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**ENGLEWOOD INTERMODAL YARD – TEST PIT EVALUATION REPORT
UNION PACIFIC RAILROAD HOUSTON WOOD PRESERVING WORKS FACILITY
4910 LIBERTY ROAD FACILITY, HOUSTON, TEXAS
POST-CLOSURE CARE PERMIT NO. HW-50343; INDUSTRIAL SWR NO. 31547**

Dear Ms. Hatfield,

Golder Associates Inc. (Golder), on behalf of Union Pacific Railroad (UPRR), is pleased to provide this report summarizing the additional investigation activities at the Englewood Intermodal (IM) Yard within the UPRR Houston Wood Preserving Works (HWPW) site (the Site). This report details the test pit evaluation and camera surveys of the storm water sewers conducted at the Englewood IM Yard from July 2020 through February 2021.

Background

During the July 2017 quarterly inspection of the capped areas at the Site in accordance with the procedures detailed in the Response Action Plan (PBW, 2014), a tar-like non-aqueous phase liquid (NAPL) was observed surfacing within the Englewood IM Yard through the joints and cracks in the concrete and asphalt surfaces primarily in the area shown on Figure 1. In October 2018, Golder personnel documented the excavation of four test pits in the areas where the tar-like NAPL was observed in the Englewood IM Yard following the general work plan provided to the TCEQ in the August 2018 monthly update (Golder, 2018a). This information was provided in the *Monthly Status Update – Soil Cap and Concrete Cap Repairs* dated October 31, 2018 (October 2018 Monthly Update) submitted to the TCEQ (Golder, 2018b). Based on the results of the test pit evaluation, Golder, on behalf of UPRR, proposed to the TCEQ the installation of a NAPL Collection System as an interim measure as detailed in the October 2018 Monthly Update. The TCEQ approved UPRR to proceed with the interim measure in a letter dated December 6, 2018. The NAPL Collection System was installed in January and February 2019 as detailed in the Response Action Completion Report (RACR) dated March 26, 2019. Following installation of the NAPL Collection System, weekly inspections were conducted to assess the effectiveness of the NAPL Collection System.

As detailed in the monthly updates submitted to the TCEQ for the NAPL Collection System inspections, additional small tar-like NAPL surface seeps and water seeps with dark brown to black water have been occasionally identified on the IM yard pavement surface outside of the NAPL Collection System area within the Englewood IM

Yard. At no time have the NAPL or water associated with these seeps been observed to move beyond the immediate seepage area on the IM yard pavement surface. Currently, NAPL that surfaces on the pavement is scraped up on a weekly basis (as necessary, typically NAPL seeps decrease or cease during the cooler months) and properly disposed of in accordance with state and federal regulations and requirements.

Golder, on behalf of UPPR, developed an investigation approach and pilot study initiated in July 2020 to evaluate remedial approaches to address the tar-like NAPL surface seeps at the Englewood IM Yard outside the NAPL Collection System (Golder, 2020a; Golder, 2020b). As described in the July 2020 Monthly Status Update submitted to the TCEQ dated August 19, 2020, the investigative approach included excavation of test pits in certain areas where the NAPL surface seeps were observed. The goal of the isolated excavation approach (i.e., hot spots) and removal of NAPL was to reduce the NAPL mass to possibly eliminate future surface seeps in that area. The scope of work for the investigation and pilot study are discussed below.

Scope of Work

Golder proposed to excavate seven test pits within the Englewood IM Yard where NAPL surface seeps had been observed. In addition to the test pit assessment, the storm water utilities within the Englewood IM Yard near the NAPL Collection System area were assessed by a camera survey to evaluate if NAPL observed in the shallow soils may be potentially impacting the underground utility (Golder, 2020b).

The objectives of the activities were to:

- Evaluate the tar-like material or NAPL in the subsurface immediately below where the NAPL surface seeps are located;
- Evaluate the areas where brown water seeps had been observed;
- Evaluate over a six-month period if the NAPL surface seeps return following test pit construction and removal of the NAPL in the shallow subsurface at the test pit locations; and
- Evaluate potential impacts to the underground utilities within the Englewood IM Yard from the shallow NAPL at the Site.

Details of the field activities and results are provided below.

Field Activities

Test Pit Excavation and Sampling

Golder personnel documented the test pit excavation activities from July 13, 2020 through July 16, 2020. Seven test pits were excavated by United States Environmental Services, LLC (USES) within areas where tar-like material and brown water had previously been observed at the following locations:

Test Pit	Location
TP-01	Slot B108
TP-02	Slot A098
TP-03	Slot B096
TP-04	Slot B057

TP-05	Slot A021
TP-06	Slot B013
TP-07	Slot A010

Prior to conducting the test pits, utility notifications were conducted and each proposed area was scanned for underground utilities using ground penetrating radar (GPR). The concrete or asphalt pavement at each test pit was cut and removed prior to excavating the test pits (Attachment A, Photo Nos. 1 through 7). The test pits were then excavated to approximately 3 feet wide, 6 feet long and 4 feet deep with a mini excavator. Locations of the test pits are shown on the attached Figure 1.

During the test pit excavation, Golder personnel documented field observations and the field screened the air within the test pits with a photoionization detector (PID) and a multi-gas detector (screening for lower explosive limits (LEL), oxygen (O₂), carbon monoxide (CO), and hydrogen sulfide (H₂S)). Golder collected soil samples from each test pit. Each test pit was then left open for a few hours to overnight after excavation to monitor for seepage of the tar-like NAPL and water into the test pits. If enough water entered the test pit to be sampled, water samples were also collected from the test pits.

The test pits indicated that the concrete pavement was approximately 0.5 feet thick with an underlying road base material that appeared to be crushed rock or similar material approximately 1 foot thick. Firm black clay with cobbles and debris generally underlay the concrete and fill.

NAPL was observed in five (TP-01, TP-02, TP-03, TP-05, TP-07) of the seven test pits at varying depths within the firm, black clay subsurface. Pockets of viscous NAPL were observed within the clay soil matrix underlying the road base material, typically at depths between 2 and 3 feet below ground surface (bgs). Water was observed in six of the seven test pits at varying depths, typically within the road base material immediately under the concrete pavement or near the transition to the subsurface clay. During the observation period, only two test pits (TP-02 (Slot A098) and TP-07 (Slot A010)) had enough water accumulate in the excavation to be sampled. Detailed observations from the test pits are summarized below and a photographic log from the test pits is provided in **Attachment A**:

- **TP-01 (B108 Test Pit)** – Located just north of the current NAPL Collection System, NAPL was encountered directly under the asphalt and at varying depths within the test pit. A pocket of NAPL was observed approximately 3 feet bgs (Photo No. 8). A black clay with significant amounts of debris and fill was encountered from below the road base (approx. 1.5' bgs) to the bottom of the test pit (4 feet bgs). A strong hydrocarbon odor was occasionally noted in the test pit, and some water was observed at the bottom of the test pit. However, no PID or gas meter readings were noted above background levels during excavation (ambient air). A sample of the soil excavated was placed in a plastic Ziploc bag, and a PID measurement of the headspace from the sample was recorded at 11.5 ppmV. After leaving the test pit open overnight, there was not enough water accumulated in the excavation to collect a sample. Approximately 15 to 20 gallons of NAPL that had accumulated into the excavation were removed (Photo No. 9) and placed in a 55-gallon drum for proper disposal.
- **TP-02 (A098 Test Pit)** – This test pit was located approximately 50 feet northeast of the B99/B100 NAPL Collection Sump. During excavation of the test pit, water seeped into the test pit excavation

from approximately 8 inches bgs at the base of the road base material. A sheen was noted on the water that collected in the bottom of test pit (Photo No. 10). Asphalt was encountered below the road base at 1 foot bgs, and NAPL pockets were encountered approximately 2.5 feet bgs. A black clay with significant amounts of rocks and debris was encountered from below the asphalt (1.5 feet bgs) to the bottom of the test pit (4 feet bgs); a hydrocarbon odor was noted. After leaving the excavation open overnight, enough water had accumulated in the test pit to be sampled and a sample was collected. No PID or gas meter readings were noted above background during excavation (ambient air). A sample of the soil excavated was placed in a plastic Ziploc bag, and a PID measurement of the headspace from the sample was recorded at 29.5 ppmV. The water that had accumulated in the test pit overnight was removed prior to backfilling.

