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	2020 1st 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

Golder Associates Inc.

SIGNATURES

DATABASE CODES

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

July 6, 2020 Project No. 19119232

Ms. Maureen Hatfield
MC-127
VCP-CA Section, Team 1, Remediation Division
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

SUBJECT: **CORRECTIVE ACTION MONITORING REPORT: 2020 FIRST SEMI-ANNUAL EVENT**
UNION PACIFIC RAILROAD HOUSTON WOOD PRESERVING WORKS, HOUSTON, TEXAS
4910 LIBERTY ROAD, HOUSTON, HARRIS COUNTY, TEXAS
TCEQ SWR NO. 31547; TCEQ PERMIT/COMPLIANCE PLAN NO. 50343
EPA ID NO. TXD000820266
CUSTOMER NO. CN600131098; REGULATED ENTITY NO. RN100674613

Dear Ms. Hatfield:

Golder Associates Inc (Golder), on behalf of Union Pacific Railroad Company (UPRR), is pleased to provide the Corrective Action Monitoring Report: 2020 First Semi-Annual Event for above referenced site for your review. The report was prepared in accordance with Section VII.C.2 of Compliance Plan No. CP-50343, which was issued in conjunction with Post-Closure Care Permit No. HW-50343, both dated June 10, 2005. In addition to the original copy of the report, a flash drive with an electronic version of the report is also attached for your files.

If you have any questions or need additional information, please feel free to call me at (512) 671-3434 or email eric_matzner@golder.com; or Mr. Kevin Peterburs of UPRR at (414) 267-4164 and email kjpeterb@up.com.

Sincerely

Golder Associates Inc.

Eric C. Matzner, P.G.
Principal

CC: Waste Program Manager, TCEQ Region 12, Houston
Mr. Kevin Peterburs, UPRR – Milwaukee, WI

Golder Associates Inc.
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GOLDER

CORRECTIVE ACTION MONITORING REPORT

2020 First Semi-Annual Event

Former Houston Wood Preserving Works

4910 Liberty Road Houston, Texas

Submitted to:

Mr. Kevin Peterburs
Union Pacific Railroad Company
4823 N 119th Street
Milwaukee, WI 53225

Submitted by:

Golder Associates Inc.
Round Rock, Texas, USA 78664
+1 512 671-3434
Texas Geoscience Firm No. 50369
Texas Engineering Firm No. 2578
Project No. 19119232

July 6, 2020

Certification

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

06/22/2020

Date

Mark Lutz

Name

AVP Fuel and Environmental

Title

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APPENDICES

1.0 EXECUTIVE SUMMARY

This semi-annual report presents a summary and evaluation of the Corrective Action Groundwater Monitoring for January through June 2020 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 Golder Associates Inc. (Golder) on behalf of Union Pacific Railroad (UPRR) in January 2020.

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 January 2020 sampling event show groundwater generally flows to the southwest in the A-TZ with a hydraulic gradient across SWMU 1 of approximately 0.01 ft/ft. Groundwater flow during the previous event (2019 second semi-annual monitoring event) in the A-TZ was observed to have a hydraulic gradient with a general flow direction of west/northwest/southeast across SWMU 1.

Groundwater elevation data collected in the B-TZ show groundwater flow to the west and south/southeast across SWMU 1 with a hydraulic gradient of approximately 0.004 ft/ft. Groundwater flow during the previous event (2019 second semi-annual monitoring event) was observed to have a hydraulic gradient of approximately 0.025 ft/ft with a general flow direction to the northwest/west/southwest across SWMU 1.

Analytical results from the 1st semi-annual sampling event of 2020 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 2020 first 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 2020 first semi-annual monitoring period (January through June) 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, Golder Associates Inc (Golder) conducted groundwater monitoring activities at SWMU 1 on January 13-14, 2020. 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 first half of 2020 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 July 2020, 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 2020 FIRST 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

Golder performed quarterly inspections of SWMU 1 in January and April 2020 and conducted semi-annual groundwater sampling activities on January 13-14, 2020. 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 the groundwater samples. An approximate one-foot section of disposable silicon tubing was placed around the pump head and attached to the PTFE tubing for proper operation of the pump. Groundwater was pumped from the screened interval of 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 (COC) forms were completed and kept with their respective samples. Copies of the analytical data and COCs are included in Appendix C. Groundwater samples were then analyzed for the Detected Hazardous and Solid Waste Constituents listed in the CP, Table III (Appendix A).

3.2 Purge Water Management

Approximately 8 gallons of purge water were generated during the January 2020 low-flow groundwater sampling event. The purge water was containerized in a Department of Transportation (DOT) certified, 55-gallon steel drum and temporarily stored on site in a fenced and locked container storage area (NOR 007). Wastes generated during the 2020 first semi-annual monitoring event were transported from the Site by NRC/US Ecology to the US Ecology Robstown facility, located in Robstown, Texas on March 25, 2020 under EPA waste code F034 and TCEQ Notice of Registration (NOR) waste code 0914101H. 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 2020 first 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) were 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 2020 first 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.

The two uppermost groundwater bearing units, the A-TZ and the B-TZ, were monitored during this period. Groundwater elevation data collected in the A-TZ during the January 2020 sampling event show a groundwater high in the center of the unit with a hydraulic gradient in west, southwest, south, southeast, and east directions of approximately 0.01 ft/ft (to the southwest). Groundwater flow during the previous event (2019 second semi-annual monitoring event) in the A-TZ was observed to have a similar hydraulic gradient with a general flow direction of west/northwest/southeast across SWMU 1.

Groundwater elevation data collected in the B-TZ show groundwater flow to the west and south/southeast across SWMU 1 with a hydraulic gradient of approximately 0.004 ft/ft. Groundwater flow during the previous event (2019 second semi-annual monitoring event) was observed to have a hydraulic gradient of approximately 0.025 ft/ft with a general flow direction to the northwest/west/southwest 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 January 2020 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 January 2020 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).

3.11 Reported Concentration Maps

Reported concentrations of each constituent analyzed for the 2020 first semi-annual monitoring event are presented on Figures 5 and 6 for the A-TZ and B-TZ compliance wells, respectively. In the event a constituent exceeded their respective PCL, the value would be highlighted on the figures. Concentrations in all wells were below PCLs.

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, and June 24, 2017. The Permit Renewal Application is currently under TCEQ review. 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.

Naphthalene concentrations in POC well MW-11B exceeded the GWPS during the 2nd semiannual monitoring event in 2019. An evaluation of MW-11B data was provided in the Interim Groundwater Monitoring Report (2019-2020) dated April 30, 2020 as requested by the TCEQ in a letter dated March 18, 2020. As part of the current monitoring period, constituent concentrations including naphthalene were below GWPS in the SWMU 1 wells during the 1st semi-annual monitoring event in 2020. As detailed in Section XI of the current RCRA Permit Renewal application, UPRR proposed to revise the CP to move the SWMU 1 to compliance monitoring. UPRR will evaluate the proposed switch to compliance monitoring following review of the second semi-annual 2020 sampling event.

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, and July 9, 2019. A revised RAP will be submitted to the TCEQ by August 31, 2020.

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 most recently surveyed on December 23, 2015. The report for the resurveyed well casing elevations was submitted to the TCEQ on January 29, 2016 under a separate cover letter. SWMU 1 monitoring well elevations will be resurveyed during the second half of 2020.

3.18 Recommendation for Changes

Recommendations for changes to the post-closure care for SWMU 1 are included in the RCRA Part B Permit Renewal Application submitted on December 10, 2014, with revisions dated December 7, 2015, July 29, 2016, June 24, 2017, and July 9, 2019. UPRR will evaluate the proposed switch to compliance monitoring following review of the second semi-annual 2020 sampling event.

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: 2020 First Semi-Annual Event

Houston Wood Preserving Works
Houston, Texas

Analyte	PCL (mg/L)	Monitoring Well IDs (Concentrations mg/L)																				
		MW-01A			FD-01			MW-02			MW-07			MW-08			MW-10A			MW-11A		
		1/14/2020	LQ	VQ	1/14/2020	LQ	VQ	1/14/2020	LQ	VQ	1/13/2020	LQ	VQ	1/13/2020	LQ	VQ	1/14/2020	LQ	VQ	1/14/2020	LQ	VQ
Acenaphthene	1.5	0.024			0.018			0.003			0.000027	U	U	0.000027	U	U	0.00011			0.000027	U	U
Acenaphthylene	1.5	0.00084			0.00066			0.000015	U	U	0.000015	U	U	0.000015	U	U	0.000015	U	U	0.000015	U	U
Anthracene	7.3	0.000014	U	U	0.000014	U	U	0.00011			0.000014	U	U	0.000014	U	U	0.000014	U	U	0.000014	U	U
bis(2-ethylhexyl)phthalate	0.006	0.000037	U	U	0.000074	J	J	0.000037	U	U	0.000037	U	U	0.00021			0.000037	U	U	0.000037	U	U
Dibenzofuran	0.098	0.0036			0.0021			0.00039			0.000057	J	J	0.00002	U	U	0.00002	U	U	0.00002	U	U
Fluoranthene	0.98	0.0011			0.0012			0.00024			0.0001			0.00001	U	U	0.00001	U	U	0.00001	U	U
Fluorene	0.98	0.0064			0.0038			0.0017			0.00003	U	U	0.00003	U	U	0.00003	U	U	0.00003	U	U
2-Methylnaphthalene	0.098	0.00019			0.000019	U	U	0.000019	U	U	0.000066	J	J	0.000019	U	U	0.000019	U	U	0.000019	U	U
Naphthalene	0.49	0.00052			0.00002	U	U	0.00002	U	U	0.00017			0.00002	U	U	0.00002	U	U	0.00002	U	U
Phenanthrene	0.73	0.000021	U	U	0.000021	U	U	0.00011			0.00014			0.000046	J	J	0.000021	U	U	0.000021	U	U
Pyrene	0.73	0.00052			0.00059			0.00011			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
FD-01 = Duplicate sample collected at MW-07
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: 2020 First 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			P-12		
		1/14/2020	LQ	VQ	1/14/2020	LQ	VQ	1/13/2020	LQ	VQ	1/13/2020	LQ	VQ
Acenaphthene	1.5	0.069			0.033			0.000027	U	U	0.000027	U	U
Acenaphthylene	1.5	0.00066			0.0016			0.000015	U	U	0.000015	U	U
Anthracene	7.3	0.0028			0.000014	U	U	0.000014	U	U	0.0001		
bis(2-ethylhexyl)phthalate	0.006	0.0002			0.000095	J	J	0.000037	U	U	0.000037	U	U
Dibenzofuran	0.098	0.022			0.00002	U	U	0.00002	U	U	0.00002	U	U
Di-n-butyl phthalate	2.4	0.00002	U	U	0.00002	U	U	0.00002	U	U	0.00002	U	U
Fluoranthene	0.98	0.0029			0.0024			0.00001	U	U	0.00001	U	U
Fluorene	0.98	0.036			0.00035			0.00003	U	U	0.00003	U	U
Naphthalene	0.49	0.0021			0.00002	U	U	0.00017			0.00016		
Phenol	7.3	0.000035	U	U	0.000035	U	U	0.000035	U	U	0.000035	U	U
Pyrene	0.73	0.0013			0.0023			0.000019	U	U	0.00063		

Notes:
PCL = Protective Concentration Level
The Compliance Plan Section IV.D defines the Groundwater Protection Standard (GWPS) as the PCL

LQ - Lab Qualifier
J = Estimated value between the SDL and the MDQ
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 3
Summary of Analytical Results for Quality Assurance/Quality Control Samples
Semiannual Monitoring Report: 2020 First Semi-Annual Event

Houston Wood Preserving Works
Houston, Texas

Analyte	PCL (mg/L)	P-12(MS)[1] Matrix Spike		P-12(MSD)[1] Matrix Spike Duplicate	
Acenaphthene	1.5	0.004554		0.003858	
Acenaphthylene	1.5	0.004432		0.003761	
Anthracene	7.3	0.005422		0.004577	
bis(2-ethylhexyl)phthalate	0.006	0.005953		0.005317	
Dibenzofuran	0.098	0.004513		0.003783	
Fluoranthene	0.98	0.005303		0.004616	
Fluorene	0.98	0.004678		0.004	
2-Methylnaphthalene	0.098	0.004077		0.003617	
Naphthalene	0.49	0.004398		0.003832	
Phenanthrene	0.73	0.005217		0.004366	
Pyrene	0.73	0.005985		0.005245	

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: 2020 First 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	47.90	1/14/2020	2.71	ND	20.2	19.90	45.19
MW-02	47.89	1/14/2020	2.42	ND	20.3	20.20	45.47
MW-07	48.91	1/13/2020	4.29	ND	25.9	24.90	44.62
MW-08	49.33	1/13/2020	4.45	ND	26.8	25.10	44.88
MW-10A	49.83	1/14/2020	4.68	ND	25.9	25.55	45.15
MW-11A	50.16	1/14/2020	5.11	ND	24.4	24.05	45.05
B-TZ Monitoring Locations							
MW-10B	49.96	1/14/2020	4.92	ND	48.8	46.52	45.04
MW-11B	50.24	1/14/2020	5.30	ND	46.8	46.80	44.94
P-10	47.71	1/13/2020	3.18	ND	40.0	42.90	44.53
P-12	48.76	1/14/2020	3.96	ND	40.0	42.75	44.80

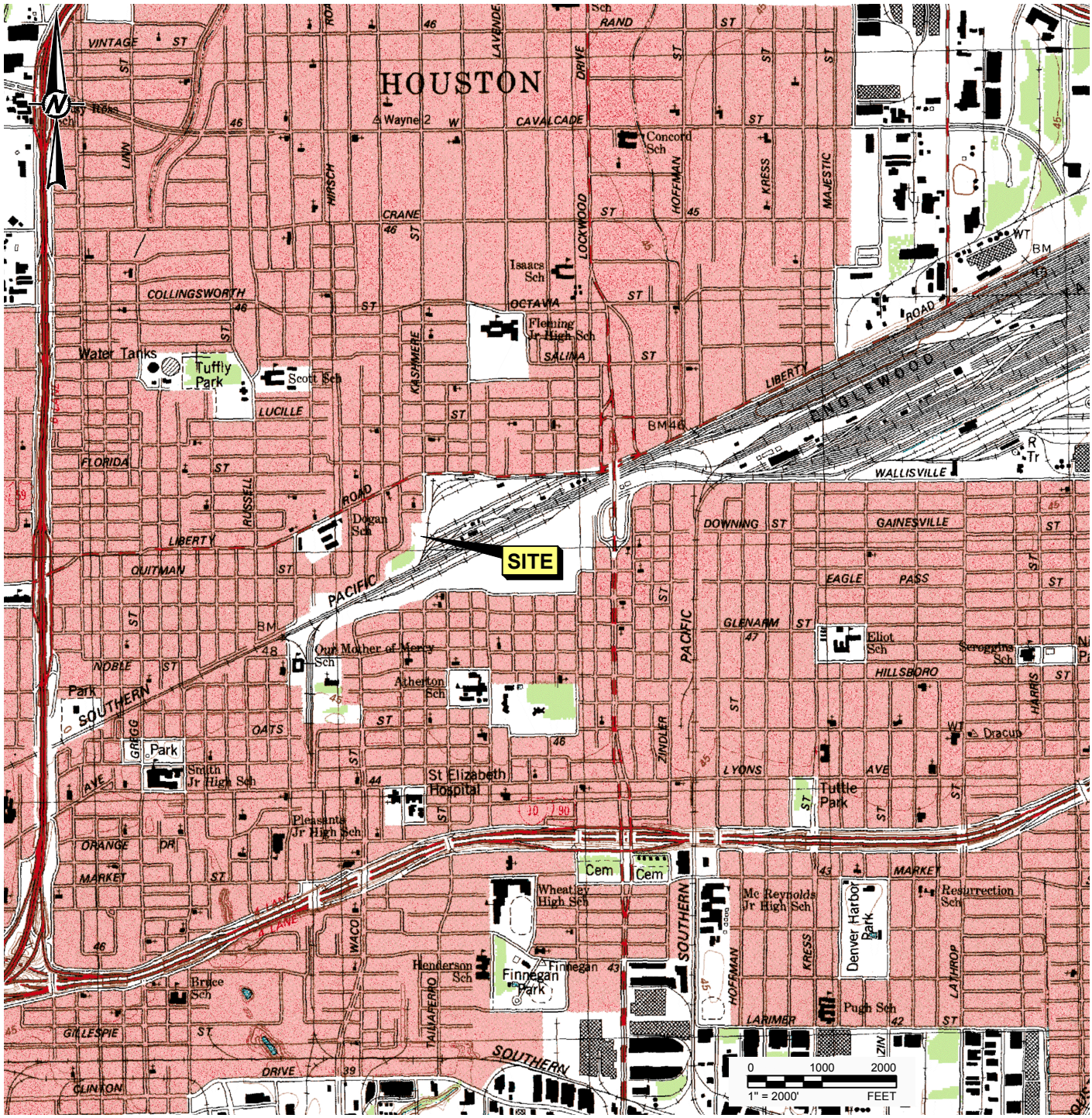
Notes
BTOC = feet below the top of the well casing
ft. MSL = feet above Mean Sea Level
NA = Not Available
*TOC elevations based on December 2015 survey (see Section 3.17)

Table 5
Compliance Status of Wells and Piezometers
Semiannual Monitoring Report: 2020 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 USGS 7.5 MINUTE QUADRANGLE, SETTEGAST, TEXAS, 1982.

QUADRANGLE LOCATION

CLIENT

UNION PACIFIC RAILROAD CO.

PROJECT

HOUSTON WOOD PRESERVING WORKS

TITLE

SITE LOCATION MAP

CONSULTANT

GOLDER

YYYY-MM-DD	2018-12-10
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

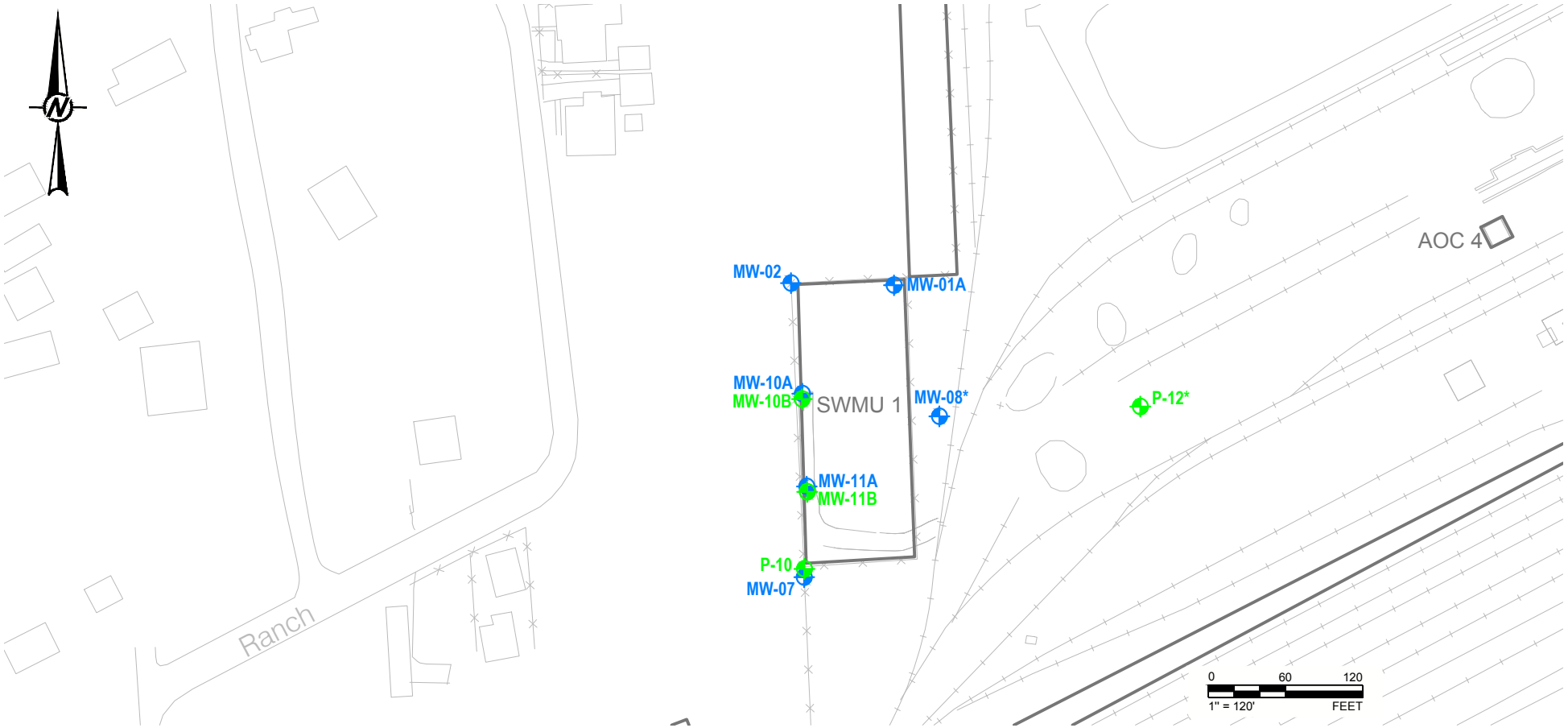
PROJECT NO. 30401358 | REV. 0 | FIGURE 1

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

0 1 cm

Last Edited By: adiamond Date: 2018-12-10 Time:8:55:38 AM | Printed By: adiamond Date: 2018-12-10 Time:8:56:10 AM
Path: \\texarkanadata\Projects - Round Rock\13\58-UPRR Wood Preserving Works\2018-4 Apmt | File Name: Fig 1 - Site Location Map.dwg

Last Edited By: adiamond Date: 2020-07-06 Time:12:07:03 PM | Printed By: adiamond Date: 2020-07-06 Time:12:08:08 PM |
Path: \\texarkana\data\Projects - Round Rock_2019\19119232 - HWPW\0-Semi-Annual Monitoring Event\SWMU Figures\2020 - 1st Semi-Annual\ | File Name: FIG 2 - Corrective Action Monitoring Well Network TCEQ Permit Unit No.1.dwg



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.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
7/6/2020

