



September 18, 2019

Project No. 19119232

Ms. Kendra Bernhagen, Work Leader

Emergency Response Team
Texas Commission on Environmental Quality Houston Region
5425 Polk St, Suite H
Houston, Texas 77023

**WATER LINE LEAK RELEASE RESPONSE
HOUSTON WOOD PRESERVING WORKS, HOUSTON, TEXAS
TCEQ SWR NO. 31547; HAZARDOUS SOLID WASTE PERMIT NO. 50343**

Dear Ms. Bernhagen:

Golder Associates, Inc. (Golder) on behalf of the Union Pacific Railroad (UPRR) prepared this summary of the water line leak release and spill response activities that occurred at UPRR Former Houston Wood Preserving Works (HWPW) Site (the Site) located at 4910 Liberty Road in Houston, Texas in Harris County (the Site; Figure 1) on August 10, 2019. The water release occurred due to the opening of a valve to an abandoned water line by a contractor that was working in the Englewood Intermodal Yard. The water line leak occurred underneath the soil cap area at the Site. The soil cap was constructed as part of response actions undertaken in accordance with the Texas Risk Reduction Program (TRRP) to address surface and subsurface soil protective concentration levels exceedance (PCLE) zone at the Site. Soils under the soil cap are impacted with contaminants associated with the former wood preserving operations that occurred at Site. The abandoned water line likely serviced a former fire hydrant that was removed in 2016 during the construction of a soil cap at the Site.

Because the water may have come into contact with contaminated soils, UPRR promptly reported the incident and subsequent release to the Texas Commission on Environmental Quality (TCEQ) (Spill Report No. 20192773 and NRC Report No. 1254765) upon discovery and began the initial spill response actions on August 10, 2019. UPRR personnel, emergency response contractor National Response Corporation (NRC), remediation contractor United States Environmental Services (USES), and Golder personnel mobilized to the Site to respond to the incident. This report briefly summarizes the incident and the response activities conducted to address the release in accordance with the reporting requirements of 30 Texas Administrative Code §327.5(c). Details regarding the release of water and response actions are provided in the following sections. A detailed photographic log and the sample analytical results are provided as Attachments 1 and 2.

Release Information

On August 9, 2019, a contractor opened a valve to an abandoned water line that is located beneath the soil cap at the Site. This led to water emanating from the location of a former fire hydrant prior to the construction of the soil cap (Photo 1). Water flowed through the capped soils, up through the soil cap, and over the soil cap (Photographs 2 and 3) to the south-southeast (Photographs 4 and 5), across an asphalt road (that serves as a cap between the

soil cap and railroad tracks) (Photographs 4 and 5), and then to a ditch along the railroad tracks (Photographs 6 and 7). The water flowed down the ditch approximately 200 yards to the northeast to Liberty Road and under the Lockwood Drive Bridge (Photographs 8 and 9). The flowing water extended beyond the intersection of Liberty Road and Lockwood Drive approximately 300 yards northeast on Liberty Road (Photograph 10). Photograph 11 shows the valve to an abandoned water line that was inadvertently opened by a contractor.

The runoff flow direction is illustrated in Figure 1.

Initial Response

UPRR was notified of the water leak on the morning of August 10, 2019 and emergency response activities were initiated. At approximately 9:45 am on August 10, 2019, Golder was on site to evaluate potential environmental concerns related to the water leak. Once the source of the water was identified, the valve was closed at approximately 10:36 am on August 10, 2019. NRC arrived onsite to capture the flowing water using a vacuum truck and remove the water that was leaving the Site and ponding at the intersection of Liberty Road and Lockwood Drive. An absorbent boom was placed in the ditch as a preventative measure in case there were any hydrocarbons present in the flowing water (Photograph 7). No observations of hydrocarbon sheens or odors were noted during the response activities. Approximately 15,000 gallons of water was recovered with the vacuum truck was transferred to a frac tank and staged on-site.

Sample Collection

Golder collected surface water samples from the following locations (shown on Figure 1):

- W-1620-RO-20190810 – surface water run off sample collected where the water runoff was leaving the capped area.
- W-1620-RO-Ditch-20190810 – surface water run off sample collected from the ditch between the asphalt road and railroad tracks; and
- W-1620-Fractank-20190810 - a combination of all the water that was removed from Liberty Road and the drainage ditch, sample collected for waste characterization.
- One surface water sample was collected (labeled W-1620-RO-LibertyRd-20190810 collected from Liberty Road under the Lockwood Bridge overpass (see Photograph 10)) but put on hold pending the analysis of the three other samples.
- One sample of floating solids (see Photograph 7) was collected with a sheen net (labeled W-1620-Sheen-20190810) in the ditch near the absorbent boom. Even though sample W-1620-Sheen-20190810 was labeled “Sheen”, no hydrocarbon sheen was observed in the sampled area (noted as floating debris shown on Photograph 7).

The three water samples were analyzed for the following chemicals of concern (COCs):

- Total petroleum hydrocarbons (TPH) by TCEQ Method TX1005;
- Benzene, ethylbenzene, toluene, and total xylenes (BTEX) by EPA Method 8260; and
- Polycyclic aromatic hydrocarbons (PAHs) and phenol by EPA 8270.

Water samples were collected with dip bottles and placed in laboratory-provided sample containers. The sheen net was provided by General Oceanics and the sample was collected by pulling the net through the solids floating on the surface water. Samples were submitted to ALS Environmental (ALS) located in Houston, Texas for the analyses

listed above. Analytical data collected from the Site surface water samples are summarized on Table 1. Analytical data for the waste characterization sample are summarized on Table 2. Laboratory reports are provided in Attachment 2.

Sample Results

Surface Water

Surface water sample results were compared to TCEQ Texas Risk Reduction Program (TRRP) Groundwater Residential (^{GW}GW_{Ing}) Protective Concentration Levels (PCLs) and the TCEQ ecological benchmarks (freshwater surface water acute and chronic values, <https://www.tceq.texas.gov/remediation/eco/eco.html>) to evaluate potential impacts to surface water bodies. The nearest downstream surface water segment in this area is Hunting Bayou above Tidal (1007R), which is a freshwater segment. Table 1 provided the PCLs, benchmarks, and surface water data.

TPH was not detected above the sample detection limits (SDLs) in the two runoff samples (RO and RO-Ditch) collected on the Site. The TPH SDLs are below the ^{GW}GW_{Ing} PCLs. The TCEQ does not have ecological benchmarks for TPH. BTEX parameters were not detected above their respective SDLs in any of the runoff water samples collected from the Site. The SDLs were below the ecological benchmark and groundwater protection values for BTEX. PAH concentrations in runoff sample W-1620-RO-20190810 were below the freshwater benchmark and residential groundwater values. Benzo(a)pyrene is the only PAH that was detected above the freshwater chronic benchmark value (0.000014 milligrams per liter [mg/L]) in the W-1620-RO-Ditch-20190810 sample at a concentration of 0.000068 J mg/L. The J-flag indicates that the concentration is an estimate below the laboratory method quantitation limit. The concentration is below the freshwater acute benchmark value (0.00024 mg/L).

Waste Characterization

TPH concentrations were detected in the sample collected from the frac tank in the Aromatic C₆-C₁₂ and >C₁₂-C₂₈ ranges at reported concentrations of 0.91 mg/L and 0.31 J mg/L, respectively. Ethylbenzene, toluene, and xylenes were detected in the frac tank sample above their respective SDLs at 0.0018 mg/L, 0.045 mg/L, and 0.02 mg/L, respectively. PAHs were detected above their respective SDLs in the frac tank sample, but all concentrations were below the Class 1 toxic constituents' maximum leachable concentrations.

The concentrations of constituents in the frac tank sample are all below the limits for a Class 1 waste.

Conclusions

The findings from the response actions conducted at the Site include:

- The water leak occurred on August 9, 2019 due to the opening of a valve to an abandoned water line that likely lead to a fire hydrant removed in 2016 during the construction of a soil cap at the Site. Water flowed through the capped soils, up through the soil cap, over the soil cap to the south-southeast, to a ditch along the railroad tracks within the Site, and then flowed along the ditch approximately 200 yards northeast to Liberty Road under the Lockwood Drive Bridge. The water flowed from the intersection of Liberty Road and Lockwood Drive to approximately 300 yards northeast on Liberty Road.
- UPRR was notified of the water leak the morning of August 10, 2019. The valve was identified and closed at approximately 10:36 am on August 10, 2019. The water in Liberty Road and the drainage ditch on site

was recovered using a vacuum truck. The water was transferred to a frac tank and staged on-site for off-Site disposal.

- Water samples were collected adjacent to the soil cap, in the ditch adjacent to the railroad tracks, and from the frac tank and analyzed for TPH, BTEX, and PAHs. None of the TPH, BTEX, or PAH concentrations on the two runoff samples exceeded the TRRP ^{GW}GW_{ing} PCLs. Since the two surface water run off samples collected from the Site did not have concentrations detected above the TRRP ^{GW}GW_{ing} PCLs or TCEQ ecological surface water (freshwater) acute values, the two additional samples held were not analyzed. The detections of ethylbenzene, toluene, total xylenes, PAHs, and TPH in the frac tank sample are likely a result of urban run-off from Liberty Road and not as a result of the water leak from the Site.

Based on these findings no further action is necessary at the Site. A follow up submittal documenting the disposition of the waste generated during the response activities will be provided following waste disposal.

If you have any questions or comments, please feel free to contact Kevin Peterburs, UPRR Manager Site Remediation at (414) 267-4164 or us at (512) 671-3434.

Sincerely,

Golder Associates Inc.