- **TP-03 (B096 Test Pit)** – This test pit was excavated approximately 40 feet east of the B99/B100 NAPL Collection Sump. A relatively large amount of NAPL was encountered at various depths in TP-03. A large NAPL pocket was encountered at approximately 3 feet bgs on the north side of the test pit (Photo No. 11). A small amount of water appeared to seep into the test pit. Black clay with significant amounts of rocks and debris were encountered from below the road base (approx. 1.5' bgs) to the bottom of the pit (4' bgs). A strong hydrocarbon odor was noted. However, no PID or gas meter readings were noted above background during excavation (ambient air). A sample of the soil excavated was placed in a plastic Ziploc bag, and a PID measurement of the headspace from the sample was recorded at 5.9 ppmV. After leaving the test pit open for overnight, not enough water accumulated in the excavation to collect a sample. Approximately 60 to 70 gallons of NAPL that had accumulated into the excavation was removed (Photo No. 12) and placed in 55-gallon drum for proper disposal (Photo No. 13).
- **TP-04 (B057 Test Pit)** – At this test pit located in about the middle of the B-Row of parking slots, no NAPL or water was encountered in the test pit (Photo No. 14). Black clay with significant amounts of cobble and debris was encountered from below the road base (approx. 1.5 feet bgs) to the bottom of the pit (4 feet bgs). A hydrocarbon odor was noted, however, no PID or gas meter readings were noted above background during excavation (ambient air). A sample of the soil excavated was placed in a plastic Ziploc bag, and a PID measurement of the headspace from the sample was recorded at 10.1 ppmV.
- **TP-05 (A021 Test Pit)** – This test pit is located towards the eastern end of the A-Row. NAPL seeps were encountered at various depths in TP-05 with a NAPL pocket occurring at approximately 2 feet bgs on the south side of the test pit (Photo Nos. 15 and 16). Some water was observed seeping into the excavation from a depth of approximately 1 to 1.5 feet bgs, but not enough water to be sampled had accumulated in the test pit after 5 hours. Black clay with significant amounts of cobble and debris was encountered from below the road base (approximately 1 foot bgs) to the bottom of the pit (4 feet bgs). Hydrocarbon odors were noted; however, no gas meter readings were noted above background during excavation (ambient air). PID readings up to 3.0 ppm were detected during excavation. A sample of the soil excavated was placed in a plastic Ziploc bag, and a PID measurement of the headspace from the sample was recorded at 31.3 ppmV.
- **TP-06 (B013 Test Pit)** – This test pit is located towards the eastern end of the B-Row. No NAPL was observed in this test pit, but a hydrocarbon odor was noted. A water seep was encountered at approximately 1.5 feet bgs along the north wall, but not enough water accumulated in the test pit after at least 10 hours left open to collect a sample. Black clay with significant amounts of rocks and debris was encountered from below the road base (1 foot bgs) to the bottom of the pit (4 feet bgs)

(Photo No. 17). No gas meter readings were noted above background during excavation (ambient air); PID readings up to 1.3 ppm were detected during excavation. A sample of the soil excavated was placed in a plastic Ziploc bag, and a PID measurement of the headspace from the sample was recorded at 72.1 ppmV.

- **TP-07 (A010 Test Pit)** – This test pit is located towards the eastern end of the A-Row. Water and NAPL seeps were encountered at various depths during excavation of the test pit (Photo Nos. 18 and 19). A hydrocarbon sheen was noted on the water that collected in the bottom of the excavation. Black clay with significant amounts of rocks and debris was encountered from below the road base (approx. 1 foot bgs) to the bottom of the pit (4 feet bgs); a hydrocarbon odor was noted. Over 8 hours of being left open, enough water had accumulated in the test pit to be sampled and a sample was collected. No gas meter readings were noted above background during excavation (ambient air). PID readings up to 2.5 ppm were detected during excavation. A sample of the soil excavated was placed in a plastic Ziploc bag, and a PID measurement of the headspace from the sample was recorded at 53.4 ppmV.

The NAPL observed in each test pit visually appeared to be similar at each location and was described as a black, viscous material (see photos in **Attachment A**). During the test pit excavation, a hydrocarbon odor was noted to varying degrees in each pit with strong odor noted in TP-03 (B096) and TP-01 (B108).

At each of the seven test pits, a composite soil sample was collected from the sidewalls of the pit, submitted to ALS Laboratory in Houston, Texas and analyzed for the following parameters to evaluate chemicals of concern (COCs) within in the soil:

- Total petroleum hydrocarbons (TPH) by Tx1005 Method,
- Volatile Organic Compounds (VOCs) by EPA 8260 Method,
- Semi-volatile organic compounds (SVOCs) by EPA 8270 Method, and
- RCRA Metals by EPA 6010/7141A Methods.

At two of the seven test pits (TP-02 (A098) and TP-07 (A010)), samples of the water that accumulated in the pits were collected using a peristaltic pump and was submitted to ALS Laboratory in Houston, Texas and analyzed for the following parameters and/or COCs:

- TPH by Tx1005 Method,
- VOCs by EPA 8260 Method,
- SVOCs by EPA 8270 Method,
- RCRA Metals by EPA 6010/7141A Methods, and
- The water sample from TP-02 was also evaluated for chloride, sulfate, nitrate/nitrite, calcium, alkalinity, TDS, and pH by the appropriate methods.

The soil analytical results are summarized in **Table 1**, and the water analytical results are summarized in **Table 2**. The laboratory analytical reports are provided in **Attachment B**.

After observation and sampling, a plastic liner was placed at the bottom of each pit. Each pit was backfilled with coarse sand and road base and covered with a concrete patch (see Photo Nos. 20 through 29). The excavated soils from the test pits were placed in roll-off boxes (Photo No. 31), sampled, characterized, and disposed of in accordance with state and federal regulations. Waste manifests for the excavated soils are provided in **Attachment C**.

Data Evaluation

Test Pit Samples

The soil results from the samples collected from the seven test pits are summarized in **Table 1**. The results were compared to Texas Risk Reduction Program (TRRP) Commercial/Industrial (C/I) Soil Tier 1 Protective Concentration Levels (PCLs) assuming a 30-acre source area, consistent with the PCLs used as part of the HWPW site assessment. The following COCs were detected in soil samples at concentrations greater than their respective C/I Tier 1 PCLs:

- **VOCs:** None of the VOCs detected in the soil samples exceeded the soil C/I Tier 1 PCLs.
- **SVOCs:** 2-Methylnaphthalene at TP-07 (A010) of 54 mg/kg and benzo(a)pyrene at TP-01 (B108) at 6.7 mg/kg were detected above their respective C/I Tier 1 PCLs. Several SVOCs had sample detection limits (SDLs) greater than their respective PCLs including 1,2-diphenylhydrazine, 2,4-dinitrotoluene, 2,6-dinitrotoluene, 4,6-dinitro-2-methylphenol, and bis(2-chloroethoxy) methane.
- **TPH by TX1005:** The seven soil samples from the test pits had Total TPH by TX1005 (C₆-C₃₅) concentrations ranging from 520 mg/kg at TP-01 (B108) to 22,200 mg/kg at TP-07 (A010), with the highest concentrations detected in the C₁₂-C₂₈ TPH range. This data was compared to the TPH mixture PCLs developed in the TPH-NAPL Assessment that was conducted in 2020 in the Englewood IM Yard (Golder, 2020c). As detailed in the TPH-NAPL Assessment, the evaluation indicated the following four different categories of TPH mixtures in soils at the Site based on TPH TX1005 predominant peaks in GC graphs and fractionation data:
 - (1) nC₆ to nC₁₂ Organics – GC graphs indicate the presence of VOCs;
 - (2) >nC₁₂ to nC₂₈ Organics – appears to be impacted by diesel or other fuels of similar composition;
 - (3) >nC₁₂ to nC₂₈ Organics with High Aromatic Content – typical for creosote;
 - (4) Unresolved complex material (UCM) – potentially may include residual fuel oils (which have common names such as No. 4, 5, and 6 fuel oils) and bunker C or asphalt and lubricating oils.Using representative TX1006 analytical data for each category, TPH mixture PCLs were calculated following TCEQ guidance (TCEQ, 2010). The TPH mixture PCL analysis indicated that the soil to groundwater pathway for the TPH mixture is not complete, and therefore the ^{Tot}Soil_{Comb} pathway PCL is the critical PCL for each TPH category. The calculated TPH mixture PCLs for the four categories listed above were: (1) nC₆ to nC₁₂ Organics: 16,766 mg/kg, (2) >nC₁₂ to nC₂₈ Organics: 60,480 mg/kg, (3) >nC₁₂ to nC₂₈ Organics with High Aromatic Content: 70,247 mg/kg, (4) UCM: 57,967 mg/kg. Samples collected during the TPH-NAPL Assessment (Golder, 2020c) in the areas where the July 2020 test pits were conducted contained TPH consistent with Categories 2 through 4. TPH TX1005 concentrations in soil samples collected from the test pits in July 2020 were below the C/I ^{Tot}Soil_{Comb} PCL_{TPH-Mix} (30-acre) for categories 2 through 4 (range from 57,927 mg/kg to 70,247 mg/kg). TPH concentrations in samples collected from TP-03, TP-06, and TP-07 exceeded the Tier 1 Soil_{Res} PCL of 10,000 mg/kg, which is generally consistent with the results from the TPH-NAPL Assessment (Golder, 2020c).
- **RCRA metals:** arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver were all detected above their respective SDLs. Arsenic, barium, cadmium, lead, selenium, and silver had concentrations detected above respective C/I PCLs in several samples. Except for lead concentrations, RCRA metals concentrations were below applicable ^{Tot}Soil_{Comb} PCLs. Lead concentrations at one test pit (TP-01) had a concentration of 3,000 mg/kg, which that exceeded the ^{Tot}Soil_{Comb} PCL of 1,600 mg/kg.

