

4.10 Analyte Reporting

The laboratory reported detected results for each analyte down to the sample detection limit (SDL), which is defined as the method detection limit (MDL) with sample-specific adjustments for dilutions, aliquot size, volumes, etc. Positive analyte detections less than the MQL but greater than the SDL were qualified as estimated (J) in Table 2 unless qualified otherwise in this report.

i.) WG-1620-MW02-20240722 and WG-1620-MW10B-20240722 were analyzed at the lowest practical dilution for SVOCs analysis due to elevated concentrations of target and/or non-target compounds resulting in elevated reporting limits. No further action was required

All detectability check standard (DCS) results supported the laboratory MDLs.

5. Conclusion

Based on the assessment detailed in the foregoing, the analytical data summarized in Table 2 are usable for the purpose of supporting the HWPW - Semiannual SWMU No. 1 Monitoring Event at the site with the specific exceptions and qualifications noted herein.

Regards

Chris G. Knight
NA Environmental – Mid-Con / Chemistry Data Validator / Analytical Coordinator / Chemistry Team Lead

Table 1

Sample Collection and Analysis Summary
Semiannual SWMU No. 1 Monitoring Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2024

					Analysis/Parameters	
Sample Identification	**Location**	**Matrix**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**SVOCs**	**Comments**
WG-1620-MW02-20240722	MW-02	Water	07/22/2024	08:15	X	
WG-1620-P10-20240722	P-10	Water	07/22/2024	12:30	X	
WG-1620-FD01-20240722	P-10	Water	07/22/2024	12:30	X	Field duplicate of P-10
WG-1620-MW07-20240722	MW-07	Water	07/22/2024	13:00	X	
WG-1620-MW11B-20240722	MW-11B	Water	07/22/2024	14:35	X	
WG-1620-MW11A-20240722	MW-11A	Water	07/22/2024	15:05	X	
WG-1620-MW10A-20240722	MW-10A	Water	07/22/2024	15:50	X	
WG-1620-MW10B-20240722	MW-10B	Water	07/22/2024	16:20	X	
WS-1620-MW01A-20240723	MW-01A	Water	07/23/2024	07:45	X	
WG-1620-FD02-20240723	MW-01A	Water	07/23/2024	07:50	X	Field duplicate of MW-01A
WG-1620-MW08-20240723	MW-08	Water	07/23/2024	09:05	X	
WG-1620-P12-20240723	P-12	Water	07/23/2024	09:45	X	
WG-1620-FB01-20240723	-	Water	07/23/2024	10:15	X	Field Blank

Notes:

SVOCs - Semi-volatile Organic Compounds
"-" - Not Applicable

Table 2

Analytical Results Summary
Semiannual SWMU No. 1 Monitoring Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2024

Location ID:		**MW-01A**	**MW-01A**	**MW-02**	**MW-07**
Sample Name:		**WS-1620-MW01A-20240723**	**WG-1620-FD02-20240723**	**WG-1620-MW02-20240722**	**WG-1620-MW07-20240722**
Sample Date:		**07/23/2024**	**07/23/2024**	**07/22/2024**	**07/22/2024**
			Duplicate		
Parameters	**Unit**				
Semi-volatile Organic Compounds					
2-Methylnaphthalene	mg/L	0.025 J	0.069 J	0.0016	<0.000019
Acenaphthene	mg/L	0.047 J	0.12 J	0.016	<0.000027
Acenaphthylene	mg/L	0.00059 J	0.00095 J	<0.00015	<0.000015
Anthracene	mg/L	0.0013 J	0.0024 J	0.00036 J	0.000034 J
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000037 J	0.00014 J	<0.00037	<0.000037
Di-n-butylphthalate (DBP)	mg/L	--	--	--	--
Dibenzofuran	mg/L	0.017 J	0.043 J	0.00040 J	<0.000020
Fluoranthene	mg/L	0.0018 J	0.0038 J	0.00076 J	<0.000010
Fluorene	mg/L	0.024 J	0.060 J	0.0088	<0.000030
Naphthalene	mg/L	0.019 J	0.041 J	0.0019	0.000048 J
Phenanthrene	mg/L	0.0050 J	0.0097 J	0.00063 J	<0.000021
Phenol	mg/L	--	--	--	--
Pyrene	mg/L	0.00074 J	0.0015 J	0.00037 J	<0.000019

Table 2

Analytical Results Summary
Semiannual SWMU No. 1 Monitoring Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2024

Location ID:		**MW-08**	**MW-10A**	**MW-10B**	**MW-11A**
Sample Name:		**WG-1620-MW08-20240723**	**WG-1620-MW10A-20240722**	**WG-1620-MW10B-20240722**	**WG-1620-MW11A-20240722**
Sample Date:		**07/23/2024**	**07/22/2024**	**07/22/2024**	**07/22/2024**
Parameters	**Unit**				
Semi-volatile Organic Compounds					
2-Methylnaphthalene	mg/L	0.000038 J	0.00091	--	0.00016
Acenaphthene	mg/L	0.00033	0.0027	0.020	0.000079 J
Acenaphthylene	mg/L	<0.000015	0.000076 J	0.00020 J	<0.000015
Anthracene	mg/L	<0.000014	0.000049 J	0.00081 J	0.00010
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000037	<0.000037	<0.00037	0.000051 J
Di-n-butylphthalate (DBP)	mg/L	--	--	<0.00020	--
Dibenzofuran	mg/L	0.000032 J	0.0013	0.0060	0.00014
Fluoranthene	mg/L	<0.000010	<0.000010	0.0013	<0.000010
Fluorene	mg/L	0.00016	0.0013	0.010	0.000095 J
Naphthalene	mg/L	0.00017	0.067	0.044	0.00060
Phenanthrene	mg/L	<0.000021	0.00030	--	0.000032 J
Phenol	mg/L	--	--	<0.00035	--
Pyrene	mg/L	<0.000019	<0.000019	0.00062 J	<0.000019