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

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

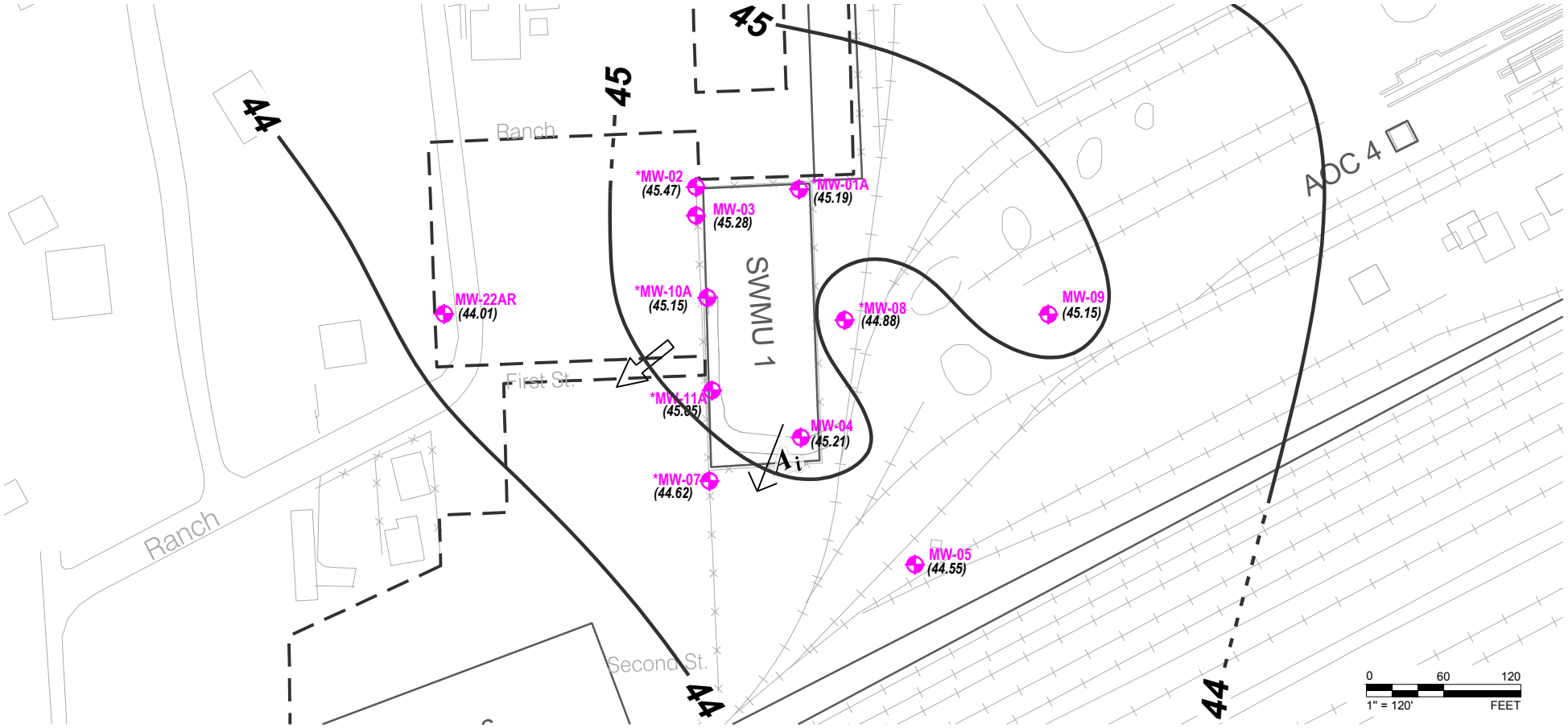
CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-06-29
DESIGNED	AJD
PREPARED	AJD
REVIEWED	HM
APPROVED	ECM

PROJECT NO. 19119232 | 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: 2020-07-06 Time:12:10:45 PM | Printed By: adiamond Date: 2020-07-06 Time:12:11:20 PM |
Path: \\texarkana\data\Projects - Round Rock_2019\19119232 - HWPW\0-Semi-Annual Monitoring Event\SWMU Figures\2020 - 1st Semi-Annual\ | File Name: FIG 3 - A-TZ Potentiometric Surface Contour Map (SWMU 1) - January 2020.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 FT (DASHED WHERE INFERRED)
- INFERRED GROUNDWATER FLOW DIRECTION

ESTIMATED GRADIENT

$$A_i \rightarrow A_i = \frac{0.6\ ft}{60\ ft} = 0.01\ ft/ft$$

REFERENCE(S)

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

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
7/6/2020

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
A-TZ POTENTIOMETRIC SURFACE CONTOUR MAP JANUARY 2020

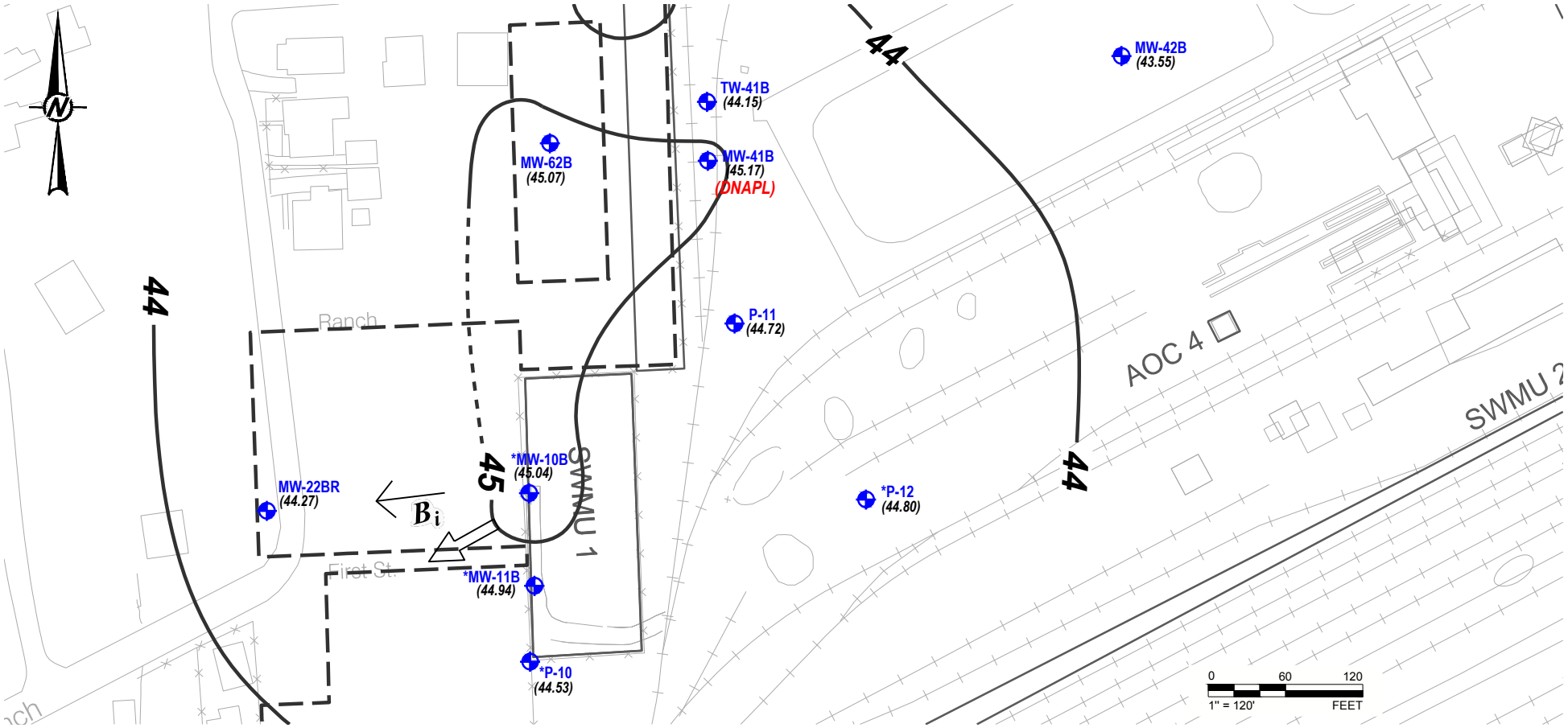
CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-06-18
DESIGNED	AJD
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | 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: 2020-07-06 Time:12:09:10 PM | Printed By: adiamond Date: 2020-07-06 Time:12:09:58 PM |
Path: \\texarkana\data\Projects - Round Rock_2019\19119232 - HWPW\0-Semi-Annual Monitoring Event\SWMU Figures\2020 - 1st Semi-Annual\ | File Name: FIG 4 - B-TZ-B-CZ Potentiometric Surface Contour Map (SWMU 1) - January 2020.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 FT (DASHED WHERE INFERRED)
- INFERRED GROUNDWATER FLOW DIRECTION

ESTIMATED GRADIENT

$$B_i \rightarrow B_i = \frac{0.77\ ft}{192\ ft} = 0.004\ ft/ft$$

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
7/6/2020

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

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

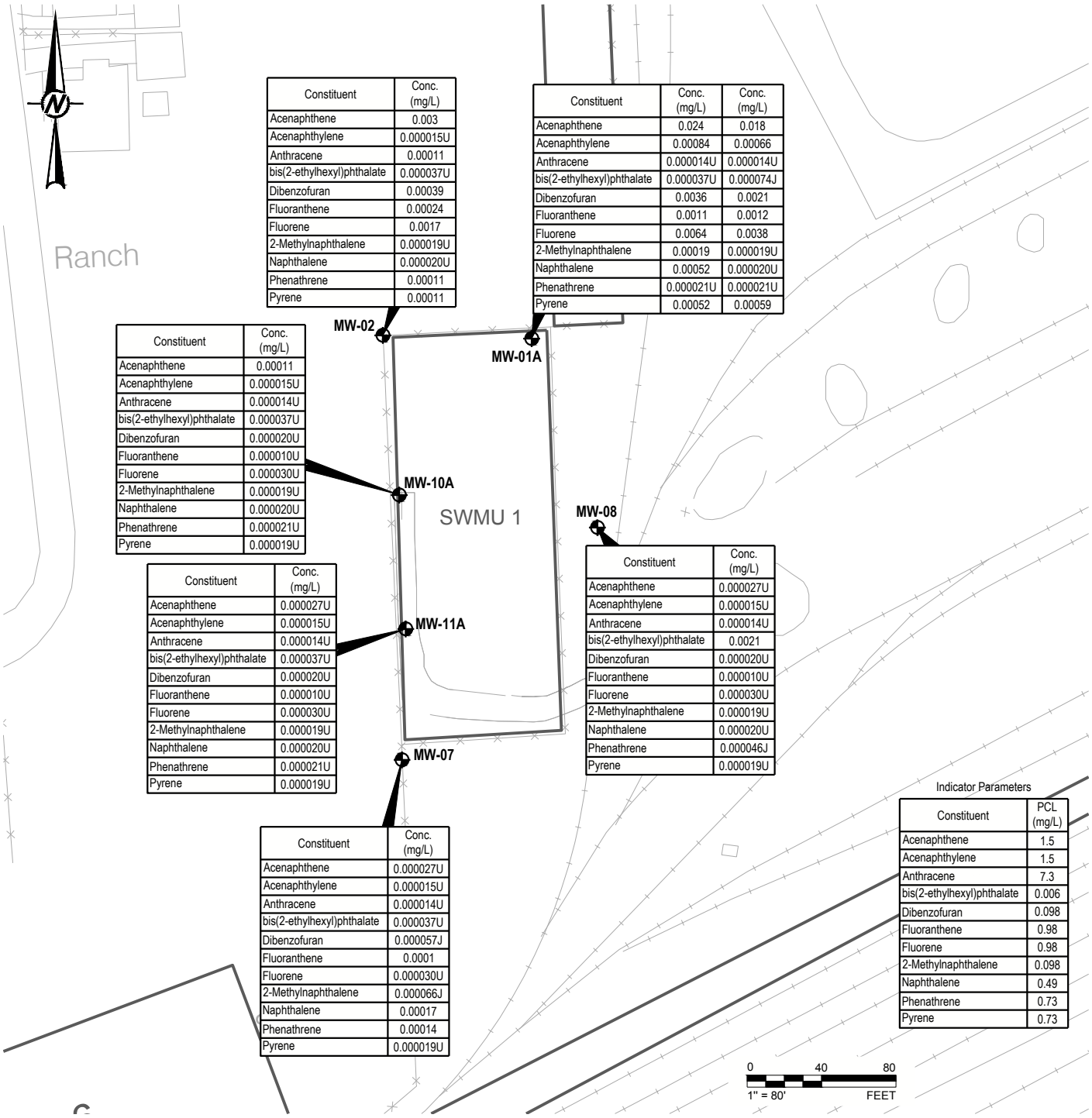
TITLE
B-TZ POTENTIOMETRIC SURFACE CONTOUR MAP
JANUARY 2020

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-06-18
DESIGNED	AJD
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | 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	0.003
Acenaphthylene	0.000015U
Anthracene	0.00011
bis(2-ethylhexyl)phthalate	0.000037U
Dibenzofuran	0.00039
Fluoranthene	0.00024
Fluorene	0.0017
2-Methylnaphthalene	0.000019U
Naphthalene	0.000020U
Phenathrene	0.00011
Pyrene	0.00011

Constituent	Conc. (mg/L)	Conc. (mg/L)
Acenaphthene	0.024	0.018
Acenaphthylene	0.00084	0.00066
Anthracene	0.000014U	0.000014U
bis(2-ethylhexyl)phthalate	0.000037U	0.000074J
Dibenzofuran	0.0036	0.0021
Fluoranthene	0.0011	0.0012
Fluorene	0.0064	0.0038
2-Methylnaphthalene	0.00019	0.000019U
Naphthalene	0.00052	0.000020U
Phenathrene	0.000021U	0.000021U
Pyrene	0.00052	0.00059

Constituent	Conc. (mg/L)
Acenaphthene	0.00011
Acenaphthylene	0.000015U
Anthracene	0.000014U
bis(2-ethylhexyl)phthalate	0.000037U
Dibenzofuran	0.000020U
Fluoranthene	0.000010U
Fluorene	0.000030U
2-Methylnaphthalene	0.000019U
Naphthalene	0.000020U
Phenathrene	0.000021U
Pyrene	0.000019U

Constituent	Conc. (mg/L)
Acenaphthene	0.000027U
Acenaphthylene	0.000015U
Anthracene	0.000014U
bis(2-ethylhexyl)phthalate	0.000037U
Dibenzofuran	0.000020U
Fluoranthene	0.000010U
Fluorene	0.000030U
2-Methylnaphthalene	0.000019U
Naphthalene	0.000020U
Phenathrene	0.000021U
Pyrene	0.000019U

Constituent	Conc. (mg/L)
Acenaphthene	0.000027U
Acenaphthylene	0.000015U
Anthracene	0.000014U
bis(2-ethylhexyl)phthalate	0.0021
Dibenzofuran	0.000020U
Fluoranthene	0.000010U
Fluorene	0.000030U
2-Methylnaphthalene	0.000019U
Naphthalene	0.000020U
Phenathrene	0.000046J
Pyrene	0.000019U

Constituent	Conc. (mg/L)
Acenaphthene	0.000027U
Acenaphthylene	0.000015U
Anthracene	0.000014U
bis(2-ethylhexyl)phthalate	0.000037U
Dibenzofuran	0.000057J
Fluoranthene	0.0001
Fluorene	0.000030U
2-Methylnaphthalene	0.000066J
Naphthalene	0.00017
Phenathrene	0.00014
Pyrene	0.000019U

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 JANUARY 2020.
2. J = ESTIMATED VALUE BETWEEN SQL AND MDL.
3. U = VALUE NOT DETECTED GREATER THAN MDL.
4. * FIELD DUPLICATE

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
7/6/2020

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
2020 1ST SEMI-ANNUAL MONITORING EVENT

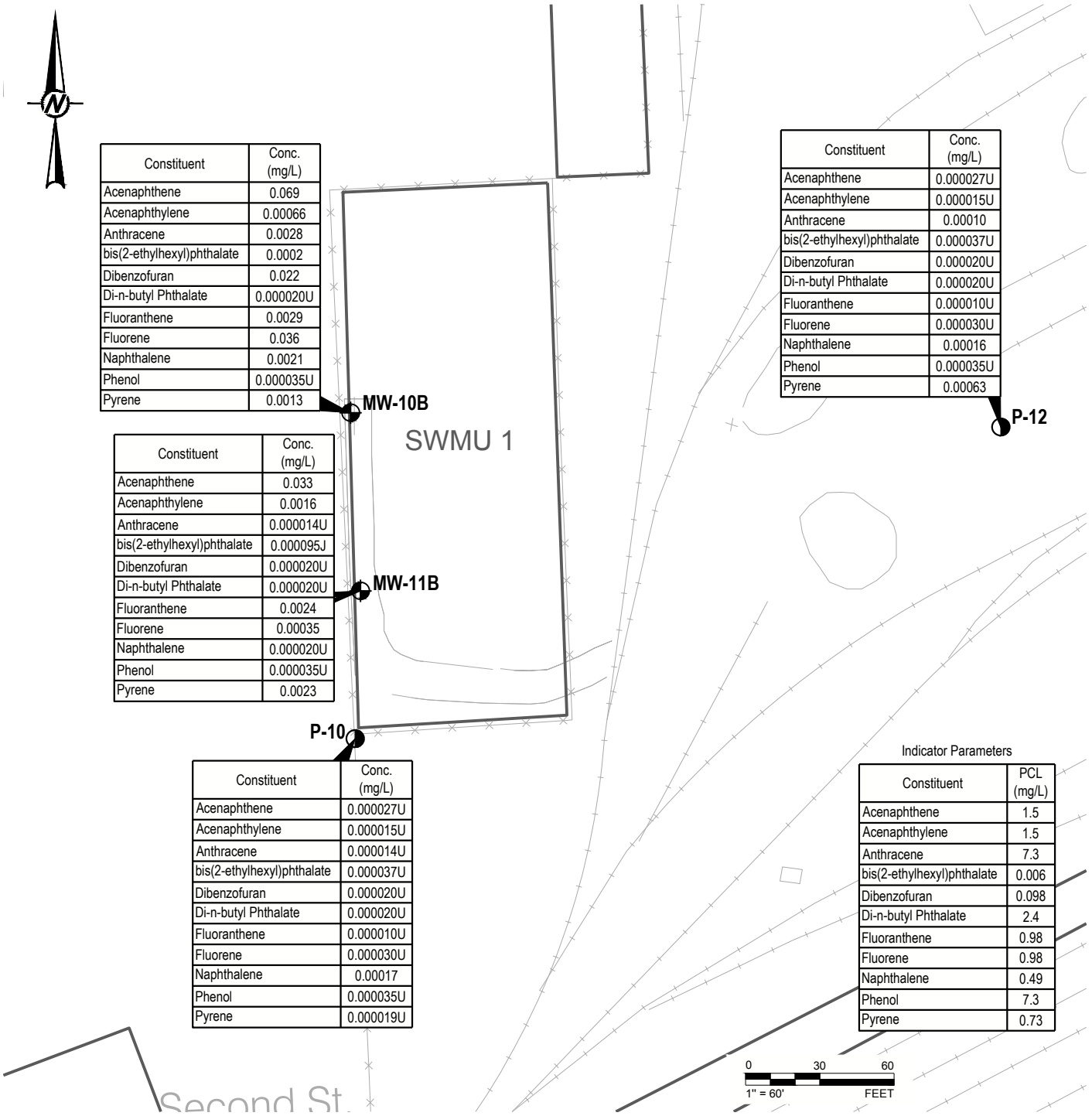
CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-03-20
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 . REV. 0 FIGURE 5

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

Last Edited By: adiamond Date: 2020-07-06 Time:12:13:32 PM | Printed By: adiamond Date: 2020-07-06 Time:12:14:10 PM
Path: \\texarkanadata\Projects - Round Rock_2019\19119232 - HWPW\0-Semi-Annual Monitoring Event\SWMU Figures\2020 - 1st Semi-Annual\ | File Name: FIG 5 - A-TZ Reported Concentrations 2020 1st SAME.dwg



Constituent	Conc. (mg/L)
Acenaphthene	0.069
Acenaphthylene	0.00066
Anthracene	0.0028
bis(2-ethylhexyl)phthalate	0.0002
Dibenzofuran	0.022
Di-n-butyl Phthalate	0.000020U
Fluoranthene	0.0029
Fluorene	0.036
Naphthalene	0.0021
Phenol	0.000035U
Pyrene	0.0013

Constituent	Conc. (mg/L)
Acenaphthene	0.033
Acenaphthylene	0.0016
Anthracene	0.000014U
bis(2-ethylhexyl)phthalate	0.000095J
Dibenzofuran	0.000020U
Di-n-butyl Phthalate	0.000020U
Fluoranthene	0.0024
Fluorene	0.00035
Naphthalene	0.000020U
Phenol	0.000035U
Pyrene	0.0023

Constituent	Conc. (mg/L)
Acenaphthene	0.000027U
Acenaphthylene	0.000015U
Anthracene	0.000014U
bis(2-ethylhexyl)phthalate	0.000037U
Dibenzofuran	0.000020U
Di-n-butyl Phthalate	0.000020U
Fluoranthene	0.000010U
Fluorene	0.000030U
Naphthalene	0.00017
Phenol	0.000035U
Pyrene	0.000019U

Constituent	Conc. (mg/L)
Acenaphthene	0.000027U
Acenaphthylene	0.000015U
Anthracene	0.00010
bis(2-ethylhexyl)phthalate	0.000037U
Dibenzofuran	0.000020U
Di-n-butyl Phthalate	0.000020U
Fluoranthene	0.000010U
Fluorene	0.000030U
Naphthalene	0.00016
Phenol	0.000035U
Pyrene	0.00063

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 JANUARY 2020.
2. J = ESTIMATED VALUE BETWEEN SQL AND MDL.
3. U = VALUE NOT DETECTED GREATER THAN MDL.
4. JL = ESTIMATED CONCENTRATION; BIASED LOW.
5. HIGHLIGHTED VALUE EXCEEDS PCL.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
7/6/2020

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
2020 1ST SEMI-ANNUAL MONITORING EVENT

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-06-03
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 1 | 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: 2020-07-06 Time:12:15:24 PM | Printed By: adiamond Date: 2020-07-06 Time:12:15:57 PM
Path: \\texarkanadata\Projects - Round Rock_2019\19119232 - HWPW\0-Semi-Annual Monitoring Event\SWMU Figures\2020 - 1st Semi-Annual\ | File Name: FIG 6 - B-TZ Reported Concentrations 2020 1st 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: 2020 First 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
	1/14/2020	1/14/2020	1/13/2020	1/13/2020	1/14/2020	1/14/2020	1/14/2020	1/14/2020	1/13/2020	1/13/2020
Time Sampled (hrs CST)	14:35	13:30	13:15	11:30	12:25	10:35	11:35	9:25	14:40	10:30
Temperature (ºC)	25.4	22.24	19.61	19.59	22.94	21.49	22.74	21.12	19.6	20.33
pH (Standard Units)	6.15	5.96	7.05	7.1	6.3	6.22	5.9	5.92	7.21	6.89
Specific Conductivity (mmhos/cm)	1060	578	812	605	944	880	1070	1020	1090	1280
Dissolved Oxygen (mg/L)	1.91	0.6	4.6	3.62	1.92	2.29	1.07	0	1.38	0.49
Turbidity (NTU)	8.4	40	15.4	0.1	0	7.4	0	0	2.4	53.4

APPENDIX C

Laboratory Analytical Reports and Data Usability Summaries

Memorandum

March 10, 2020

To:	Eric Matzner	Ref. No.:	11183954-1620
From:	Chris G. Knight/eew/559-NF	Tel:	512-506-8803
cc:	Jesse Orth, Jon Lang; Julie Lidstone		

Subject: **Data Usability Summary**
Semiannual Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January 2020

1. Scope of Data Usability Study

This document details a Data Usability Summary (DUS) of analytical results for groundwater samples collected in support of the Semiannual Groundwater Monitoring Event at the Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works site during January 2020. Samples were submitted to ALS Environmental (ALS), located in Houston, Texas and are reported in data package HS20010618. The intended use of the data is to support the Semiannual Groundwater Monitoring Event at the site by providing current concentration of chemicals of concern.

Data were reviewed and validated by Chris G. Knight of GHD, in accordance with Title 30 of the 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, the finished report forms, method blank data, recovery data from surrogate spikes/laboratory control samples (LCS)/matrix spikes (MS), duplicate data, field quality assurance/quality control (QA/QC) samples, the laboratory review checklists (LRC), and the laboratory exception report (ER).

A sample collection and analysis summary is 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.

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 # TX104704231 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 field blank samples, a field duplicate sample set, 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.

4. Data Review/Validation Results

4.1 Sample Holding Time and Preservation

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

The sample chain of custody documents and the analytical report were used to determine sample holding times. All samples were prepared and analyzed within the required holding times.

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 method.

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 handled in the field, these blanks are not listed on the sample identification cross-reference list found in the data package.

For this study, laboratory method blanks were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch and results are reported in the laboratory data package.

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 package. 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 semi-volatile organic compounds (SVOCs) are spiked with surrogate compounds prior to sample 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 as long as the recovery is at least ten percent. Sample analyzed at elevated sample dilutions (five times or greater) were not assessed.

Surrogate recoveries were assessed against laboratory control limits and/or the guidance in TRRP-13. All surrogate recoveries met the above criteria.

4.6 Laboratory Control Sample Analysis

LCS are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project.