The test pits conducted in July 2020 are located within the boundary of the soil affected property (PBW, 2014). Based on the analytical data, the soil sampling at these test pits do not change the overall perimeter boundary of the affected property at the Site as defined in the Response Action Plan dated December 2014 (PBW, 2014).

The results from the test pit water samples collected in TP-02 and TP-07 are summarized on Table 2. The likely source of the water is infiltrating storm water accumulating within the road base material above the lower permeability clay soils. Since the water is perched water accumulating with the road base material and not groundwater, the results were not compared to groundwater PCLs. Given the water samples were collected as grab samples from the test pit excavation, the samples exhibited high levels of turbidity due to entrained suspended soil. The COCs detected in the two test pit water samples above SDLs included the following:

- VOCs: No VOCs were detected above their SDLs in the water samples.
- SVOCs: Low concentrations of 2,4-dimethylphenol, 2-methylnaphthalene, acenaphthene, anthracene, benz(a)anthracene, benzo(a)pyrene, bis(2-ethylhexyl)phthalate, chrysene, dibenzofuran, fluoranthene, fluorene, naphthalene, pentachlorophenol, phenanthrene, and pyrene were detected in the water samples. Most of the SVOCs were detected at concentrations near their respective SDLs.
- TPH by TX1005: The two water samples collected at TP-02 (A098) and TP-07 (A010) had TPH concentrations ranging of 2.30 mg/L and 28.8 mg/L respectively, with the highest concentrations detected in the C₁₂-C₂₈ TPH range.
- RCRA metals: arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver were all detected above their respective SDLs in both water samples. Higher metal concentrations were detected in the sample collected from TP-07 than in the sample collected from TP-02. Both water samples had elevated turbidity levels (>1,000 NTUs and 566 NTUs in TP-02 and TP-07, respectively) when sampled, which likely influenced the sample results.

To confirm that the water in the test pit is not groundwater from the uppermost water bearing unit, the groundwater elevation was assessed, and a groundwater sample was collected from A-Transmissive Zone (A-TZ) monitoring well MW-77A (screened across the uppermost water bearing unit) located near TP-02 (Figure 1) and analyzed for general water chemistry parameters. The depth to groundwater at MW-77A was 6.54 feet below top of casing in July 2020. The top of casing is approximately at grade with the ground surface. The test pits were excavated to approximately 4 feet bgs; therefore, the groundwater potentiometric elevation in the A-TZ is below the depth of the test pits. As shown on **Table 2**, the pH of the water in test pit TP-02 (10.8) was higher than the pH of the groundwater (7.09). Nitrate and sulfate concentrations in the groundwaters sample were an order of magnitude less than concentrations in the TP-02 sample. The overall total dissolved solids (TDS) were more than three times as high in the sample of the test pit water compared to the sample from MW-77A. These differences in general water chemistry parameters as well as the depth to groundwater measured in MW-77A indicates that the water observed in TP-02 is not groundwater from the uppermost water bearing unit.

Investigative-derived waste (IDW) samples (Sample IDs: SO-1620-IDW-R01-20200715 and SO-1620-IDW-R02-20200715) were also collected for waste characterization from the roll-off bins where the excavated soils were stored. The analytical results from these sample did not indicate any toxicity characteristic leaching procedure (TCLP) metal, VOC, or SVOC concentrations that exceeded the TCLP Regulatory Levels detailed in the TCEQ *Guidelines for the Classification and Coding of Industrial and Hazardous Wastes*, RG-022 (Revised 11/14). The TPH concentrations in both roll-off soil samples exceeded 1,500 mg/kg, which per waste classification guidelines in the TCEQ RG-022 document corresponds to Class I non-hazardous waste classification. A sample (Sample ID:

NAPL-1620-TP_NAPL-20200723) was collected from the NAPL removed from the test pits. The analytical results from this sample did not indicate any TCLP metal, VOC, or SVOC concentrations that exceeded the TCLP Regulatory Levels for hazardous waste classification. The TPH concentrations in the NAPL sample exceeded 1,500 mg/kg, corresponding to a Class I non-hazardous waste classification. All waste generated during test pit excavation were profiled, transported, and disposed of off-site following state and federal regulations.

Test Pit Follow-Up Inspections

Following the excavation and backfilling of the test pits (July 13-16, 2020), Golder has inspected the test pit locations on a weekly basis as part of the NAPL Collection System inspections. The objective of the weekly inspections was to observe if the NAPL seeps that were present prior to the test pit excavation work would return at these locations following the test pit activities. From the July 2020 through April 2021 inspections, no NAPL seeps had been observed at the test pit locations (see Photolog in **Attachment A**). Based on inspections following the test pit activities, the test pits appear to be an effective response action to address the local areas where NAPL surface seeps have been observed. However, UPRR will continue to inspect the test pit areas for NAPL seeps through September 2021 (specifically to continue evaluate the areas during another cycle of hotter months when NAPL surface seeps are typically more active) to confirm that the test pits address the minor areas of surface seeps. The observations during inspections will continue to be included in the monthly status reports submitted to the TCEQ.

Storm Water Line Camera Survey

Underground storm water lines and catch basins are located within the Englewood IM Yard to allow storm water to drain from the intermodal container parking area to the City of Houston storm sewer system. Since the NAPL Collection System is located approximately 50 feet from a storm drain line running along the C-Row (see Figure 1), Golder proposed to inspect the storm water line to evaluate the potential for NAPL found in the shallow soils (generally less than 3 feet bgs as demonstrated in the test pits) to impact the underground utility. The proposed method to inspect the line was through a Video Pipe Inspection (VPI) camera to visually inspect the storm drain lines. Camera survey reports generated by the subcontractors are provided in **Attachment D**. Below is a summary of the activities and dates the inspection occurred and results of the inspections:

- On December 8, 2020, a camera survey was performed on the storm water sewer pipes in the Englewood Intermodal Yard as part of the Englewood IM Yard Test Pit Evaluation (**Figure 3**). A VPI crawler system operated by Ground Penetrating Radar Systems, Inc. (GPRS) was used to visually inspect the condition of the storm lines. The VPI system was unable to survey the full length of several drain lines due to obstructions from build-up of sediments and deposits (e.g., mud) within the lines that prevented the VPI crawler from advancing. During the survey, a sheen was observed upon disturbance of the sediments in the standing water in the catch basins from the VPI crawler and absorbent booms were placed in the catch basins as a precautionary measure. No flow was observed in the storm pipes during the December 2020 survey. The outfall associated with these storm pipes located approximately 1 mile southwest of the Site off of Market Street was inspected, and no sheen or discolored water were observed. In order to facilitate access to the sewer lines that were blocked, a sediment and obstruction removal event was scheduled.
- On December 21 and 22, Golder, on behalf of UPRR, coordinated with USES to remove the obstructions within sections of the storm system using jet rods and a vacuum truck. Potable water was used to break

up the sediment and obstructions, and a vacuum truck was used to remove and recover the sediment and water from the drainpipes.