Table 2

Analytical Results Summary
Semiannual SWMU No. 1 Monitoring Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2024

Location ID:		MW-11B	P-10	P-10	P-12
Sample Name:		WG-1620-MW11B-20240722	WG-1620-P10-20240722	WG-1620-FD01-20240722	WG-1620-P12-20240723
Sample Date:		07/22/2024	07/22/2024	07/22/2024	07/23/2024
				Duplicate	
Parameters	**Unit**				
Semi-volatile Organic Compounds					
2-Methylnaphthalene	mg/L	--	--	--	--
Acenaphthene	mg/L	0.082	0.011 JL	0.012 JL	0.000028 J
Acenaphthylene	mg/L	0.0011	0.000043 JL	R	<0.000015
Anthracene	mg/L	0.0027	0.000095 JL	0.00015 JL	0.000028 J
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000037	R	R	<0.000037
Di-n-butylphthalate (DBP)	mg/L	<0.000020	R	R	0.000041 J
Dibenzofuran	mg/L	0.023	0.00027 JL	0.00035 JL	0.000056 J
Fluoranthene	mg/L	0.0046	0.00023 JL	0.00027 JL	<0.000010
Fluorene	mg/L	0.034	0.00010 JL	0.00016 JL	0.000031 J
Naphthalene	mg/L	0.14	0.00074 JL	0.00088 JL	0.00027
Phenanthrene	mg/L	--	--	--	--
Phenol	mg/L	<0.000035	R	R	<0.000035
Pyrene	mg/L	0.0026	0.00010 JL	0.00013 JL	<0.000019

Notes:

< - Not detected at the associated reporting limit
J - Estimated concentration
JL - Estimated concentration; biased low
R - Rejected
"--" - Not analyzed

Table 3

Analytical Methods
Semiannual SWMU No. 1 Monitoring Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2024

Parameter	Method	Matrix	Holding Time	
			Collection to Extraction (Days)	Extraction to Analysis (Days)
SVOCs	SW-846 8270D	Water	7	40

Notes:

SVOCs - Semi-volatile Organic Compounds

Method References:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions

Table 4

Qualified Sample Results Due to Extraction Holding Time Exceedance
Semiannual SWMU No. 1 Monitoring Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2024

Parameter	Sample ID	Extraction Holding Time (days)	Extraction Holding Time Criteria (days)	Analyte	Qualified Sample Results		Units
SVOCs	WG-1620-P10-20240722	9	7	Acenaphthene	0.011	JL	mg/L
				Acenaphthylene	0.000043	JL	mg/L
				Anthracene	0.000095	JL	mg/L
				bis(2-Ethylhexyl)phthalate (DEHP)		R	
				Dibenzofuran	0.00027	JL	mg/L
				Di-n-butylphthalate (DBP)		R	
				Fluoranthene	0.00023	JL	mg/L
				Fluorene	0.00010	JL	mg/L
				Naphthalene	0.00074	JL	mg/L
				Phenol		R	
				Pyrene	0.00010	JL	mg/L
SVOCs	WG-1620-FD01-20240722	9	7	Acenaphthene	0.012	JL	mg/L
				Acenaphthylene		R	
				Anthracene	0.00015	JL	mg/L
				bis(2-Ethylhexyl)phthalate (DEHP)		R	

Table 4

Qualified Sample Results Due to Extraction Holding Time Exceedance
Semiannual SWMU No. 1 Monitoring Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2024

Parameter	Sample ID	Extraction Holding Time (days)	Extraction Holding Time Criteria (days)	Analyte	Qualified Sample Results		Units
SVOCs	WG-1620-FD01-20240722	9	7	Dibenzofuran	0.00035	JL	mg/L
				Di-n-butylphthalate (DBP)		R	
				Fluoranthene	0.00027	JL	mg/L
				Fluorene	0.00016	JL	mg/L
				Naphthalene	0.00088	JL	mg/L
				Phenol		R	
				Pyrene	0.00013	JL	mg/L

Notes:

SVOCs - Semi-volatile Organic Compounds
JL - Estimated concentration; biased low
R - Rejected

Table 5

Qualified Sample Data Due to Variability in Field Duplicate Results
Semiannual SWMU No. 1 Monitoring Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2024

Parameter	Analyte	RPD	Diff	Sample ID	Qualified Result		Field Duplicate Sample ID	Qualified Result		Units
SVOCs	Acenaphthylene	96.6	0.000028	WG-1620-P10-20240722	0.000043	JL	WG-1620-FD01-20240722	R		
	Anthracene	44.9	0.000055		0.000095	JL		0.00015	JL	mg/L
	Fluorene	46.2	0.00006		0.0001	JL		0.00016	JL	mg/L
SVOCs	2-Methylnaphthalene	93.6	0.044	WS-1620-MW01A-20240723	0.025	J	WG-1620-FD02-20240723	0.069	J	mg/L
	Acenaphthene	87.4	0.073		0.047	J		0.12	J	mg/L
	Acenaphthylene	46.8	0.00036		0.00059	J		0.00095	J	mg/L
	Anthracene	59.5	0.0011		0.0013	J		0.0024	J	mg/L
	bis(2-Ethylhexyl)phthalate (DEHP)	116	0.000103		<0.000037	J		0.00014	J	mg/L
	Dibenzofuran	86.7	0.026		0.017	J		0.043	J	mg/L
	Fluoranthene	71.4	0.002		0.0018	J		0.0038	J	mg/L
	Fluorene	85.7	0.036		0.024	J		0.06	J	mg/L
	Naphthalene	73.3	0.022		0.019	J		0.041	J	mg/L
	Phenanthrene	63.9	0.0047		0.005	J		0.0097	J	mg/L
	Pyrene	67.9	0.00076		0.00074	J		0.0015	J	mg/L