For this study, LCS were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch.

The LCS contained all compounds specified in the method. All LCS recoveries were within the laboratory control limits, demonstrating acceptable analytical accuracy.

4.7 Matrix Spike Analysis

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

An MS/MSD analysis was performed as specified in Table 1. The recovery ranges established by the laboratory is adopted as the acceptance criteria for the project.

The MS/MSD samples were spiked with all compounds specified in the method. All percent recoveries and the RPD value were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision.

4.8 Field QA/QC Samples

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

Field Blank Sample Analysis

To assess ambient conditions at the site, two field blank samples were submitted for analysis, as identified in Table 1. All results were non-detect for the compounds of interest.

Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, one field duplicate sample set was collected and submitted "blind" 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. All field duplicate results were within acceptable agreement, demonstrating acceptable sampling and analytical precision.

4.9 Field Procedures

Golder Associates, Inc. collected groundwater 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.

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

5. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are usable for the purpose of supporting the Semiannual Groundwater Monitoring Event at the site by providing current concentration of chemicals of concern without qualification.

Table 1

Sample Collection and Analysis Summary
Semiannual Groundwater Monitoring Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January 2020

					Analysis/Parameters	
Sample Identification	**Location**	**Matrix**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**SVOCs**	**Comments**
WG-1620-P12-20200113	P-12	Water	01/13/2020	10:30	X	MS/MSD
WG-1620-MW08-20200113	MW-08	Water	01/13/2020	11:30	X	
WG-1620-FB01-20200113	-	Water	01/13/2020	11:30	X	Field Blank
WG-1620-MW07-20200113	MW-07	Water	01/13/2020	13:15	X	
WG-1620-P10-20200113	P-10	Water	01/13/2020	14:20	X	
WG-1620-MW11B-20200114	MW-11B	Water	01/14/2020	09:25	X	
WG-1620-MW11A-20200114	MW-11A	Water	01/14/2020	10:35	X	
WG-1620-MW10B-20200114	MW-10B	Water	01/14/2020	11:35	X	
WG-1620-MW10A-20200114	MW-10A	Water	01/14/2020	12:25	X	
WG-1620-MW02-20200114	MW-02	Water	01/14/2020	13:30	X	
WG-1620-MW01A-20200114	MW-01A	Water	01/14/2020	14:35	X	
WG-1620-FD01-20200114	MW-01A	Water	01/14/2020	14:35	X	Field duplicate of MW-01A
WG-1620-FB02-20200114	-	Water	01/14/2020	15:00	X	Field Blank

Notes:

SVOCs - Semi-volatile Organic Compounds
MS/MSD - Matrix Spike/ Matrix Spike Duplicate
"-" - Not Applicable

Table 2

Analytical Results Summary
Semiannual Groundwater Monitoring Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January 2020

Location ID:		MW-01A	MW-01A	MW-02	MW-07
Sample Name:		WG-1620-MW01A-20200114	WG-1620-FD01-20200114	WG-1620-MW02-20200114	WG-1620-MW07-20200113
Sample Date:		01/14/2020	01/14/2020	01/14/2020	01/13/2020
			Duplicate		
Parameters	**Unit**				
Semi-volatile Organic Compounds					
2-Methylnaphthalene	mg/L	0.00019	<0.000019	<0.000019	0.000066 J
Acenaphthene	mg/L	0.024	0.018	0.0030	<0.000027
Acenaphthylene	mg/L	0.00084	0.00066	<0.000015	<0.000015
Anthracene	mg/L	<0.000014	<0.000014	0.00011	<0.000014
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000037	0.000074 J	<0.000037	<0.000037
Di-n-butylphthalate (DBP)	mg/L	--	--	--	--
Dibenzofuran	mg/L	0.0036	0.0021	0.00039	0.000057 J
Fluoranthene	mg/L	0.0011	0.0012	0.00024	0.00010
Fluorene	mg/L	0.0064	0.0038	0.0017	<0.000030
Naphthalene	mg/L	0.00052	<0.000020	<0.000020	0.00017
Phenanthrene	mg/L	<0.000021	<0.000021	0.00011	0.00014
Phenol	mg/L	--	--	--	--
Pyrene	mg/L	0.00052	0.00059	0.00011	<0.000019

Table 2

Analytical Results Summary
Semiannual Groundwater Monitoring Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January 2020

Location ID:		MW-08	MW-10A	MW-10B	MW-11A
Sample Name:		WG-1620-MW08-20200113	WG-1620-MW10A-20200114	WG-1620-MW10B-20200114	WG-1620-MW11A-20200114
Sample Date:		01/13/2020	01/14/2020	01/14/2020	01/14/2020
Parameters	**Unit**				
Semi-volatile Organic Compounds					
2-Methylnaphthalene	mg/L	<0.000019	<0.000019	--	<0.000019
Acenaphthene	mg/L	<0.000027	0.00011	0.069	<0.000027
Acenaphthylene	mg/L	<0.000015	<0.000015	0.00066	<0.000015
Anthracene	mg/L	<0.000014	<0.000014	0.0028	<0.000014
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	0.00021	<0.000037	0.00020	<0.000037
Di-n-butylphthalate (DBP)	mg/L	--	--	<0.000020	--
Dibenzofuran	mg/L	<0.000020	<0.000020	0.022	<0.000020
Fluoranthene	mg/L	<0.000010	<0.000010	0.0029	<0.000010
Fluorene	mg/L	<0.000030	<0.000030	0.036	<0.000030
Naphthalene	mg/L	<0.000020	<0.000020	0.0021	<0.000020
Phenanthrene	mg/L	0.000046 J	<0.000021	--	<0.000021
Phenol	mg/L	--	--	<0.000035	--
Pyrene	mg/L	<0.000019	<0.000019	0.0013	<0.000019

Table 2

Analytical Results Summary
Semiannual Groundwater Monitoring Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January 2020

Location ID:		**MW-11B**	**P-10**	**P-12**
Sample Name:		**WG-1620-MW11B-20200114**	**WG-1620-P10-20200113**	**WG-1620-P12-20200113**
Sample Date:		**01/14/2020**	**01/13/2020**	**01/13/2020**
Parameters	**Unit**			
Semi-volatile Organic Compounds				
2-Methylnaphthalene	mg/L	--	--	--
Acenaphthene	mg/L	0.033	<0.000027	<0.000027
Acenaphthylene	mg/L	0.0016	<0.000015	<0.000015
Anthracene	mg/L	<0.000014	<0.000014	0.00010
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	0.000095 J	<0.000037	<0.000037
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	<0.000020
Dibenzofuran	mg/L	<0.000020	<0.000020	<0.000020
Fluoranthene	mg/L	0.0024	<0.000010	<0.000010
Fluorene	mg/L	0.00035	<0.000030	<0.000030
Naphthalene	mg/L	<0.000020	0.00017	0.00016
Phenanthrene	mg/L	--	--	--
Phenol	mg/L	<0.000035	<0.000035	<0.000035
Pyrene	mg/L	0.0023	<0.000019	0.00063

Notes:

< - Not detected at the associated reporting limit
J - Estimated concentration
"--" - Not applicable

Table 3

Analytical Methods
Semiannual Groundwater Monitoring Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January 2020

			Holding Time	
Parameter	**Method**	**Matrix**	**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

Attachment A
Laboratory NELAP Certificate

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-19-23

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

Expiration Date: 4/30/2020

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

Issue Date: 5/1/2019

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: ***Drinking Water***

Method EPA 1613

Analyte	AB	Analyte ID	Method ID
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10120408

Method EPA 200.8

Analyte	AB	Analyte ID	Method ID
Copper	TX	1055	10014605
Lead	TX	1075	10014605

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Matrix: ***Non-Potable Water***

Method EPA 1010

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10116606

Method EPA 120.1

Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	10006403

Method EPA 1311

Analyte	AB	Analyte ID	Method ID
TCLP	TX	849	10118806

Method EPA 1312

Analyte	AB	Analyte ID	Method ID
SPLP	TX	850	10119003

Method EPA 160.4

Analyte	AB	Analyte ID	Method ID
Residue-volatile	TX	1970	10010409

Method EPA 1613

Analyte	AB	Analyte ID	Method ID
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10120408
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10120408
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10120408
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10120408
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10120408
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10120408
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10120408
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10120408
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10120408
1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10120408
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10120408
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10120408
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10120408
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10120408

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Matrix: ***Non-Potable Water***

2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10120408
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10120408
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10120408
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10120408
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10120408
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10120408
Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10120408
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10120408
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10120408
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10120408
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10120408

Method EPA 1664

Analyte	**AB**	**Analyte ID**	**Method ID**
n-Hexane Extractable Material (HEM) (O&G)	TX	1803	10127807

Method EPA 180.1

Analyte	**AB**	**Analyte ID**	**Method ID**
Turbidity	TX	2055	10011606

Method EPA 200.8

Analyte	**AB**	**Analyte ID**	**Method ID**
Aluminum	TX	1000	10014605
Antimony	TX	1005	10014605
Arsenic	TX	1010	10014605
Barium	TX	1015	10014605
Beryllium	TX	1020	10014605
Boron	TX	1025	10014605
Cadmium	TX	1030	10014605
Calcium	TX	1035	10014605
Chromium	TX	1040	10014605
Cobalt	TX	1050	10014605
Copper	TX	1055	10014605
Iron	TX	1070	10014605

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Matrix: ***Non-Potable Water***

Lead	TX	1075	10014605
Magnesium	TX	1085	10014605
Manganese	TX	1090	10014605
Molybdenum	TX	1100	10014605
Nickel	TX	1105	10014605
Potassium	TX	1125	10014605
Selenium	TX	1140	10014605
Silver	TX	1150	10014605
Sodium	TX	1155	10014605
Strontium	TX	1160	10014605
Thallium	TX	1165	10014605
Tin	TX	1175	10014605
Titanium	TX	1180	10014605
Uranium	TX	3035	10014605
Vanadium	TX	1185	10014605
Zinc	TX	1190	10014605

Method EPA 245.1

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10036609

Method EPA 300.0

Analyte	**AB**	**Analyte ID**	**Method ID**
Bromide	TX	1540	10053200
Chloride	TX	1575	10053200
Fluoride	TX	1730	10053200
Nitrate as N	TX	1810	10053200
Nitrate-nitrite	TX	1820	10053200
Nitrite as N	TX	1840	10053200
Orthophosphate as P	TX	1870	10053200
Sulfate	TX	2000	10053200

Method EPA 325.1

Analyte	**AB**	**Analyte ID**	**Method ID**

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Matrix: ***Non-Potable Water***

Chloride	TX	1575	10056801

Method EPA 335.1

Analyte	AB	Analyte ID	Method ID
Amenable cyanide	TX	1510	10060001

Method EPA 335.2

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	10278203

Method EPA 335.4

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	10061402

Method EPA 350.3

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	10064401

Method EPA 365.3

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	10070801
Phosphorus	TX	1910	10070801

Method EPA 375.4

Analyte	AB	Analyte ID	Method ID
Sulfate	TX	2000	10073800

Method EPA 376.1

Analyte	AB	Analyte ID	Method ID
Sulfide	TX	2005	10074201

Method EPA 410.4

Analyte	AB	Analyte ID	Method ID
Chemical oxygen demand (COD)	TX	1565	10077404

Method EPA 415.1

Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	10078407

Method EPA 420.1

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10079400

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Matrix: ***Non-Potable Water***

Method EPA 420.4

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10080203

Method EPA 6020

Analyte	AB	Analyte ID	Method ID
Aluminum	TX	1000	10156419
Antimony	TX	1005	10156419
Arsenic	TX	1010	10156419
Barium	TX	1015	10156419
Beryllium	TX	1020	10156419
Boron	TX	1025	10156419
Cadmium	TX	1030	10156419
Calcium	TX	1035	10156419
Chromium	TX	1040	10156419
Cobalt	TX	1050	10156419
Copper	TX	1055	10156419
Iron	TX	1070	10156419
Lead	TX	1075	10156419
Lithium	TX	1080	10156419
Magnesium	TX	1085	10156419
Manganese	TX	1090	10156419
Molybdenum	TX	1100	10156419
Nickel	TX	1105	10156419
Potassium	TX	1125	10156419
Selenium	TX	1140	10156419
Silver	TX	1150	10156419
Sodium	TX	1155	10156419
Strontium	TX	1160	10156419
Thallium	TX	1165	10156419
Tin	TX	1175	10156419
Titanium	TX	1180	10156419

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Matrix: ***Non-Potable Water***

Vanadium	TX	1185	10156419
Zinc	TX	1190	10156419

Method EPA 608

Analyte	AB	Analyte ID	Method ID
4,4'-DDD	TX	7355	10103603
4,4'-DDE	TX	7360	10103603
4,4'-DDT	TX	7365	10103603
Aldrin	TX	7025	10103603
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10103603
alpha-Chlordane	TX	7240	10103603
Aroclor-1016 (PCB-1016)	TX	8880	10103603
Aroclor-1221 (PCB-1221)	TX	8885	10103603
Aroclor-1232 (PCB-1232)	TX	8890	10103603
Aroclor-1242 (PCB-1242)	TX	8895	10103603
Aroclor-1248 (PCB-1248)	TX	8900	10103603
Aroclor-1254 (PCB-1254)	TX	8905	10103603
Aroclor-1260 (PCB-1260)	TX	8910	10103603
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10103603
Chlordane (tech.)	TX	7250	10103603
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10103603
Dieldrin	TX	7470	10103603
Endosulfan I	TX	7510	10103603
Endosulfan II	TX	7515	10103603
Endosulfan sulfate	TX	7520	10103603
Endrin	TX	7540	10103603
Endrin aldehyde	TX	7530	10103603
Endrin ketone	TX	7535	10103603
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10103603
gamma-Chlordane	TX	7245	10103603
Heptachlor	TX	7685	10103603

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

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

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

Issue Date: 5/1/2019

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Matrix: ***Non-Potable Water***

Heptachlor epoxide	TX	7690	10103603
Methoxychlor	TX	7810	10103603
Toxaphene (Chlorinated camphene)	TX	8250	10103603

Method EPA 624

Analyte	AB	Analyte ID	Method ID
1,1,1-Trichloroethane	TX	5160	10107207
1,1,2,2-Tetrachloroethane	TX	5110	10107207
1,1,2-Trichloroethane	TX	5165	10107207
1,1-Dichloroethane	TX	4630	10107207
1,1-Dichloroethylene	TX	4640	10107207
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10107207
1,2-Dichlorobenzene	TX	4610	10107207
1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10107207
1,2-Dichloropropane	TX	4655	10107207
1,3-Dichlorobenzene	TX	4615	10107207
1,4-Dichlorobenzene	TX	4620	10107207
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10107207
2-Chloroethyl vinyl ether	TX	4500	10107207
Acetone (2-Propanone)	TX	4315	10107207
Acrolein (Propenal)	TX	4325	10107207
Acrylonitrile	TX	4340	10107207
Benzene	TX	4375	10107207
Bromodichloromethane	TX	4395	10107207
Bromoform	TX	4400	10107207
Carbon tetrachloride	TX	4455	10107207
Chlorobenzene	TX	4475	10107207
Chlorodibromomethane	TX	4575	10107207
Chloroethane (Ethyl chloride)	TX	4485	10107207
Chloroform	TX	4505	10107207
cis-1,2-Dichloroethylene	TX	4645	10107207

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Matrix: ***Non-Potable Water***

cis-1,3-Dichloropropene	TX	4680	10107207
Ethylbenzene	TX	4765	10107207
m+p-xylene	TX	5240	10107207
Methyl bromide (Bromomethane)	TX	4950	10107207
Methyl chloride (Chloromethane)	TX	4960	10107207
Methyl tert-butyl ether (MTBE)	TX	5000	10107207
Methylene chloride (Dichloromethane)	TX	4975	10107207
Naphthalene	TX	5005	10107207
o-Xylene	TX	5250	10107207
Tetrachloroethylene (Perchloroethylene)	TX	5115	10107207
Toluene	TX	5140	10107207
trans-1,2-Dichloroethylene	TX	4700	10107207
trans-1,3-Dichloropropylene	TX	4685	10107207
Trichloroethene (Trichloroethylene)	TX	5170	10107207
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10107207
Vinyl chloride	TX	5235	10107207
Xylene (total)	TX	5260	10107207

Method EPA 625

Analyte	**AB**	**Analyte ID**	**Method ID**
1,2,4,5-Tetrachlorobenzene	TX	6715	10107401
1,2,4-Trichlorobenzene	TX	5155	10107401
1,2-Dichlorobenzene	TX	4610	10107401
1,2-Diphenylhydrazine	TX	6220	10107401
1,3-Dichlorobenzene	TX	4615	10107401
1,4-Dichlorobenzene	TX	4620	10107401
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10107401
2,4,5-Trichlorophenol	TX	6835	10107401
2,4,6-Trichlorophenol	TX	6840	10107401
2,4-Dichlorophenol	TX	6000	10107401
2,4-Dimethylphenol	TX	6130	10107401

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Matrix: ***Non-Potable Water***

2,4-Dinitrophenol	TX	6175	10107401
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10107401
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10107401
2-Chloronaphthalene	TX	5795	10107401
2-Chlorophenol	TX	5800	10107401
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10107401
2-Methylphenol (o-Cresol)	TX	6400	10107401
2-Nitrophenol	TX	6490	10107401
3,3'-Dichlorobenzidine	TX	5945	10107401
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10107401
4-Chloro-3-methylphenol	TX	5700	10107401
4-Chlorophenyl phenylether	TX	5825	10107401
4-Methylphenol (p-Cresol)	TX	6410	10107401
4-Nitrophenol	TX	6500	10107401
Acenaphthene	TX	5500	10107401
Acenaphthylene	TX	5505	10107401
Anthracene	TX	5555	10107401
Benzidine	TX	5595	10107401
Benzo(a)anthracene	TX	5575	10107401
Benzo(a)pyrene	TX	5580	10107401
Benzo(b)fluoranthene	TX	5585	10107401
Benzo(g,h,i)perylene	TX	5590	10107401
Benzo(k)fluoranthene	TX	5600	10107401
bis(2-Chloroethoxy)methane	TX	5760	10107401
bis(2-Chloroethyl) ether	TX	5765	10107401
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10107401
Butyl benzyl phthalate	TX	5670	10107401
Chrysene	TX	5855	10107401
Dibenz(a,h) anthracene	TX	5895	10107401
Diethyl phthalate	TX	6070	10107401

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Matrix: ***Non-Potable Water***

Dimethyl phthalate	TX	6135	10107401
Di-n-butyl phthalate	TX	5925	10107401
Di-n-octyl phthalate	TX	6200	10107401
Fluoranthene	TX	6265	10107401
Fluorene	TX	6270	10107401
Hexachlorobenzene	TX	6275	10107401
Hexachlorobutadiene	TX	4835	10107401
Hexachlorocyclopentadiene	TX	6285	10107401
Hexachloroethane	TX	4840	10107401
Indeno(1,2,3-cd) pyrene	TX	6315	10107401
Isophorone	TX	6320	10107401
Naphthalene	TX	5005	10107401
Nitrobenzene	TX	5015	10107401
n-Nitrosodiethylamine	TX	6525	10107401
n-Nitrosodimethylamine	TX	6530	10107401
n-Nitrosodi-n-butylamine	TX	5025	10107401
n-Nitrosodi-n-propylamine	TX	6545	10107401
n-Nitrosodiphenylamine	TX	6535	10107401
Pentachlorobenzene	TX	6590	10107401
Pentachlorophenol	TX	6605	10107401
Phenanthrene	TX	6615	10107401
Phenol	TX	6625	10107401
Pyrene	TX	6665	10107401
Pyridine	TX	5095	10107401

Method EPA 7196

Analyte	**AB**	**Analyte ID**	**Method ID**
Chromium (VI)	TX	1045	10162206

Method EPA 7470

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10165603

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Matrix: ***Non-Potable Water***

Method EPA 8011

Analyte	AB	Analyte ID	Method ID
1,2,3-Trichloropropane	TX	5180	10173009
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10173009
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10173009

Method EPA 8015

Analyte	AB	Analyte ID	Method ID
Diesel range organics (DRO)	TX	9369	10173203
Ethanol	TX	4750	10173203
Ethylene glycol	TX	4785	10173203
Gasoline range organics (GRO)	TX	9408	10173203
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10173203
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10173203
Methanol	TX	4930	10173203
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10173203
n-Propanol (1-Propanol)	TX	5055	10173203
Propylene Glycol	TX	6657	10173203
tert-Butyl alcohol	TX	4420	10173203

Method EPA 8021

Analyte	AB	Analyte ID	Method ID
Benzene	TX	4375	10174400
Ethylbenzene	TX	4765	10174400
m+p-xylene	TX	5240	10174400
Methyl tert-butyl ether (MTBE)	TX	5000	10174400
o-Xylene	TX	5250	10174400
Toluene	TX	5140	10174400
Xylene (total)	TX	5260	10174400

Method EPA 8081

Analyte	AB	Analyte ID	Method ID
4,4'-DDD	TX	7355	10178402
4,4'-DDE	TX	7360	10178402

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Matrix: ***Non-Potable Water***

4,4'-DDT	TX	7365	10178402
Aldrin	TX	7025	10178402
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10178402
alpha-Chlordane	TX	7240	10178402
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10178402
Chlordane (tech.)	TX	7250	10178402
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10178402
Dieldrin	TX	7470	10178402
Endosulfan I	TX	7510	10178402
Endosulfan II	TX	7515	10178402
Endosulfan sulfate	TX	7520	10178402
Endrin	TX	7540	10178402
Endrin aldehyde	TX	7530	10178402
Endrin ketone	TX	7535	10178402
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10178402
gamma-Chlordane	TX	7245	10178402
Heptachlor	TX	7685	10178402
Heptachlor epoxide	TX	7690	10178402
Hexachlorobenzene	TX	6275	10178402
Methoxychlor	TX	7810	10178402
Mirex	TX	7870	10178402
Toxaphene (Chlorinated camphene)	TX	8250	10178402

Method EPA 8082

Analyte	**AB**	**Analyte ID**	**Method ID**
Aroclor-1016 (PCB-1016)	TX	8880	10179201
Aroclor-1221 (PCB-1221)	TX	8885	10179201
Aroclor-1232 (PCB-1232)	TX	8890	10179201
Aroclor-1242 (PCB-1242)	TX	8895	10179201
Aroclor-1248 (PCB-1248)	TX	8900	10179201
Aroclor-1254 (PCB-1254)	TX	8905	10179201

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Matrix: ***Non-Potable Water***

Aroclor-1260 (PCB-1260)	TX	8910	10179201
PCBs (total)	TX	8870	10179201

Method EPA 8151

Analyte	AB	Analyte ID	Method ID
2,4,5-T	TX	8655	10183003
2,4-D	TX	8545	10183003
2,4-DB	TX	8560	10183003
Dalapon	TX	8555	10183003
Dicamba	TX	8595	10183003
Dichloroprop (Dichlorprop, Weedone)	TX	8605	10183003
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10183003
MCPA	TX	7775	10183003
MCPP	TX	7780	10183003
Silvex (2,4,5-TP)	TX	8650	10183003

Method EPA 8260

Analyte	AB	Analyte ID	Method ID
1,1,1,2-Tetrachloroethane	TX	5105	10184404
1,1,1-Trichloroethane	TX	5160	10184404
1,1,2,2-Tetrachloroethane	TX	5110	10184404
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	TX	5195	10184404
1,1,2-Trichloroethane	TX	5165	10184404
1,1-Dichloroethane	TX	4630	10184404
1,1-Dichloroethylene	TX	4640	10184404
1,1-Dichloropropene	TX	4670	10184404
1,2,3-Trichlorobenzene	TX	5150	10184404
1,2,3-Trichloropropane	TX	5180	10184404
1,2,4-Trichlorobenzene	TX	5155	10184404
1,2,4-Trimethylbenzene	TX	5210	10184404
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10184404
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10184404
1,2-Dichlorobenzene	TX	4610	10184404