- Water used to break up the material in the pipes and the material from the obstruction removal effort were placed in two vacuum boxes and stored onsite pending characterization. Used booms from the obstruction removal effort were placed in a 55-gallon drum and stored onsite. Waste generated from the removal effort was sampled, characterized, and disposed of off-site in accordance with state and federal regulations. A composite waste sample was collected from the vacuum boxes on December 22, 2020 and analyzed for VOCs, SVOCs, TPH, total RCRA metals, reactivity, corrosivity, and ignitability. Elevated total lead concentrations (>5 mg/L) were detected in the total RCRA metals water sample, which was likely a result of high turbidity that was observed in the waste sample during sampling. Since the total RCRA metal sample is acidified with nitric acid per Method 6020 upon sampling, the total metal sample results were likely biased by the dissolution of suspended sediment in the sample bottle. To confirm the initial sample from the vacuum box, both vacuum boxes were resampled using the TCLP lead analytical method for evaluating waste characteristics. The additional waste samples were collected on January 7, 2021 and indicated that the TCLP lead concentrations were 0.179 mg/L and 0.136 mg/L for each vacuum box. Additionally, TCLP lead was analyzed on the original sample collected December 22, 2020 (0.128 mg/L). Analytical reports of the waste characterization samples are provided in **Attachment E**. Manifests are provided in **Attachment F**.
- On January 8, 2021, another camera survey was performed by GPRS. As shown on **Figure 3**, the VPI crawler was able to advance the full length between some of the catch basins and/or further than previously in some drain lines. However, some of the lines (from the catch basin in Slot C131 to the north, C109 to the west, C065 to the east, C021 to the west, and A028 to the west) still had mud buildup that prevented the camera from advancing the full length of the pipes (**Figure 3**).
- Between February 24 and 26, 2021, an additional obstruction removal effort and camera survey were conducted. USES subcontracted Atlas Inspection to conduct the VPI survey (see **Attachment D**). Water used to break up the material in the pipes and sediment and material from the obstruction removal effort were placed in five vacuum boxes. Following the additional removal efforts, the camera was able to advance the full length of most of the storm sewer segments as indicated on **Figure 3**. The storm line from catch basin A028 to the west could not be surveyed due to sediment build up. As detailed in the VPI log in Attachment D, multiple breaks or separations at joints were noted along storm sewer segments. The Atlas Inspection operator noted in some cases that the separations were large enough to allow debris to enter the pipe (e.g., at locations approximately 60 feet and 141 feet east of catch basin at C131). No seepage of water or NAPL was observed at the breaks or points of separation at the time of the VPI survey. The field notes provided by the Atlas Inspection operator based on the video footage included notation of “oily sheen” or “oily water” in the pipe approximately 15 feet north of catch basin C131, 16 feet north of catch basin A117, and approximately 40 feet east of catch basin C065. In response, USES redeployed clean booms in the catch basins at the end of the survey. However, this observation of “oily water” was not confirmed and there were no other obvious indications of a sheen or oily water in the storm line.
 - Waste generated from the removal effort (i.e., water used to break up the material in the pipes and material from the obstruction removal effort) was sampled, characterized, and disposed of off-site in accordance with state and federal regulations. Three waste samples were collected from the five vacuum boxes as follows: (1) composite water sample from two vacuum boxes

containing mostly water (IDW-01), (2) composite water sample from three vacuum boxes containing an estimated 50% solids and 50% water (IDW-02), and (3) composite sediment sample from the three vacuum boxes containing an estimated 50% solids and 50% water (IDW-02). The water samples were collected with a peristaltic pump and the sediment sample was collected using an Ekman dredge. Samples were analyzed for VOCs, TPH, RCRA metals, and select TCLP metals. Except for naphthalene, no other VOCs were detected in the sediment sample. Low concentrations of naphthalene were detected at 0.0074 mg/kg. TPH concentrations were in the sediment sample with the total TPH (C₆-C₃₆) concentration at 2,160 mg/kg. RCRA metals were detected in the sediment, but the concentrations are lower compared to the metal concentrations detected in the surface soils in the Englewood IM Yard. The sediment sample results are provided in **Table 3**. Analytical reports of the waste characterization samples are provided in **Attachment E**. Waste manifests for the disposal of the wastes generated are provided in **Attachment F**.

Multiple breaks and separations at joints in the storm water lines were noted during the camera surveys. No seepage of water or NAPL was observed entering into the surveyed storm lines at the time of the inspections. Although no seepage of water was observed, there was standing water observed during the VPI survey of the pipes.

The groundwater potentiometric surface of the A-TZ was compared to the storm line elevations to evaluate the potential for groundwater seepage into the storm line. Based on July 2020 potentiometric surface elevations of the A-TZ groundwater monitoring wells in the Englewood Intermodal Yard and the surveyed elevations of the storm sewer lines, the potentiometric surface of the A-TZ was below the bottom of the storm sewer pipes in the vicinity of the NAPL Collection System. The easternmost storm water catch basin along the C-Row (labeled C002 in Figure 2) has a storm water pipe that flows to the northeast that is approximately 9 feet bgs (approximately 37.19 feet in elevation). The estimated potentiometric surface elevation in A-TZ during the July 2020 sampling event in this same area is approximately 37 feet, indicating that the A-TZ groundwater potentiometric surface could be close to the bottom elevation of the pipe in this area. However, the top of transmissive sands of the A-TZ in this area is about 14.2 feet bgs (32.98 feet in elevation) with a high plasticity sandy clay (part of the A-Cohesive Zone (CZ)) overlying the sand (as indicated in the boring log for MW-75B). The storm sewer pipe in this area appears to be within the A-CZ and not hydrologically connected to the A-TZ.

As has been noted in the monthly updates, the tar-like NAPL material that seeps to the ground surface appears to be more mobile during the summer months. As a result, UPRR proposes to re-survey the lines with a VPI system during the warmer, summer months (i.e., June or July), to evaluate potential mobile NAPL entering the lines.

Summary

Golder, on behalf of UPRR, coordinated the excavation of seven test pits where the NAPL surface seeps were observed as part of the pilot test. The objective of the test pits was to evaluate whether the isolated excavation approach (i.e., hot spot excavation) and removal of NAPL could reduce the NAPL mass to eliminate future surface seeps in that specific area. From July 2020 through April 2021, Golder conducted weekly inspections and no NAPL seeps had been observed at the test pit locations. Based on inspections following the test pit activities, the test pits appear to be an effective response action to address areas where surface seeps of NAPL occur. However, UPRR proposes to continue the pilot study through the warmer months (through September 2021) and will continue to inspect the test pit locations to confirm this conclusion.

Camera surveys were conducted within the storm water lines of the Englewood Intermodal Yard to evaluate the potential for NAPL found in the shallow soils (generally less than 3 feet BGS) to impact the underground utility. Multiple breaks and separations at joints in the storm water lines were noted. However, no seepage of water or NAPL was observed entering into the surveyed lines at the time of the inspections. The sediment in the storm water lines appears to be impacted with TPH based on the observations when the sediment was disturbed and the analytical results of the sediment sample from the obstruction removal efforts. UPRR proposes to re-survey the lines with a VPI system during June or July to evaluate potential mobile NAPL entering the lines.

If you have any questions or comments, please feel free to give Mr. Kevin Peterburs of UPRR a call at (414) 267-4164 or us at 512-671-3434.

Sincerely,

Golder Associates Inc.



Michelle Hermiston
Senior Project Hydrogeologist



Eric C. Matzner, P.G.
Principal / Practice Leader



Texas Geosciences Firm No. 50369

References

Golder Associates Inc (Golder), 2018a. Monthly Status Update – Soil Cap and Concrete Cap Repairs dated August 31, 2018 (August 2018 Monthly Update) submitted to the TCEQ.

Golder, 2018b. Monthly Status Update –Soil Cap and Concrete Cap Repairs dated October 31, 2018 (October 2018 Monthly Update) submitted to the TCEQ.

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Texas Commission on Environmental Quality (TCEQ), 2010. Development of Human Health PCLs for Total Petroleum Hydrocarbon Mixtures, RG-366/TRRP-27. January.