Notes:

RPD - Relative Percent Difference
Diff - Difference
SVOCs - Semi-volatile Organic Compounds
< - Not detected at the associated reporting limit
J - Estimated concentration
JL - Estimated concentration; biased low
R - Rejected

Attachment A

Laboratory NELAP Certificate

Texas Commission on Environmental Quality

Certificate of Accreditation

Accreditation is hereby granted to

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

State Lab ID: T104704231
Effective Date: 05/01/2024
Expiration Date: 04/30/2025
Document ID: TX-C24-00130

Conditions of Accreditation

This laboratory has been found to conform with TCEQ rules and applicable standards for laboratory accreditation. The scope of accreditation is limited to the Fields of Accreditation specifically listed on the subsequent page(s) of this certificate. Accreditation is for all version of a method approved per 40 CFR 136, 40 CFR 141, and/ or 40 CFR 143. Continued accreditation requires ongoing compliance with all applicable standards and requirements.

Issued By: Kelly Keel, Executive Director Texas Commission on Environmental Quality
Date Issued: 05/01/2024

APPENDIX D

Waste Manifest

Please print or type. Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator ID Number: TXD000820266	2. Page 1 of 1	3. Emergency Response Phone: (888) 877-7267	4. Manifest Tracking Number: 026660634 JJK

5. Generator's Name and Mailing Address: Union Pacific Railroad (UPRR) c/o GHD-Attn: Manifest Receiving
9100 Centre Pointe Drive Suite # 240
West Chester, OH 45069
Generator's Phone: (414) 267-4164

Generator's Site Address (if different than mailing address): Union Pacific Railroad (UPRR)
4910 Liberty Road
Houston, TX 77026

6. Transporter 1 Company Name: Enchanced Environmental & Emergency Services, Inc. — U.S. EPA ID Number: TXR000083939

7. Transporter 2 Company Name: US Ecology Transportation Solutions — U.S. EPA ID Number: MOK 593743838

8. Designated Facility Name and Site Address: US Ecology
3277 County Rd 69
Robstown, TX 78380
Facility's Phone: (800) 242-3209
U.S. EPA ID Number: TXD069452340

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
X	1. NA3082, Hazardous waste, liquid, n.o.s. (Creosote), 9, III RQ(F034) ERG #171	4	DM	650	P	F034	0914101H	
	2.							
	3.							
	4.							

14. Special Handling Instructions and Additional Information: 1.WR# 019921/Profile# 090129843-0 EXP: 2/25/25
Bill to: E3 Environmental- PO Box 7, Clinton, MS 39060
Email invoices: e3admin@e3enviro.com/claraque@e3enviro.com
Job#: 135-24-0
PO#: 35-2024-

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Jared Baysen — Signature: [signature] — Month 10 Day 17 Year 24

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit: ______
Transporter signature (for exports only): Date leaving U.S.:

17. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Juan Navarro — Signature: [signature] — Month 10 Day 18 Year 24
Transporter 2 Printed/Typed Name: Dean L. Emme — Signature: Dean L Emme — Month 10 Day 23 Year 24

18. Discrepancy
18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
18b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:
18c. Signature of Alternate Facility (or Generator) — Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1. H141	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name: Jay Murdoch — Signature: Jay Murdoch — Month 10 Day 24 Year 24

EPA Form 8700-22 (Rev. 12-17) Previous editions are obsolete. **DESIGNATED FACILITY TO EPA's e-MANIFEST SYSTEM**

APPENDIX E

POC Concentration vs. Time Graphs

Figure E-1
2-Methylnaphthalene Concentrations vs Time - A-TZ Unit
UPRR HWPW Facility - RCRA SWMU No. 1