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Matrix: ***Non-Potable Water***

1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10184404
1,2-Dichloropropane	TX	4655	10184404
1,3,5-Trimethylbenzene	TX	5215	10184404
1,3-Dichlorobenzene	TX	4615	10184404
1,3-Dichloropropane	TX	4660	10184404
1,4-Dichlorobenzene	TX	4620	10184404
1,4-Dioxane (1,4-Diethyleneoxide)	TX	4735	10184404
1-Chlorohexane	TX	4510	10184404
1-Propanol	TX	5060	10184404
2,2-Dichloropropane	TX	4665	10184404
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10184404
2-Chloroethyl vinyl ether	TX	4500	10184404
2-Chlorotoluene	TX	4535	10184404
2-Hexanone (MBK)	TX	4860	10184404
2-Pentanone	TX	5045	10184404
4-Chlorotoluene	TX	4540	10184404
4-Isopropyltoluene (p-Cymene)	TX	4915	10184404
4-Methyl-2-pentanone (MIBK)	TX	4995	10184404
Acetone (2-Propanone)	TX	4315	10184404
Acetonitrile	TX	4320	10184404
Acrolein (Propenal)	TX	4325	10184404
Acrylonitrile	TX	4340	10184404
Allyl alcohol	TX	4350	10184404
Allyl chloride (3-Chloropropene)	TX	4355	10184404
Benzene	TX	4375	10184404
Benzyl chloride	TX	5635	10184404
Bromobenzene	TX	4385	10184404
Bromochloromethane	TX	4390	10184404
Bromodichloromethane	TX	4395	10184404
Bromoform	TX	4400	10184404

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Matrix: ***Non-Potable Water***

Carbon disulfide	TX	4450	10184404
Carbon tetrachloride	TX	4455	10184404
Chlorobenzene	TX	4475	10184404
Chlorodibromomethane	TX	4575	10184404
Chloroethane (Ethyl chloride)	TX	4485	10184404
Chloroform	TX	4505	10184404
Chloroprene (2-Chloro-1,3-butadiene)	TX	4525	10184404
cis-1,2-Dichloroethylene	TX	4645	10184404
cis-1,3-Dichloropropene	TX	4680	10184404
Dibromofluoromethane	TX	4590	10184404
Dibromomethane (Methylene bromide)	TX	4595	10184404
Dichlorodifluoromethane (Freon-12)	TX	4625	10184404
Diethyl ether	TX	4725	10184404
Di-isopropylether (DIPE)	TX	9375	10184404
Epichlorohydrin (1-Chloro-2,3-epoxypropane)	TX	4745	10184404
Ethanol	TX	4750	10184404
Ethyl acetate	TX	4755	10184404
Ethyl methacrylate	TX	4810	10184404
Ethylbenzene	TX	4765	10184404
Ethylene oxide	TX	4795	10184404
Ethyl-t-butylether (ETBE) (2-Ethoxy-2-methylpropane)	TX	4770	10184404
Hexachlorobutadiene	TX	4835	10184404
Iodomethane (Methyl iodide)	TX	4870	10184404
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10184404
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10184404
Isopropylbenzene (Cumene)	TX	4900	10184404
m+p-xylene	TX	5240	10184404
Methacrylonitrile	TX	4925	10184404
Methyl acetate	TX	4940	10184404
Methyl acrylate	TX	4945	10184404

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Matrix: ***Non-Potable Water***

Methyl bromide (Bromomethane)	TX	4950	10184404
Methyl chloride (Chloromethane)	TX	4960	10184404
Methyl methacrylate	TX	4990	10184404
Methyl tert-butyl ether (MTBE)	TX	5000	10184404
Methylcyclohexane	TX	4965	10184404
Methylene chloride (Dichloromethane)	TX	4975	10184404
Naphthalene	TX	5005	10184404
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10184404
n-Butylbenzene	TX	4435	10184404
n-Propylbenzene	TX	5090	10184404
o-Xylene	TX	5250	10184404
Pentachloroethane	TX	5035	10184404
Propionitrile (Ethyl cyanide)	TX	5080	10184404
Pyridine	TX	5095	10184404
sec-Butylbenzene	TX	4440	10184404
Styrene	TX	5100	10184404
T-amylmethylether (TAME)	TX	4370	10184404
tert-Butyl alcohol	TX	4420	10184404
tert-Butylbenzene	TX	4445	10184404
Tetrachloroethylene (Perchloroethylene)	TX	5115	10184404
Toluene	TX	5140	10184404
trans-1,2-Dichloroethylene	TX	4700	10184404
trans-1,3-Dichloropropylene	TX	4685	10184404
trans-1,4-Dichloro-2-butene	TX	4605	10184404
Trichloroethene (Trichloroethylene)	TX	5170	10184404
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10184404
Vinyl acetate	TX	5225	10184404
Vinyl chloride	TX	5235	10184404
Xylene (total)	TX	5260	10184404

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Matrix: ***Non-Potable Water***

Method EPA 8270

Analyte	AB	Analyte ID	Method ID
1,2,4,5-Tetrachlorobenzene	TX	6715	10185203
1,2,4-Trichlorobenzene	TX	5155	10185203
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10185203
1,2-Dichlorobenzene	TX	4610	10185203
1,2-Dinitrobenzene	TX	6155	10185203
1,2-Diphenylhydrazine	TX	6220	10185203
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10185203
1,3-Dichlorobenzene	TX	4615	10185203
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10185203
1,4-Dichlorobenzene	TX	4620	10185203
1,4-Dinitrobenzene	TX	6165	10185203
1,4-Naphthoquinone	TX	6420	10185203
1,4-Phenylenediamine	TX	6630	10185203
1-Chloronaphthalene	TX	5790	10185203
1-Naphthylamine	TX	6425	10185203
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10185203
2,3,4,6-Tetrachlorophenol	TX	6735	10185203
2,4,5-Trichlorophenol	TX	6835	10185203
2,4,5-Trimethylaniline	TX	6880	10185203
2,4,6-Trichlorophenol	TX	6840	10185203
2,4-Diaminotoluene	TX	5880	10185203
2,4-Dichlorophenol	TX	6000	10185203
2,4-Dimethylphenol	TX	6130	10185203
2,4-Dinitrophenol	TX	6175	10185203
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10185203
2,6-Dichlorophenol	TX	6005	10185203
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10185203
2-Acetylaminofluorene	TX	5515	10185203

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-19-23

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

Expiration Date: 4/30/2020

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

Issue Date: 5/1/2019

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Matrix: ***Non-Potable Water***

2-Chloronaphthalene	TX	5795	10185203
2-Chlorophenol	TX	5800	10185203
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10185203
2-Methylaniline (o-Toluidine)	TX	5145	10185203
2-Methylnaphthalene	TX	6385	10185203
2-Methylphenol (o-Cresol)	TX	6400	10185203
2-Naphthylamine	TX	6430	10185203
2-Nitroaniline	TX	6460	10185203
2-Nitrophenol	TX	6490	10185203
2-Picoline (2-Methylpyridine)	TX	5050	10185203
3,3'-Dichlorobenzidine	TX	5945	10185203
3,3'-Dimethylbenzidine	TX	6120	10185203
3-Methylcholanthrene	TX	6355	10185203
3-Methylphenol (m-Cresol)	TX	6405	10185203
3-Nitroaniline	TX	6465	10185203
4-Aminobiphenyl	TX	5540	10185203
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10185203
4-Chloro-3-methylphenol	TX	5700	10185203
4-Chloroaniline	TX	5745	10185203
4-Chlorophenyl phenylether	TX	5825	10185203
4-Dimethyl aminoazobenzene	TX	6105	10185203
4-Methylphenol (p-Cresol)	TX	6410	10185203
4-Nitroaniline	TX	6470	10185203
4-Nitrobiphenyl	TX	6480	10185203
4-Nitrophenol	TX	6500	10185203
4-Nitroquinoline-1-oxide	TX	6510	10185203
5-Chloro-2-methylaniline	TX	5695	10185203
5-Nitro-o-toluidine	TX	6570	10185203
7,12-Dimethylbenz(a) anthracene	TX	6115	10185203
a-a-Dimethylphenethylamine	TX	6125	10185203

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Matrix: ***Non-Potable Water***

Acenaphthene	TX	5500	10185203
Acenaphthylene	TX	5505	10185203
Acetophenone	TX	5510	10185203
Aniline	TX	5545	10185203
Anthracene	TX	5555	10185203
Aramite	TX	5560	10185203
Atrazine	TX	7065	10185203
Azinphos-methyl (Guthion)	TX	7075	10185203
Azobenzene	TX	5562	10185203
Benzenethiol (Thiophenol)	TX	6750	10185203
Benzidine	TX	5595	10185203
Benzo(a)anthracene	TX	5575	10185203
Benzo(a)pyrene	TX	5580	10185203
Benzo(b)fluoranthene	TX	5585	10185203
Benzo(e)pyrene	TX	5605	10185203
Benzo(g,h,i)perylene	TX	5590	10185203
Benzo(k)fluoranthene	TX	5600	10185203
Benzoic acid	TX	5610	10185203
Benzyl alcohol	TX	5630	10185203
Biphenyl	TX	5640	10185203
bis(2-Chloroethoxy)methane	TX	5760	10185203
bis(2-Chloroethyl) ether	TX	5765	10185203
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10185203
Butyl benzyl phthalate	TX	5670	10185203
Caprolactam	TX	7180	10185203
Captan	TX	7190	10185203
Carbaryl (Sevin)	TX	7195	10185203
Carbazole	TX	5680	10185203
Carbophenothion	TX	7220	10185203
Chlorobenzilate	TX	7260	10185203

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Matrix: ***Non-Potable Water***

Chrysene	TX	5855	10185203
Coumaphos	TX	7315	10185203
Demeton	TX	7390	10185203
Demeton	TX	7390	10185203
Demeton-o	TX	7395	10185203
Demeton-s	TX	7385	10185203
Diallate	TX	7405	10185203
Dibenz(a,h) anthracene	TX	5895	10185203
Dibenz(a,j) acridine	TX	5900	10185203
Dibenzofuran	TX	5905	10185203
Dichlorovos (DDVP, Dichlorvos)	TX	8610	10185203
Diethyl phthalate	TX	6070	10185203
Dimethoate	TX	7475	10185203
Dimethoate	TX	7475	10185203
Dimethyl phthalate	TX	6135	10185203
Di-n-butyl phthalate	TX	5925	10185203
Di-n-octyl phthalate	TX	6200	10185203
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10185203
Dioxathion	TX	7495	10185203
Diphenylamine	TX	6205	10185203
Disulfoton	TX	8625	10185203
Ethion	TX	7565	10185203
Ethyl methanesulfonate	TX	6260	10185203
Famphur	TX	7580	10185203
Fluoranthene	TX	6265	10185203
Fluorene	TX	6270	10185203
Hexachlorobenzene	TX	6275	10185203
Hexachlorobutadiene	TX	4835	10185203
Hexachlorocyclopentadiene	TX	6285	10185203
Hexachloroethane	TX	4840	10185203

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Matrix: ***Non-Potable Water***

Hexachlorophene	TX	6290	10185203
Hexachloropropene	TX	6295	10185203
Indeno(1,2,3-cd) pyrene	TX	6315	10185203
Isodrin	TX	7725	10185203
Isophorone	TX	6320	10185203
Isosafrole	TX	6325	10185203
Kepone	TX	7740	10185203
Maleic anhydride	TX	6335	10185203
Methapyrilene	TX	6345	10185203
Methyl methanesulfonate	TX	6375	10185203
Methyl parathion (Parathion, methyl)	TX	7825	10185203
Mevinphos	TX	7850	10185203
Naled	TX	7905	10185203
Naphthalene	TX	5005	10185203
Nitrobenzene	TX	5015	10185203
n-Nitrosodiethylamine	TX	6525	10185203
n-Nitrosodimethylamine	TX	6530	10185203
n-Nitrosodi-n-butylamine	TX	5025	10185203
n-Nitrosodi-n-propylamine	TX	6545	10185203
n-Nitrosodiphenylamine	TX	6535	10185203
n-Nitrosomethylethylamine	TX	6550	10185203
n-Nitrosomorpholine	TX	6555	10185203
n-Nitrosopiperidine	TX	6560	10185203
n-Nitrosopyrrolidine	TX	6565	10185203
o,o,o-Triethyl phosphorothioate	TX	8290	10185203
o-Anisidine	TX	5550	10185203
Parathion, ethyl	TX	7955	10185203
p-Cresidine	TX	5860	10185203
Pentachlorobenzene	TX	6590	10185203
Pentachloronitrobenzene (PCNB)	TX	6600	10185203

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Pentachlorophenol	TX	6605	10185203
Phenacetin	TX	6610	10185203
Phenanthrene	TX	6615	10185203
Phenol	TX	6625	10185203
Phorate	TX	7985	10185203
Phosmet (Imidan)	TX	8000	10185203
Phthalic anhydride	TX	6640	10185203
Pronamide (Kerb)	TX	6650	10185203
Pyrene	TX	6665	10185203
Pyridine	TX	5095	10185203
Quinoline	TX	6670	10185203
Resorcinol	TX	6680	10185203
Safrole	TX	6685	10185203
Sulfotepp	TX	8155	10185203
Terbufos	TX	8185	10185203
Tetrachlorvinphos (Stirophos, Gardona)	TX	8197	10185203
Thionazin (Zinophos)	TX	8235	10185203
Toluene diisocyanate	TX	6775	10185203
Trifluralin (Treflan)	TX	8295	10185203

Method EPA 8290

Analyte	**AB**	**Analyte ID**	**Method ID**
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10187209
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10187209
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10187209
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10187209
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10187209
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10187209
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10187209
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10187209
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10187209

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Matrix: ***Non-Potable Water***

1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10187209
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10187209
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10187209
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10187209
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10187209
2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10187209
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10187209
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10187209
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10187209
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10187209
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10187209
Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10187209
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10187209
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10187209
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10187209
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10187209

Method EPA 8316

Analyte	**AB**	**Analyte ID**	**Method ID**
Acrylamide	TX	4330	10188202

Method EPA 8330

Analyte	**AB**	**Analyte ID**	**Method ID**
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10189807
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10189807
2,4,6-Trinitrotoluene (2,4,6-TNT)	TX	9651	10189807
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10189807
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10189807
2-Amino-4,6-dinitrotoluene (2-am-dnt)	TX	9303	10189807
2-Nitrotoluene	TX	9507	10189807
3-Nitrotoluene	TX	9510	10189807
4-Amino-2,6-dinitrotoluene (4-am-dnt)	TX	9306	10189807
4-Nitrotoluene	TX	9513	10189807

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Matrix: ***Non-Potable Water***

Methyl-2,4,6-trinitrophenylnitramine (tetryl)	TX	6415	10189807
Nitrobenzene	TX	5015	10189807
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	TX	9522	10189807
RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine)	TX	9432	10189807

Method EPA 9014

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	10193803
Total cyanide	TX	1645	10193803

Method EPA 9038

Analyte	**AB**	**Analyte ID**	**Method ID**
Sulfate	TX	2000	10196608

Method EPA 9040

Analyte	**AB**	**Analyte ID**	**Method ID**
pH	TX	1900	10196802

Method EPA 9050

Analyte	**AB**	**Analyte ID**	**Method ID**
Conductivity	TX	1610	10198604

Method EPA 9056

Analyte	**AB**	**Analyte ID**	**Method ID**
Bromide	TX	1540	10199209
Chloride	TX	1575	10199209
Fluoride	TX	1730	10199209
Nitrate as N	TX	1810	10199209
Nitrate-nitrite	TX	1820	10199209
Nitrite as N	TX	1840	10199209
Orthophosphate as P	TX	1870	10199209
Sulfate	TX	2000	10199209

Method EPA 9060

Analyte	**AB**	**Analyte ID**	**Method ID**
Total Organic Carbon (TOC)	TX	2040	10200201

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Matrix: ***Non-Potable Water***

Method EPA 9065

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200405

Method EPA 9066

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200609

Method EPA 9250

Analyte	AB	Analyte ID	Method ID
Chloride	TX	1575	10207202

Method EPA RSK 175

Analyte	AB	Analyte ID	Method ID
2-methylpropane (Isobutane)	TX	4942	10212905
Ethane	TX	4747	10212905
Ethene	TX	4752	10212905
Methane	TX	4926	10212905
n-Butane	TX	5007	10212905
n-Propane	TX	5029	10212905

Method HACH 8000

Analyte	AB	Analyte ID	Method ID
Chemical oxygen demand (COD)	TX	1565	60003001

Method SM 2120 B

Analyte	AB	Analyte ID	Method ID
Color	TX	1605	20223807

Method SM 2310 B (4a)

Analyte	AB	Analyte ID	Method ID
Acidity, as CaCO3	TX	1500	20002806

Method SM 2320 B

Analyte	AB	Analyte ID	Method ID
Alkalinity as CaCO3	TX	1505	20045005

Method SM 2340 B

Analyte	AB	Analyte ID	Method ID

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Matrix: ***Non-Potable Water***

Total hardness as CaCO3	TX	1755	20046008

Method SM 2510 B

Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	20048004

Method SM 2540 B

Analyte	AB	Analyte ID	Method ID
Residue-total (total solids)	TX	1950	20004608

Method SM 2540 C

Analyte	AB	Analyte ID	Method ID
Residue-filterable (TDS)	TX	1955	20049803

Method SM 2540 D

Analyte	AB	Analyte ID	Method ID
Residue-nonfilterable (TSS)	TX	1960	20004802

Method SM 3500-Cr B

Analyte	AB	Analyte ID	Method ID
Chromium (VI)	TX	1045	20065809

Method SM 4500-Cl F

Analyte	AB	Analyte ID	Method ID
Total residual chlorine	TX	1940	20080482

Method SM 4500-Cl^- E

Analyte	AB	Analyte ID	Method ID
Chloride	TX	1575	20019209

Method SM 4500-CN^- C

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	20020808

Method SM 4500-CN^- E

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	20021209

Method SM 4500-CN^- G

Analyte	AB	Analyte ID	Method ID
Amenable cyanide	TX	1510	20021607

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Matrix: ***Non-Potable Water***

Method SM 4500-H+ B

Analyte	AB	Analyte ID	Method ID
pH	TX	1900	20104603

Method SM 4500-NH3 D

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	20108809
Kjeldahl Nitrogen (Total Kjeldahl Nitrogen-TKN)	TX	1790	20108809

Method SM 4500-NH3 F

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	20023001

Method SM 4500-O G

Analyte	AB	Analyte ID	Method ID
Oxygen, dissolved	TX	1880	20025405

Method SM 4500-P E

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	20025803
Phosphorus	TX	1910	20025803

Method SM 4500-$S2^{-}$ F

Analyte	AB	Analyte ID	Method ID
Sulfide	TX	2005	20126209

Method SM 4500-SiO2 D

Analyte	AB	Analyte ID	Method ID
Silica as SiO2	TX	1990	20127202

Method SM 4500-$SO3^{-}$ B

Analyte	AB	Analyte ID	Method ID
Sulfite	TX	2015	20026806

Method SM 5210 B

Analyte	AB	Analyte ID	Method ID
Biochemical oxygen demand (BOD)	TX	1530	20027401
Carbonaceous BOD, CBOD	TX	1555	20027401

Method SM 5310 B

Analyte	AB	Analyte ID	Method ID

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Matrix: ***Non-Potable Water***

Total Organic Carbon (TOC)	TX	2040	20137206

Method SM 5310 C

Analyte	**AB**	**Analyte ID**	**Method ID**
Total Organic Carbon (TOC)	TX	2040	20138209

Method SM 5540 C

Analyte	**AB**	**Analyte ID**	**Method ID**
Surfactants - MBAS	TX	2025	20144405

Method TCEQ 1005

Analyte	**AB**	**Analyte ID**	**Method ID**
Total Petroleum Hydrocarbons (TPH)	TX	2050	90019208

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Matrix: ***Solid & Chemical Materials***

Method ASTM D2216

Analyte	AB	Analyte ID	Method ID
Moisture	TX	10337	ASTM D2216-05

Method EPA 1010

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10116606

Method EPA 1030

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10117201

Method EPA 1311

Analyte	AB	Analyte ID	Method ID
TCLP	TX	849	10118806

Method EPA 1312

Analyte	AB	Analyte ID	Method ID
SPLP	TX	850	10119003

Method EPA 1668

Analyte	AB	Analyte ID	Method ID
Decachlorobiphenyls	TX	10332	10262007
Dichlorobiphenyls	TX	464	10262007
Heptachlorobiphenyls	TX	486	10262007
Hexachlorobiphenyls	TX	487	10262007
Monochlorobiphenyls	TX	501	10262007
Nonachlorobiphenyls	TX	507	10262007
Octachlorobiphenyls	TX	508	10262007
Pentachlorobiphenyls	TX	515	10262007
Tetrachlorobiphenyls	TX	528	10262007
Trichlorobiphenyls	TX	541	10262007

Method EPA 200.8

Analyte	AB	Analyte ID	Method ID
Uranium	TX	3035	10014605

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Matrix: ***Solid & Chemical Materials***

Method EPA 300.0

Analyte	AB	Analyte ID	Method ID
Bromide	TX	1540	10053200
Chloride	TX	1575	10053200
Fluoride	TX	1730	10053200
Nitrate as N	TX	1810	10053200
Nitrate-nitrite	TX	1820	10053200
Nitrite as N	TX	1840	10053200
Orthophosphate as P	TX	1870	10053200
Sulfate	TX	2000	10053200

Method EPA 310.1

Analyte	AB	Analyte ID	Method ID
Alkalinity as CaCO3	TX	1505	10054805

Method EPA 350.3

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	10064401

Method EPA 365.3

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	10070801
Phosphorus	TX	1910	10070801

Method EPA 6020

Analyte	AB	Analyte ID	Method ID
Aluminum	TX	1000	10156204
Antimony	TX	1005	10156204
Arsenic	TX	1010	10156204
Barium	TX	1015	10156204
Beryllium	TX	1020	10156204
Boron	TX	1025	10156204
Cadmium	TX	1030	10156204
Calcium	TX	1035	10156204
Chromium	TX	1040	10156204

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Houston, TX 77099-4338

Issue Date: 5/1/2019

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Matrix: ***Solid & Chemical Materials***

Cobalt	TX	1050	10156204
Copper	TX	1055	10156204
Iron	TX	1070	10156204
Lead	TX	1075	10156204
Lithium	TX	1080	10156204
Magnesium	TX	1085	10156204
Manganese	TX	1090	10156204
Molybdenum	TX	1100	10156204
Nickel	TX	1105	10156204
Potassium	TX	1125	10156204
Selenium	TX	1140	10156204
Silver	TX	1150	10156204
Sodium	TX	1155	10156204
Strontium	TX	1160	10156204
Thallium	TX	1165	10156204
Tin	TX	1175	10156204
Titanium	TX	1180	10156204
Vanadium	TX	1185	10156204
Zinc	TX	1190	10156204

Method EPA 7196

Analyte	**AB**	**Analyte ID**	**Method ID**
Chromium (VI)	TX	1045	10162206

Method EPA 7470

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10165603

Method EPA 7471

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10166004

Method EPA 8015

Analyte	**AB**	**Analyte ID**	**Method ID**
Diesel range organics (DRO)	TX	9369	10173203

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Matrix: ***Solid & Chemical Materials***

Ethanol	TX	4750	10173203
Ethylene glycol	TX	4785	10173203
Gasoline range organics (GRO)	TX	9408	10173203
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10173203
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10173203
Methanol	TX	4930	10173203
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10173203
n-Propanol (1-Propanol)	TX	5055	10173203
Propylene Glycol	TX	6657	10173203
tert-Butyl alcohol	TX	4420	10173203