Eric C. Matzner, P.G.
Principal Hydrogeologist

CC: Mr. Kevin Peterburs, Manager Environmental Site Remediation, UPRR

Attachments: Table 1 – Summary of Surface Water Run-Off Sample Analytical Results
Table 2 – Summary of Frac Tank Analytical Results
Figure 1 – Water Leak and Sample Location Map
Attachment 1 – Photographic Log
Attachment 2 – Laboratory Report

Tables

TABLE 1
SUMMARY OF SURFACE WATER RUN-OFF SAMPLE ANALYTICAL RESULTS
AUGUST 10, 2019 WATER LEAK
UPRR HOUSTON WOOD PRESERVING WORKS, HOUSTON, TEXAS

Sample ID Sample Collection Date	Freshwater Acute Benchmark (mg/L)	Freshwater Chronic Benchmark (mg/L)	Residential GW ^{GW} GW _{Ing} (mg/L)	W-1620-RO- 20190810	W-1620-RO-Ditch- 20190810
				8/10/2019	8/10/2019
Volatile Organic Compounds (SW8260) (mg/L)					
Benzene	2.3	0.13	0.005	0.002 U	0.002 U
Ethylbenzene	3	1	0.7	0.0003 U	0.0003 U
Toluene	10.21	3.4	1	0.0002 U	0.0002 U
Xylenes, Total	4.02	1.34	10	0.0003 U	0.0003 U
Semi-Volatile Organic Compounds (SW8270) (mg/L)					
Acenaphthene	0.08	0.023	1.5	0.0001	0.00033
Acenaphthylene	--	--	1.5	0.000015 U	0.000015 U
Anthracene	0.0018	0.0003	7.3	0.000016 J	0.000088 J
Benz(a)anthracene	0.2076	0.0346	0.0091	0.000051 U	0.00011
Benzo(a)pyrene	0.00024	0.000014	0.0002	0.00002 U	0.000068 J
Benzo(b)fluoranthene	--	--	0.0091	0.000023 U	0.00014
Benzo(g,h,i)perylene	--	--	0.73	0.000014 U	0.000066 J
Benzo(k)fluoranthene	--	--	0.091	0.000019 U	0.000074 J
Chrysene	0.207	0.007	0.91	0.000021 U	0.00023
Dibenz(a,h)anthracene	0.149	0.005	0.0002	0.000024 U	0.000034 J
Dibenzofuran	--	--	0.098	0.000055 J	0.00014
Fluoranthene	0.0336	0.00616	0.98	0.000046 J	0.0009
Fluorene	0.064	0.011	0.98	0.000085 J	0.00021
Indeno(1,2,3-cd)pyrene	--	--	0.0091	0.000022 U	0.00004 J
Naphthalene	1.48	0.25	0.49	0.00008 J	0.00019
Phenanthrene	0.03	0.03	0.73	0.00013	0.00021
Pyrene	0.206	0.007	0.73	0.000027 J	0.00053
Total Petroleum Hydrocarbons (TX1005) (mg/L)					
nC6 to nC12	--	--	0.98	0.2 U	0.2 U
>nC12 to nC28	--	--	0.98	0.2 U	0.2 U
>nC28 to nC35	--	--	0.98	0.2 U	0.2 U
Total Petroleum Hydrocarbons	--	--	--	0.2 U	0.2 U

Notes:

Nearest downstream surface water segment is Hunting Bayou above Tidal (1007R), which is a freshwater segment.

U - indicates analyte was not detected above the detection limit

J - estimate; concentration is below the quantitation limit but above the detection limit

TABLE 2
SUMMARY OF WASTE CHARACTERIZATION SAMPLE ANALYTICAL RESULTS
AUGUST 10, 2019 WATER LEAK
UPRR HOUSTON WOOD PRESERVING WORKS, HOUSTON, TEXAS

Sample ID Sample Collection Date	Class 1 Toxic Constituents' Maximum Leachable Concentrations ¹	W-1620-Fractank- 20190810 8/10/2019
	Volatile Organic Compounds (SW8260) (mg/L)	
Benzene	0.5	0.002 U
Ethylbenzene	400	0.0018
Toluene	1000	0.045
Xylenes, Total	7000	0.02
Semi-Volatile Organic Compounds (SW8270) (mg/L)		
Acenaphthene	210	0.00039
Acenaphthylene	--	0.000035 J
Anthracene	1050	0.0002
Benz(a)anthracene	--	0.00017
Benzo(a)pyrene	--	0.000091 J
Benzo(b)fluoranthene	--	0.00017
Benzo(g,h,i)perylene	--	0.000074 J
Benzo(k)fluoranthene	--	0.000074 J
Chrysene	--	0.00027
Dibenz(a,h)anthracene	--	0.000038 J
Dibenzofuran	--	0.00019
Fluoranthene	140	0.00092
Fluorene	140	0.00037
Indeno(1,2,3-cd)pyrene	--	0.000058 J
Naphthalene	--	0.007
Phenanthrene	--	0.00079
Pyrene	5.9	0.00065
Total Petroleum Hydrocarbons (TX1005) (mg/L)		
nC6 to nC12	--	0.91
>nC12 to nC28	--	0.31 J
>nC28 to nC35	--	0.2 U
Total Petroleum Hydrocarbons	--	1.22
RCI Characteristics		
Reactive cyanide (mg/kg)	≥250	100 U
Reactive sulfide (mg/kg)	≥500	100 U
Corrosivity (pH units)	≤2 or ≥12.5	7.78 H
Ignitability (degrees Fahrenheit)	<140	>212

Notes:

U - indicates analyte was not detected above the detection limit

J - estimate; concentration below the quantitation limit but above the detection limit

H - analyzed outside of holding time

¹ Class 1 Toxic Constituents' Maximum Leachable Concentrations from 30 TAC Chapter 335 Subchapter R Appendix 1 Table 1.

Figures

Path: \\uswest\external\projects - Round Deck\19119232 - HWPW\2019-09-05 - Water Leak\Location Map.dwg | File Name: FIG 1 - Water Leak Location Map.dwg | Last Edited By: adiamond | Date: 2019-09-13 | Time: 3:35:32 PM | Printed By: adiamond | Date: 2019-09-05 | Time: 5:19:30 PM

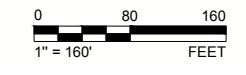


LEGEND

- UPRR PROPERTY BOUNDARY
- WATER LEAK LOCATION
- SAMPLE LOCATION
- WATER RUN-OFF FLOW

REFERENCE(S)

PARCEL BOUNDARIES: CITY OF HOUSTON GEOGRAPHIC INFORMATION & MANAGEMENT SYSTEM (GIMS).
 AERIAL: GOOGLE EARTH, PHOTOGRAPHY DATED 10/28/17.



CLIENT
 UNION PACIFIC RAILROAD CO.

PROJECT
 HOUSTON WOOD PRESERVING WORKS

TITLE
WATER LEAK AND SAMPLE LOCATION MAP
 AUGUST 10, 2019

CONSULTANT	YYYY-MM-DD	2019-09-05
DESIGNED	AJD	
PREPARED	AJD	
REVIEWED	ECM	
APPROVED	ECM	

PROJECT NO.
 19119232

REV.
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FIGURE
 1

1in IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSIB

ATTACHMENT 1

Photographic Log



Client Name: Union Pacific Railroad	Site Location: Water Line Leak Release Response, Houston, Texas	Project No.: 19119232
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Photo No. 1	Date: 08/10/19
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Description:
Location of the source of water emanating from the soil cap.



Photo No. 2	Date: 08/10/19
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Description:
Source area of water line leak at soil cap, looking east.





Client Name:
Union Pacific Railroad

Site Location:
Water Line Leak Release Response, Houston, Texas

Project No.
19119232

Photo No.
3

Date:
08/10/19

Description:

Runoff from soil cap toward asphalt road and railroad tracks, looking south.

Location of water runoff sample W-1620-RO-20190810.



Photo No.
4

Date:
08/10/19

Description:

Runoff from soil cap toward asphalt road and railroad tracks, looking southeast.

Location of water runoff sample W-1620-RO-20190810.





Client Name:
Union Pacific Railroad

Site Location:
Water Line Leak Release Response, Houston, Texas

Project No.
19119232

Photo No.
5

Date:
08/10/19

Description:

Water flowing across asphalt road toward railroad tracks from soil cap, looking northeast.

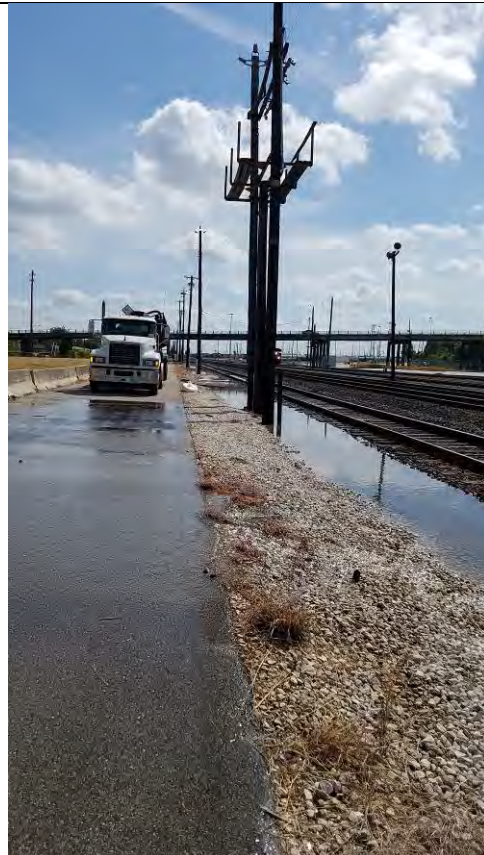


Photo No.
6

Date:
08/10/19

Description:

Water flowing across asphalt road toward railroad tracks from soil cap, looking northeast.





Client Name: Union Pacific Railroad	Site Location: Water Line Leak Release Response, Houston, Texas	Project No.: 19119232
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Photo No. 7	Date: 08/10/19
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Description:

Absorbent boom placed in the ditch adjacent to railroad tracks, looking south. Note floating debris, no sheen observed.

Location of water run off sample W-1620-RO-Ditch-20190810.



Photo No. 8	Date: 08/10/19
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Description:

Runoff reaching Liberty Road, looking East toward Lockwood Drive Bridge.