CC: TCEQ Region 12, Houston Texas

Attachments: Figure 1 – Total Petroleum Hydrocarbon Concentrations in Soil – Test Pits
Figure 2 – Camera Survey
Attachment A – Test Pit Photographs
Attachment B – Laboratory Analytical Reports – Test Pit Evaluation
Attachment C – Manifests – Test Pit Excavation
Attachment D – Camera Survey Reports
Attachment E – Laboratory Analytical Reports – Obstruction Removal Events
Attachment F – Manifests – Obstruction Removal Events

Tables

Table 1
Test Pit Soil Sample Results
Summary Table
Houston Wood Preserving Works - Houston, TX

Test Pit ID	C/I PCLs ^{2,3}		TP-01	TP-02	TP-03	TP-04	TP-05	TP-06	TP-07
Parking Slot Location ID			B108	A098	B096	B057	A021	B013	A010
Sample Depth (ft bgs)	TotSoil _{Comb}	GWSoil _{Ing}	2-4	2-4	2-4	2-4	1-4	1-4	1-4
Sample Date			7/14/2020	7/14/2020	7/14/2020	7/14/2020	7/15/2020	7/15/2020	7/15/2020
Volatiles (mg/Kg)¹									
1,2-Dichloroethane	71	0.0069	<0.00085	<0.00063	<0.00079	<0.00054	<0.00057	<0.00063	<0.00088
Benzene	130	0.013	<0.00071	<0.00053	<0.00066	0.0010 J	0.0086	<0.00052	<0.00073
Chlorobenzene	540	0.55	<0.00085	<0.00063	<0.00079	<0.00054	<0.00057	<0.00063	<0.00088
Ethylbenzene	17000	3.8	<0.0010	0.0011 J	0.035	0.0081	0.022	0.0036 J	<0.0010
Methylene chloride	8600	0.0065	<0.0014	<0.0011	<0.0013	<0.00089	<0.00094	<0.0010	<0.0015
Toluene	29000	4.1	<0.00085	0.0016 J	<0.00079	0.0072	0.0089	<0.00063	<0.00088
Xylenes, Total	6500	61	0.0049 J	0.0095	0.058	0.016	0.035	0.0077	<0.0015
Semivolatiles (mg/Kg)									
1,2-Diphenylhydrazine	20	0.036	<0.013	<0.014	<0.013	<0.013	<0.013	<0.013	<0.037
2,4-Dimethylphenol	14000	4.8	0.058 J	<0.041	<0.040	<0.039	<0.038	<0.040	<0.11
2,4-Dinitrotoluene	28	0.006	<0.011	<0.011	<0.011	<0.011	<0.010	<0.011	<0.031
2,6-Dinitrotoluene	28	0.0054	<0.039	<0.041	<0.040	<0.039	<0.038	<0.040	<0.11
2-Chloronaphthalene	50000	1000	<0.015	<0.016	<0.016	<0.015	<0.015	<0.016	<0.044
2-Methylnaphthalene	2500	25	0.12	0.10	1.9	0.35	1.3	0.15	54
4,6-Dinitro-2-methylphenol	68	0.007	<0.025	<0.026	<0.025	<0.025	<0.024	<0.025	<0.072
4-Nitrophenol	1400	0.15	<0.022	<0.024	<0.023	<0.022	<0.022	<0.023	<0.065
Acenaphthene	37000	350	1.0	0.41	4.4	0.52	1.3	0.30	4.0
Acenaphthylene	37000	610	0.25	0.027 J	0.14	0.049	0.20	<0.012	0.80
Anthracene	190000	10000	1.5	0.63	7.1	0.58	2.9	0.31	4.2
Benz(a)anthracene	170	150	3.1	0.65	3.5	0.24	2.1	0.39	3.1
Benzo(a)pyrene	17	3.8	6.7	0.81	1.6	<0.012	0.59	0.15	1.6
Bis(2-chloroethoxy)methane	6.2	0.013	<0.011	<0.011	<0.011	<0.011	<0.010	<0.011	<0.031
Bis(2-ethylhexyl)phthalate	560	82	0.75	10	0.36	<0.020	<0.020	<0.021	1.2
Chrysene	17000	13000	1.6	0.71	3.7	0.25	2.2	0.93	4.4
Dibenzofuran	2700	50	0.27	0.19	3.6	0.21	<0.0081	0.3	1.4
Di-n-butyl phthalate (Dibutyl phthalate)	68000	5000	0.16	0.23	<0.014	<0.014	<0.014	<0.015	<0.041
Fluoranthene	25000	2900	5.9	2.4	17	1.0	14	1.7	9.5
Fluorene	25000	450	0.94	0.58	7.7	0.56	2.0	0.53	5.0
Naphthalene	190	47	0.17	0.13	0.42	1.7	0.19	0.14	8.9
Nitrobenzene	57	0.52	<0.011	<0.011	<0.011	<0.011	<0.010	<0.011	<0.031
N-Nitrosodiphenylamine	1900	3.2	<0.0082	<0.0088	<0.0084	<0.0082	<0.0081	<0.0085	<0.024
Pentachlorophenol	32	2.2 ⁵	<0.039	<0.041	<0.040	<0.039	<0.038	<0.040	<0.11
Phenanthrene	19000	620	4.2	2.6	28	1.7	13	2.4	16
Phenol	1400	29	<0.013	<0.014	<0.013	<0.013	<0.013	<0.013	0.12 J
Pyrene	19000	1700	8.5	1.8	10	0.72	9.2	1.6	17

Table 1
Test Pit Soil Sample Results
Summary Table
Houston Wood Preserving Works - Houston, TX

Test Pit ID	C/I PCLs ^{2,3}		TP-01	TP-02	TP-03	TP-04	TP-05	TP-06	TP-07
Parking Slot Location ID			B108	A098	B096	B057	A021	B013	A010
Sample Depth (ft bgs)	TotSoil _{Comb}	GWSoil _{Ing}	2-4	2-4	2-4	2-4	1-4	1-4	1-4
Sample Date			7/14/2020	7/14/2020	7/14/2020	7/14/2020	7/15/2020	7/15/2020	7/15/2020
Total Petroleum Hydrocarbons TX1005 (mg/Kg)									
nC6 to nC12	2100	1400*	<13	<16	<140	<41	<37	<330	520 J
>nC12 to nC28	7800	4400*	300	1,200	8,200	2,700	1,600	17,000	18,000
>nC28 to nC35	7800	4400*	220	470	2,300	1,200	630	4,300	3,700
Total Petroleum Hydrocarbon (TPH)	--	--	520	1,670	10,500	3,900	2,230	21,300	22,200
Metals (mg/Kg)									
Arsenic	200	5.9	19.5	3.76	11.4	2.24	2.41	1.64	7.80
Barium	120000	220	812	242	462	167	81.9	67.5	623
Cadmium	770	0.75	15.7	6.05	10.4	4.51	1.64	1.97	3.09
Chromium	75000	1200	122	18.2	44.8	14.8	7.85	5.81	57.4
Lead	1600	275*	3,000	319	1,370	63.2	69.8	29.6	630
Mercury	11	1	0.785	0.0536	0.204	0.0174	0.0825	0.0102	0.290
Selenium	4900	1.1	0.628	0.434 J	1.12	0.200 J	0.181 J	0.344 J	0.242 J
Silver	2300	0.71	4.42	0.487 J	2.07	0.163 J	0.113 J	0.0332 J	0.884
Field Readings									
PID (ppm) ⁴	--	--	11.5	29.5	5.9	10.1	31.3	72.1	54.3

Notes:

1. mg/kg - milligrams per kilogram
2. TRRP Tier 1 PCLs, Table 2, Commercial/Industrial (C/I) Land use, 30 acre source area, Nov. 2019
3. Yellow highlighted values exceed the lesser of TotSoil_{Comb} and GWSoil_{Ing} PCLs
4. Photoionization detector (PID) reading in parts per million (ppm)
5. TRRP Tier 3 PCLs, detailed in Updated Pentachlorophenol Soil Assessment Interim Report dated July 14, 2020 (Golder, 2020)

Blue highlighted TPH concentrations exceed 10,000 mg/kg (Tier 1 Soil_{Res} PCL)

Bold text indicates concentrations detected above the listed Sample Detection Limit (SDL)

Italicized text indicates SDL was above the GWSoil_{Ing} PCL

Lab Qualifiers:

< = analyzed but not detected above the MDL

J = analyte detected below Sample Quantitation Limit but above the MDL

* Tier 2 GWSoil PCL

Table 2
Test Pit Water Sample Results and MW-77A Results
Summary Table
Houston Wood Preserving Works - Houston, TX