Method EPA 8021

Analyte	**AB**	**Analyte ID**	**Method ID**
Benzene	TX	4375	10174400
Ethylbenzene	TX	4765	10174400
m+p-xylene	TX	5240	10174400
Methyl tert-butyl ether (MTBE)	TX	5000	10174400
o-Xylene	TX	5250	10174400
Toluene	TX	5140	10174400
Xylene (total)	TX	5260	10174400

Method EPA 8081

Analyte	**AB**	**Analyte ID**	**Method ID**
4,4'-DDD	TX	7355	10178402
4,4'-DDE	TX	7360	10178402
4,4'-DDT	TX	7365	10178402
Aldrin	TX	7025	10178402
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10178402
alpha-Chlordane	TX	7240	10178402
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10178402
Chlordane (tech.)	TX	7250	10178402
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10178402
Dieldrin	TX	7470	10178402

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Matrix: ***Solid & Chemical Materials***

Endosulfan I	TX	7510	10178402
Endosulfan II	TX	7515	10178402
Endosulfan sulfate	TX	7520	10178402
Endrin	TX	7540	10178402
Endrin aldehyde	TX	7530	10178402
Endrin ketone	TX	7535	10178402
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10178402
gamma-Chlordane	TX	7245	10178402
Heptachlor	TX	7685	10178402
Heptachlor epoxide	TX	7690	10178402
Methoxychlor	TX	7810	10178402
Mirex	TX	7870	10178402
Toxaphene (Chlorinated camphene)	TX	8250	10178402

Method EPA 8082

Analyte	**AB**	**Analyte ID**	**Method ID**
Aroclor-1016 (PCB-1016)	TX	8880	10179201
Aroclor-1221 (PCB-1221)	TX	8885	10179201
Aroclor-1232 (PCB-1232)	TX	8890	10179201
Aroclor-1242 (PCB-1242)	TX	8895	10179201
Aroclor-1248 (PCB-1248)	TX	8900	10179201
Aroclor-1254 (PCB-1254)	TX	8905	10179201
Aroclor-1260 (PCB-1260)	TX	8910	10179201
PCBs (total)	TX	8870	10179201

Method EPA 8260

Analyte	**AB**	**Analyte ID**	**Method ID**
1,1,1,2-Tetrachloroethane	TX	5105	10184404
1,1,1-Trichloroethane	TX	5160	10184404
1,1,2,2-Tetrachloroethane	TX	5110	10184404
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	TX	5195	10184404
1,1,2-Trichloroethane	TX	5165	10184404
1,1-Dichloroethane	TX	4630	10184404

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Matrix: ***Solid & Chemical Materials***

1,1-Dichloroethylene	TX	4640	10184404
1,1-Dichloropropene	TX	4670	10184404
1,2,3-Trichlorobenzene	TX	5150	10184404
1,2,3-Trichloropropane	TX	5180	10184404
1,2,4-Trichlorobenzene	TX	5155	10184404
1,2,4-Trimethylbenzene	TX	5210	10184404
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10184404
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10184404
1,2-Dichlorobenzene	TX	4610	10184404
1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10184404
1,2-Dichloropropane	TX	4655	10184404
1,3,5-Trimethylbenzene	TX	5215	10184404
1,3-Dichlorobenzene	TX	4615	10184404
1,3-Dichloropropane	TX	4660	10184404
1,4-Dichlorobenzene	TX	4620	10184404
1,4-Dioxane (1,4-Diethyleneoxide)	TX	4735	10184404
1-Chlorohexane	TX	4510	10184404
1-Propanol	TX	5060	10184404
2,2-Dichloropropane	TX	4665	10184404
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10184404
2-Chloroethyl vinyl ether	TX	4500	10184404
2-Chlorotoluene	TX	4535	10184404
2-Hexanone (MBK)	TX	4860	10184404
4-Chlorotoluene	TX	4540	10184404
4-Isopropyltoluene (p-Cymene)	TX	4915	10184404
4-Methyl-2-pentanone (MIBK)	TX	4995	10184404
Acetone (2-Propanone)	TX	4315	10184404
Acetonitrile	TX	4320	10184404
Acrolein (Propenal)	TX	4325	10184404
Acrylonitrile	TX	4340	10184404

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Matrix: ***Solid & Chemical Materials***

Allyl chloride (3-Chloropropene)	TX	4355	10184404
Benzene	TX	4375	10184404
Benzyl chloride	TX	5635	10184404
Bromobenzene	TX	4385	10184404
Bromochloromethane	TX	4390	10184404
Bromodichloromethane	TX	4395	10184404
Bromoform	TX	4400	10184404
Carbon disulfide	TX	4450	10184404
Carbon tetrachloride	TX	4455	10184404
Chlorobenzene	TX	4475	10184404
Chlorodibromomethane	TX	4575	10184404
Chloroethane (Ethyl chloride)	TX	4485	10184404
Chloroform	TX	4505	10184404
Chloroprene (2-Chloro-1,3-butadiene)	TX	4525	10184404
cis-1,2-Dichloroethylene	TX	4645	10184404
cis-1,3-Dichloropropene	TX	4680	10184404
Dibromofluoromethane	TX	4590	10184404
Dibromomethane (Methylene bromide)	TX	4595	10184404
Dichlorodifluoromethane (Freon-12)	TX	4625	10184404
Diethyl ether	TX	4725	10184404
Epichlorohydrin (1-Chloro-2,3-epoxypropane)	TX	4745	10184404
Ethanol	TX	4750	10184404
Ethyl acetate	TX	4755	10184404
Ethyl methacrylate	TX	4810	10184404
Ethylbenzene	TX	4765	10184404
Ethylene oxide	TX	4795	10184404
Hexachlorobutadiene	TX	4835	10184404
Iodomethane (Methyl iodide)	TX	4870	10184404
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10184404
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10184404

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Matrix: ***Solid & Chemical Materials***

Isopropylbenzene (Cumene)	TX	4900	10184404
m+p-xylene	TX	5240	10184404
Methacrylonitrile	TX	4925	10184404
Methyl acetate	TX	4940	10184404
Methyl acrylate	TX	4945	10184404
Methyl bromide (Bromomethane)	TX	4950	10184404
Methyl chloride (Chloromethane)	TX	4960	10184404
Methyl methacrylate	TX	4990	10184404
Methyl tert-butyl ether (MTBE)	TX	5000	10184404
Methylcyclohexane	TX	4965	10184404
Methylene chloride (Dichloromethane)	TX	4975	10184404
Naphthalene	TX	5005	10184404
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10184404
n-Butylbenzene	TX	4435	10184404
n-Propylbenzene	TX	5090	10184404
o-Xylene	TX	5250	10184404
Pentachloroethane	TX	5035	10184404
Propionitrile (Ethyl cyanide)	TX	5080	10184404
Pyridine	TX	5095	10184404
sec-Butylbenzene	TX	4440	10184404
Styrene	TX	5100	10184404
tert-Butyl alcohol	TX	4420	10184404
tert-Butylbenzene	TX	4445	10184404
Tetrachloroethylene (Perchloroethylene)	TX	5115	10184404
Toluene	TX	5140	10184404
trans-1,2-Dichloroethylene	TX	4700	10184404
trans-1,3-Dichloropropylene	TX	4685	10184404
trans-1,4-Dichloro-2-butene	TX	4605	10184404
Trichloroethene (Trichloroethylene)	TX	5170	10184404
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10184404

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Matrix: ***Solid & Chemical Materials***

Vinyl acetate	TX	5225	10184404
Vinyl chloride	TX	5235	10184404
Xylene (total)	TX	5260	10184404

Method EPA 8270

Analyte	AB	Analyte ID	Method ID
1,2,4,5-Tetrachlorobenzene	TX	6715	10185203
1,2,4-Trichlorobenzene	TX	5155	10185203
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10185203
1,2-Dichlorobenzene	TX	4610	10185203
1,2-Dinitrobenzene	TX	6155	10185203
1,2-Diphenylhydrazine	TX	6220	10185203
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10185203
1,3-Dichlorobenzene	TX	4615	10185203
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10185203
1,4-Dichlorobenzene	TX	4620	10185203
1,4-Dinitrobenzene	TX	6165	10185203
1,4-Naphthoquinone	TX	6420	10185203
1,4-Phenylenediamine	TX	6630	10185203
1-Chloronaphthalene	TX	5790	10185203
1-Naphthylamine	TX	6425	10185203
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10185203
2,3,4,6-Tetrachlorophenol	TX	6735	10185203
2,4,5-Trichlorophenol	TX	6835	10185203
2,4,5-Trimethylaniline	TX	6880	10185203
2,4,6-Trichlorophenol	TX	6840	10185203
2,4-Diaminotoluene	TX	5880	10185203
2,4-Dichlorophenol	TX	6000	10185203
2,4-Dimethylphenol	TX	6130	10185203
2,4-Dinitrophenol	TX	6175	10185203
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10185203

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Matrix: ***Solid & Chemical Materials***

2,6-Dichlorophenol	TX	6005	10185203
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10185203
2-Acetylaminofluorene	TX	5515	10185203
2-Chloronaphthalene	TX	5795	10185203
2-Chlorophenol	TX	5800	10185203
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10185203
2-Methylaniline (o-Toluidine)	TX	5145	10185203
2-Methylnaphthalene	TX	6385	10185203
2-Methylphenol (o-Cresol)	TX	6400	10185203
2-Naphthylamine	TX	6430	10185203
2-Nitroaniline	TX	6460	10185203
2-Nitrophenol	TX	6490	10185203
2-Picoline (2-Methylpyridine)	TX	5050	10185203
3,3'-Dichlorobenzidine	TX	5945	10185203
3,3'-Dimethylbenzidine	TX	6120	10185203
3-Methylcholanthrene	TX	6355	10185203
3-Methylphenol (m-Cresol)	TX	6405	10185203
3-Nitroaniline	TX	6465	10185203
4-Aminobiphenyl	TX	5540	10185203
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10185203
4-Chloro-3-methylphenol	TX	5700	10185203
4-Chloroaniline	TX	5745	10185203
4-Chlorophenyl phenylether	TX	5825	10185203
4-Methylphenol (p-Cresol)	TX	6410	10185203
4-Nitroaniline	TX	6470	10185203
4-Nitrophenol	TX	6500	10185203
4-Nitroquinoline-1-oxide	TX	6510	10185203
5-Nitro-o-toluidine	TX	6570	10185203
7,12-Dimethylbenz(a) anthracene	TX	6115	10185203
a-a-Dimethylphenethylamine	TX	6125	10185203

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Matrix: ***Solid & Chemical Materials***

Acenaphthene	TX	5500	10185203
Acenaphthylene	TX	5505	10185203
Acetophenone	TX	5510	10185203
Aniline	TX	5545	10185203
Anthracene	TX	5555	10185203
Aramite	TX	5560	10185203
Atrazine	TX	7065	10185203
Azinphos-methyl (Guthion)	TX	7075	10185203
Azobenzene	TX	5562	10185203
Benzenethiol (Thiophenol)	TX	6750	10185203
Benzidine	TX	5595	10185203
Benzo(a)anthracene	TX	5575	10185203
Benzo(a)pyrene	TX	5580	10185203
Benzo(b)fluoranthene	TX	5585	10185203
Benzo(e)pyrene	TX	5605	10185203
Benzo(g,h,i)perylene	TX	5590	10185203
Benzo(k)fluoranthene	TX	5600	10185203
Benzoic acid	TX	5610	10185203
Benzyl alcohol	TX	5630	10185203
Biphenyl	TX	5640	10185203
bis(2-Chloroethoxy)methane	TX	5760	10185203
bis(2-Chloroethyl) ether	TX	5765	10185203
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10185203
Butyl benzyl phthalate	TX	5670	10185203
Caprolactam	TX	7180	10185203
Carbaryl (Sevin)	TX	7195	10185203
Carbazole	TX	5680	10185203
Carbophenothion	TX	7220	10185203
Chlorobenzilate	TX	7260	10185203
Chrysene	TX	5855	10185203

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Demeton	TX	7390	10185203
Demeton-o	TX	7395	10185203
Demeton-s	TX	7385	10185203
Diallate	TX	7405	10185203
Dibenz(a,h) anthracene	TX	5895	10185203
Dibenz(a,j) acridine	TX	5900	10185203
Dibenzo(a,e) pyrene	TX	5890	10185203
Dibenzofuran	TX	5905	10185203
Dichlorovos (DDVP, Dichlorvos)	TX	8610	10185203
Diethyl phthalate	TX	6070	10185203
Dimethoate	TX	7475	10185203
Dimethyl phthalate	TX	6135	10185203
Di-n-butyl phthalate	TX	5925	10185203
Di-n-octyl phthalate	TX	6200	10185203
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10185203
Diphenylamine	TX	6205	10185203
Disulfoton	TX	8625	10185203
Ethyl methanesulfonate	TX	6260	10185203
Fluoranthene	TX	6265	10185203
Fluorene	TX	6270	10185203
Hexachlorobenzene	TX	6275	10185203
Hexachlorobutadiene	TX	4835	10185203
Hexachlorocyclopentadiene	TX	6285	10185203
Hexachloroethane	TX	4840	10185203
Hexachlorophene	TX	6290	10185203
Hexachloropropene	TX	6295	10185203
Indeno(1,2,3-cd) pyrene	TX	6315	10185203
Isodrin	TX	7725	10185203
Isophorone	TX	6320	10185203
Isosafrole	TX	6325	10185203

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Matrix: ***Solid & Chemical Materials***

Kepone	TX	7740	10185203
Malathion	TX	7770	10185203
Methapyrilene	TX	6345	10185203
Methyl methanesulfonate	TX	6375	10185203
Methyl parathion (Parathion, methyl)	TX	7825	10185203
Mevinphos	TX	7850	10185203
Naphthalene	TX	5005	10185203
Nitrobenzene	TX	5015	10185203
n-Nitrosodiethylamine	TX	6525	10185203
n-Nitrosodimethylamine	TX	6530	10185203
n-Nitrosodi-n-butylamine	TX	5025	10185203
n-Nitrosodi-n-propylamine	TX	6545	10185203
n-Nitrosodiphenylamine	TX	6535	10185203
n-Nitrosomethylethylamine	TX	6550	10185203
n-Nitrosomorpholine	TX	6555	10185203
n-Nitrosopiperidine	TX	6560	10185203
n-Nitrosopyrrolidine	TX	6565	10185203
o,o,o-Triethyl phosphorothioate	TX	8290	10185203
o-Anisidine	TX	5550	10185203
Parathion, ethyl	TX	7955	10185203
p-Cresidine	TX	5860	10185203
Pentachlorobenzene	TX	6590	10185203
Pentachloronitrobenzene (PCNB)	TX	6600	10185203
Pentachlorophenol	TX	6605	10185203
Phenacetin	TX	6610	10185203
Phenanthrene	TX	6615	10185203
Phenol	TX	6625	10185203
Phorate	TX	7985	10185203
Pronamide (Kerb)	TX	6650	10185203
Pyrene	TX	6665	10185203

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Matrix: ***Solid & Chemical Materials***

Pyridine	TX	5095	10185203
Quinoline	TX	6670	10185203
Safrole	TX	6685	10185203
Sulfotepp	TX	8155	10185203
Terbufos	TX	8185	10185203
Tetrachlorvinphos (Stirophos, Gardona)	TX	8197	10185203
Thionazin (Zinophos)	TX	8235	10185203
Toluene diisocyanate	TX	6775	10185203

Method EPA 8290

Analyte	**AB**	**Analyte ID**	**Method ID**
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10187209
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10187209
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10187209
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10187209
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10187209
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10187209
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10187209
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10187209
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10187209
1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10187209
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10187209
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10187209
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10187209
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10187209
2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10187209
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10187209
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10187209
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10187209
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10187209
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10187209

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-19-23

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

Expiration Date: 4/30/2020

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

Issue Date: 5/1/2019

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: ***Solid & Chemical Materials***

Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10187209
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10187209
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10187209
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10187209
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10187209

Method EPA 8316

Analyte	**AB**	**Analyte ID**	**Method ID**
Acrylamide	TX	4330	10188202

Method EPA 8330

Analyte	**AB**	**Analyte ID**	**Method ID**
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10189807
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10189807
2,4,6-Trinitrotoluene (2,4,6-TNT)	TX	9651	10189807
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10189807
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10189807
2-Amino-4,6-dinitrotoluene (2-am-dnt)	TX	9303	10189807
2-Nitrotoluene	TX	9507	10189807
3-Nitrotoluene	TX	9510	10189807
4-Amino-2,6-dinitrotoluene (4-am-dnt)	TX	9306	10189807
4-Nitrotoluene	TX	9513	10189807
Methyl-2,4,6-trinitrophenylnitramine (tetryl)	TX	6415	10189807
Nitrobenzene	TX	5015	10189807
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	TX	9522	10189807
RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine)	TX	9432	10189807

Method EPA 9014

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	10193803
Total cyanide	TX	1645	10193803

Method EPA 9038

Analyte	**AB**	**Analyte ID**	**Method ID**
Sulfate	TX	2000	10196608

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Matrix: ***Solid & Chemical Materials***

Method EPA 9040

Analyte	AB	Analyte ID	Method ID
Corrosivity	TX	1615	10197203
pH	TX	1900	10196802

Method EPA 9045

Analyte	AB	Analyte ID	Method ID
Corrosivity	TX	1615	10197805
pH	TX	1900	10197805

Method EPA 9050

Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	10198604

Method EPA 9056

Analyte	AB	Analyte ID	Method ID
Bromide	TX	1540	10199209
Chloride	TX	1575	10199209
Fluoride	TX	1730	10199209
Nitrate as N	TX	1810	10199209
Nitrate-nitrite	TX	1820	10199209
Nitrite as N	TX	1840	10199209
Orthophosphate as P	TX	1870	10199209
Sulfate	TX	2000	10199209

Method EPA 9060

Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	10200201

Method EPA 9065

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200405

Method EPA 9071

Analyte	AB	Analyte ID	Method ID
n-Hexane Extractable Material (HEM) (O&G)	TX	1803	10201204

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

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Issue Date: 5/1/2019

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Matrix: ***Solid & Chemical Materials***

Method	Analyte	AB	Analyte ID	Method ID
EPA 9095	Paint Filter Liquids Test	TX	10312	10204009
EPA 9250	Chloride	TX	1575	10207202
SM 2320 B	Alkalinity as CaCO3	TX	1505	20045005
SM 2510 B	Conductivity	TX	1610	20048004
SM 2540 G	Residue-total (total solids)	TX	1950	20005203
SSA/ASA Part 3:34	Carbon, organic (Walkley-Black)	TX	10340	SSA/ASA Pt 3:34
TCEQ 1005	Total Petroleum Hydrocarbons (TPH)	TX	2050	90019208

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

January 23, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20010618**

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

Dear Eric,

ALS Environmental received 13 sample(s) on Jan 15, 2020 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: JUMOKE.LAWAL
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20010618**	

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:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS20010618**

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.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 01/23/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20010618				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 149789				
#[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			1
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			2
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs 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				
		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				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 01/23/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20010618				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 149789				
#[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: 01/23/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20010618
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 149789

ER#[5]	Description
1	Semivolatile Organics Method SW3510/8270, sample WG-1620-FD01-20200114, surrogate 4-Terphenyl-d14 recovered above the control limit due to possible matrix interference.
1,2	Batch 149789, Semivolatile Organics Method 8270, sample WG-1620-P12-20200113, MS/MSD RPD recovered above the RPD limits for surrogates 2,4,6-Tribromophenol and 2-Fluorobiphenyl. The individual recoveries met acceptance criteria.

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: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20010618

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20010618-01	WG-1620-P12-20200113	Groundwater		13-Jan-2020 10:30	15-Jan-2020 11:50	☐
HS20010618-02	WG-1620-FB01-20200113	Water		13-Jan-2020 11:30	15-Jan-2020 11:50	☐
HS20010618-03	WG-1620-MW08-20200113	Groundwater		13-Jan-2020 11:30	15-Jan-2020 11:50	☐
HS20010618-04	WG-1620-MW07-20200113	Groundwater		13-Jan-2020 13:15	15-Jan-2020 11:50	☐
HS20010618-05	WG-1620-P10-20200113	Groundwater		13-Jan-2020 14:20	15-Jan-2020 11:50	☐
HS20010618-06	WG-1620-MW11B-20200114	Groundwater		14-Jan-2020 09:25	15-Jan-2020 11:50	☐
HS20010618-07	WG-1620-MW11A-20200114	Groundwater		14-Jan-2020 10:35	15-Jan-2020 11:50	☐
HS20010618-08	WG-1620-MW10B-20200114	Groundwater		14-Jan-2020 11:35	15-Jan-2020 11:50	☐
HS20010618-09	WG-1620-MW10A-20200114	Groundwater		14-Jan-2020 12:25	15-Jan-2020 11:50	☐
HS20010618-10	WG-1620-MW02-20200114	Groundwater		14-Jan-2020 13:30	15-Jan-2020 11:50	☐
HS20010618-11	WG-1620-MW01A-20200114	Groundwater		14-Jan-2020 14:35	15-Jan-2020 11:50	☐
HS20010618-12	WG-1620-FD01-20200114	Groundwater		14-Jan-2020 14:35	15-Jan-2020 11:50	☐
HS20010618-13	WG-1620-FB02-20200114	Water		14-Jan-2020 15:00	15-Jan-2020 11:50	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-P12-20200113
Collection Date: 13-Jan-2020 10:30

ANALYTICAL REPORT
WorkOrder:HS20010618
Lab ID:HS20010618-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Jan-2020		Analyst: LG
Acenaphthene	U		0.000027	0.00010	mg/L	1	20-Jan-2020 18:20
Acenaphthylene	U		0.000015	0.00010	mg/L	1	20-Jan-2020 18:20
Anthracene	**0.00010**		**0.000014**	**0.00010**	**mg/L**	1	20-Jan-2020 18:20
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	20-Jan-2020 18:20
Dibenzofuran	U		0.000020	0.00010	mg/L	1	20-Jan-2020 18:20
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	20-Jan-2020 18:20
Fluoranthene	U		0.000010	0.00010	mg/L	1	20-Jan-2020 18:20
Fluorene	U		0.000030	0.00010	mg/L	1	20-Jan-2020 18:20
Naphthalene	**0.00016**		**0.000020**	**0.00010**	**mg/L**	1	20-Jan-2020 18:20
Phenol	U		0.000035	0.00020	mg/L	1	20-Jan-2020 18:20
Pyrene	**0.00063**		**0.000019**	**0.00010**	**mg/L**	1	20-Jan-2020 18:20
Surr: 2,4,6-Tribromophenol	*67.8*			*34-129*	*%REC*	*1*	*20-Jan-2020 18:20*
Surr: 2-Fluorobiphenyl	*84.8*			*40-125*	*%REC*	*1*	*20-Jan-2020 18:20*
Surr: 2-Fluorophenol	*68.2*			*20-120*	*%REC*	*1*	*20-Jan-2020 18:20*
Surr: 4-Terphenyl-d14	*92.9*			*40-135*	*%REC*	*1*	*20-Jan-2020 18:20*
Surr: Nitrobenzene-d5	*59.2*			*41-120*	*%REC*	*1*	*20-Jan-2020 18:20*
Surr: Phenol-d6	*66.1*			*20-120*	*%REC*	*1*	*20-Jan-2020 18:20*

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

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB01-20200113
Collection Date: 13-Jan-2020 11:30