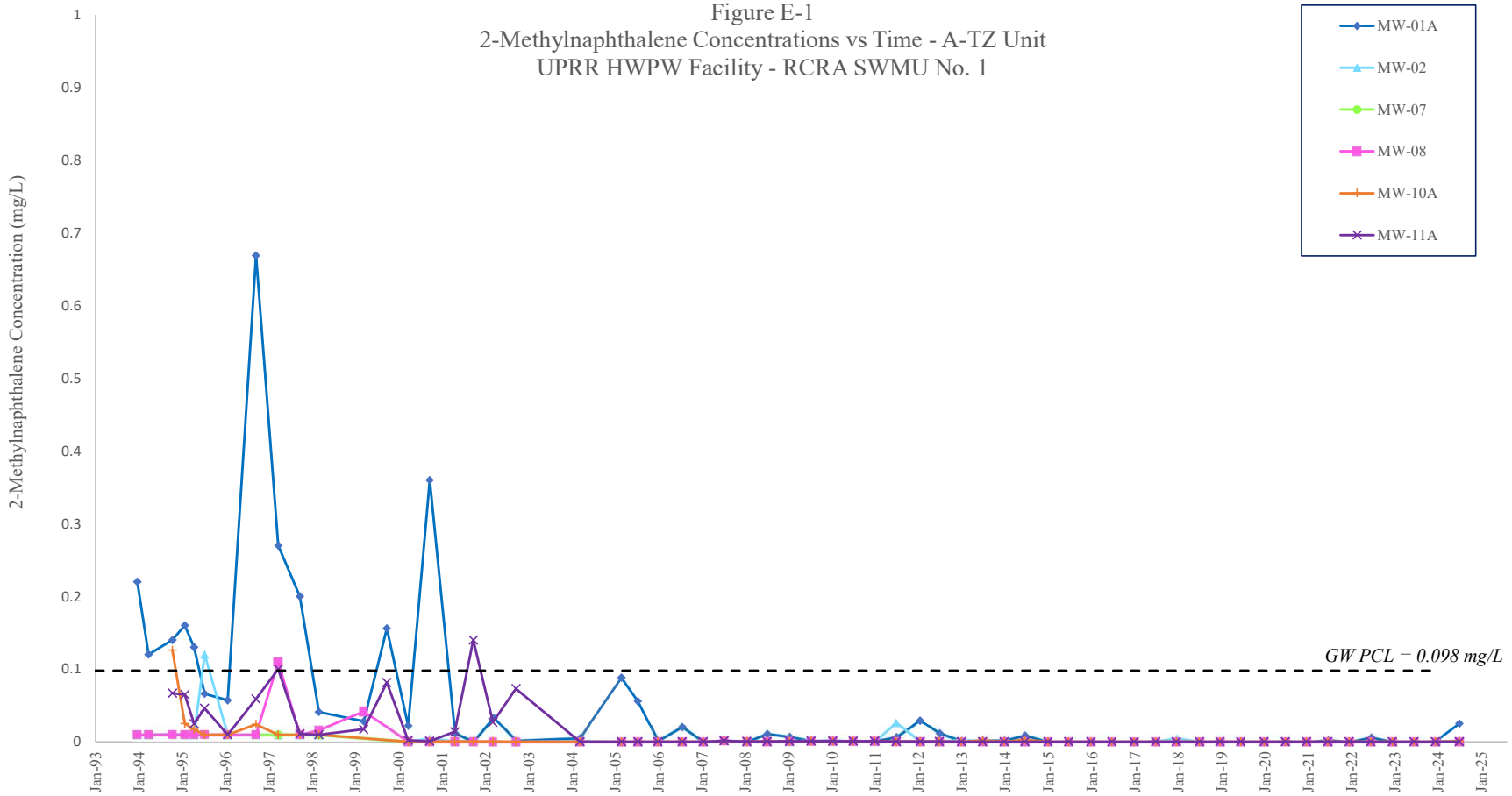


Figure E-2
Dibenzofuran Concentrations vs Time - A-TZ Unit
UPRR HWPW Facility - RCRA SWMU No. 1

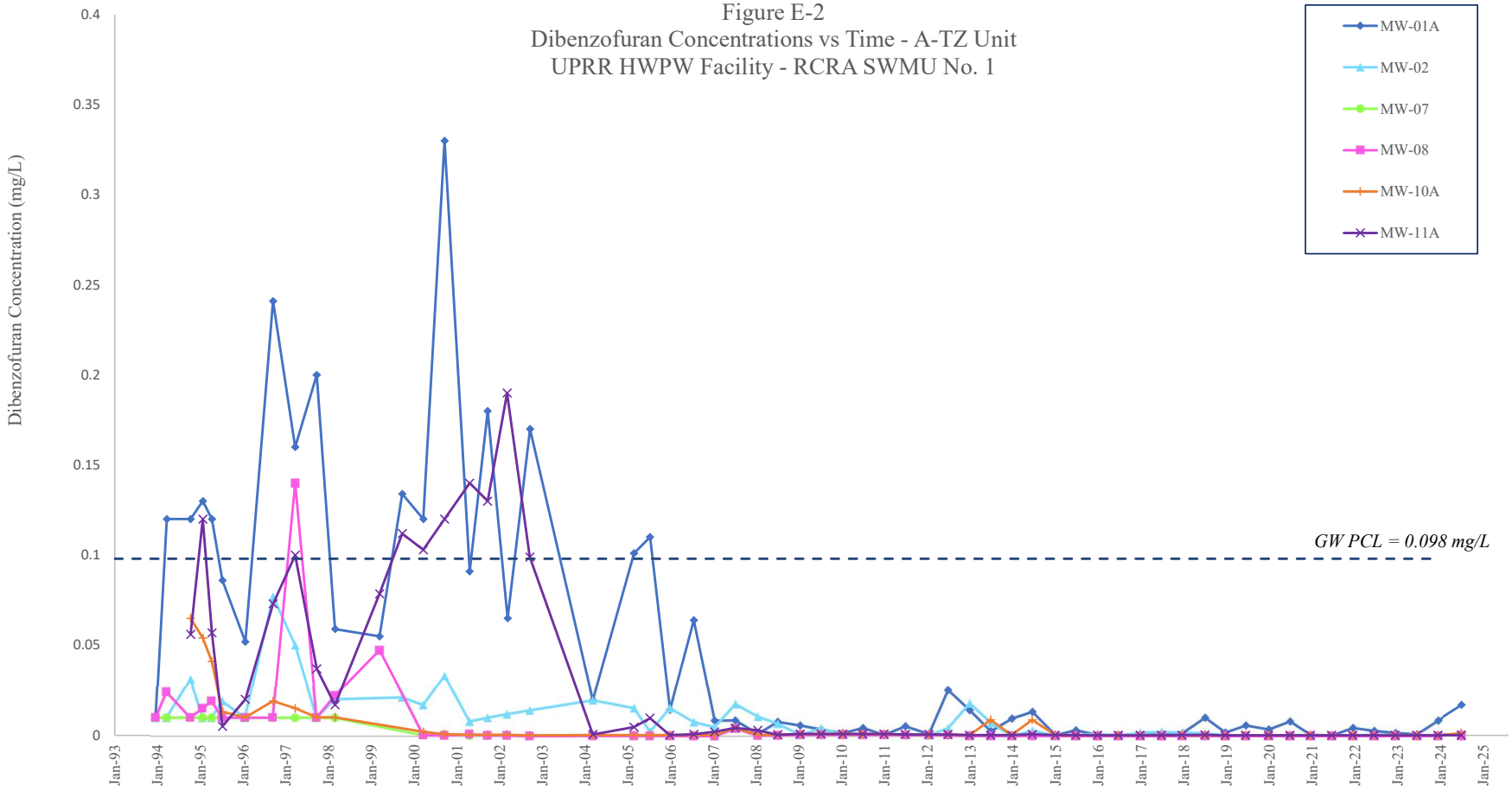


Figure E-3
Naphthalene Concentrations vs Time - A-TZ Unit
UPRR HWPW Facility - RCRA SWMU No. 1