Client Name: Union Pacific Railroad	Site Location: Water Line Leak Release Response, Houston, Texas	Project No.: 19119232
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Photo No. 9	Date: 08/10/19
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Description:
Runoff under Lockwood Drive Bridge on Liberty Road, looking east.



Photo No. 10	Date: 08/10/19
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Description:
Liberty Road past Lockwood Drive Bridge, looking east.





Client Name:
Union Pacific Railroad

Site Location:
Water Line Leak Release Response, Houston, Texas

Project No.
19119232

Photo No.
11

Date:
08/10/19

Description:

Location of water valve that was turned on at northeast corner of the property, looking west.



ATTACHMENT 2

Data Usability Summary and Laboratory Report



Memorandum

August 27, 2019

To: Eric Matzner Ref. No.: 11183954-1620

From: ^{CK} Chris G. Knight/eew/357-NF Tel: 512-506-8803

cc: Jesse Orth, Jon Lang; Julie Lidstone

**Subject: Data Usability Summary
Water Line Leak Sampling Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
August 2019**

1. Scope of Data Usability Study

This document details a Data Usability Summary (DUS) of analytical results for surface water samples collected in support of the Water Line Leak Sampling Event at the Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works site during August 2019. Samples were submitted to ALS Environmental (ALS), located in Houston, Texas and are reported in data package HS19080556. The intended use of the data is to support the Water Line Leak Sampling Event at the site by providing current concentrations 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) sample, the laboratory review checklist (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.

- i) With the exception of reactive cyanide and reactive sulfide, ALS is NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package. Because TCEQ does not offer accreditation for these compounds, the results are flagged with "n" in the analytical report. No further action was.

3. Project Objectives

3.1 Sampling/Analytical QA/QC Objectives

The QA/QC program was designed to identify contamination resulting from the sampling, sample transport and analytical process through the analysis of a trip blank sample 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, MS, and laboratory duplicate analyses.

4. Data Review/Validation Results

4.1 Sample Holding Time and Preservation

Sample were shipped with a chain of custody and the paper work was filled out properly. 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. Samples were prepared and analyzed within the required holding times with the following exception (see Table 4):

- i) W-1620-Fractank-20190810 was analyzed outside of the established holding time for pH analysis and was qualified as estimated; biased low.

4.2 Sample Containers

Sample containers used were certified pre-cleaned glass and plastic 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 volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and total petroleum hydrocarbons (TPH) are spiked with surrogate compounds prior to sample extraction and/or 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.

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 or LCS/laboratory control sample duplicate (LCSD) are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects. The relative percent difference (RPD) of the LCS/LCSD recoveries is used to evaluate analytical precision. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project.

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

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



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.

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

4.8 Duplicate Sample Analyses

Analytical precision is evaluated based on the analysis of laboratory duplicate samples. For this study, duplicate samples were prepared and analyzed by the laboratory as specified in Table 1 for ignitability and pH analyses. The RPDs established by the laboratory are adopted as the acceptance criteria for the project.

The duplicate analysis performed was acceptable, demonstrating acceptable analytical precision.

The laboratory also performed additional duplicate analyses on non-site samples. These cannot be used to assess precision for the site samples.

4.9 Field QA/QC Sample

The field QA/QC consisted of one trip blank sample.

To evaluate contamination from sample collection, transportation, storage, and analytical activities, one trip blank sample was submitted to the laboratory for VOCs analysis. All results were non-detect for the compounds of interest.

4.10 Field Procedures

Golder Associates, Inc. collected surface water samples in accordance with their Standard Operating Procedures (SOP) for sample collection.

4.11 Analyte Reporting

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

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

5. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are usable for the purpose of supporting the Water Line Leak Sampling Event at the site by providing current concentrations of chemicals of concern with the specific qualification noted herein.

Table 1

Sample Collection and Analysis Summary
Water Line Leak Sampling Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
August 2019

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Analysis/Parameters							Comments	
					VOCs	SVOCs	TPH	Ignitability	pH	Reactive Cyanide	Reactive Sulfide		
W-1620-RO-20190810	RO	Water	08/10/2019	10:50	X	X	X						
W-1620-RO-Ditch-20190810	RO-Ditch	Water	08/10/2019	11:15	X	X	X						
W-1620-Fractank-20190810	Frac Tank	Water	08/10/2019	14:00	X	X	X	X	X	X	X		DUP-P
WQ-1620-TB-20190810	-	Water	08/10/2019	-	X								Trip Blank

Notes:

- VOCs - Volatile Organic Compounds
SVOCs - Semi-volatile Organic Compounds
DUP-P - Laboratory Duplicate (partial parameters)
"-" - Not Applicable

Table 2

Water Line Leak Sampling Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
August 2019

	Location ID:	Frac Tank	RO	RO-Ditch
	Sample Name:	W-1620-Fractank-20190810	W-1620-RO-20190810	W-1620-RO-Ditch-20190810
	Sample Date:	08/10/2019	08/10/2019	08/10/2019
Parameters	Unit			
Volatile Organic Compounds				
Benzene	mg/L	<0.00020	<0.00020	<0.00020
Ethylbenzene	mg/L	0.0018	<0.00030	<0.00030
Toluene	mg/L	0.045	<0.00020	<0.00020
Xylenes (total)	mg/L	0.020	<0.00030	<0.00030
Semivolatile Organic Compounds				
Acenaphthene	mg/L	0.00039	0.00010	0.00033
Acenaphthylene	mg/L	0.000035 J	<0.000015	<0.000015
Anthracene	mg/L	0.00020	0.000016 J	0.000088 J
Benzo(a)anthracene	mg/L	0.00017	<0.000051	0.00011
Benzo(a)pyrene	mg/L	0.000091 J	<0.000020	0.000068 J
Benzo(b)fluoranthene	mg/L	0.00017	<0.000023	0.00014
Benzo(g,h,i)perylene	mg/L	0.000074 J	<0.000014	0.000066 J
Benzo(k)fluoranthene	mg/L	0.000074 J	<0.000019	0.000074 J
Chrysene	mg/L	0.00027	<0.000021	0.00023
Dibenz(a,h)anthracene	mg/L	0.000038 J	<0.000024	0.000034 J
Dibenzofuran	mg/L	0.00019	0.000055 J	0.00014
Fluoranthene	mg/L	0.00092	0.000046 J	0.00090
Fluorene	mg/L	0.00037	0.000085 J	0.00021
Indeno(1,2,3-cd)pyrene	mg/L	0.000058 J	<0.000022	0.000040 J
Naphthalene	mg/L	0.0070	0.000080 J	0.00019
Phenanthrene	mg/L	0.00079	0.00013	0.00021
Pyrene	mg/L	0.00065	0.000027 J	0.00053
Total Petroleum Hydrocarbons				
Total Petroleum Hydrocarbons	mg/L	1.22	<0.20	<0.20
Total Petroleum Hydrocarbons (>C12-C28)	mg/L	0.31 J	<0.20	<0.20
Total Petroleum Hydrocarbons (>C28-C35)	mg/L	<0.20	<0.20	<0.20
Total Petroleum Hydrocarbons (C6-C12)	mg/L	0.91	<0.20	<0.20
General Chemistry				
Ignitability	Deg F	212	--	--
pH	s.u.	7.78 JL	--	--
Reactive cyanide	mg/kg	<100	--	--
Reactive sulfide	mg/kg	<100	--	--

Notes:

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

Table 3

Analytical Methods
Water Line Leak Sampling Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
August 2019

Parameter	Method	Matrix	Holding Time	Holding Time
			Collection to Extraction (Days)	Extraction to Analysis (Days)
VOCs	SW-846 8260C	Water	-	14
SVOCs	SW-846 8270D	Water	7	40
TPH	TX1005	Water	14	40
Ignitability	SW-846 1010	Water	-	28
pH	SW-846 9040C	Water	-	immediate
Reactive Cyanide	SW-846 7.3.3.2	Water	-	14
Reactive Sulfide	SW-846 7.3.4.2	Water	-	28

Notes:

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

Method References:

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

Table 4

**Qualified Sample Results Due to Holding Time Exceedance
Water Line Leak Sampling Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
August 2019**

Parameter	Sample ID	Holding Time (days)	Holding Time Criteria	Analyte	Qualified Sample Results	Units
General Chemistry	W-1620-Fractank-20190810	5	immediate	pH	7.78 JL	s.u.

Notes:

JL - Estimated concentration; biased low

Attachment A

Laboratory NELAP Certificate



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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	AB	Analyte ID	Method ID
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 Amenable cyanide	AB TX	Analyte ID 1510	Method ID 10060001
Method EPA 335.2			
Analyte Total cyanide	AB TX	Analyte ID 1645	Method ID 10278203
Method EPA 335.4			
Analyte Total cyanide	AB TX	Analyte ID 1645	Method ID 10061402
Method EPA 350.3			
Analyte Ammonia as N	AB TX	Analyte ID 1515	Method ID 10064401
Method EPA 365.3			
Analyte Orthophosphate as P Phosphorus	AB TX TX	Analyte ID 1870 1910	Method ID 10070801 10070801
Method EPA 375.4			
Analyte Sulfate	AB TX	Analyte ID 2000	Method ID 10073800
Method EPA 376.1			
Analyte Sulfide	AB TX	Analyte ID 2005	Method ID 10074201
Method EPA 410.4			
Analyte Chemical oxygen demand (COD)	AB TX	Analyte ID 1565	Method ID 10077404
Method EPA 415.1			
Analyte Total Organic Carbon (TOC)	AB TX	Analyte ID 2040	Method ID 10078407
Method EPA 420.1			
Analyte Total phenolics	AB TX	Analyte ID 1905	Method ID 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



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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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Issue Date: 5/1/2019

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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 (Dichloroprop, 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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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



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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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Matrix: Non-Potable Water