Location ID	TP-02	TP-07	MW-77A
Parking Slot Location ID	A098	A010	
Sample Date	7/14/2020	7/16/2020	7/31/2020*
Volatiles (mg/L)¹			
1,2-Dichloroethane	< 0.0020	< 0.010	<0.00020
Benzene	< 0.0020	< 0.010	0.021
Chlorobenzene	< 0.0030	< 0.015	<0.00030
Ethylbenzene	< 0.0030	< 0.015	0.022
Methylene chloride	< 0.010	< 0.050	<0.0010
Toluene	< 0.0020	< 0.010	0.0024
Xylenes, Total	< 0.0030	< 0.015	0.026
Semivolatiles (mg/L)			
1,2-Diphenylhydrazine	< 0.00021	< 0.00021	<0.000021
2,4-Dimethylphenol	0.00055 J	0.0033	0.0013
2,4-Dinitrotoluene	< 0.00058	< 0.00058	<0.000058
2,6-Dinitrotoluene	< 0.00042	< 0.00042	<0.000042
2-Chloronaphthalene	< 0.00021	< 0.00021	<0.000021
2-Methylnaphthalene	< 0.00019	0.0043	0.0023
4,6-Dinitro-2-methylphenol	< 0.00020	< 0.00020	<0.00002
4-Nitrophenol	< 0.00047	< 0.00047	<0.000047
Acenaphthene	0.00057 J	0.0028	0.009
Acenaphthylene	< 0.00015	< 0.00015	<0.000015
Anthracene	0.00050 J	0.0031	0.00033
Benz(a)anthracene	0.00051 J	< 0.00050	<0.00005
Benzo(a)pyrene	0.00064 J	< 0.00020	<0.00002
Bis(2-chloroethoxy)methane	< 0.00030	< 0.00030	<0.00003
Bis(2-ethylhexyl)phthalate	0.00064 J	< 0.00037	<0.000037
Chrysene	0.00078 J	< 0.00021	<0.000021
Dibenzofuran	< 0.00020	0.0018	0.004
Di-n-butyl phthalate (Dibutyl phthalate)	< 0.00020	< 0.00020	<0.00002
Fluoranthene	0.0019	0.0031	0.00012
Fluorene	< 0.00030	0.0027	0.0042
Naphthalene	0.00042 J	0.016	0.01
Nitrobenzene	< 0.00024	< 0.00024	<0.000024
N-Nitrosodiphenylamine	< 0.00025	< 0.00025	<0.000025
Pentachlorophenol	< 0.00079	0.0051	<0.000079
Phenanthrene	0.00098 J	0.0076	0.0018
Phenol	0.0016 J	0.0076	<0.000035
Pyrene	0.0022	0.0026	0.000067 J
Total Petroleum Hydrocarbons TX1005 (mg/L)			
nC6 to nC12	< 0.20	< 0.20	
>nC12 to nC28	1.2	25	
>nC28 to nC35	1.1	3.8	
Total Petroleum Hydrocarbon	2.30	28.8	

Table 2
 Test Pit Water Sample Results and MW-77A Results
 Summary Table
 Houston Wood Preserving Works - Houston, TX

Location ID	TP-02	TP-07	MW-77A
Parking Slot Location ID	A098	A010	
Sample Date	7/14/2020	7/16/2020	7/31/2020*
Metals (mg/L)			
Arsenic	0.0703	0.543 JL	0.0233
Barium	0.0729	0.561 JL	
Cadmium	0.00195 J	0.00830 JL	
Calcium	22.8	--	102
Chromium	0.0382	0.651 JL	
Lead	0.219	2.88 JL	
Mercury	0.000116 J	0.00140 JL	
Selenium	0.00409	0.0132 JL	
Silver	0.00196 J	0.00516 JL	
Alkalinity (As CaCO3) (mg/L)			
Alkalinity, Bicarbonate	< 5.00	--	490
Alkalinity, Carbonate	885	--	<5.00
Alkalinity, Hydroxide	106	--	<5.00
Alkalinity, Total	991	--	490
Anions (mg/L)			
Chloride	99.9	--	144
Nitrogen, Nitrate (As N)	0.635	--	0.0584 J
Nitrogen, Nitrite (As N)	< 0.0600	--	<0.0300
Sulfate	189	--	1.06
General Chemistry			
Total Dissolved Solids (mg/L)	2,520	--	688
pH (standard units) ⁴ - Lab	10.8 JL	--	7.09 JL
pH (standard units) - Field	11.49	10.93	8.16
Temp (°C) ⁵	34.6	29.6	23.2
ORP (mV) ⁶	-77	-84	-9
Specific Conductivity (umhos/cm) ⁷	2,570	6,690	618
Turbidity (NTU) ⁸	>1,000	566	2.6
Dissolved Oxygen (mg/L)	2.78	3.29	0.34

Notes:

1. mg/L - milligrams per Liter
2. Bold text indicates concentrations detected above the listed Method Detection Limit (MDL)
3. Lab Qualifiers:
 - < = analyzed but not detected above the listed MDL
 - J = analyte detected below Sample Quantitation Limit but above the MDL
4. pH reported in standard units
5. Temperature reported in degrees Celsius
6. Oxidation Reduction Potential (ORP) reported in millivolts
7. Specific conductivity reported in micromhos per centimeter
8. Turbidity reported in Nephelometric Turbidity units

* Sample date for MW-77A represents when sample for cations and anions was collected. Samples for site-specific COCs were collected 7/20/21. Laboratory report and DUS for the site-specific COCs of MW-77A are included in the Groundwater Monitoring Report (July 2020) submitted to the TCEQ in April 2021.

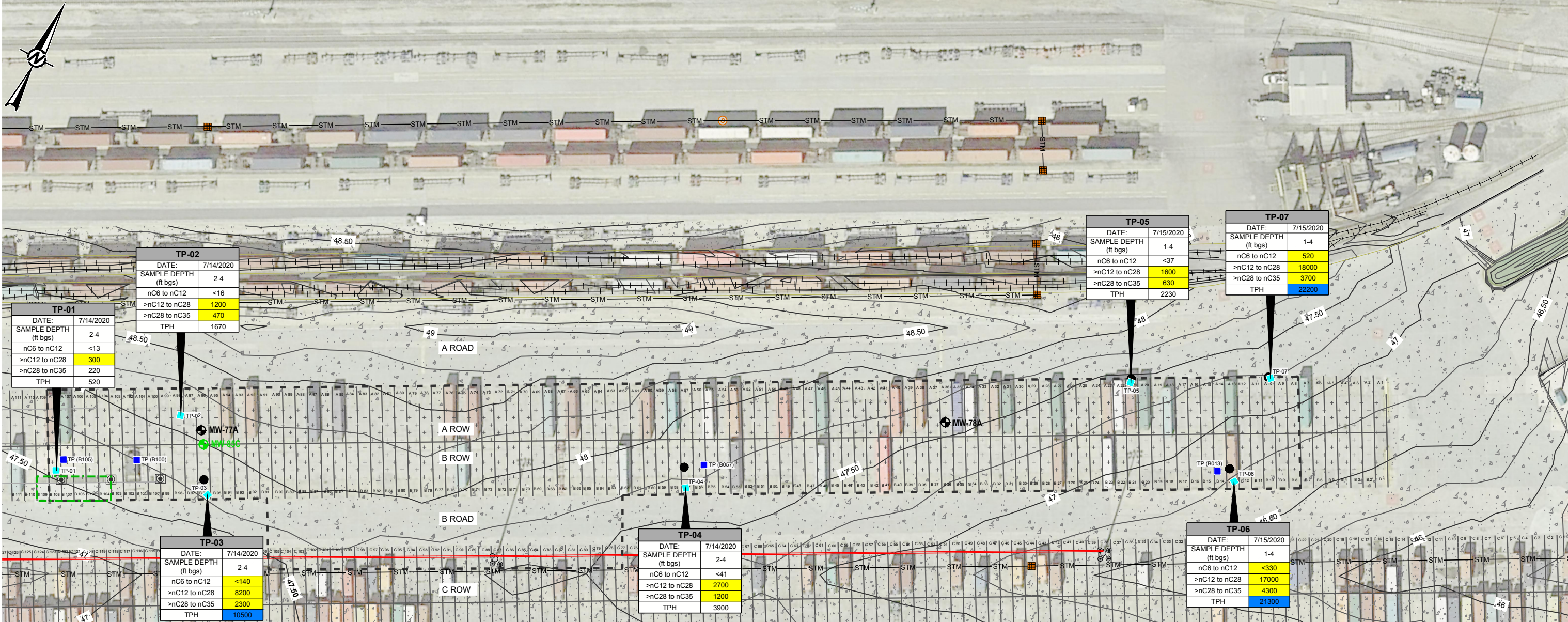
Table 3
Investigation-Derived Waste - Sediment Sample Results
Summary Table
Houston Wood Preserving Works - Houston, TX

Location ID	IDW-02
Sample Date	3/2/2021
Volatile Organic Compounds (mg/kg)	
Benzene	< 0.00053
Ethylbenzene	< 0.00074
Naphthalene	0.0074
Toluene	< 0.00064
Xylenes, Total	< 0.0011
Total Petroleum Hydrocarbons TX1005 (mg/kg)	
nC6 to nC12	<15
>nC12 to nC28	1,300
>nC28 to nC35	860
Total Petroleum Hydrocarbon	2,160
Metals (mg/kg)	
Arsenic	3.23
Barium	253
Cadmium	0.798
Chromium	236
Lead	66.2
Mercury	0.208
Selenium	<0.0852
Silver	0.0770 J
TCLP Metals (mg/L)	
Barium	1.67
Chromium	<0.00400
Lead	0.0185 J