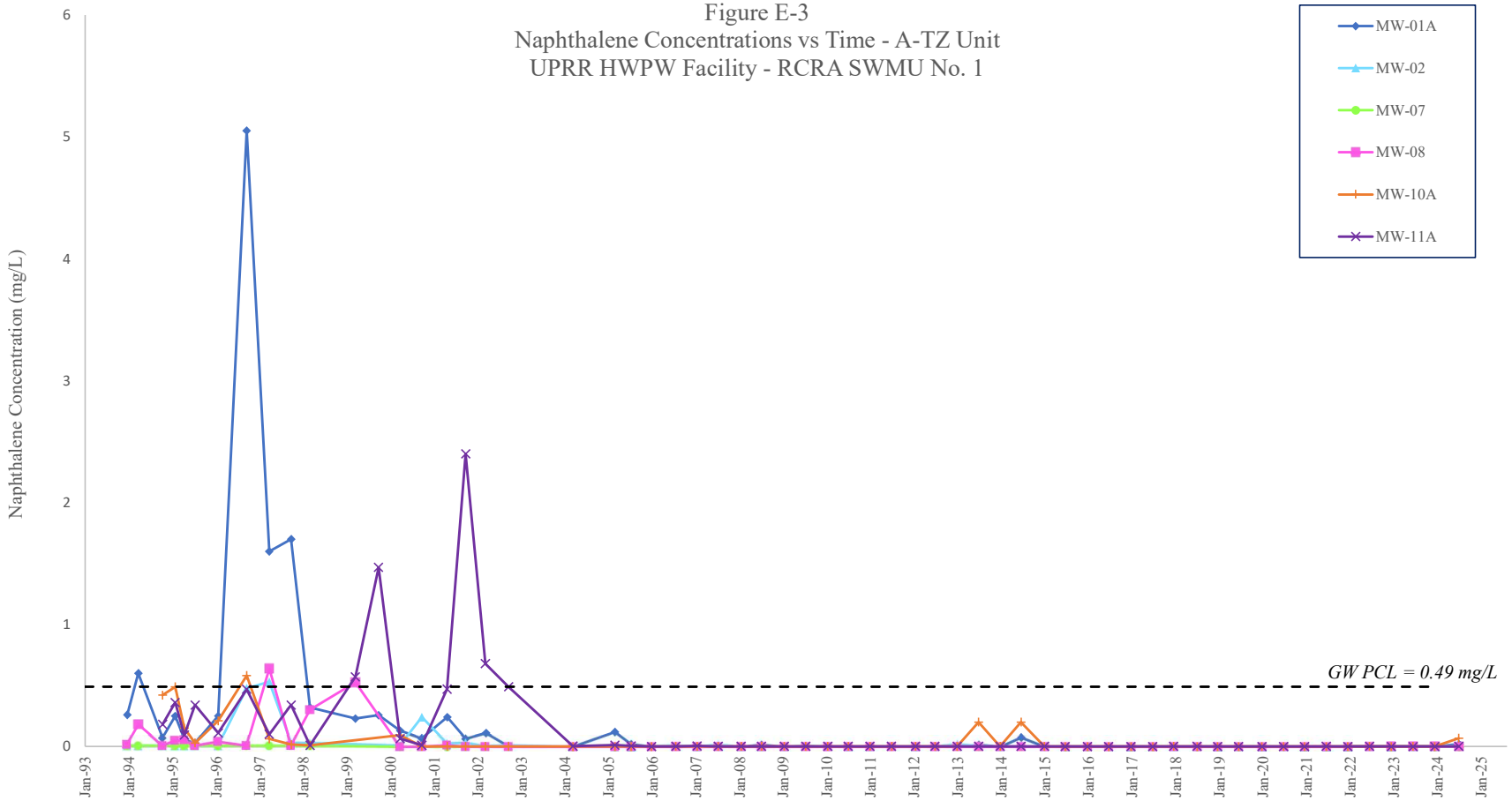
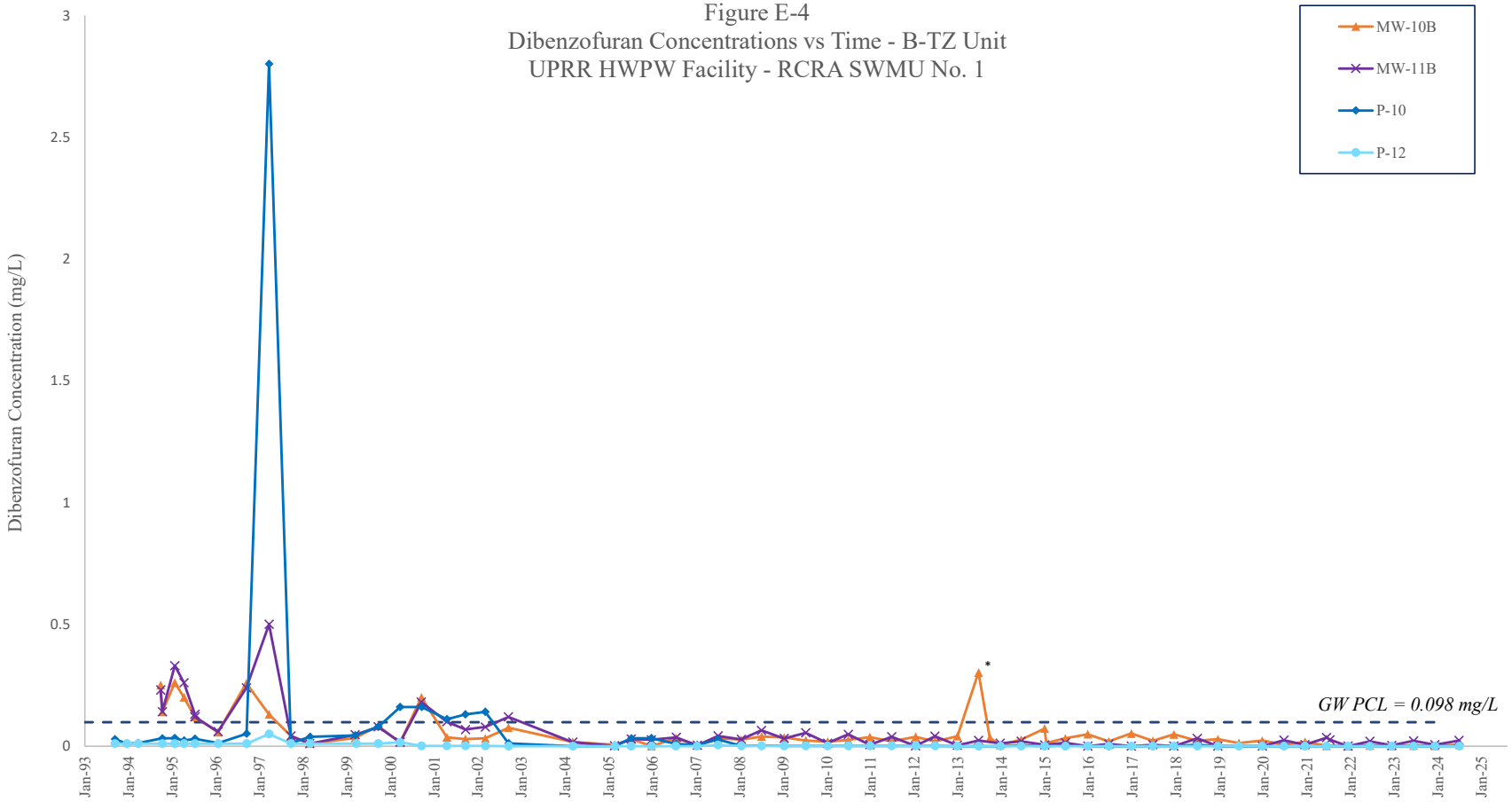