ANALYTICAL REPORT
WorkOrder:HS20010618
Lab ID:HS20010618-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Jan-2020		Analyst: LG
2-Methylnaphthalene		U	0.000019	0.00010	mg/L	1	21-Jan-2020 16:43
Acenaphthene		U	0.000027	0.00010	mg/L	1	21-Jan-2020 16:43
Acenaphthylene		U	0.000015	0.00010	mg/L	1	21-Jan-2020 16:43
Anthracene		U	0.000014	0.00010	mg/L	1	21-Jan-2020 16:43
Bis(2-ethylhexyl)phthalate		U	0.000037	0.00020	mg/L	1	21-Jan-2020 16:43
Dibenzofuran		U	0.000020	0.00010	mg/L	1	21-Jan-2020 16:43
Di-n-butyl phthalate		U	0.000020	0.00020	mg/L	1	21-Jan-2020 16:43
Fluoranthene		U	0.000010	0.00010	mg/L	1	21-Jan-2020 16:43
Fluorene		U	0.000030	0.00010	mg/L	1	21-Jan-2020 16:43
Naphthalene		U	0.000020	0.00010	mg/L	1	21-Jan-2020 16:43
Phenanthrene		U	0.000021	0.00010	mg/L	1	21-Jan-2020 16:43
Phenol		U	0.000035	0.00020	mg/L	1	21-Jan-2020 16:43
Pyrene		U	0.000019	0.00010	mg/L	1	21-Jan-2020 16:43
Surr: 2,4,6-Tribromophenol	*73.7*			*34-129*	*%REC*	*1*	*21-Jan-2020 16:43*
Surr: 2-Fluorobiphenyl	*91.9*			*40-125*	*%REC*	*1*	*21-Jan-2020 16:43*
Surr: 2-Fluorophenol	*70.8*			*20-120*	*%REC*	*1*	*21-Jan-2020 16:43*
Surr: 4-Terphenyl-d14	*97.3*			*40-135*	*%REC*	*1*	*21-Jan-2020 16:43*
Surr: Nitrobenzene-d5	*80.7*			*41-120*	*%REC*	*1*	*21-Jan-2020 16:43*
Surr: Phenol-d6	*78.3*			*20-120*	*%REC*	*1*	*21-Jan-2020 16:43*

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

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW08-20200113
Collection Date: 13-Jan-2020 11:30

ANALYTICAL REPORT
WorkOrder:HS20010618
Lab ID:HS20010618-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Jan-2020		Analyst: LG
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	21-Jan-2020 17:02
Acenaphthene	U		0.000027	0.00010	mg/L	1	21-Jan-2020 17:02
Acenaphthylene	U		0.000015	0.00010	mg/L	1	21-Jan-2020 17:02
Anthracene	U		0.000014	0.00010	mg/L	1	21-Jan-2020 17:02
Bis(2-ethylhexyl)phthalate	**0.00021**		**0.000037**	**0.00020**	**mg/L**	1	21-Jan-2020 17:02
Dibenzofuran	U		0.000020	0.00010	mg/L	1	21-Jan-2020 17:02
Fluoranthene	U		0.000010	0.00010	mg/L	1	21-Jan-2020 17:02
Fluorene	U		0.000030	0.00010	mg/L	1	21-Jan-2020 17:02
Naphthalene	U		0.000020	0.00010	mg/L	1	21-Jan-2020 17:02
Phenanthrene	**0.000046**	J	**0.000021**	**0.00010**	**mg/L**	1	21-Jan-2020 17:02
Pyrene	U		0.000019	0.00010	mg/L	1	21-Jan-2020 17:02
Surr: 2,4,6-Tribromophenol	*63.9*			*34-129*	*%REC*	*1*	*21-Jan-2020 17:02*
Surr: 2-Fluorobiphenyl	*70.0*			*40-125*	*%REC*	*1*	*21-Jan-2020 17:02*
Surr: 2-Fluorophenol	*55.9*			*20-120*	*%REC*	*1*	*21-Jan-2020 17:02*
Surr: 4-Terphenyl-d14	*96.0*			*40-135*	*%REC*	*1*	*21-Jan-2020 17:02*
Surr: Nitrobenzene-d5	*62.1*			*41-120*	*%REC*	*1*	*21-Jan-2020 17:02*
Surr: Phenol-d6	*60.3*			*20-120*	*%REC*	*1*	*21-Jan-2020 17:02*

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

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW07-20200113
Collection Date: 13-Jan-2020 13:15

ANALYTICAL REPORT
WorkOrder:HS20010618
Lab ID:HS20010618-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Jan-2020		Analyst: LG
2-Methylnaphthalene	**0.000066**	J	**0.000019**	**0.00010**	**mg/L**	1	21-Jan-2020 17:21
Acenaphthene	U		0.000027	0.00010	mg/L	1	21-Jan-2020 17:21
Acenaphthylene	U		0.000015	0.00010	mg/L	1	21-Jan-2020 17:21
Anthracene	U		0.000014	0.00010	mg/L	1	21-Jan-2020 17:21
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	21-Jan-2020 17:21
Dibenzofuran	**0.000057**	J	**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 17:21
Fluoranthene	**0.00010**		**0.000010**	**0.00010**	**mg/L**	1	21-Jan-2020 17:21
Fluorene	U		0.000030	0.00010	mg/L	1	21-Jan-2020 17:21
Naphthalene	**0.00017**		**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 17:21
Phenanthrene	**0.00014**		**0.000021**	**0.00010**	**mg/L**	1	21-Jan-2020 17:21
Pyrene	U		0.000019	0.00010	mg/L	1	21-Jan-2020 17:21
Surr: 2,4,6-Tribromophenol	*74.6*			*34-129*	*%REC*	*1*	*21-Jan-2020 17:21*
Surr: 2-Fluorobiphenyl	*80.0*			*40-125*	*%REC*	*1*	*21-Jan-2020 17:21*
Surr: 2-Fluorophenol	*59.7*			*20-120*	*%REC*	*1*	*21-Jan-2020 17:21*
Surr: 4-Terphenyl-d14	*85.6*			*40-135*	*%REC*	*1*	*21-Jan-2020 17:21*
Surr: Nitrobenzene-d5	*66.6*			*41-120*	*%REC*	*1*	*21-Jan-2020 17:21*
Surr: Phenol-d6	*71.0*			*20-120*	*%REC*	*1*	*21-Jan-2020 17:21*

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

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-P10-20200113
Collection Date: 13-Jan-2020 14:20

ANALYTICAL REPORT
WorkOrder:HS20010618
Lab ID:HS20010618-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Jan-2020		Analyst: LG
Acenaphthene	U		0.000027	0.00010	mg/L	1	21-Jan-2020 17:40
Acenaphthylene	U		0.000015	0.00010	mg/L	1	21-Jan-2020 17:40
Anthracene	U		0.000014	0.00010	mg/L	1	21-Jan-2020 17:40
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	21-Jan-2020 17:40
Dibenzofuran	U		0.000020	0.00010	mg/L	1	21-Jan-2020 17:40
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	21-Jan-2020 17:40
Fluoranthene	U		0.000010	0.00010	mg/L	1	21-Jan-2020 17:40
Fluorene	U		0.000030	0.00010	mg/L	1	21-Jan-2020 17:40
Naphthalene	**0.00017**		**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 17:40
Phenol	U		0.000035	0.00020	mg/L	1	21-Jan-2020 17:40
Pyrene	U		0.000019	0.00010	mg/L	1	21-Jan-2020 17:40
Surr: 2,4,6-Tribromophenol	*79.3*			*34-129*	*%REC*	*1*	*21-Jan-2020 17:40*
Surr: 2-Fluorobiphenyl	*93.5*			*40-125*	*%REC*	*1*	*21-Jan-2020 17:40*
Surr: 2-Fluorophenol	*78.0*			*20-120*	*%REC*	*1*	*21-Jan-2020 17:40*
Surr: 4-Terphenyl-d14	*99.0*			*40-135*	*%REC*	*1*	*21-Jan-2020 17:40*
Surr: Nitrobenzene-d5	*82.6*			*41-120*	*%REC*	*1*	*21-Jan-2020 17:40*
Surr: Phenol-d6	*78.2*			*20-120*	*%REC*	*1*	*21-Jan-2020 17:40*

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

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW11B-20200114
Collection Date: 14-Jan-2020 09:25

ANALYTICAL REPORT
WorkOrder:HS20010618
Lab ID:HS20010618-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Jan-2020		Analyst: LG
Acenaphthene	**0.033**		**0.00014**	**0.00050**	**mg/L**	5	22-Jan-2020 12:03
Acenaphthylene	**0.0016**		**0.000015**	**0.00010**	**mg/L**	1	21-Jan-2020 18:00
Anthracene	U		0.000014	0.00010	mg/L	1	21-Jan-2020 18:00
Bis(2-ethylhexyl)phthalate	**0.000095**	J	**0.000037**	**0.00020**	**mg/L**	1	21-Jan-2020 18:00
Dibenzofuran	U		0.000020	0.00010	mg/L	1	21-Jan-2020 18:00
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	21-Jan-2020 18:00
Fluoranthene	**0.0024**		**0.000010**	**0.00010**	**mg/L**	1	21-Jan-2020 18:00
Fluorene	**0.00035**		**0.000030**	**0.00010**	**mg/L**	1	21-Jan-2020 18:00
Naphthalene	U		0.000020	0.00010	mg/L	1	21-Jan-2020 18:00
Phenol	U		0.000035	0.00020	mg/L	1	21-Jan-2020 18:00
Pyrene	**0.0023**		**0.000019**	**0.00010**	**mg/L**	1	21-Jan-2020 18:00
Surr: 2,4,6-Tribromophenol	*81.4*			*34-129*	*%REC*	*1*	*21-Jan-2020 18:00*
Surr: 2,4,6-Tribromophenol	*101*			*34-129*	*%REC*	*5*	*22-Jan-2020 12:03*
Surr: 2-Fluorobiphenyl	*90.1*			*40-125*	*%REC*	*5*	*22-Jan-2020 12:03*
Surr: 2-Fluorobiphenyl	*72.9*			*40-125*	*%REC*	*1*	*21-Jan-2020 18:00*
Surr: 2-Fluorophenol	*74.1*			*20-120*	*%REC*	*5*	*22-Jan-2020 12:03*
Surr: 2-Fluorophenol	*56.2*			*20-120*	*%REC*	*1*	*21-Jan-2020 18:00*
Surr: 4-Terphenyl-d14	*92.8*			*40-135*	*%REC*	*1*	*21-Jan-2020 18:00*
Surr: 4-Terphenyl-d14	*123*			*40-135*	*%REC*	*5*	*22-Jan-2020 12:03*
Surr: Nitrobenzene-d5	*80.4*			*41-120*	*%REC*	*5*	*22-Jan-2020 12:03*
Surr: Nitrobenzene-d5	*61.3*			*41-120*	*%REC*	*1*	*21-Jan-2020 18:00*
Surr: Phenol-d6	*60.8*			*20-120*	*%REC*	*1*	*21-Jan-2020 18:00*
Surr: Phenol-d6	*77.3*			*20-120*	*%REC*	*5*	*22-Jan-2020 12:03*

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

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW11A-20200114
Collection Date: 14-Jan-2020 10:35

ANALYTICAL REPORT
WorkOrder:HS20010618
Lab ID:HS20010618-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Jan-2020		Analyst: LG
2-Methylnaphthalene		U	0.000019	0.00010	mg/L	1	21-Jan-2020 18:19
Acenaphthene		U	0.000027	0.00010	mg/L	1	21-Jan-2020 18:19
Acenaphthylene		U	0.000015	0.00010	mg/L	1	21-Jan-2020 18:19
Anthracene		U	0.000014	0.00010	mg/L	1	21-Jan-2020 18:19
Bis(2-ethylhexyl)phthalate		U	0.000037	0.00020	mg/L	1	21-Jan-2020 18:19
Dibenzofuran		U	0.000020	0.00010	mg/L	1	21-Jan-2020 18:19
Fluoranthene		U	0.000010	0.00010	mg/L	1	21-Jan-2020 18:19
Fluorene		U	0.000030	0.00010	mg/L	1	21-Jan-2020 18:19
Naphthalene		U	0.000020	0.00010	mg/L	1	21-Jan-2020 18:19
Phenanthrene		U	0.000021	0.00010	mg/L	1	21-Jan-2020 18:19
Pyrene		U	0.000019	0.00010	mg/L	1	21-Jan-2020 18:19
Surr: 2,4,6-Tribromophenol	*78.8*			*34-129*	*%REC*	*1*	*21-Jan-2020 18:19*
Surr: 2-Fluorobiphenyl	*80.3*			*40-125*	*%REC*	*1*	*21-Jan-2020 18:19*
Surr: 2-Fluorophenol	*56.8*			*20-120*	*%REC*	*1*	*21-Jan-2020 18:19*
Surr: 4-Terphenyl-d14	*92.1*			*40-135*	*%REC*	*1*	*21-Jan-2020 18:19*
Surr: Nitrobenzene-d5	*63.9*			*41-120*	*%REC*	*1*	*21-Jan-2020 18:19*
Surr: Phenol-d6	*65.0*			*20-120*	*%REC*	*1*	*21-Jan-2020 18:19*

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

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW10B-20200114
Collection Date: 14-Jan-2020 11:35

ANALYTICAL REPORT
WorkOrder:HS20010618
Lab ID:HS20010618-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Jan-2020		Analyst: LG
Acenaphthene	**0.069**		**0.00027**	**0.0010**	**mg/L**	10	22-Jan-2020 12:22
Acenaphthylene	**0.00066**		**0.000015**	**0.00010**	**mg/L**	1	21-Jan-2020 18:38
Anthracene	**0.0028**		**0.000014**	**0.00010**	**mg/L**	1	21-Jan-2020 18:38
Bis(2-ethylhexyl)phthalate	**0.00020**		**0.000037**	**0.00020**	**mg/L**	1	21-Jan-2020 18:38
Dibenzofuran	**0.022**		**0.00020**	**0.0010**	**mg/L**	10	22-Jan-2020 12:22
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	21-Jan-2020 18:38
Fluoranthene	**0.0029**		**0.000010**	**0.00010**	**mg/L**	1	21-Jan-2020 18:38
Fluorene	**0.036**		**0.00030**	**0.0010**	**mg/L**	10	22-Jan-2020 12:22
Naphthalene	**0.0021**		**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 18:38
Phenol	U		0.000035	0.00020	mg/L	1	21-Jan-2020 18:38
Pyrene	**0.0013**		**0.000019**	**0.00010**	**mg/L**	1	21-Jan-2020 18:38
Surr: 2,4,6-Tribromophenol	*70.8*			*34-129*	*%REC*	*10*	*22-Jan-2020 12:22*
Surr: 2,4,6-Tribromophenol	*80.7*			*34-129*	*%REC*	*1*	*21-Jan-2020 18:38*
Surr: 2-Fluorobiphenyl	*77.4*			*40-125*	*%REC*	*1*	*21-Jan-2020 18:38*
Surr: 2-Fluorobiphenyl	*85.2*			*40-125*	*%REC*	*10*	*22-Jan-2020 12:22*
Surr: 2-Fluorophenol	*60.1*			*20-120*	*%REC*	*10*	*22-Jan-2020 12:22*
Surr: 2-Fluorophenol	*62.8*			*20-120*	*%REC*	*1*	*21-Jan-2020 18:38*
Surr: 4-Terphenyl-d14	*103*			*40-135*	*%REC*	*10*	*22-Jan-2020 12:22*
Surr: 4-Terphenyl-d14	*89.0*			*40-135*	*%REC*	*1*	*21-Jan-2020 18:38*
Surr: Nitrobenzene-d5	*75.6*			*41-120*	*%REC*	*10*	*22-Jan-2020 12:22*
Surr: Nitrobenzene-d5	*68.2*			*41-120*	*%REC*	*1*	*21-Jan-2020 18:38*
Surr: Phenol-d6	*69.2*			*20-120*	*%REC*	*1*	*21-Jan-2020 18:38*
Surr: Phenol-d6	*74.4*			*20-120*	*%REC*	*10*	*22-Jan-2020 12:22*

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

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW10A-20200114
Collection Date: 14-Jan-2020 12:25

ANALYTICAL REPORT
WorkOrder:HS20010618
Lab ID:HS20010618-09
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Jan-2020		Analyst: LG
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	21-Jan-2020 18:57
Acenaphthene	**0.00011**		**0.000027**	**0.00010**	**mg/L**	1	21-Jan-2020 18:57
Acenaphthylene	U		0.000015	0.00010	mg/L	1	21-Jan-2020 18:57
Anthracene	U		0.000014	0.00010	mg/L	1	21-Jan-2020 18:57
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	21-Jan-2020 18:57
Dibenzofuran	U		0.000020	0.00010	mg/L	1	21-Jan-2020 18:57
Fluoranthene	U		0.000010	0.00010	mg/L	1	21-Jan-2020 18:57
Fluorene	U		0.000030	0.00010	mg/L	1	21-Jan-2020 18:57
Naphthalene	U		0.000020	0.00010	mg/L	1	21-Jan-2020 18:57
Phenanthrene	U		0.000021	0.00010	mg/L	1	21-Jan-2020 18:57
Pyrene	U		0.000019	0.00010	mg/L	1	21-Jan-2020 18:57
Surr: 2,4,6-Tribromophenol	*60.3*			*34-129*	*%REC*	*1*	*21-Jan-2020 18:57*
Surr: 2-Fluorobiphenyl	*77.4*			*40-125*	*%REC*	*1*	*21-Jan-2020 18:57*
Surr: 2-Fluorophenol	*64.6*			*20-120*	*%REC*	*1*	*21-Jan-2020 18:57*
Surr: 4-Terphenyl-d14	*110*			*40-135*	*%REC*	*1*	*21-Jan-2020 18:57*
Surr: Nitrobenzene-d5	*68.5*			*41-120*	*%REC*	*1*	*21-Jan-2020 18:57*
Surr: Phenol-d6	*64.7*			*20-120*	*%REC*	*1*	*21-Jan-2020 18:57*

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

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW02-20200114
Collection Date: 14-Jan-2020 13:30

ANALYTICAL REPORT
WorkOrder:HS20010618
Lab ID:HS20010618-10
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Jan-2020		Analyst: LG
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	21-Jan-2020 19:16
Acenaphthene	**0.0030**		**0.000027**	**0.00010**	**mg/L**	1	21-Jan-2020 19:16
Acenaphthylene	U		0.000015	0.00010	mg/L	1	21-Jan-2020 19:16
Anthracene	**0.00011**		**0.000014**	**0.00010**	**mg/L**	1	21-Jan-2020 19:16
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	21-Jan-2020 19:16
Dibenzofuran	**0.00039**		**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 19:16
Fluoranthene	**0.00024**		**0.000010**	**0.00010**	**mg/L**	1	21-Jan-2020 19:16
Fluorene	**0.0017**		**0.000030**	**0.00010**	**mg/L**	1	21-Jan-2020 19:16
Naphthalene	U		0.000020	0.00010	mg/L	1	21-Jan-2020 19:16
Phenanthrene	**0.00011**		**0.000021**	**0.00010**	**mg/L**	1	21-Jan-2020 19:16
Pyrene	**0.00011**		**0.000019**	**0.00010**	**mg/L**	1	21-Jan-2020 19:16
Surr: 2,4,6-Tribromophenol	*64.5*			*34-129*	*%REC*	*1*	*21-Jan-2020 19:16*
Surr: 2-Fluorobiphenyl	*83.6*			*40-125*	*%REC*	*1*	*21-Jan-2020 19:16*
Surr: 2-Fluorophenol	*62.6*			*20-120*	*%REC*	*1*	*21-Jan-2020 19:16*
Surr: 4-Terphenyl-d14	*99.3*			*40-135*	*%REC*	*1*	*21-Jan-2020 19:16*
Surr: Nitrobenzene-d5	*70.1*			*41-120*	*%REC*	*1*	*21-Jan-2020 19:16*
Surr: Phenol-d6	*66.9*			*20-120*	*%REC*	*1*	*21-Jan-2020 19:16*

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

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW01A-20200114
Collection Date: 14-Jan-2020 14:35

ANALYTICAL REPORT
WorkOrder:HS20010618
Lab ID:HS20010618-11
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Jan-2020		Analyst: LG
2-Methylnaphthalene	**0.00019**		**0.000019**	**0.00010**	**mg/L**	1	21-Jan-2020 19:35
Acenaphthene	**0.024**		**0.00014**	**0.00050**	**mg/L**	5	22-Jan-2020 12:41
Acenaphthylene	**0.00084**		**0.000015**	**0.00010**	**mg/L**	1	21-Jan-2020 19:35
Anthracene	U		0.000014	0.00010	mg/L	1	21-Jan-2020 19:35
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	21-Jan-2020 19:35
Dibenzofuran	**0.0036**		**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 19:35
Fluoranthene	**0.0011**		**0.000010**	**0.00010**	**mg/L**	1	21-Jan-2020 19:35
Fluorene	**0.0064**		**0.000030**	**0.00010**	**mg/L**	1	21-Jan-2020 19:35
Naphthalene	**0.00052**		**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 19:35
Phenanthrene	U		0.000021	0.00010	mg/L	1	21-Jan-2020 19:35
Pyrene	**0.00052**		**0.000019**	**0.00010**	**mg/L**	1	21-Jan-2020 19:35
Surr: 2,4,6-Tribromophenol	*81.3*			*34-129*	*%REC*	*1*	*21-Jan-2020 19:35*
Surr: 2,4,6-Tribromophenol	*82.2*			*34-129*	*%REC*	*5*	*22-Jan-2020 12:41*
Surr: 2-Fluorobiphenyl	*95.4*			*40-125*	*%REC*	*5*	*22-Jan-2020 12:41*
Surr: 2-Fluorobiphenyl	*90.6*			*40-125*	*%REC*	*1*	*21-Jan-2020 19:35*
Surr: 2-Fluorophenol	*68.6*			*20-120*	*%REC*	*1*	*21-Jan-2020 19:35*
Surr: 2-Fluorophenol	*77.7*			*20-120*	*%REC*	*5*	*22-Jan-2020 12:41*
Surr: 4-Terphenyl-d14	*103*			*40-135*	*%REC*	*5*	*22-Jan-2020 12:41*
Surr: 4-Terphenyl-d14	*94.4*			*40-135*	*%REC*	*1*	*21-Jan-2020 19:35*
Surr: Nitrobenzene-d5	*88.0*			*41-120*	*%REC*	*5*	*22-Jan-2020 12:41*
Surr: Nitrobenzene-d5	*80.0*			*41-120*	*%REC*	*1*	*21-Jan-2020 19:35*
Surr: Phenol-d6	*75.8*			*20-120*	*%REC*	*1*	*21-Jan-2020 19:35*
Surr: Phenol-d6	*77.6*			*20-120*	*%REC*	*5*	*22-Jan-2020 12:41*

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

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FD01-20200114
Collection Date: 14-Jan-2020 14:35

ANALYTICAL REPORT
WorkOrder:HS20010618
Lab ID:HS20010618-12
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Jan-2020		Analyst: LG
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	21-Jan-2020 19:54
Acenaphthene	**0.018**		**0.00011**	**0.00040**	**mg/L**	4	22-Jan-2020 13:00
Acenaphthylene	**0.00066**		**0.000015**	**0.00010**	**mg/L**	1	21-Jan-2020 19:54
Anthracene	U		0.000014	0.00010	mg/L	1	21-Jan-2020 19:54
Bis(2-ethylhexyl)phthalate	**0.000074**	J	**0.000037**	**0.00020**	**mg/L**	1	21-Jan-2020 19:54
Dibenzofuran	**0.0021**		**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 19:54
Fluoranthene	**0.0012**		**0.000010**	**0.00010**	**mg/L**	1	21-Jan-2020 19:54
Fluorene	**0.0038**		**0.000030**	**0.00010**	**mg/L**	1	21-Jan-2020 19:54
Naphthalene	U		0.000020	0.00010	mg/L	1	21-Jan-2020 19:54
Phenanthrene	U		0.000021	0.00010	mg/L	1	21-Jan-2020 19:54
Pyrene	**0.00059**		**0.000019**	**0.00010**	**mg/L**	1	21-Jan-2020 19:54
Surr: 2,4,6-Tribromophenol	*107*			*34-129*	*%REC*	*1*	*21-Jan-2020 19:54*
Surr: 2,4,6-Tribromophenol	*117*			*34-129*	*%REC*	*4*	*22-Jan-2020 13:00*
Surr: 2-Fluorobiphenyl	*98.7*			*40-125*	*%REC*	*4*	*22-Jan-2020 13:00*
Surr: 2-Fluorobiphenyl	*88.3*			*40-125*	*%REC*	*1*	*21-Jan-2020 19:54*
Surr: 2-Fluorophenol	*59.0*			*20-120*	*%REC*	*1*	*21-Jan-2020 19:54*
Surr: 2-Fluorophenol	*66.0*			*20-120*	*%REC*	*4*	*22-Jan-2020 13:00*
Surr: 4-Terphenyl-d14	*142*	*S*		*40-135*	*%REC*	*4*	*22-Jan-2020 13:00*
Surr: 4-Terphenyl-d14	*129*			*40-135*	*%REC*	*1*	*21-Jan-2020 19:54*
Surr: Nitrobenzene-d5	*63.6*			*41-120*	*%REC*	*1*	*21-Jan-2020 19:54*
Surr: Nitrobenzene-d5	*71.5*			*41-120*	*%REC*	*4*	*22-Jan-2020 13:00*
Surr: Phenol-d6	*80.1*			*20-120*	*%REC*	*4*	*22-Jan-2020 13:00*
Surr: Phenol-d6	*67.3*			*20-120*	*%REC*	*1*	*21-Jan-2020 19:54*