Notes:

1. mg/L - milligrams per Liter
2. Bold text indicates concentrations detected above the listed Method Detection Limit (MDL)
3. Lab Qualifiers:
 - < = analyzed but not detected above the listed MDL
 - J = analyte detected below Sample Quantitation Limit but above the MDL

Figures

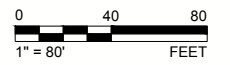


LEGEND

- EXISTING CONCRETE
- EXISTING ASPHALT
- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- EXISTING STORMWATER DRAIN LINE
- EXISTING RAIL SPURS
- EXISTING PARKING STALL STRIPE
- EXISTING PARKING STALL LABELS
- EXISTING 2 in ELECTRICAL CONDUIT (PVC SCH 80 OR HDPE OF EQUIVALENT THICKNESS)
- EXISTING LIGHT POLE
- EXISTING BOLLARD
- EXISTING STORMWATER INLET
- EXISTING NAPL COLLECTION SUMP
- A-TZ MONITORING WELL LOCATION
- C-TZ MONITORING WELL LOCATION
- EXISTING NAPL COLLECTION SYSTEM (CONSTRUCTED FEB. 2019)
- APPROXIMATE AREA OF SEASONAL BROWN WATER SEEPS
- HISTORICAL NAPL SEEP LOCATION
- TEST PIT LOCATION (2019)
- TEST PIT LOCATION (JULY 2020)

REFERENCE(S)
 BASE MAP TAKEN FROM GOOGLE EARTH, DATED 02-23-2019
 SURVEY BY: SURVEYING AND MAPPING, LLC (SAM)
 1019 CENTRAL PARKWAY NORTH SUITE 104
 SAN ANTONIO, TEXAS 78232

- NOTE(S)**
- THE SURVEYED INFORMATION DEPICTED HEREON IS BASED ON TEXAS SOUTH CENTRAL USING TEXAS COORDINATE SYSTEM, NAD27 TEXAS STATE PLANE, SOUTH CENTRAL ZONE. ALL DISTANCES ARE REPRESENTED IN GRID VALUES, MEASURED IN U.S. SURVEY FEET, AND ARE BASED ON SAID HORIZONTAL DATUM.
 - ELEVATIONS SHOWN HEREON ARE PURSUANT TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) (GEOID 128).
 - UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE BASED ON A RIGHT-OF-WAY AND TRACK MAP PROVIDED FOR INFORMATION. ALWAYS CALL 811 BEFORE YOU DIG.
 - SAMPLE INTERVAL IN FEET BELOW GROUND SURFACE (BGS)
 - YELLOW HIGHLIGHT - CONCENTRATIONS GREATER THAN APPLICABLE COMMERCIAL/INDUSTRIAL (C/I) PCL BASED ON THE LOWER OF THE TIER 1 ^{TOT}SOIL_{COMB} AND ^{GW}SOIL_{ING} PCLs.
 - BLUE HIGHLIGHTED - TOTAL TPH CONCENTRATIONS GREATER THAN 10,000 mg/kg (TIER 1 SOILRes PCL).



CLIENT
UNION PACIFIC RAILROAD CO

PROJECT
HOUSTON WOOD PRESERVING WORKS
ENGLEWOOD INTERMODAL YARD

TITLE
TOTAL PETROLEUM HYDROCARBON CONCENTRATIONS IN SOIL - TEST PITS

CONSULTANT	YYYY-MM-DD	2020-09-28
DESIGNED	AJD	
PREPARED	RS	
REVIEWED	SB	
APPROVED	ECM	

PROJECT NO. 19119232

REV. 0

FIGURE 1












Path: \\usar\trans\ad\ad\Projects - Round Rock\2019\19119232 - HWP\19119232-19119232-01.dwg | File Name: FIG 1 - TPH COC - Soil.bgs | Last Edited By: rasilator | Date: 2020-09-28 | Time: 2:45:12 PM | Printed By: Rasilator | Date: 2020-09-28 | Time: 3:07:05 PM

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

Path: \\golder-gbl.com\projects\19119232-HWPR\2021-03-March\1 - File Name: FIG.2 - Camera Survey (NAPL Collection System).dwg | Last Edited By: adiamond | Date: 2021-05-10 | Time: 6:17:41 PM | Printed By: adiamond | Date: 2021-05-10 | Time: 6:18:46 PM



LEGEND

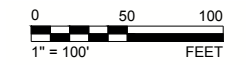
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	EXISTING LIGHT POLE		HISTORICAL NAPL SEEP LOCATION
	EXISTING BOLLARD		TEST PIT LOCATION (2019)
	EXISTING STORMWATER INLET		TEST PIT LOCATION (JULY 2020)
	EXISTING NAPL COLLECTION SUMP		CAMERA DISTANCE AND DIRECTION - DECEMBER 8, 2020
	A-TZ MONITORING WELL LOCATION		CAMERA DISTANCE AND DIRECTION - JANUARY 8, 2021
	C-TZ MONITORING WELL LOCATION		CAMERA DISTANCE AND DIRECTION - FEBRUARY 26, 2021

REFERENCE(S)

BASE MAP TAKEN FROM GOOGLE EARTH, DATED 02-23-2019
 SURVEY BY: SURVEYING AND MAPPING, LLC (SAM)
 1019 CENTRAL PARKWAY NORTH SUITE 104
 SAN ANTONIO, TEXAS 78232

NOTE(S)

1. THE SURVEYED INFORMATION DEPICTED HEREON IS BASED ON TEXAS SOUTH CENTRAL USING TEXAS COORDINATE SYSTEM, NAD27 TEXAS STATE PLANE, SOUTH CENTRAL ZONE. ALL DISTANCES ARE REPRESENTED IN GRID VALUES, MEASURED IN U.S. SURVEY FEET, AND ARE BASED ON SAID HORIZONTAL DATUM.
2. ELEVATIONS SHOWN HEREON ARE PURSUANT TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) (GEOID 128).
3. UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE BASED ON A RIGHT-OF-WAY AND TRACK MAP PROVIDED FOR INFORMATION. ALWAYS CALL 811 BEFORE YOU DIG.



CLIENT
 UNION PACIFIC RAILROAD CO.

PROJECT
 HOUSTON WOOD PRESERVING WORKS
 ENGLEWOOD INTERMODAL YARD

TITLE
 CAMERA SURVEY

CONSULTANT	YYYY-MM-DD	2021-05-10
 GOLDER MEMBER OF WSP TEXAS GEOSCIENCE FIRM NO. 50369 TEXAS ENGINEERING FIRM NO. 2578	DESIGNED	AJD
	PREPARED	AJD
	REVIEWED	MH
	APPROVED	ECM

PROJECT NO. 19119232 REV. 0 FIGURE 2

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

ATTACHMENT A

Test Pit Photographs



PHOTOGRAPHIC LOG

Client Name: Union Pacific Railroad	Site Location: Englewood Intermodal Yard 5500 Wallisville Rd, Houston, Texas	Project No. 19119232
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Photo No. 1	Date: 7/13/2020
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**Initial Conditions
B108 (TP-01)**

Initial layout and markings for B108 (TP-01). Cut performed in the near side of the box, left-right orientation.

Latitude: 29.784175
Longitude: -95.321031



Photo No. 2	Date: 7/13/2020
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**Initial Conditions
A098 (TP-02)**

Initial layout and markings for A098 (TP-02). Cut performed on the near side of the asphalt-concrete line, left-right orientation.

Latitude: 29.784486
Longitude: -95.320831





PHOTOGRAPHIC LOG

Client Name: Union Pacific Railroad	Site Location: Englewood Intermodal Yard 5500 Wallisville Rd, Houston, Texas	Project No. 19119232
--	---	---------------------------------

Photo No. 3	Date: 7/13/2020
------------------------	----------------------------

**Initial Conditions
B096 (TP-03)**

Initial layout and markings for B096 (TP-03). Cut performed in the orange box.

Latitude: 29.784247
Longitude: -95.320656



Photo No. 4	Date: 7/13/2020
------------------------	----------------------------

**Initial Conditions
B057 (TP-04)**

Initial layout and markings for B057 (TP-04). Cut performed in the near side of the box, left-right orientation.

Latitude: 29.784744
Longitude: -95.319503





PHOTOGRAPHIC LOG

Client Name: Union Pacific Railroad	Site Location: Englewood Intermodal Yard 5500 Wallisville Rd, Houston, Texas	Project No. 19119232
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Photo No. 5	Date: 7/13/2020
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**Initial Conditions
A021 (TP-05)**

Initial layout and markings for A021 (TP-05). Cut performed in the orange box.