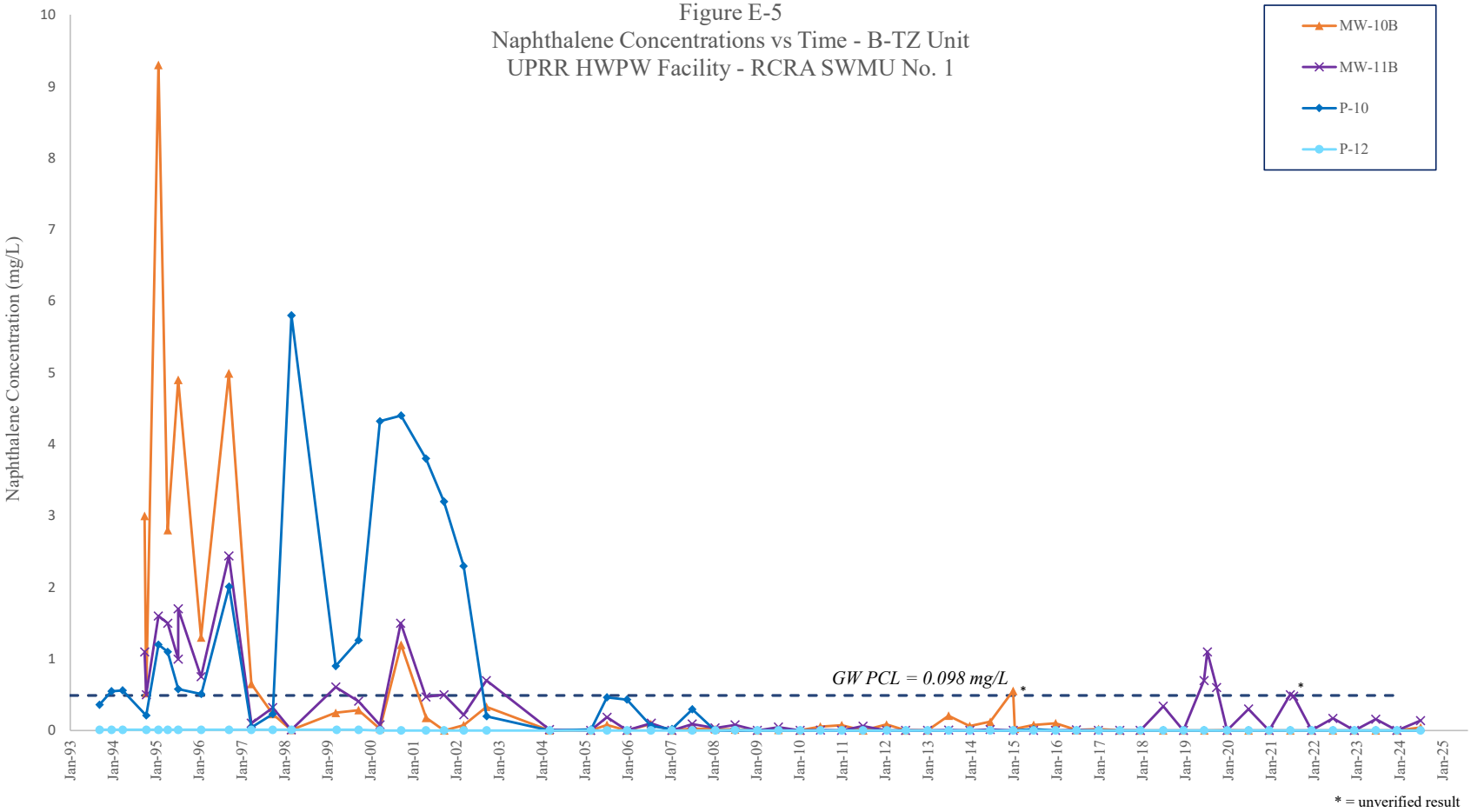