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-trinitrophenylamine (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	Analyte	AB	Analyte ID	Method ID
EPA 9065	Total phenolics	TX	1905	10200405
EPA 9066	Total phenolics	TX	1905	10200609
EPA 9250	Chloride	TX	1575	10207202
EPA RSK 175	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
HACH 8000	Chemical oxygen demand (COD)	TX	1565	60003001
SM 2120 B	Color	TX	1605	20223807
SM 2310 B (4a)	Acidity, as CaCO ₃	TX	1500	20002806
SM 2320 B	Alkalinity as CaCO ₃	TX	1505	20045005
SM 2340 B		AB	Analyte ID	Method ID



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Matrix: Non-Potable Water

Total hardness as CaCO ₃	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	AB	Analyte ID	Method ID
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	Analyte	AB	Analyte ID	Method ID
ASTM D2216	Moisture	TX	10337	ASTM D2216-05
EPA 1010	Ignitability	TX	1780	10116606
EPA 1030	Ignitability	TX	1780	10117201
EPA 1311	TCLP	TX	849	10118806
EPA 1312	SPLP	TX	850	10119003
EPA 1668	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
EPA 200.8	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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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



Texas Commission on Environmental Quality



NELAP - Recognized Laboratory Fields of Accreditation

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

10450 Stancliff Road, Suite 210
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Expiration Date: 4/30/2020
Issue Date: 5/1/2019

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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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Matrix: Solid & Chemical Materials

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

Kepona	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



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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



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Matrix: Solid & Chemical Materials

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



10450 Stancliff Rd. Suite 210
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August 22, 2019

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

Work Order: **HS19080556**

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

Dear Eric,

ALS Environmental received 6 sample(s) on Aug 10, 2019 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.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080556

**TRRP Laboratory Data
Package Cover Page**

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: HS19080556

**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: 08/22/2019			
Project Name: Houston TX-Wood Preserving Works				Laboratory Job Number: HS19080556			
Reviewer Name: Dane Wacasey				Prep Batch Number(s): 144039,144041,R344125,R344268,R344271,R344272,R344324			
# 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			1
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	Surrogate recovery data					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	Test reports/summary forms for blank samples					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	Laboratory control samples (LCS):					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?		X			2
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	Analytical duplicate data					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	Method quantitation limits (MQLs):					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	Other problems/anomalies					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		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				3

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group				LRC Date: 08/22/2019			
Project Name: Houston TX-Wood Preserving Works				Laboratory Job Number: HS19080556			
Reviewer Name: Dane Wacasey				Prep Batch Number(s): 144039,144041,R344125,R344268,R344271,R344272,R344324			
# ¹	A ²	Description	Yes	No	NA ³	NR ⁴	ER# ⁵
S1	OI	Initial calibration (ICAL)					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	Mass spectral tuning:					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	Internal standards (IS):					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	Dual column confirmation					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	Tentatively identified compounds (TICs):					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	Interference Check Sample (ICS) results:					
		Were percent recoveries within method QC limits?			X		
S9	I	Serial dilutions, post digestion spikes, and method of standard additions					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	Method detection limit (MDL) studies					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	Proficiency test reports:					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	Standards documentation					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	Compound/analyte identification procedures					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	Demonstration of analyst competency (DOC)					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	Laboratory standard operating procedures (SOPs):					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports

Laboratory Name: ALS Laboratory Group	LRC Date: 08/22/2019
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS19080556
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 144039,144041,R344125,R344268,R344271,R344272,R344324

ER#⁵	Description
1	Sample received outside method holding time for pH. pH is an immediate test. Sample results are flagged with an "H" qualifier. The temperature at the time of pH is reported. Please note that all pH results are already normalized to a temperature of 25 degrees C.
2	Batch 144041, Semivolatile Organics Method SW8270, LCS/LCSD were analyzed and reported in lieu of an MS/MSD for this batch.
3	Reactive Cyanide by Method SW7.3.3.2; TCEQ does not offer accreditation for Reactive Cyanide, the results are flagged with n. Reactive Sulfide by Method SW7.3.4.2; TCEQ does not offer accreditation for Reactive Sulfide, the results are flagged with n.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);

NA = Not Applicable;

NR = Not Reviewed;

R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS19080556

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19080556-01	W-1620-RO-20190810	Water		10-Aug-2019 10:50	10-Aug-2019 14:55	<input type="checkbox"/>
HS19080556-02	W-1620-RO-LibertyRd-20190810	Water		10-Aug-2019 11:15	10-Aug-2019 14:55	<input checked="" type="checkbox"/>
HS19080556-03	W-1620-RO-Ditch-20190810	Water		10-Aug-2019 11:15	10-Aug-2019 14:55	<input type="checkbox"/>
HS19080556-04	WQ-1620-TB-20190810	Water	CG 080519 -68	10-Aug-2019 10:30	10-Aug-2019 14:55	<input type="checkbox"/>
HS19080556-05	S-1620-Sheen-20190810	Solid		10-Aug-2019 12:00	10-Aug-2019 14:55	<input checked="" type="checkbox"/>
HS19080556-06	W-1620-Fractank-20190810	Water		10-Aug-2019 14:00	10-Aug-2019 14:55	<input type="checkbox"/>

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works
 Sample ID: W-1620-RO-20190810
 Collection Date: 10-Aug-2019 10:50

ANALYTICAL REPORT
 WorkOrder:HS19080556
 Lab ID:HS19080556-01
 Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260					Analyst: PC
Benzene	U		0.00020	0.0010	mg/L	1	12-Aug-2019 19:15
Ethylbenzene	U		0.00030	0.0010	mg/L	1	12-Aug-2019 19:15
Toluene	U		0.00020	0.0010	mg/L	1	12-Aug-2019 19:15
Xylenes, Total	U		0.00030	0.0010	mg/L	1	12-Aug-2019 19:15
Surr: 1,2-Dichloroethane-d4	89.5			70-126	%REC	1	12-Aug-2019 19:15
Surr: 4-Bromofluorobenzene	103			81-113	%REC	1	12-Aug-2019 19:15
Surr: Dibromofluoromethane	93.0			77-123	%REC	1	12-Aug-2019 19:15
Surr: Toluene-d8	99.6			82-127	%REC	1	12-Aug-2019 19:15
LOW-LEVEL SEMIVOLATILES BY 8270D		Method:SW8270				Prep:SW3510 / 12-Aug-2019	Analyst: GEY
Acenaphthene	0.00010		0.000027	0.00010	mg/L	1	12-Aug-2019 18:46
Acenaphthylene	U		0.000015	0.00010	mg/L	1	12-Aug-2019 18:46
Anthracene	0.000016	J	0.000014	0.00010	mg/L	1	12-Aug-2019 18:46
Benz(a)anthracene	U		0.000051	0.00010	mg/L	1	12-Aug-2019 18:46
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	12-Aug-2019 18:46
Benzo(b)fluoranthene	U		0.000023	0.00010	mg/L	1	12-Aug-2019 18:46
Benzo(g,h,i)perylene	U		0.000014	0.00010	mg/L	1	12-Aug-2019 18:46
Benzo(k)fluoranthene	U		0.000019	0.00010	mg/L	1	12-Aug-2019 18:46
Chrysene	U		0.000021	0.00010	mg/L	1	12-Aug-2019 18:46
Dibenz(a,h)anthracene	U		0.000024	0.00010	mg/L	1	12-Aug-2019 18:46
Dibenzofuran	0.000055	J	0.000020	0.00010	mg/L	1	12-Aug-2019 18:46
Fluoranthene	0.000046	J	0.000010	0.00010	mg/L	1	12-Aug-2019 18:46
Fluorene	0.000085	J	0.000030	0.00010	mg/L	1	12-Aug-2019 18:46
Indeno(1,2,3-cd)pyrene	U		0.000022	0.00010	mg/L	1	12-Aug-2019 18:46
Naphthalene	0.000080	J	0.000020	0.00010	mg/L	1	12-Aug-2019 18:46
Phenanthrene	0.00013		0.000021	0.00010	mg/L	1	12-Aug-2019 18:46
Pyrene	0.000027	J	0.000019	0.00010	mg/L	1	12-Aug-2019 18:46
Surr: 2-Fluorobiphenyl	84.2			40-125	%REC	1	12-Aug-2019 18:46
Surr: 4-Terphenyl-d14	85.8			40-135	%REC	1	12-Aug-2019 18:46
Surr: Nitrobenzene-d5	74.6			41-120	%REC	1	12-Aug-2019 18:46
LOW-LEVEL TEXAS TPH BY TX1005		Method:TX1005				Prep:TX1005PR / 12-Aug-2019	Analyst: MBG
nC6 to nC12	U		0.20	0.50	mg/L	1	14-Aug-2019 00:53
>nC12 to nC28	U		0.20	0.50	mg/L	1	14-Aug-2019 00:53
>nC28 to nC35	U		0.20	0.50	mg/L	1	14-Aug-2019 00:53
Total Petroleum Hydrocarbon	U		0.20	0.50	mg/L	1	14-Aug-2019 00:53
Surr: 2-Fluorobiphenyl	106			70-130	%REC	1	14-Aug-2019 00:53
Surr: Trifluoromethyl benzene	113			70-130	%REC	1	14-Aug-2019 00:53

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

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works
 Sample ID: W-1620-RO-Ditch-20190810
 Collection Date: 10-Aug-2019 11:15