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

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB02-20200114
Collection Date: 14-Jan-2020 15:00

ANALYTICAL REPORT
WorkOrder:HS20010618
Lab ID:HS20010618-13
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Jan-2020		Analyst: LG
2-Methylnaphthalene		U	0.000019	0.00010	mg/L	1	21-Jan-2020 20:13
Acenaphthene		U	0.000027	0.00010	mg/L	1	21-Jan-2020 20:13
Acenaphthylene		U	0.000015	0.00010	mg/L	1	21-Jan-2020 20:13
Anthracene		U	0.000014	0.00010	mg/L	1	21-Jan-2020 20:13
Bis(2-ethylhexyl)phthalate		U	0.000037	0.00020	mg/L	1	21-Jan-2020 20:13
Dibenzofuran		U	0.000020	0.00010	mg/L	1	21-Jan-2020 20:13
Di-n-butyl phthalate		U	0.000020	0.00020	mg/L	1	21-Jan-2020 20:13
Fluoranthene		U	0.000010	0.00010	mg/L	1	21-Jan-2020 20:13
Fluorene		U	0.000030	0.00010	mg/L	1	21-Jan-2020 20:13
Naphthalene		U	0.000020	0.00010	mg/L	1	21-Jan-2020 20:13
Phenanthrene		U	0.000021	0.00010	mg/L	1	21-Jan-2020 20:13
Phenol		U	0.000035	0.00020	mg/L	1	21-Jan-2020 20:13
Pyrene		U	0.000019	0.00010	mg/L	1	21-Jan-2020 20:13
Surr: 2,4,6-Tribromophenol	*61.9*			*34-129*	*%REC*	*1*	*21-Jan-2020 20:13*
Surr: 2-Fluorobiphenyl	*109*			*40-125*	*%REC*	*1*	*21-Jan-2020 20:13*
Surr: 2-Fluorophenol	*79.0*			*20-120*	*%REC*	*1*	*21-Jan-2020 20:13*
Surr: 4-Terphenyl-d14	*100*			*40-135*	*%REC*	*1*	*21-Jan-2020 20:13*
Surr: Nitrobenzene-d5	*91.2*			*41-120*	*%REC*	*1*	*21-Jan-2020 20:13*
Surr: Phenol-d6	*88.1*			*20-120*	*%REC*	*1*	*21-Jan-2020 20:13*

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

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010618

Batch ID: 149789 **Start Date:** 19 Jan 2020 07:30 **End Date:** 19 Jan 2020 16:00
Method: SV AQ SEP FUN EXTRACT-LOWLEV - 3510C **Prep Code:** 3510_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20010618-01	1	1000 (mL)	1 (mL)	0.001
HS20010618-02	1	1000 (mL)	1 (mL)	0.001
HS20010618-03	1	1000 (mL)	1 (mL)	0.001
HS20010618-04	1	1000 (mL)	1 (mL)	0.001
HS20010618-05	1	1000 (mL)	1 (mL)	0.001
HS20010618-06	1	1000 (mL)	1 (mL)	0.001
HS20010618-07	1	1000 (mL)	1 (mL)	0.001
HS20010618-08	1	1000 (mL)	1 (mL)	0.001
HS20010618-09	1	1000 (mL)	1 (mL)	0.001
HS20010618-10	1	1000 (mL)	1 (mL)	0.001
HS20010618-11	1	1000 (mL)	1 (mL)	0.001
HS20010618-12	1	1000 (mL)	1 (mL)	0.001
HS20010618-13	1	1000 (mL)	1 (mL)	0.001

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010618

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 149789 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Water	
HS20010618-02	WG-1620-FB01-20200113	13 Jan 2020 11:30		19 Jan 2020 15:02	21 Jan 2020 16:43	1
HS20010618-13	WG-1620-FB02-20200114	14 Jan 2020 15:00		19 Jan 2020 15:02	21 Jan 2020 20:13	1
Batch ID: 149789 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Groundwater	
HS20010618-01	WG-1620-P12-20200113	13 Jan 2020 10:30		19 Jan 2020 15:02	20 Jan 2020 18:20	1
HS20010618-03	WG-1620-MW08-20200113	13 Jan 2020 11:30		19 Jan 2020 15:02	21 Jan 2020 17:02	1
HS20010618-04	WG-1620-MW07-20200113	13 Jan 2020 13:15		19 Jan 2020 15:02	21 Jan 2020 17:21	1
HS20010618-05	WG-1620-P10-20200113	13 Jan 2020 14:20		19 Jan 2020 15:02	21 Jan 2020 17:40	1
HS20010618-06	WG-1620-MW11B-20200114	14 Jan 2020 09:25		19 Jan 2020 15:02	22 Jan 2020 12:03	5
HS20010618-06	WG-1620-MW11B-20200114	14 Jan 2020 09:25		19 Jan 2020 15:02	21 Jan 2020 18:00	1
HS20010618-07	WG-1620-MW11A-20200114	14 Jan 2020 10:35		19 Jan 2020 15:02	21 Jan 2020 18:19	1
HS20010618-08	WG-1620-MW10B-20200114	14 Jan 2020 11:35		19 Jan 2020 15:02	22 Jan 2020 12:22	10
HS20010618-08	WG-1620-MW10B-20200114	14 Jan 2020 11:35		19 Jan 2020 15:02	21 Jan 2020 18:38	1
HS20010618-09	WG-1620-MW10A-20200114	14 Jan 2020 12:25		19 Jan 2020 15:02	21 Jan 2020 18:57	1
HS20010618-10	WG-1620-MW02-20200114	14 Jan 2020 13:30		19 Jan 2020 15:02	21 Jan 2020 19:16	1
HS20010618-11	WG-1620-MW01A-20200114	14 Jan 2020 14:35		19 Jan 2020 15:02	22 Jan 2020 12:41	5
HS20010618-11	WG-1620-MW01A-20200114	14 Jan 2020 14:35		19 Jan 2020 15:02	21 Jan 2020 19:35	1
HS20010618-12	WG-1620-FD01-20200114	14 Jan 2020 14:35		19 Jan 2020 15:02	22 Jan 2020 13:00	4
HS20010618-12	WG-1620-FD01-20200114	14 Jan 2020 14:35		19 Jan 2020 15:02	21 Jan 2020 19:54	1

WorkOrder: HS20010618
InstrumentID: SV-6
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	2-Methylnaphthalene	91-57-6	0.000050	0.000060	0.000019	0.00010
A	Acenaphthene	83-32-9	0.000050	0.000059	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000050	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.000047	0.000014	0.00010
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.00012	0.000037	0.00020
A	Dibenzofuran	132-64-9	0.000050	0.000050	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.00011	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000049	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.000053	0.000030	0.00010
A	Naphthalene	91-20-3	0.000050	0.000049	0.000020	0.00010
A	Phenanthrene	85-01-8	0.000050	0.000049	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.000096	0.000035	0.00020
A	Pyrene	129-00-0	0.000050	0.000047	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: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010618

QC BATCH REPORT

Batch ID: 149789 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-149789** Units: **ug/L** Analysis Date: **20-Jan-2020 14:13**
Client ID: Run ID: **SV-6_354667** SeqNo: **5441804** PrepDate: **19-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	U	0.10								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Bis(2-ethylhexyl)phthalate	U	0.20								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*3.413*	*0.20*	*5*	*0*	*68.3*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.677*	*0.20*	*5*	*0*	*93.5*	*40 - 125*				
Surr: 2-Fluorophenol	*3.815*	*0.20*	*5*	*0*	*76.3*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.529*	*0.20*	*5*	*0*	*90.6*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.693*	*0.20*	*5*	*0*	*73.9*	*41 - 120*				
Surr: Phenol-d6	*3.844*	*0.20*	*5*	*0*	*76.9*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010618

QC BATCH REPORT

Batch ID: 149789 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCS Sample ID: **LCS-149789** Units: **ug/L** Analysis Date: **20-Jan-2020 14:32**
Client ID: Run ID: **SV-6_354667** SeqNo: **5441805** PrepDate: **19-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	4.12	0.10	5	0	82.4	50 - 120				
Acenaphthene	4.616	0.10	5	0	92.3	45 - 120				
Acenaphthylene	4.438	0.10	5	0	88.8	47 - 120				
Anthracene	4.793	0.10	5	0	95.9	45 - 120				
Bis(2-ethylhexyl)phthalate	5.208	0.20	5	0	104	40 - 139				
Dibenzofuran	4.382	0.10	5	0	87.6	50 - 120				
Di-n-butyl phthalate	5.327	0.20	5	0	107	45 - 123				
Fluoranthene	4.608	0.10	5	0	92.2	45 - 125				
Fluorene	4.509	0.10	5	0	90.2	49 - 120				
Naphthalene	4.352	0.10	5	0	87.0	45 - 120				
Phenanthrene	4.579	0.10	5	0	91.6	45 - 121				
Phenol	4.045	0.20	5	0	80.9	20 - 124				
Pyrene	4.543	0.10	5	0	90.9	40 - 130				
Surr: 2,4,6-Tribromophenol	*3.728*	*0.20*	*5*	*0*	*74.6*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.553*	*0.20*	*5*	*0*	*91.1*	*40 - 125*				
Surr: 2-Fluorophenol	*3.92*	*0.20*	*5*	*0*	*78.4*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.553*	*0.20*	*5*	*0*	*91.1*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.663*	*0.20*	*5*	*0*	*73.3*	*41 - 120*				
Surr: Phenol-d6	*3.85*	*0.20*	*5*	*0*	*77.0*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010618

QC BATCH REPORT

Batch ID: 149789 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MS Sample ID: **HS20010618-01MS** Units: **ug/L** Analysis Date: **20-Jan-2020 18:40**
Client ID: **WG-1620-P12-20200113** Run ID: **SV-6_354667** SeqNo: **5441807** PrepDate: **19-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	4.077	0.10	5	0	81.5	50 - 120				
Acenaphthene	4.554	0.10	5	0	91.1	45 - 120				
Acenaphthylene	4.432	0.10	5	0	88.6	47 - 120				
Anthracene	5.422	0.10	5	0.1005	106	45 - 120				
Bis(2-ethylhexyl)phthalate	5.953	0.20	5	0	119	40 - 139				
Dibenzofuran	4.513	0.10	5	0	90.3	50 - 120				
Di-n-butyl phthalate	5.9	0.20	5	0	118	45 - 123				
Fluoranthene	5.303	0.10	5	0	106	45 - 125				
Fluorene	4.678	0.10	5	0	93.6	49 - 120				
Naphthalene	4.398	0.10	5	0.1605	84.8	45 - 120				
Phenanthrene	5.217	0.10	5	0.0662	103	45 - 121				
Phenol	3.858	0.20	5	0	77.2	20 - 124				
Pyrene	5.985	0.10	5	0.6322	107	40 - 130				
Surr: 2,4,6-Tribromophenol	*4.348*	*0.20*	*5*	*0*	*87.0*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.593*	*0.20*	*5*	*0*	*91.9*	*40 - 125*				
Surr: 2-Fluorophenol	*3.499*	*0.20*	*5*	*0*	*70.0*	*20 - 120*				
Surr: 4-Terphenyl-d14	*5.237*	*0.20*	*5*	*0*	*105*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.192*	*0.20*	*5*	*0*	*63.8*	*41 - 120*				
Surr: Phenol-d6	*3.6*	*0.20*	*5*	*0*	*72.0*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010618

QC BATCH REPORT

Batch ID: 149789 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MSD Sample ID: **HS20010618-01MSD** Units: **ug/L** Analysis Date: **20-Jan-2020 18:59**
Client ID: **WG-1620-P12-20200113** Run ID: **SV-6_354667** SeqNo: **5441808** PrepDate: **19-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
2-Methylnaphthalene	3.617	0.10	5	0	72.3	50 - 120	4.077	12	20	
Acenaphthene	3.858	0.10	5	0	77.2	45 - 120	4.554	16.6	20	
Acenaphthylene	3.761	0.10	5	0	75.2	47 - 120	4.432	16.4	20	
Anthracene	4.577	0.10	5	0.1005	89.5	45 - 120	5.422	16.9	20	
Bis(2-ethylhexyl)phthalate	5.317	0.20	5	0	106	40 - 139	5.953	11.3	20	
Dibenzofuran	3.783	0.10	5	0	75.7	50 - 120	4.513	17.6	20	
Di-n-butyl phthalate	5.105	0.20	5	0	102	45 - 123	5.9	14.5	20	
Fluoranthene	4.616	0.10	5	0	92.3	45 - 125	5.303	13.8	20	
Fluorene	4	0.10	5	0	80.0	49 - 120	4.678	15.6	20	
Naphthalene	3.832	0.10	5	0.1605	73.4	45 - 120	4.398	13.8	20	
Phenanthrene	4.366	0.10	5	0.0662	86.0	45 - 121	5.217	17.8	20	
Phenol	3.371	0.20	5	0	67.4	20 - 124	3.858	13.5	20	
Pyrene	5.245	0.10	5	0.6322	92.2	40 - 130	5.985	13.2	20	
Surr: 2,4,6-Tribromophenol	*3.502*	*0.20*	*5*	*0*	*70.0*	*34 - 129*	*4.348*	*21.5*	*20*	R
Surr: 2-Fluorobiphenyl	*3.715*	*0.20*	*5*	*0*	*74.3*	*40 - 125*	*4.593*	*21.1*	*20*	R
Surr: 2-Fluorophenol	*2.97*	*0.20*	*5*	*0*	*59.4*	*20 - 120*	*3.499*	*16.3*	*20*	
Surr: 4-Terphenyl-d14	*4.522*	*0.20*	*5*	*0*	*90.4*	*40 - 135*	*5.237*	*14.7*	*20*	
Surr: Nitrobenzene-d5	*2.709*	*0.20*	*5*	*0*	*54.2*	*41 - 120*	*3.192*	*16.4*	*20*	
Surr: Phenol-d6	*3.121*	*0.20*	*5*	*0*	*62.4*	*20 - 120*	*3.6*	*14.3*	*20*	

The following samples were analyzed in this batch:

HS20010618-01	HS20010618-02	HS20010618-03	HS20010618-04
HS20010618-05	HS20010618-06	HS20010618-07	HS20010618-08
HS20010618-09	HS20010618-10	HS20010618-11	HS20010618-12
HS20010618-13			

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20010618**

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
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20010618

Date/Time Received: **15-Jan-2020 11:50**
Received by: **AC**

Checklist completed by: *Paris Frazier* 15-Jan-2020
eSignature | Date

Reviewed by: *Dane J. Wacasey* 15-Jan-2020
eSignature | Date

Matrices: **WATER**

Carrier name: **Client**

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 ☐	2 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:215992/215990
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):	2.3C/2.3C,2.1C/2.1C. 1.2C/1.2C UC/C	IR25	
Cooler(s)/Kit(s):	44307/45460/BLUE		
Date/Time sample(s) sent to storage:	01.15.2020 17:00		
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:

Cincinnati, OH +1 513 733 5336
Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600
Holland, MI +1 616 399 6070

Chain of Custody Fc

Page 1 of 2

COC ID: 215992

HS20010618

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-08-Rev0 SR 92688 SWMU1
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	eric_matzner@golder.com	e-Mail Address	

A: 8270_LOW_W (5632532 ATZ SemiVolatiles)
B: 8270_LOW_W (5632532 BTZ SemiVolatiles)
C: 8270_LOW_W (5632532 ATZ & BTZ SemiVolatiles)
D:
E:
F:
G:
H:
I:
J:

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	WG-1620-P12-20200113	1-13-20	1030	Groundwa	8	2		X									
2	WG-1620-P12MS-20200113		1030	W		2		X									
3	WG-1620-P12MSD-20200113		1030	W		2		X									
4	WG-1620-FB01-20200113		1130	W		2		X									
5	WG-1620-MW08-20200113		1130	W		2	X										
6	WG-1620-MW07-20200113		1315	W		2	X										
7	WG-1620-P10-20200113		1420	W		2		X									
8	WG-1620-MW11B-20200114	1-14-20	0925	W		2		X									
9	WG-1620-MW11A-20200114		1035	W		2	X										
10	WG-1620-MW10B-20200114		1135	W		2		X									

Sampler(s) Please Print & Sign: JOHN BRAYTON

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) ☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other

Results Due Date:

	Date	Time		
Relinquished by:	1-15-20	1150	Received by:	
Relinquished by:	1-15-2020	11:50	Received by (Laboratory):	AC
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.
	ulc
44307	2.3
45460	2.1
BLUE	1.2
IR#25	cfac

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

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.

Cincinnati, OH
+1 513 733 5336

Fort Collins, CO
+1 970 490 1511

Everett, WA
+1 425 356 2600

Holland, MI
+1 616 399 6070

Chain of Custody Form

Page 2 of 2

COC ID: 215990

HS20010618

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information			
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A	8270_LOW_W (5632532 ATZ SemiVolatiles)
Work Order		Project Number	1620-08-Rev0 SR 92688 SWMU1	B	8270_LOW_W (5632532 BTZ SemiVolatiles)
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P	C	8270_LOW_W (5632532 ATZ & BTZ SemiVolatiles)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	eric_matzner@golder.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	WG-1620-MW10A-20200114	1-14-20	1225	Groundwa	8	2	X										
2	WG-1620-MW02-20200114		1330	W		2	X										
3	WG-1620-MW01A-20200114		1435	W		2	X										
4	WG-1620-FD01-20200114		1435	W		2	X										
5	WG-1620-FB02-20200114		1500	W		2	X										
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: JOHN BRAYTON

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) ☐ Other ____ ☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour

Results Due Date:

	Date:	Time:	
Relinquished by:	1-15-20	1150	Received by:
Relinquished by:	1-15-2020	11:50	Received by (Laboratory): AC
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)

☐ Level II Std QC
☐ Level III Std QC/Raw Date
☐ Level IV SW846/CLP
☐ Other ____
☒ TRRP Checklist
☐ TRRP Level IV

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.

APPENDIX D

Waste Manifest

(2)

Please print or type.

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
TXD000820266	01	8888777267	019318173 JJK

GENERATOR

5. Generator's Name and Mailing Address
UPRR-WMC/O GHD Attn, Manifest Receiving
6520 Corporate Dr.
Indianapolis, IN 46278
Generator's Phone: 414 264-4964

Generator's Site Address (if different than mailing address)
4910 Liberty Rd.
Houston, TX 77026

6. Transporter 1 Company Name
NRC GULF
U.S. EPA ID Number
FLR000012823

7. Transporter 2 Company Name
EQ Industrial Services
U.S. EPA ID Number
MIK435642742

8. Designated Facility Name and Site Address
US ECOLOGY - Robstown
3277 County Road 69
Robstown, TX 78380
U.S. EPA ID Number
TXD069452340
Facility's Phone:

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. RQ, NA3082, HAZARDOUS WASTE, liquid, n.o.s (CREOSOTE), 9, PGIII (F034)	2	DM	100	G	F034	D014	D018
	2.							
	3.							
	4.							

14. Special Handling Instructions and Additional Information
Job #
PO# N/A
L. WS#0901170710
WR#000040

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: X Thomas Capucci
Signature: X
Month: 3 Day: 23 Year: 2020

INT'L

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

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 2 Printed/Typed Name: Marcus Johnson
Signature:
Month: 3 Day: 25 Year: 2020

Transporter 3 Printed/Typed Name: Kenneth Sharpe
Signature:
Month: 03 Day: 25 Year: 2020

DESIGNATED FACILITY

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.	2.	3.	4.
H132			

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:
Signature:
Month: 4 Day: 1 Year: 20

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

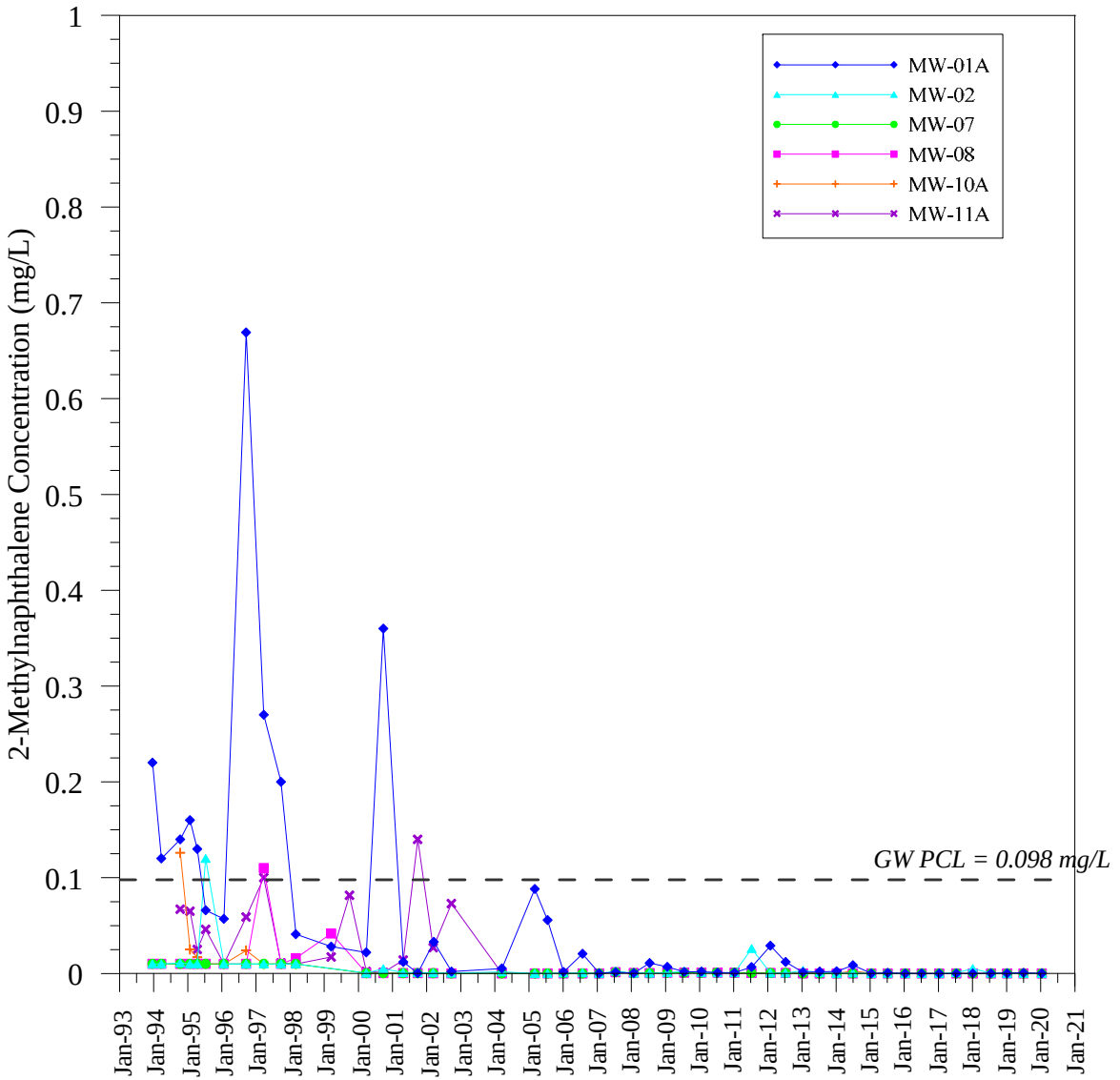


Figure E-2
Dibenzofuran Concentrations vs Time - A-TZ Unit
UPRR HWPW Facility - RCRA SWMU No. 1