Figure E-4
Dibenzofuran Concentrations vs Time - B-TZ Unit
UPRR HWPW Facility - RCRA SWMU No. 1



* = unverified result

Figure E-5
Naphthalene Concentrations vs Time - B-TZ Unit
UPRR HWPW Facility - RCRA SWMU No. 1

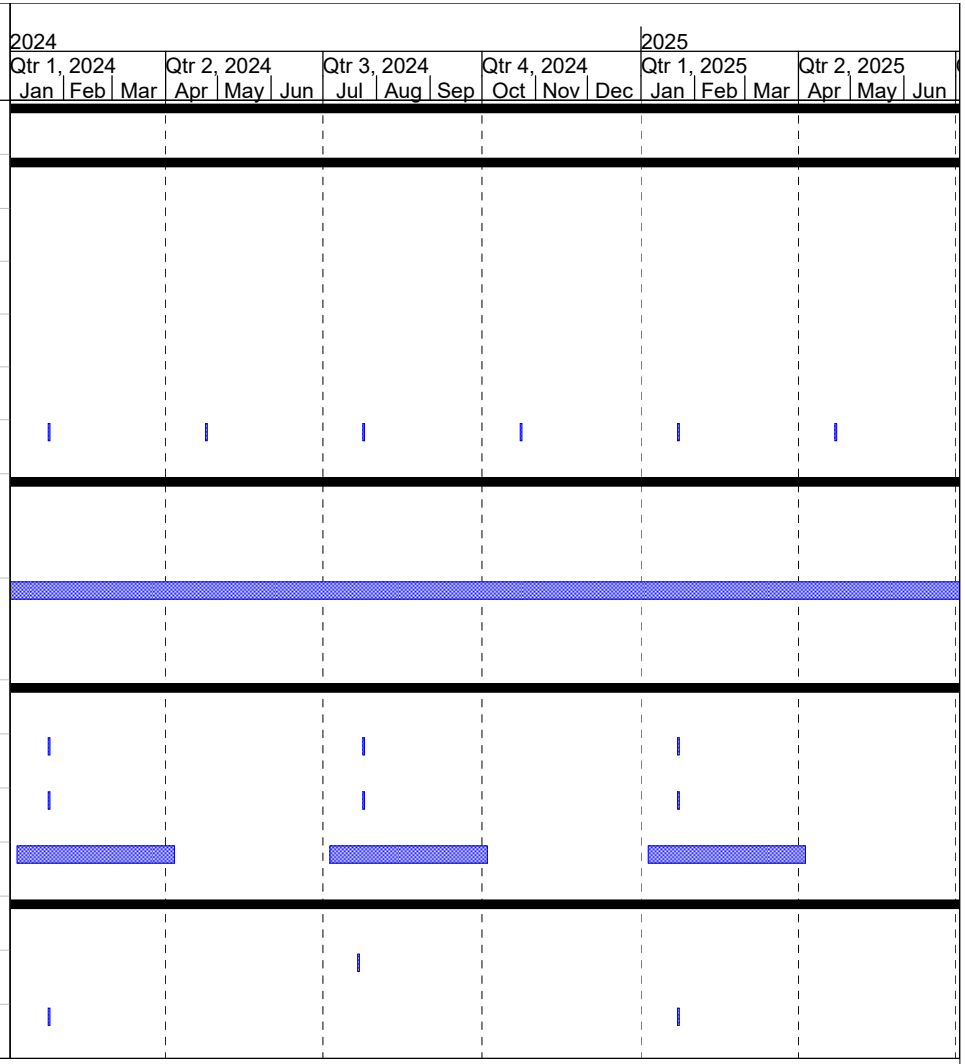


* = unverified result

APPENDIX F

Updated Compliance Schedule

ID	Task Name/Permit or CP Section No.
1	**Facility Management**
2	**RCRA Permit/Compliance Plan Renewal and Major Amendments**
15	Permit Revision No. 5, 6, and 7
16	Preliminary Decision and Final Draft Permit Issued
17	Public Meeting
18	Public Comment Period
19	General Inspection Requirements (quaterly) [Permit Section III.D; Table III.D]
103	**Corrective Measures Implementation (CMI)/Response Action Plan (RAP) [CP Section VIII.F]**
110	Implement Corrective Action as detailed in RAP (pending approval of Permit Renewal/Compliance Plan)
111	**Ground-Water Monitoring Program [Permit Section VI.A.; CP Section VI.]**
112	Water Level Measurements (Semiannually) [CP Section VI.C.4.a]1
152	Monitoring Well Inspections (Semiannually) [CP Section VI.C.4.a]1
193	**Groundwater Sampling and Data Evaluation [CP Section VI.C.2]**
244	**Response and Reporting [Permit Section II.B.7; CP Section VII.)**
245	First Semi-Annual GW Monitoring Report - July 21 [CP Section VII.C.2]
265	Second Semi-Annual GW Monitoring Report - January 21 [CP Section VII.C.2]



Compliance Schedule
UPRR Houston Wood Preserving Works Site
Houston, Texas

Task
Milestone
Summary
Rolled Up Task
Rolled Up Milestone
Rolled Up Progress
External Tasks
Manual Summary

APPENDIX G

Laboratory Data QA/QC Report Checklist

FORMER HOUSTON WOOD PRESERVING WORKS
LABORATORY DATA QA/QC REPORT CHECKLIST
ANALYTICAL REPORT HS24071389
August 7, 2024

Facility Name: Former Houston Wood Preserving Works SWMU 1	**Permit/ISW Reg No.: 50343**	**For TCEQ Use Only**
Laboratory Name: ALS Environmental	**EPA I.D. No.:**	**Project Mgr:**
Reviewer Name: Courtney Thom		
Date: 12/13/2024	**Date:**	