ANALYTICAL REPORT

WorkOrder:HS19080556
 Lab ID:HS19080556-03
 Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: PC			
Benzene	U		0.00020	0.0010	mg/L	1	12-Aug-2019 19:39
Ethylbenzene	U		0.00030	0.0010	mg/L	1	12-Aug-2019 19:39
Toluene	U		0.00020	0.0010	mg/L	1	12-Aug-2019 19:39
Xylenes, Total	U		0.00030	0.0010	mg/L	1	12-Aug-2019 19:39
Surr: 1,2-Dichloroethane-d4	90.4			70-126	%REC	1	12-Aug-2019 19:39
Surr: 4-Bromofluorobenzene	100			81-113	%REC	1	12-Aug-2019 19:39
Surr: Dibromofluoromethane	93.5			77-123	%REC	1	12-Aug-2019 19:39
Surr: Toluene-d8	102			82-127	%REC	1	12-Aug-2019 19:39
LOW-LEVEL SEMIVOLATILES BY 8270D		Method:SW8270		Prep:SW3510 / 12-Aug-2019		Analyst: GEY	
Acenaphthene	0.00033		0.00027	0.00010	mg/L	1	12-Aug-2019 19:05
Acenaphthylene	U		0.000015	0.00010	mg/L	1	12-Aug-2019 19:05
Anthracene	0.000088	J	0.000014	0.00010	mg/L	1	12-Aug-2019 19:05
Benz(a)anthracene	0.00011		0.000050	0.00010	mg/L	1	12-Aug-2019 19:05
Benzo(a)pyrene	0.000068	J	0.000020	0.00010	mg/L	1	12-Aug-2019 19:05
Benzo(b)fluoranthene	0.00014		0.000023	0.00010	mg/L	1	12-Aug-2019 19:05
Benzo(g,h,i)perylene	0.000066	J	0.000014	0.00010	mg/L	1	12-Aug-2019 19:05
Benzo(k)fluoranthene	0.000074	J	0.000019	0.00010	mg/L	1	12-Aug-2019 19:05
Chrysene	0.00023		0.000021	0.00010	mg/L	1	12-Aug-2019 19:05
Dibenz(a,h)anthracene	0.000034	J	0.000024	0.00010	mg/L	1	12-Aug-2019 19:05
Dibenzofuran	0.00014		0.000020	0.00010	mg/L	1	12-Aug-2019 19:05
Fluoranthene	0.00090		0.000010	0.00010	mg/L	1	12-Aug-2019 19:05
Fluorene	0.00021		0.000030	0.00010	mg/L	1	12-Aug-2019 19:05
Indeno(1,2,3-cd)pyrene	0.000040	J	0.000022	0.00010	mg/L	1	12-Aug-2019 19:05
Naphthalene	0.00019		0.000020	0.00010	mg/L	1	12-Aug-2019 19:05
Phenanthrene	0.00021		0.000021	0.00010	mg/L	1	12-Aug-2019 19:05
Pyrene	0.00053		0.000019	0.00010	mg/L	1	12-Aug-2019 19:05
Surr: 2-Fluorobiphenyl	78.6			40-125	%REC	1	12-Aug-2019 19:05
Surr: 4-Terphenyl-d14	85.9			40-135	%REC	1	12-Aug-2019 19:05
Surr: Nitrobenzene-d5	71.7			41-120	%REC	1	12-Aug-2019 19:05
LOW-LEVEL TEXAS TPH BY TX1005		Method:TX1005		Prep:TX1005PR / 12-Aug-2019		Analyst: MBG	
nC6 to nC12	U		0.20	0.50	mg/L	1	14-Aug-2019 01:22
>nC12 to nC28	U		0.20	0.50	mg/L	1	14-Aug-2019 01:22
>nC28 to nC35	U		0.20	0.50	mg/L	1	14-Aug-2019 01:22
Total Petroleum Hydrocarbon	U		0.20	0.50	mg/L	1	14-Aug-2019 01:22
Surr: 2-Fluorobiphenyl	95.9			70-130	%REC	1	14-Aug-2019 01:22
Surr: Trifluoromethyl benzene	103			70-130	%REC	1	14-Aug-2019 01:22

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

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works
 Sample ID: WQ-1620-TB-20190810
 Collection Date: 10-Aug-2019 10:30

ANALYTICAL REPORT

WorkOrder:HS19080556
 Lab ID:HS19080556-04
 Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: PC			
Benzene	U		0.00020	0.0010	mg/L	1	12-Aug-2019 18:51
Ethylbenzene	U		0.00030	0.0010	mg/L	1	12-Aug-2019 18:51
Toluene	U		0.00020	0.0010	mg/L	1	12-Aug-2019 18:51
Xylenes, Total	U		0.00030	0.0010	mg/L	1	12-Aug-2019 18:51
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>89.2</i>			<i>70-126</i>	<i>%REC</i>	<i>1</i>	<i>12-Aug-2019 18:51</i>
<i>Surr: 4-Bromofluorobenzene</i>	<i>101</i>			<i>81-113</i>	<i>%REC</i>	<i>1</i>	<i>12-Aug-2019 18:51</i>
<i>Surr: Dibromofluoromethane</i>	<i>92.0</i>			<i>77-123</i>	<i>%REC</i>	<i>1</i>	<i>12-Aug-2019 18:51</i>
<i>Surr: Toluene-d8</i>	<i>101</i>			<i>82-127</i>	<i>%REC</i>	<i>1</i>	<i>12-Aug-2019 18:51</i>

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

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works
 Sample ID: W-1620-Fractank-20190810
 Collection Date: 10-Aug-2019 14:00

ANALYTICAL REPORT

WorkOrder:HS19080556
 Lab ID:HS19080556-06
 Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C			Method:SW8260			Analyst: PC	
Benzene		U	0.00020	0.0010	mg/L	1	12-Aug-2019 20:03
Ethylbenzene	0.0018		0.00030	0.0010	mg/L	1	12-Aug-2019 20:03
Toluene	0.045		0.00020	0.0010	mg/L	1	12-Aug-2019 20:03
Xylenes, Total	0.020		0.00030	0.0010	mg/L	1	12-Aug-2019 20:03
Surr: 1,2-Dichloroethane-d4	89.8			70-126	%REC	1	12-Aug-2019 20:03
Surr: 4-Bromofluorobenzene	102			81-113	%REC	1	12-Aug-2019 20:03
Surr: Dibromofluoromethane	91.8			77-123	%REC	1	12-Aug-2019 20:03
Surr: Toluene-d8	102			82-127	%REC	1	12-Aug-2019 20:03
LOW-LEVEL SEMIVOLATILES BY 8270D			Method:SW8270			Prep:SW3510 / 12-Aug-2019 Analyst: GEY	
Acenaphthene	0.00039		0.000028	0.00010	mg/L	1	12-Aug-2019 19:25
Acenaphthylene	0.000035	J	0.000015	0.00010	mg/L	1	12-Aug-2019 19:25
Anthracene	0.00020		0.000014	0.00010	mg/L	1	12-Aug-2019 19:25
Benz(a)anthracene	0.00017		0.000051	0.00010	mg/L	1	12-Aug-2019 19:25
Benzo(a)pyrene	0.000091	J	0.000020	0.00010	mg/L	1	12-Aug-2019 19:25
Benzo(b)fluoranthene	0.00017		0.000023	0.00010	mg/L	1	12-Aug-2019 19:25
Benzo(g,h,i)perylene	0.000074	J	0.000014	0.00010	mg/L	1	12-Aug-2019 19:25
Benzo(k)fluoranthene	0.000074	J	0.000019	0.00010	mg/L	1	12-Aug-2019 19:25
Chrysene	0.00027		0.000021	0.00010	mg/L	1	12-Aug-2019 19:25
Dibenz(a,h)anthracene	0.000038	J	0.000024	0.00010	mg/L	1	12-Aug-2019 19:25
Dibenzofuran	0.00019		0.000020	0.00010	mg/L	1	12-Aug-2019 19:25
Fluoranthene	0.00092		0.000010	0.00010	mg/L	1	12-Aug-2019 19:25
Fluorene	0.00037		0.000031	0.00010	mg/L	1	12-Aug-2019 19:25
Indeno(1,2,3-cd)pyrene	0.000058	J	0.000022	0.00010	mg/L	1	12-Aug-2019 19:25
Naphthalene	0.0070		0.000020	0.00010	mg/L	1	12-Aug-2019 19:25
Phenanthrene	0.00079		0.000021	0.00010	mg/L	1	12-Aug-2019 19:25
Pyrene	0.00065		0.000019	0.00010	mg/L	1	12-Aug-2019 19:25
Surr: 2-Fluorobiphenyl	77.6			40-125	%REC	1	12-Aug-2019 19:25
Surr: 4-Terphenyl-d14	80.9			40-135	%REC	1	12-Aug-2019 19:25
Surr: Nitrobenzene-d5	70.2			41-120	%REC	1	12-Aug-2019 19:25
LOW-LEVEL TEXAS TPH BY TX1005			Method:TX1005			Prep:TX1005PR / 12-Aug-2019 Analyst: MBG	
nC6 to nC12	0.91		0.20	0.49	mg/L	1	14-Aug-2019 01:51
>nC12 to nC28	0.31	J	0.20	0.49	mg/L	1	14-Aug-2019 01:51
>nC28 to nC35		U	0.20	0.49	mg/L	1	14-Aug-2019 01:51
Total Petroleum Hydrocarbon	1.22		0.20	0.49	mg/L	1	14-Aug-2019 01:51
Surr: 2-Fluorobiphenyl	95.6			70-130	%REC	1	14-Aug-2019 01:51
Surr: Trifluoromethyl benzene	102			70-130	%REC	1	14-Aug-2019 01:51
FLASH POINT BY PENSKEY-MARTENS SW1010A			Method:SW1010			Analyst: KAH	
Ignitability	> 212		70.0	70.0	°F	1	14-Aug-2019 15:00

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

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works
 Sample ID: W-1620-Fractank-20190810
 Collection Date: 10-Aug-2019 14:00

ANALYTICAL REPORT

WorkOrder:HS19080556
 Lab ID:HS19080556-06
 Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
REACTIVE CYANIDE		Method:SW7.3.3.2			Prep:SW7.3.3.2		Analyst: MZD
Reactive Cyanide	U	n	100	100	mg/Kg	1	14-Aug-2019 16:26
REACTIVE SULFIDE		Method:SW7.3.4.2					Analyst: MZD
Reactive Sulfide	U	n	100	100	mg/Kg	1	14-Aug-2019 16:17
PH BY SW9040C		Method:SW9040C					Analyst: MWG
pH	7.78	H	0.100	0.100	pH Units	1	15-Aug-2019 12:00
Temp Deg C @pH	21.3	H	0	0	DEG C	1	15-Aug-2019 12:00