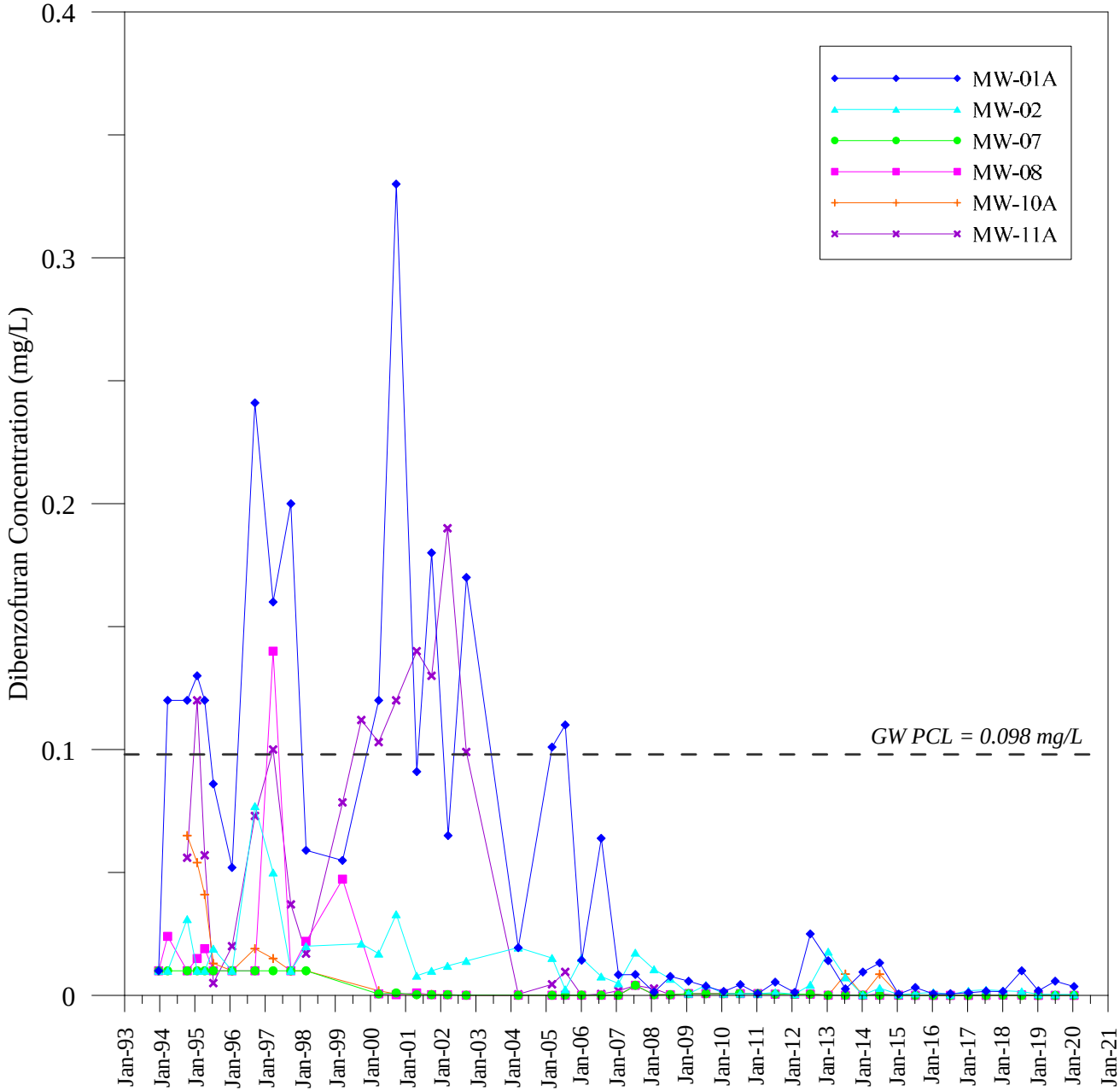


Figure E-3
Naphthalene Concentrations vs Time - A-TZ Unit
UPRR HWPW Facility - RCRA SWMU No. 1

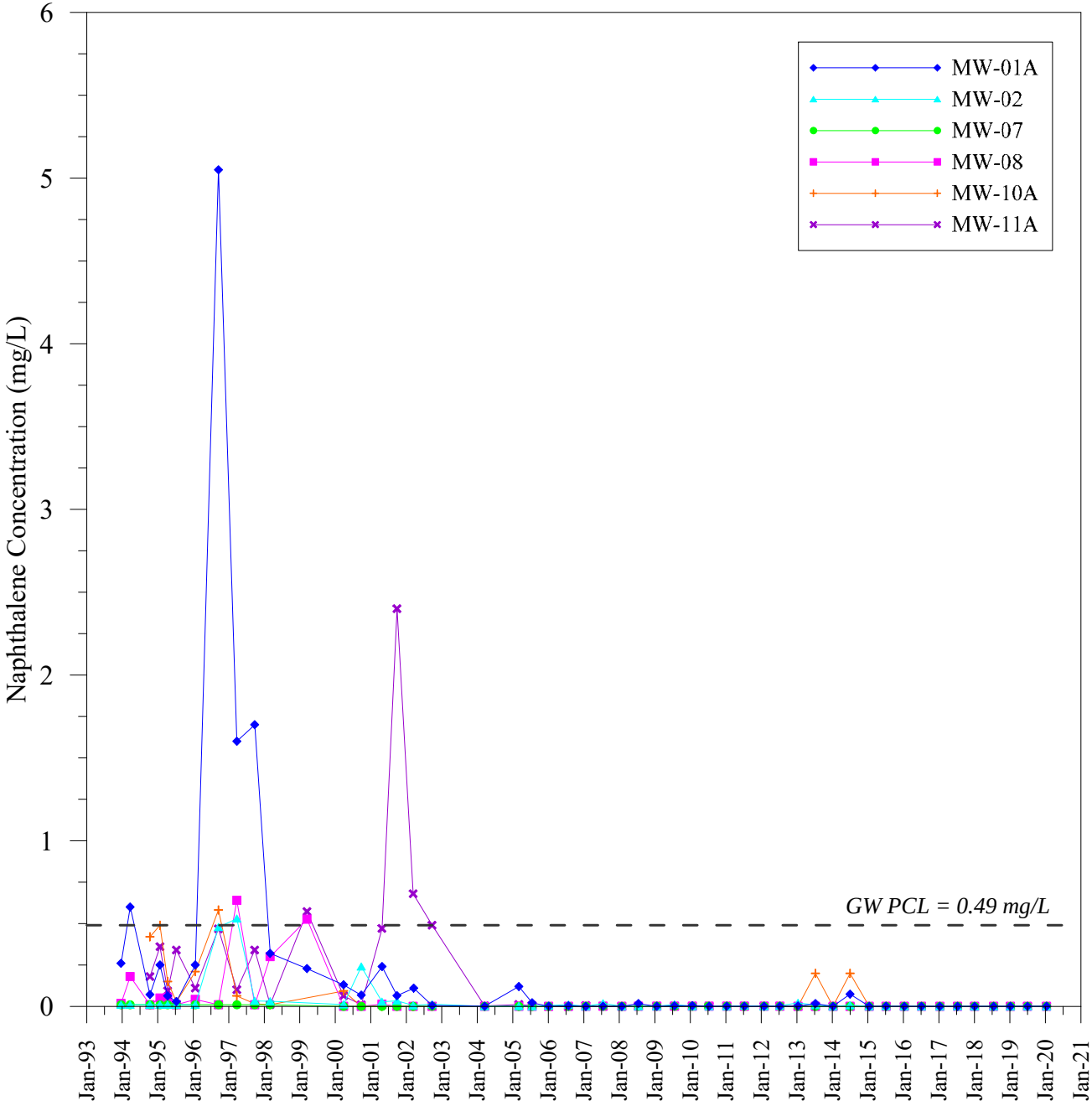
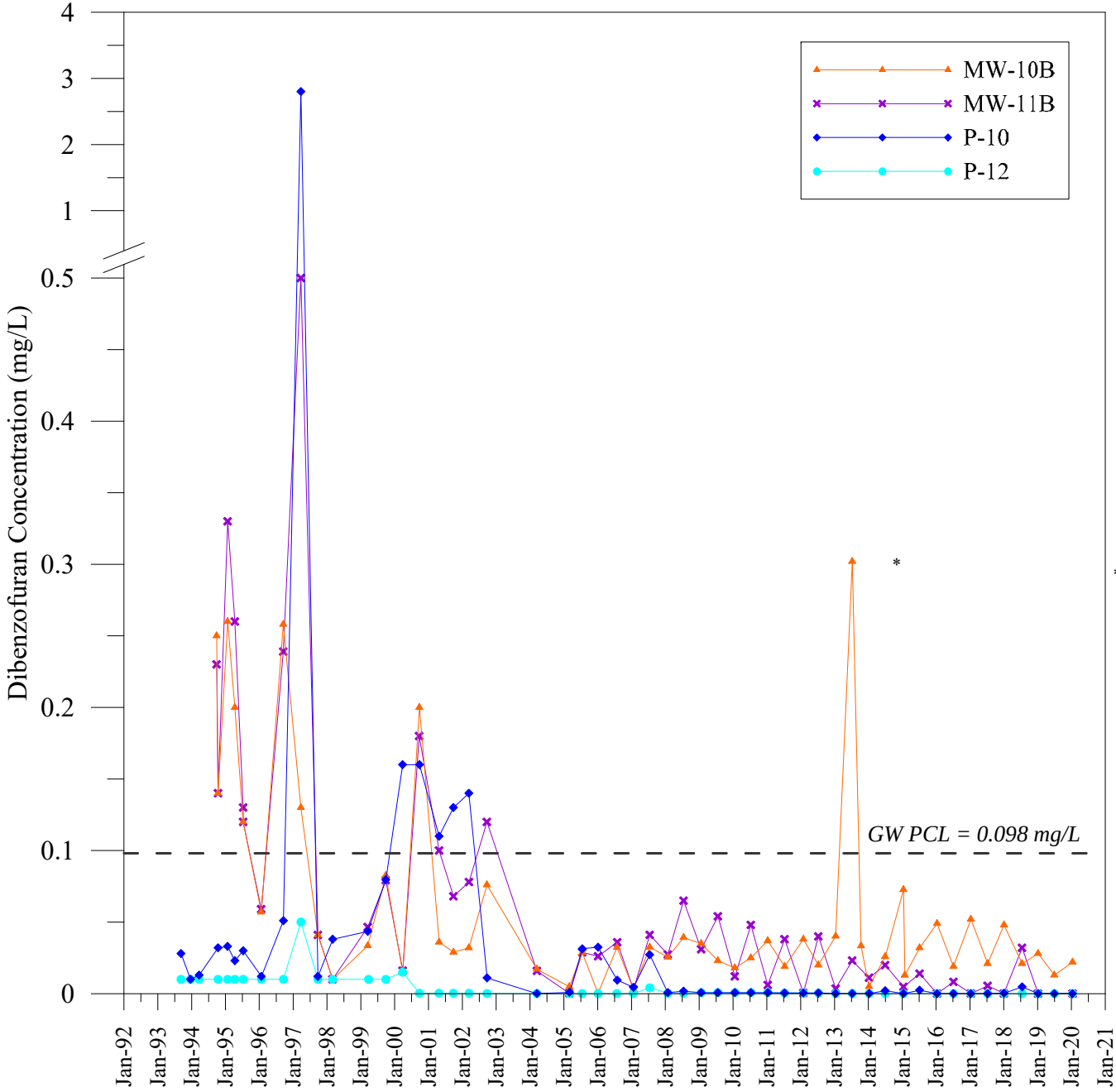
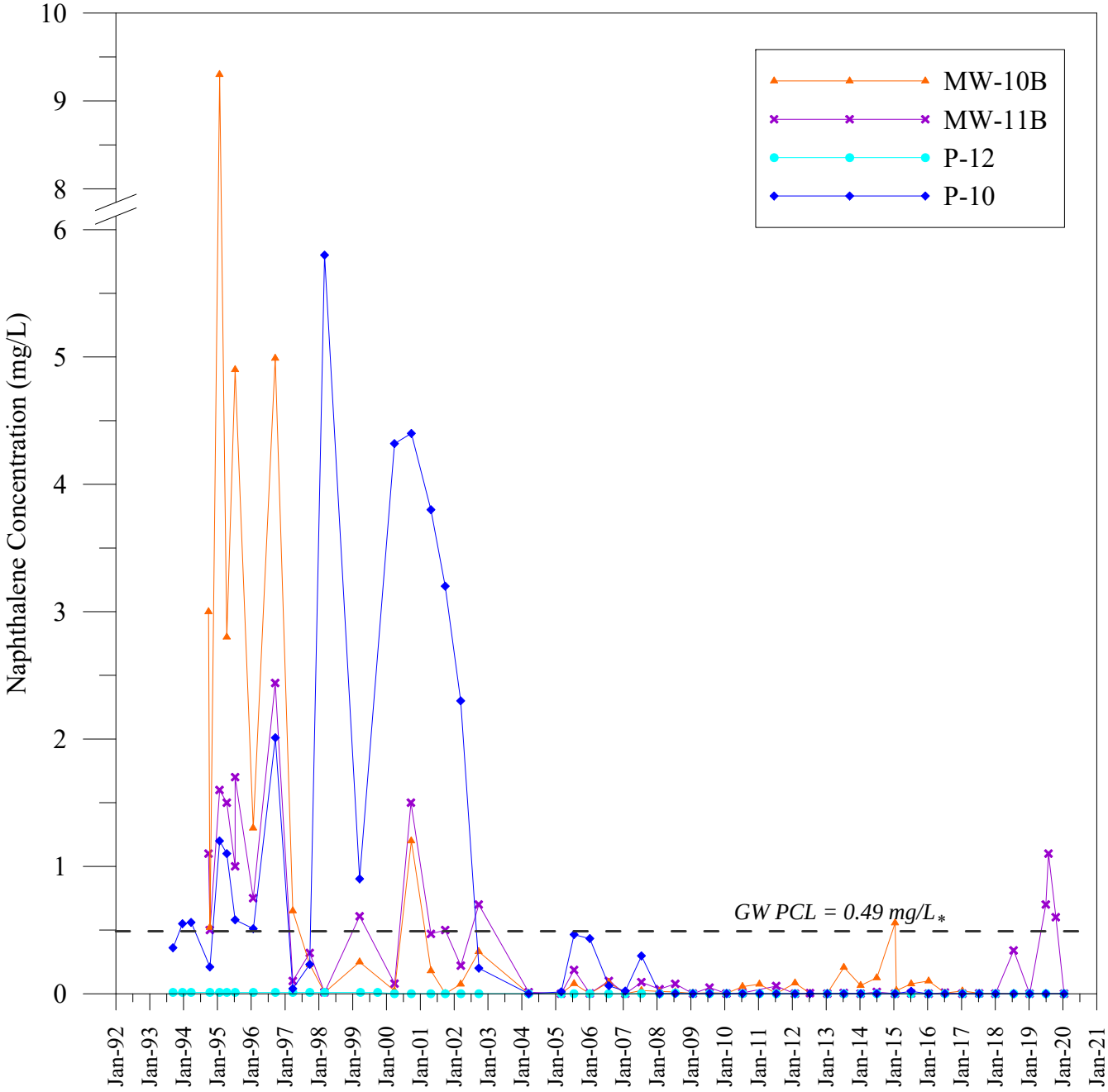


Figure E-4
Dibenzofuran Concentrations vs Time - B-TZ Unit
UPRR HWPW Facility - RCRA SWMU No. 1



* - unverified result

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

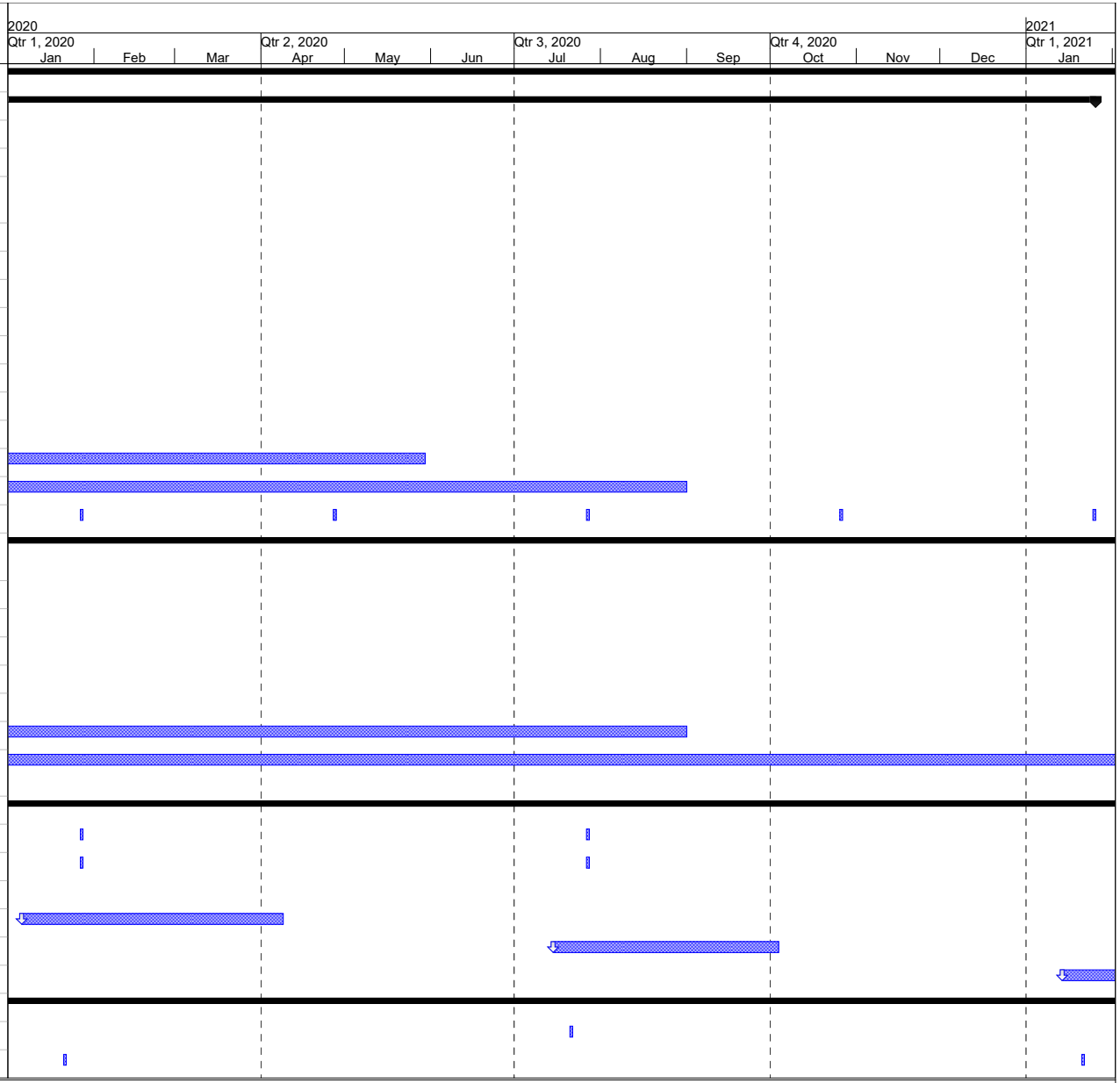


* - unverified result

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**
3	Draft Permit Renewal/Compliance Plan and Major Amendments
4	TCEQ Review of Permit Renewal/Major Amendments
5	Prepare Response to Technical NOD and Submit Permit Renewal/Major Amendments Revision No. 2
6	TCEQ Review of Technical NOD Response, Permit Revision No. 2
7	Respond to TCEQ 2nd Technical NOD Letter, Submit Revision No. 3
8	TCEQ Review of 2nd Technical NOD Response, Permit Revision No. 3
9	Respond to TCEQ 3rd Technical NOD Letter, Submit Revision No. 4
10	TCEQ Review of 3rd Technical NOD Response, Permit Revision No. 4
11	TCEQ Review of GW Inv/POE Data for RAP
12	Respond to TCEQ 4th Technical NOD Response
13	TCEQ Review of 4th Technical NOD Response
14	Additional investigations
15	Preparation of Permit Revision No. 5
16	General Inspection Requirements (quaterly) [Permit Section III.D; Table III.D]
75	**Corrective Measures Implementation (CMI)/Response Action Plan (RAP) [CP Section VIII.F]**
76	TCEQ Review of RAP (part of Compliance Plan)
77	Prepare RAP Revision No. 1 (Compliance Plan Rev2)
78	Prepare RAP Revision No. 2 (Compliance Plan Rev3)
79	TCEQ Review of RAP (part of Compliance Plan)
80	Prepare RAP Revision No. 3 (Compliance Plan Rev4)
81	Prepare RAP Revision No. 4 / Pre-Design Investigation Activities
82	Implement Corrective Action as detailed in RAP (pending approval of Permit Renewal/Compliance Plan)
83	**Ground-Water Monitoring Program [Permit Section VI.A.; CP Section VI.]**
84	Water Level Measurements (Semiannually) [CP Section VI.C.4.a]1
114	Monitoring Well Inspections (Semiannually) [CP Section VI.C.4.a]1
144	Ground Water Sampling and Data Evaluation (2nd Semiannual) [CP Setion VI.C.2]
145	Ground Water Sampling and Data Evaluation (1st Semiannual) [CP Setion VI.C.2]
146	Ground Water Sampling and Data Evaluation (2nd Semiannual) [CP Setion VI.C.2]
147	Ground Water Sampling and Data Evaluation (1st Semiannual) [CP Setion VI.C.2]
148	**Response and Reporting [Permit Section II.B.7; CP Section VII.)**
149	First Semi-Annual GW Monitoring Report - July 21 [CP Section VII.C.2]
167	Second Semi-Annual GW Monitoring Report - January 21 [CP Section VII.C.2]



Compliance Schedule
UPRR Houston Wood Preserving Works Site
Houston, Texas

Task		Split		Inactive Milestone		Start-only	
Milestone		External Tasks		Inactive Summary		Finish-only	
Summary		Project Summary		Manual Task		Progress	
Rolled Up Task		External Milestone		Duration-only		Deadline	
Rolled Up Milestone		Inactive Task		Manual Summary Rollup			
Rolled Up Progress		Inactive Task		Manual Summary			

APPENDIX G

Laboratory Data QA/QC Report Checklist

FORMER HOUSTON WOOD PRESERVING WORKS
LABORATORY DATA QA/QC REPORT CHECKLIST
ANALYTICAL REPORT HS20010618
March 10, 2020

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: Michelle Hermiston		
Date: 4/17/20	**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
SW3510/ 8270	Sample WG-1620-FD01-20200114: surrogate 4-Terphenyl-d14 recovered above the control limit due to possible matrix interference.	NA
SW8720	Batch 149789 Analysis: Sample WG-1620-P12-20200113, MS/MSD RPD recovered above the RPD limits for surrogates 2,4,6-Tribromophenol and 2-Fluorobiphenyl. The individual recoveries met acceptance criteria.	NA