Description	Status	More in Case Narrative (Check Box)	Technically Complete
1. Were laboratory analyses performed by a laboratory accredited by TCEQ, whose accreditation included the matrix (ces), methods, and parameters associated with the data? If not was an explanation given in the Case-Narrative (e.g., laboratory exemption, accreditation for method /parameter not available from TCEQ)?	**Yes☒ No☐ NA☐**	☐	**Yes☐ No☐ NA☐**
2. Was a Case Narrative from laboratory (QC data description summary) submitted with the data set?	**Yes☒ No☐ NA☐**	☐	**Yes☐ No☐ NA☐**
3. Are the sample collection, preparation and analyses methods listed in the permit, preparation and analysis methods listed in the permit or other documents specifying criteria the ones used on the final report?	**Yes☒ No☐ NA☐**	☐	**Yes☐ No☐ NA☐**
4. Were there any modifications to the sample collection, preparation and/or analytical methodology (ies)? If so was the description included on the Case-Narrative?	**Yes☐ No☒ NA☐** **Yes☐ No☐ NA☒**	☐	**Yes☐ No☐ NA☐**
5. Were all samples prepared and analyzed within required holding times?	**Yes☒ No☐ NA☐**	☐	**Yes☐ No☐ NA☐**
6. Were samples properly preserved according to method and QAPP requirements?	**Yes☒ No☐ NA☐**	☐	**Yes☐ No☐ NA☐**

Description	Status	More in Case Narrative (Check Box)	Technically Complete
7. Have the method detection limits (MDL) and/or practical quantitation limit (PQL) been defined in the final report? Note: NELAC uses terms limit of detection (LOD) and Limit of Quantitation respectively.	**Yes☒ No☐ NA☐**	☐	**Yes☐ No☐ NA☐**
8. Do parameters listed on final report match regulatory parameters of concern (POC) specified in permit and/or Waste Analysis Plan or other required document? Note: POC may also be referred to chemicals of concern (COCs)	**Yes☒ No☐ NA☐**	☐	**Yes☐ No☐ NA☐**
9. Are the POCs included within the analytical methods target analyte list?	**Yes☒ No☐ NA☐**	☐	**Yes☐ No☐ NA☐**
10. Were the appropriate type(s) of blanks analyzed?	**Yes☒ No☐ NA☐**	☐	
11. Did any blank samples contain POC concentrations >5x or 10x of MDL? If so, please explain potential bias?	**Yes☐ No☒ NA☐**	☐	**Yes☐ No☐ NA☐**
12. Were method blanks taken through the entire preparation and analytical process?	**Yes☒ No☐ NA☐**	☐	**Yes☐ No☐ NA☐**
13. Did the calibration curve and continuing calibration verification meet regulatory (e.g. NELAC Standards) method specifications (No. of standards, acceptance criteria, etc.)?	**Yes☒ No☐ NA☐**	☐	**Yes☐ No☐ NA☐**
14. Do the initial calibration standards include a concentration below the regulatory limit/decision level? If not please explain? If an MDL and PQL are each used on a report then the relationship between the two must be defined for each method.	**Yes☒ No☐ NA☐** **Yes☐ No☐ NA☒**	☐	**Yes☐ No☐ NA☐**
15. Were manual peak integrations performed? If so pre and post chromatograms and method change histories may be requested?	**Yes☒ No☐ NA☐** **Yes☒ No☐ NA☐**	☐	**Yes☐ No☐ NA☐**
16. Were all results bracketed by a lower and upper range calibration standard?	**Yes☒ No☐ NA☐**	☐	**Yes☐ No☐ NA☐**
17. Was any result reported outside of the range of the calibration standards?	**Yes☐ No☒ NA☐**	☐	**Yes☐ No☐ NA☐**
18. Were all matrix spike (MS) and MS duplicate (MSD) recoveries within the data decision making goals of QC data in the RCRA/UIC QAPP and/or within the laboratories control charts? If not were data flagged with explanation in case narrative?	**Yes☒ No☐ NA☐** **Yes☐ No☐ NA☒**	☐	**Yes☐ No☐ NA☐**
19. Were all of the MS and MSD relative percent differences (RPDs) within the data decision making goals of QC data in the RCRA/UIC QAPP? If not were data flagged with explanation in case narrative?	**Yes☒ No☐ NA☐** **Yes☐ No☐ NA☒**	☐	**Yes☐ No☐ NA☐**
20. Were all laboratory control sample (LCS) recoveries at least within the MS and MSD ranges of recoveries and within laboratories control charts? If not were data flagged with explanation in Case Narrative?	**Yes☒ No☐ NA☐** **Yes☐ No☐ NA☒**	☐	**Yes☐ No☐ NA☐**

Description	Status	More in Case Narrative (Check Box)	Technically Complete
21. Were all POCs (COCs) in the LCS?	**Yes☒ No☐ NA☐**	☐	**Yes☐ No☐ NA☐**
22. Were the MS and MSD from samples collected for this work order or other samples in the analytical batch as defined by the NELAC Standards? *This information is used to identify factors contributing to matrix interferences. It should not be assumed, unless it is understood by the laboratory, that samples relating to this report were the ones selected to be fortified with the POCs.*	**Yes☒ No☐ NA☐**	☐	**Yes☐ No☐ NA☐**
23. Were any of the samples diluted? If so were appropriate calculations made to the MDL and/or PQL of the final report?	**Yes☒ No☐ NA☐**	☐	**Yes☐ No☐ NA☐**

LABORATORY DATA REPORT QA/QC CHECKLIST
LABORATORY CASE-NARRATIVE
(To accompany laboratory checklist)

Facility Name: Former Houston Wood Preserving Works SWMU 1	**Permit/ISW Reg No.: 50343**
Laboratory Name: ALS Environmental	**EPA I.D. No.:**

Method No.	Non-conformance Description	Method Modification Description
SW8270		
SW8270		