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

WEIGHT LOG

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080556

Batch ID: 144039 **Method:** LOW-LEVEL TEXAS TPH BY TX1005 **Prep:** TX 1005_W PR

SampleID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19080556-01	1	30.23	3 (mL)	0.09924
HS19080556-03	1	30.13	3 (mL)	0.09957
HS19080556-06	1	30.69	3 (mL)	0.09775

Batch ID: 144041 **Method:** LOW-LEVEL SEMIVOLATILES BY 8270D **Prep:** 3510_B_LOW

SampleID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19080556-01	1	990	1 (mL)	0.00101
HS19080556-03	1	1000	1 (mL)	0.001
HS19080556-06	1	980	1 (mL)	0.00102

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080556

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID: 144039 (0)		Test Name : LOW-LEVEL TEXAS TPH BY TX1005			Matrix: Water	
HS19080556-01	W-1620-RO-20190810	10 Aug 2019 10:50		12 Aug 2019 11:30	14 Aug 2019 00:53	1
HS19080556-03	W-1620-RO-Ditch-20190810	10 Aug 2019 11:15		12 Aug 2019 11:30	14 Aug 2019 01:22	1
HS19080556-06	W-1620-Fractank-20190810	10 Aug 2019 14:00		12 Aug 2019 11:30	14 Aug 2019 01:51	1
Batch ID: 144041 (0)		Test Name : LOW-LEVEL SEMIVOLATILES BY 8270D			Matrix: Water	
HS19080556-01	W-1620-RO-20190810	10 Aug 2019 10:50		12 Aug 2019 13:04	12 Aug 2019 18:46	1
HS19080556-03	W-1620-RO-Ditch-20190810	10 Aug 2019 11:15		12 Aug 2019 13:04	12 Aug 2019 19:05	1
HS19080556-06	W-1620-Fractank-20190810	10 Aug 2019 14:00		12 Aug 2019 13:04	12 Aug 2019 19:25	1
Batch ID: R344125 (0)		Test Name : LOW LEVEL VOLATILES BY SW8260C			Matrix: Water	
HS19080556-01	W-1620-RO-20190810	10 Aug 2019 10:50			12 Aug 2019 19:15	1
HS19080556-03	W-1620-RO-Ditch-20190810	10 Aug 2019 11:15			12 Aug 2019 19:39	1
HS19080556-04	WQ-1620-TB-20190810	10 Aug 2019 10:30			12 Aug 2019 18:51	1
HS19080556-06	W-1620-Fractank-20190810	10 Aug 2019 14:00			12 Aug 2019 20:03	1
Batch ID: R344268 (0)		Test Name : REACTIVE SULFIDE			Matrix: Water	
HS19080556-06	W-1620-Fractank-20190810	10 Aug 2019 14:00			14 Aug 2019 16:17	1
Batch ID: R344271 (0)		Test Name : REACTIVE CYANIDE			Matrix: Water	
HS19080556-06	W-1620-Fractank-20190810	10 Aug 2019 14:00			14 Aug 2019 16:26	1
Batch ID: R344272 (0)		Test Name : FLASH POINT BY PENSKY-MARTENS SW1010A			Matrix: Water	
HS19080556-06	W-1620-Fractank-20190810	10 Aug 2019 14:00			14 Aug 2019 15:00	1
Batch ID: R344324 (0)		Test Name : PH BY SW9040C			Matrix: Water	
HS19080556-06	W-1620-Fractank-20190810	10 Aug 2019 14:00			15 Aug 2019 12:00	1

WorkOrder: HS19080556
 InstrumentID: FID-13
 Test Code: TX1005_W_Low
 Test Number: TX1005
 Test Name: Low-level Texas TPH by TX1005

**METHOD DETECTION /
 REPORTING LIMITS**

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

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	nC6 to nC12	TPH-1005-1	0.25	0.28	0.20	0.50
A	>nC12 to nC28	TPH-1005-2	0.25	0.29	0.20	0.50
A	>nC28 to nC35	TPH-1005-4	0.25	0.28	0.20	0.50
A	Total Petroleum Hydrocarbon	TPH	0.25	0.28	0.20	0.50
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	Trifluoromethyl benzene	98-08-8	0	0	0	0

WorkOrder: HS19080556
 InstrumentID: SV-7
 Test Code: 8270_LOW_W
 Test Number: SW8270
 Test Name: Low-Level Semivolatiles by 8270D

**METHOD DETECTION /
 REPORTING LIMITS**

Matrix: Aqueous

Units: mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Acenaphthene	83-32-9	0.00010	0.00011	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000050	0.000015	0.00010
A	Anthracene	120-12-7	0.00010	0.00011	0.000014	0.00010
A	Anthracene	120-12-7	0.000050	0.000055	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.000050	0.000068	0.000050	0.00010
A	Benz(a)anthracene	56-55-3	0.00010	0.000099	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.00010	0.000076	0.000020	0.00010
A	Benzo(a)pyrene	50-32-8	0.000050	0.000053	0.000020	0.00010
A	Benzo(b)fluoranthene	205-99-2	0.000050	0.000067	0.000023	0.00010
A	Benzo(b)fluoranthene	205-99-2	0.00010	0.000093	0.000023	0.00010
A	Benzo(g,h,i)perylene	191-24-2	0.00010	0.000091	0.000014	0.00010
A	Benzo(g,h,i)perylene	191-24-2	0.000050	0.000061	0.000014	0.00010
A	Benzo(k)fluoranthene	207-08-9	0.000050	0.000060	0.000019	0.00010
A	Benzo(k)fluoranthene	207-08-9	0.00010	0.00011	0.000019	0.00010
A	Chrysene	218-01-9	0.000050	0.000066	0.000021	0.00010
A	Chrysene	218-01-9	0.00010	0.00011	0.000021	0.00010
A	Dibenz(a,h)anthracene	53-70-3	0.000050	0.000059	0.000024	0.00010
A	Dibenz(a,h)anthracene	53-70-3	0.00010	0.000083	0.000024	0.00010
A	Dibenzofuran	132-64-9	0.00010	0.000094	0.000020	0.00010
A	Dibenzofuran	132-64-9	0.000050	0.000052	0.000020	0.00010
A	Fluoranthene	206-44-0	0.000050	0.000053	0.000010	0.00010
A	Fluoranthene	206-44-0	0.00010	0.00012	0.000010	0.00010
A	Fluorene	86-73-7	0.00010	0.00012	0.000030	0.00010
A	Fluorene	86-73-7	0.000050	0.000052	0.000030	0.00010
A	Indeno(1,2,3-cd)pyrene	193-39-5	0.000050	0.000066	0.000022	0.00010
A	Indeno(1,2,3-cd)pyrene	193-39-5	0.00010	0.000066	0.000022	0.00010
A	Naphthalene	91-20-3	0.00010	0.00010	0.000020	0.00010
A	Naphthalene	91-20-3	0.000050	0.000061	0.000020	0.00010
A	Phenanthrene	85-01-8	0.000050	0.000055	0.000021	0.00010
A	Phenanthrene	85-01-8	0.00010	0.00011	0.000021	0.00010
A	Pyrene	129-00-0	0.000050	0.000061	0.000019	0.00010
A	Pyrene	129-00-0	0.00010	0.00011	0.000019	0.00010
S	2-Fluorobiphenyl	321-60-8	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

WorkOrder: HS19080556
 InstrumentID: VOA6
 Test Code: 8260_LL_W
 Test Number: SW8260
 Test Name: Low Level Volatiles by SW8260C

**METHOD DETECTION /
 REPORTING LIMITS**

Matrix: Aqueous

Units: mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Benzene	71-43-2	0.00050	0.00062	0.00020	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00062	0.00030	0.0010
A	Toluene	108-88-3	0.00050	0.00060	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.0019	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080556

QC BATCH REPORT

Batch ID: 144039 (0) **Instrument:** FID-13 **Method:** LOW-LEVEL TEXAS TPH BY TX1005

MBLK		Sample ID: MBLK-144039		Units: mg/L		Analysis Date: 13-Aug-2019 21:59				
Client ID:		Run ID: FID-13_344222		SeqNo: 5209078		PrepDate: 12-Aug-2019		DF: 1		
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	U	0.50								
>nC12 to nC28	U	0.50								
>nC28 to nC35	U	0.50								
Total Petroleum Hydrocarbon	U	0.50								
Surr: 2-Fluorobiphenyl	2.242	0	2.5	0	89.7	70 - 130				
Surr: Trifluoromethyl benzene	2.422	0	2.5	0	96.9	70 - 130				

LCS		Sample ID: LCS-144039		Units: mg/L		Analysis Date: 13-Aug-2019 22:28				
Client ID:		Run ID: FID-13_344222		SeqNo: 5209079		PrepDate: 12-Aug-2019		DF: 1		
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	22.75	0.50	25	0	91.0	75 - 125				
>nC12 to nC28	22.3	0.50	25	0	89.2	75 - 125				
Surr: 2-Fluorobiphenyl	2.403	0	2.5	0	96.1	70 - 130				
Surr: Trifluoromethyl benzene	2.515	0	2.5	0	101	70 - 130				

LCSD		Sample ID: LCSD-144039		Units: mg/L		Analysis Date: 13-Aug-2019 22:57				
Client ID:		Run ID: FID-13_344222		SeqNo: 5209080		PrepDate: 12-Aug-2019		DF: 1		
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	23.73	0.50	25	0	94.9	75 - 125	22.75	4.23	20	
>nC12 to nC28	23.92	0.50	25	0	95.7	75 - 125	22.3	7	20	
Surr: 2-Fluorobiphenyl	2.546	0	2.5	0	102	70 - 130	2.403	5.79	20	
Surr: Trifluoromethyl benzene	2.57	0	2.5	0	103	70 - 130	2.515	2.17	20	

MS		Sample ID: HS19080562-01MS		Units: mg/L		Analysis Date: 13-Aug-2019 23:55				
Client ID:		Run ID: FID-13_344222		SeqNo: 5209082		PrepDate: 12-Aug-2019		DF: 1		
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	24.62	0.49	24.65	2.446	89.9	75 - 125				
>nC12 to nC28	21.94	0.49	24.65	0.7123	86.1	75 - 125				
Surr: 2-Fluorobiphenyl	2.41	0	2.465	0	97.7	70 - 130				
Surr: Trifluoromethyl benzene	2.457	0	2.465	0	99.7	70 - 130				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080556

QC BATCH REPORT

Batch ID: 144039 (0) **Instrument:** FID-13 **Method:** LOW-LEVEL TEXAS TPH BY TX1005

MSD		Sample ID: HS19080562-01MSD			Units: mg/L		Analysis Date: 14-Aug-2019 00:24			
Client ID:		Run ID: FID-13_344222			SeqNo: 5209083		PrepDate: 12-Aug-2019		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	25.44	0.49	24.55	2.446	93.7	75 - 125	24.62	3.29	20	
>nC12 to nC28	23.78	0.49	24.55	0.7123	94.0	75 - 125	21.94	8.03	20	
<i>Surr: 2-Fluorobiphenyl</i>	2.452	0	2.455	0	99.9	70 - 130	2.41	1.75	20	
<i>Surr: Trifluoromethyl benzene</i>	2.462	0	2.455	0	100	70 - 130	2.457	0.182	20	

The following samples were analyzed in this batch: HS19080556-01 HS19080556-03 HS19080556-06

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080556

QC BATCH REPORT

Batch ID: 144041 (0)		Instrument: SV-7		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
MBLK	Sample ID: MBLK-144041				Units: ug/L	Analysis Date: 12-Aug-2019 17:26				
Client ID:		Run ID: SV-7_344099			SeqNo: 5207387	PrepDate: 12-Aug-2019		DF: 1		
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Benz(a)anthracene	U	0.10								
Benzo(a)pyrene	U	0.10								
Benzo(b)fluoranthene	U	0.10								
Benzo(g,h,i)perylene	U	0.10								
Benzo(k)fluoranthene	U	0.10								
Chrysene	U	0.10								
Dibenz(a,h)anthracene	U	0.10								
Dibenzofuran	U	0.10								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Indeno(1,2,3-cd)pyrene	U	0.10								
Naphthalene	U	0.10								
Phenanthrene	U	0.10								
Pyrene	U	0.10								
<i>Surr: 2-Fluorobiphenyl</i>	3.217	0.20	5	0	64.3	40 - 125				
<i>Surr: 4-Terphenyl-d14</i>	3.118	0.20	5	0	62.4	40 - 135				
<i>Surr: Nitrobenzene-d5</i>	2.947	0.20	5	0	58.9	41 - 120				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080556

QC BATCH REPORT

Batch ID: 144041 (0)		Instrument: SV-7		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
LCS	Sample ID: LCS-144041	Units: ug/L			Analysis Date: 12-Aug-2019 17:46					
Client ID:	Run ID: SV-7_344099	SeqNo: 5207388		PrepDate: 12-Aug-2019		DF: 1				
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	3.146	0.10	5	0	62.9	45 - 120				
Acenaphthylene	3.109	0.10	5	0	62.2	47 - 120				
Anthracene	3.194	0.10	5	0	63.9	45 - 120				
Benz(a)anthracene	2.995	0.10	5	0	59.9	40 - 120				
Benzo(a)pyrene	2.637	0.10	5	0	52.7	45 - 120				
Benzo(b)fluoranthene	2.672	0.10	5	0	53.4	50 - 120				
Benzo(g,h,i)perylene	2.554	0.10	5	0	51.1	42 - 127				
Benzo(k)fluoranthene	2.514	0.10	5	0	50.3	45 - 127				
Chrysene	3.229	0.10	5	0	64.6	43 - 120				
Dibenz(a,h)anthracene	2.582	0.10	5	0	51.6	45 - 125				
Dibenzofuran	3.256	0.10	5	0	65.1	50 - 120				
Fluoranthene	3.506	0.10	5	0	70.1	45 - 125				
Fluorene	3.387	0.10	5	0	67.7	49 - 120				
Indeno(1,2,3-cd)pyrene	3.066	0.10	5	0	61.3	41 - 128				
Naphthalene	3.515	0.10	5	0	70.3	45 - 120				
Phenanthrene	3.279	0.10	5	0	65.6	45 - 121				
Pyrene	3.089	0.10	5	0	61.8	40 - 130				
Surr: 2-Fluorobiphenyl	3.28	0.20	5	0	65.6	40 - 125				
Surr: 4-Terphenyl-d14	3.154	0.20	5	0	63.1	40 - 135				
Surr: Nitrobenzene-d5	2.753	0.20	5	0	55.1	41 - 120				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080556

QC BATCH REPORT

Batch ID: 144041 (0)		Instrument: SV-7		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
LCSD	Sample ID: LCSD-144041	Units: ug/L			Analysis Date: 12-Aug-2019 18:06					
Client ID:	Run ID: SV-7_344099	SeqNo: 5207389		PrepDate: 12-Aug-2019		DF: 1				
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	3.102	0.10	5	0	62.0	45 - 120	3.146	1.43	20	
Acenaphthylene	3.056	0.10	5	0	61.1	47 - 120	3.109	1.74	20	
Anthracene	3.234	0.10	5	0	64.7	45 - 120	3.194	1.24	20	
Benz(a)anthracene	3.075	0.10	5	0	61.5	40 - 120	2.995	2.63	20	
Benzo(a)pyrene	2.691	0.10	5	0	53.8	45 - 120	2.637	2.02	20	
Benzo(b)fluoranthene	3.021	0.10	5	0	60.4	50 - 120	2.672	12.3	20	
Benzo(g,h,i)perylene	2.633	0.10	5	0	52.7	42 - 127	2.554	3.03	20	
Benzo(k)fluoranthene	2.63	0.10	5	0	52.6	45 - 127	2.514	4.5	20	
Chrysene	3.052	0.10	5	0	61.0	43 - 120	3.229	5.62	20	
Dibenz(a,h)anthracene	2.767	0.10	5	0	55.3	45 - 125	2.582	6.9	20	
Dibenzofuran	3.179	0.10	5	0	63.6	50 - 120	3.256	2.38	20	
Fluoranthene	3.53	0.10	5	0	70.6	45 - 125	3.506	0.701	20	
Fluorene	3.288	0.10	5	0	65.8	49 - 120	3.387	2.96	20	
Indeno(1,2,3-cd)pyrene	3.206	0.10	5	0	64.1	41 - 128	3.066	4.44	20	
Naphthalene	3.508	0.10	5	0	70.2	45 - 120	3.515	0.179	20	
Phenanthrene	3.307	0.10	5	0	66.1	45 - 121	3.279	0.855	20	
Pyrene	3.176	0.10	5	0	63.5	40 - 130	3.089	2.77	20	
Surr: 2-Fluorobiphenyl	3.185	0.20	5	0	63.7	40 - 125	3.28	2.92	20	
Surr: 4-Terphenyl-d14	3.099	0.20	5	0	62.0	40 - 135	3.154	1.75	20	
Surr: Nitrobenzene-d5	2.804	0.20	5	0	56.1	41 - 120	2.753	1.84	20	

The following samples were analyzed in this batch: HS19080556-01 HS19080556-03 HS19080556-06

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080556

QC BATCH REPORT

Batch ID: R344125 (0)		Instrument: VOA6		Method: LOW LEVEL VOLATILES BY SW8260C						
MBLK	Sample ID: VBLKW-190812	Units: ug/L			Analysis Date: 12-Aug-2019 12:26					
Client ID:	Run ID: VOA6_344125	SeqNo: 5206800		PrepDate:			DF: 1			
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	
Benzene	U	1.0								
Ethylbenzene	U	1.0								
Toluene	U	1.0								
Xylenes, Total	U	1.0								
<i>Surr: 1,2-Dichloroethane-d4</i>	44.97	1.0	50	0	89.9	70 - 123				
<i>Surr: 4-Bromofluorobenzene</i>	50.49	1.0	50	0	101	82 - 115				
<i>Surr: Dibromofluoromethane</i>	46.1	1.0	50	0	92.2	73 - 126				
<i>Surr: Toluene-d8</i>	51.42	1.0	50	0	103	81 - 120				
LCS	Sample ID: VLCSW-190812	Units: ug/L			Analysis Date: 12-Aug-2019 11:38					
Client ID:	Run ID: VOA6_344125	SeqNo: 5206799		PrepDate:			DF: 1			
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	
Benzene	19.19	1.0	20	0	96.0	74 - 120				
Ethylbenzene	18.52	1.0	20	0	92.6	77 - 117				
Toluene	18.96	1.0	20	0	94.8	77 - 118				
Xylenes, Total	56.46	1.0	60	0	94.1	75 - 122				
<i>Surr: 1,2-Dichloroethane-d4</i>	50.82	1.0	50	0	102	70 - 130				
<i>Surr: 4-Bromofluorobenzene</i>	51.45	1.0	50	0	103	82 - 115				
<i>Surr: Dibromofluoromethane</i>	50.86	1.0	50	0	102	73 - 126				
<i>Surr: Toluene-d8</i>	47.64	1.0	50	0	95.3	81 - 120				
MS	Sample ID: HS19080444-02MS	Units: ug/L			Analysis Date: 12-Aug-2019 17:15					
Client ID:	Run ID: VOA6_344125	SeqNo: 5206802		PrepDate:			DF: 1			
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	
Benzene	19.89	1.0	20	1.975	89.6	70 - 127				
Ethylbenzene	19.22	1.0	20	0	96.1	70 - 124				
Toluene	18.92	1.0	20	0	94.6	70 - 123				
Xylenes, Total	56.84	1.0	60	0	94.7	70 - 130				
<i>Surr: 1,2-Dichloroethane-d4</i>	46.77	1.0	50	0	93.5	70 - 126				
<i>Surr: 4-Bromofluorobenzene</i>	52.77	1.0	50	0	106	81 - 113				
<i>Surr: Dibromofluoromethane</i>	46.71	1.0	50	0	93.4	77 - 123				
<i>Surr: Toluene-d8</i>	49.81	1.0	50	0	99.6	82 - 127				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080556

QC BATCH REPORT

Batch ID: R344125 (0)		Instrument: VOA6		Method: LOW LEVEL VOLATILES BY SW8260C					
MSD	Sample ID: HS19080444-02MSD	Units: ug/L			Analysis Date: 12-Aug-2019 17:39				
Client ID:	Run ID: VOA6_344125	SeqNo: 5206803		PrepDate:		DF: 1			
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

Benzene	20.64	1.0	20	1.975	93.3	70 - 127	19.89	3.66	20
Ethylbenzene	19.8	1.0	20	0	99.0	70 - 124	19.22	3.02	20
Toluene	19.61	1.0	20	0	98.1	70 - 123	18.92	3.59	20
Xylenes, Total	59.22	1.0	60	0	98.7	70 - 130	56.84	4.1	20
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>44.97</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>89.9</i>	<i>70 - 126</i>	<i>46.77</i>	<i>3.92</i>	<i>20</i>
<i>Surr: 4-Bromofluorobenzene</i>	<i>52.86</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>106</i>	<i>81 - 113</i>	<i>52.77</i>	<i>0.171</i>	<i>20</i>
<i>Surr: Dibromofluoromethane</i>	<i>46.88</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>93.8</i>	<i>77 - 123</i>	<i>46.71</i>	<i>0.376</i>	<i>20</i>
<i>Surr: Toluene-d8</i>	<i>50.85</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>102</i>	<i>82 - 127</i>	<i>49.81</i>	<i>2.07</i>	<i>20</i>

The following samples were analyzed in this batch:

HS19080556-01	HS19080556-03	HS19080556-04	HS19080556-06
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Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080556

QC BATCH REPORT

Batch ID: R344268 (0)		Instrument: WetChem_HS		Method: REACTIVE SULFIDE					
MBLK	Sample ID: MBLK-344268	Units: mg/Kg		Analysis Date: 14-Aug-2019 16:17					
Client ID:	Run ID: WetChem_HS_344268	SeqNo: 5209980		PrepDate:		DF: 1			
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Reactive Sulfide	U	100							
LCS	Sample ID: LCS-344268	Units: mg/Kg		Analysis Date: 14-Aug-2019 16:17					
Client ID:	Run ID: WetChem_HS_344268	SeqNo: 5209981		PrepDate:		DF: 1			
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Reactive Sulfide	72	10.0	100	0	72.0	20 - 120			
MS	Sample ID: HS19080655-03MS	Units: mg/Kg		Analysis Date: 14-Aug-2019 16:17					
Client ID:	Run ID: WetChem_HS_344268	SeqNo: 5209983		PrepDate:		DF: 1			
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Reactive Sulfide	68	10.0	100	0	68.0	20 - 120			

The following samples were analyzed in this batch: HS19080556-06

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080556

QC BATCH REPORT

Batch ID: R344271 (0)		Instrument: UV-2450		Method: REACTIVE CYANIDE					
MBLK	Sample ID: MBLK-R344271	Units: mg/Kg		Analysis Date: 14-Aug-2019 16:26					
Client ID:	Run ID: UV-2450_344271	SeqNo: 5210022		PrepDate:		DF: 1			
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

Reactive Cyanide U 100

LCS	Sample ID: LCS-R344271	Units: mg/Kg		Analysis Date: 14-Aug-2019 16:26					
Client ID:	Run ID: UV-2450_344271	SeqNo: 5210021		PrepDate:		DF: 1			
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

Reactive Cyanide 0.77 10.0 10 0 7.70 5 - 100 J

MS	Sample ID: HS19080655-03MS	Units: mg/Kg		Analysis Date: 14-Aug-2019 16:26					
Client ID:	Run ID: UV-2450_344271	SeqNo: 5210023		PrepDate:		DF: 1			
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

Reactive Cyanide 0.83 10.0 10 0 8.30 5 - 100 J

The following samples were analyzed in this batch:

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080556

QC BATCH REPORT

Batch ID: R344272 (0) **Instrument:** WetChem_HS **Method:** FLASH POINT BY PENSKY-MARTENS SW1010A

LCS Sample ID: **LCS-R344272** Units: °F Analysis Date: **14-Aug-2019 15:00**
 Client ID: Run ID: **WetChem_HS_344272** SeqNo: **5210060** PrepDate: DF: **1**
 Analyte Result MQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %RPD RPD Limit Qual

Ignitability 83.57 70.0 81 0 103 95 - 105

DUP Sample ID: **HS19080556-06DUP** Units: °F Analysis Date: **14-Aug-2019 15:00**
 Client ID: **W-1620-Fractank-20190810** Run ID: **WetChem_HS_344272** SeqNo: **5210061** PrepDate: DF: **1**
 Analyte Result MQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %RPD RPD Limit Qual

Ignitability > 212 70.0 0 0 20

The following samples were analyzed in this batch: HS19080556-06

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080556

QC BATCH REPORT

Batch ID: R344324 (0)		Instrument: WetChem_HS		Method: PH BY SW9040C						
DUP	Sample ID: HS19080734-01DUP	Units: pH Units		Analysis Date: 15-Aug-2019 12:00						
Client ID:	Run ID: WetChem_HS_344324	SeqNo: 5211140		PrepDate:		DF: 1				
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

pH	7.28	0.100					7.27	0.137	10	
Temp Deg C @pH	20.8	0					20.8	0	10	

The following samples were analyzed in this batch: HS19080556-06

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080556

**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 Quantitation 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
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 Carolina	624-2019	31-Dec-2019
Oklahoma	2018-156	31-Aug-2019
Texas	TX104704231-19-23	30-Apr-2020

Sample Receipt Checklist

Client Name: PBW
Work Order: HS19080556

Date/Time Received: 10-Aug-2019 14:55
Received by: AC

Checklist completed by: Jared R. Makan
eSignature
Date: 12-Aug-2019

Reviewed by: Dane J. Wacasey
eSignature
Date: 12-Aug-2019

Matrices: Water, Solid

Carrier name: FedEx Priority Overnight

- Shipping container/cooler in good condition? Yes [checked] No [] Not Present []
Custody seals intact on shipping container/cooler? Yes [] No [] Not Present [checked]
Custody seals intact on sample bottles? Yes [] No [] Not Present [checked]
VOA/TX1005/TX1006 Solids in hermetically sealed vials? Yes [] No [] Not Present [checked]
Chain of custody present? Yes [checked] No []
Chain of custody signed when relinquished and received? Yes [checked] No []
Samplers name present on COC? Yes [checked] No []
Chain of custody agrees with sample labels? Yes [checked] No []
Samples in proper container/bottle? Yes [checked] No []
Sample containers intact? Yes [checked] No []
Sufficient sample volume for indicated test? Yes [checked] No []
All samples received within holding time? Yes [checked] No []
Container/Temp Blank temperature in compliance? Yes [checked] No []

1 Page(s)
COC IDs:144945

Temperature(s)/Thermometer(s): 0.8c/0.8 UC/C IR25
Cooler(s)/Kit(s): 44623
Date/Time sample(s) sent to storage: 08/12/2019 11:55

- Water - VOA vials have zero headspace? Yes [checked] No [] No VOA vials submitted []
Water - pH acceptable upon receipt? Yes [checked] No [] N/A []
pH adjusted? Yes [] No [] N/A [checked]

pH adjusted by:

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

10



Cincinnati, OH
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Chain of Custody Form

Page of

COC ID: 144945

Houston, TX
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Middletown, PA
+1 717 944 5541

Salt Lake City, UT
+1 801 266 7700

South Charleston, WV
+1 304 356 3168

York, PA
+1 717 505 5280

Customer Information		Project Information		ALS Project Manager:		ALS Work Order #:	
Purchase Order		Project Name	UPRR	A	BTEX		
Work Order		Project Number		B	TPH		
Company Name	Golder Associates	Bill To Company	UPRR	C	PAHS		
Send Report To	Eric Matzner	Invoice Attn		D	Hold		
Address	2201 DoubleCreek R	Address		E	<p style="text-align: center;">HS19080556</p> <p style="text-align: center;">Golder Associates inc. Houston TX-Wood Preserving Works</p> 		
				F			
City/State/Zip	Round Rock TX 78664	City/State/Zip		G			
Phone		Phone		H			
Fax		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	W-1620-RO-20190810	8/10/19	1050	SW	1.8	8	X	X	X								
2	W-1620-RO-Liberty Rd-20190810	8/10/19	1115	SW	1.8	8	X			X							
3	W-1620-RO-Ditch-20190810	8/10/19	1115	SW	1.8	8	X	X	X								
4	TB-20190810	8/10/19	1030	GC	1.8	3	X										
5	W-1620-Sheen-20190810	8/10/19	1200	net	1.8	1				X							
6	W-1620-Fractank-20190810	8/10/19	1400	W	1.8	8	X	X	X								
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign Brenda Basile/Frances Devore/Jacqueline Lybrand/delimony		Shipment Method		Required Turnaround Time: (Check Box) <input type="checkbox"/> Other _____			Results Due Date: 48 hrs	
Relinquished by: Brenda Basile		Date: 8/10/19	Time: 14:55	Received by:		Notes:		
Relinquished by:		Date: 8/10/19	Time: 14:55	Received by (Laboratory): AC		Cooler ID: 44623	Cooler Temp: 0.8	QC Package: (Check One Box Below)
Logged by (Laboratory):		Date:	Time:	Checked by (Laboratory):		<input type="checkbox"/> Level II Std QC	<input checked="" type="checkbox"/> TRRP Checklist	
Preservative Key: 1-HCl 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-Na ₂ S ₂ O ₃ 6-NaHSO ₄ 7-Other 8-4°C 9-5035						<input type="checkbox"/> Level III Std QC/Raw Date	<input type="checkbox"/> TRRP Level IV	
						<input type="checkbox"/> Level IV SW846/CLP		
						<input type="checkbox"/> Other _____		

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

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