Latitude: 29.785398
Longitude: -95.318665



Photo No. 6	Date: 7/13/2020
------------------------	----------------------------

**Initial Conditions
B013 (TP-06)**

Initial layout and markings for B013 (TP-06). Cut performed in the near side of the box, left-right orientation.

Latitude: 29.785353
Longitude: -95.318100





PHOTOGRAPHIC LOG


Client Name: Union Pacific Railroad		Site Location: Englewood Intermodal Yard 5500 Wallisville Rd, Houston, Texas	Project No. 19119232
Photo No. 7	Date: 7/13/2020		
Initial Conditions A010 (TP-07)			
Initial layout and markings for A010 (TP-07). Cut performed in the orange box. Latitude: 29.785545 Longitude: -95.318346			

Photo No. 8	Date: 7/14/2020	
Full Excavation B108 (TP-01)		
B108 (TP-01) fully excavated. NAPL can be observed leaking in from multiple corners and walls. Latitude: 29.784181 Longitude: -95.320983		



PHOTOGRAPHIC LOG

Client Name: Union Pacific Railroad	Site Location: Englewood Intermodal Yard 5500 Wallisville Rd, Houston, Texas	Project No. 19119232
--	---	---------------------------------

Photo No. 9	Date: 7/15/2020
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**Full Excavation
B108 (TP-01) Post-
NAPL Removal**

B108 (TP-01) fully excavated, post-NAPL removal and prior to backfill.

Latitude: 29.784171
Longitude: -95.321018



Photo No. 10	Date: 7/15/2020
-------------------------	----------------------------

**Full Excavation
A098 (TP-02)**

A098 (TP-02) fully excavated, water with slight sheen can be observed at bottom, along with wet walls.

Latitude: 29.784375
Longitude: -95.320336





PHOTOGRAPHIC LOG

Client Name: Union Pacific Railroad	Site Location: Englewood Intermodal Yard 5500 Wallisville Rd, Houston, Texas	Project No. 19119232
--	---	---------------------------------

Photo No. 11	Date: 7/14/2020
-------------------------	----------------------------

**Full Excavation
B096 (TP-03)**

B096 (TP-03) fully excavated, large amount of NAPL can be observed coming in from wall.

Latitude: 29.784436
Longitude: -95.320594



Photo No. 12	Date: 7/15/2020
-------------------------	----------------------------

**Full Excavation
B096 (TP-03) Post-
NAPL Removal**

B096 (TP-03) fully excavated, post-NAPL removal and prior to backfill.

Latitude: 29.784208
Longitude: -95.320694





PHOTOGRAPHIC LOG


Client Name: Union Pacific Railroad		Site Location: Englewood Intermodal Yard 5500 Wallisville Rd, Houston, Texas		Project No. 19119232	
Photo No. 13	Date: 7/15/2020				
NAPL Storage Drums					
Drums full of excavated NAPL. Latitude: 29.784286 Longitude: -95.320650					

Photo No. 14	Date: 7/16/2020				
Full Excavation B057 (TP-04)					
B057 (TP-04) fully excavated, no NAPL or water noted. Latitude: 29.784735 Longitude: -95.319543					



PHOTOGRAPHIC LOG

Client Name: Union Pacific Railroad	Site Location: Englewood Intermodal Yard 5500 Wallisville Rd, Houston, Texas	Project No. 19119232
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Photo No. 15	Date: 7/15/2020
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**Full Excavation
A021 (TP-05)**

A021 (TP-05) fully excavated.

Latitude: 29.785392
Longitude: -95.318694



Photo No. 16	Date: 7/15/2020
-------------------------	----------------------------

**Close Up – Corner
A021 (TP-05)**

A021 (TP-05) fully excavated, closeup on walls with observable NAPL seeps.

Latitude: 29.785417
Longitude: -95.318628





PHOTOGRAPHIC LOG

Client Name: Union Pacific Railroad	Site Location: Englewood Intermodal Yard 5500 Wallisville Rd, Houston, Texas	Project No. 19119232
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Photo No. 17	Date: 7/15/2020
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**Full Excavation
B013 (TP-06)**

B013 (TP-06) fully excavated, no NAPL or water observed.

Latitude: 29.785308
Longitude: -95.318344



Photo No. 18	Date: 7/15/2020
-------------------------	----------------------------

**Full Excavation
A010 (TP-07)**

A010 (TP-07) fully excavated, water observed at bottom and from sides.

Latitude: 29.785544
Longitude: -95.318375





PHOTOGRAPHIC LOG

Client Name: Union Pacific Railroad	Site Location: Englewood Intermodal Yard 5500 Wallisville Rd, Houston, Texas	Project No. 19119232
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Photo No. 19	Date: 7/15/2020
-------------------------	----------------------------

**Close Up – Wall
A010 (TP-07)**

A010 (TP-07) fully excavated, closeup on wall with water and NAPL seeps noted.

Latitude: 29.785550
Longitude: -95.318375



Photo No. 20	Date: 7/15/2020
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**Prepped for Fill
A098 (TP-02)**

A098 (TP-02) fully excavated with liner, ready for backfill.

Latitude: 29.784419
Longitude: -95.320778





PHOTOGRAPHIC LOG

Client Name: Union Pacific Railroad	Site Location: Englewood Intermodal Yard 5500 Wallisville Rd, Houston, Texas	Project No. 19119232
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Photo No. 21	Date: 7/15/2020
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**B057 (TP-04) w/
Road Base**

B057 (TP-04) filled in with liners and road base, prior to concreting.

Latitude: 29.784783
Longitude: -95.319503



Photo No. 22	Date: 7/16/2020
-------------------------	----------------------------

**Concreted
Excavation B108
(TP-01)**

B108 (TP-01)
concreted.

Latitude: 29.784228
Longitude: -95.320961





PHOTOGRAPHIC LOG

Client Name: Union Pacific Railroad	Site Location: Englewood Intermodal Yard 5500 Wallisville Rd, Houston, Texas	Project No. 19119232
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Photo No. 23	Date: 7/16/2020
-------------------------	----------------------------

Concreted Excavation A098 (TP-02)

A098 (TP-02) concreted.

Latitude: 29.784397
Longitude: -95.320878



Photo No. 24	Date: 7/16/2020
-------------------------	----------------------------

Concreted Excavation B096 (TP-03)

B096 (TP-03) concreted.

Latitude: 29.784272
Longitude: -95.320672





PHOTOGRAPHIC LOG

Client Name: Union Pacific Railroad	Site Location: Englewood Intermodal Yard 5500 Wallisville Rd, Houston, Texas	Project No. 19119232
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Photo No. 25	Date: 7/16/2020
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**Concreted
Excavation B057
(TP-04)**

B057 (TP-04)
concreted.

Latitude: 29.784725
Longitude: -95.319542



Photo No. 26	Date: 7/16/2020
-------------------------	----------------------------

**Concreted
Excavation A021
(TP-05)**

A021 (TP-05)
concreted.

Latitude: 29.785453
Longitude: -95.318672





PHOTOGRAPHIC LOG

Client Name: Union Pacific Railroad	Site Location: Englewood Intermodal Yard 5500 Wallisville Rd, Houston, Texas	Project No. 19119232
--	---	---------------------------------

Photo No. 27	Date: 7/16/2020
-------------------------	----------------------------

**B013 (TP-06)
Prepped for
Concrete**

B013 (TP-06) with final liner and rebar installed, prior to concreting.

Latitude: 29.785303
Longitude: -95.318328



Photo No. 28	Date: 7/16/2020
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**Concreted
Excavation B013
(TP-06)**

B013 (TP-06)
concreted.

Latitude: 29.785264
Longitude: -95.318183





PHOTOGRAPHIC LOG

Client Name: Union Pacific Railroad	Site Location: Englewood Intermodal Yard 5500 Wallisville Rd, Houston, Texas	Project No. 19119232
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Photo No. 29	Date: 7/16/2020
-------------------------	----------------------------

Concreted Excavation A010 (TP-07)

A010 (TP-07) concreted.

Latitude: 29.785494
Longitude: -95.318336



Photo No. 30	Date: 7/15/2020
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Rolloff and Sand/Rock Staging Locations

3 rolloff boxes, 2 drums, ~8 yd³ of sand, and ~1/3 yd³ of road base staged at the south end of the yard along the fenceline prior to backfilling test pits.

Latitude: 29.782147
Longitude: -95.319206





PHOTOGRAPHIC LOG

Client Name: Union Pacific Railroad	Site Location: Englewood Intermodal Yard 5500 Wallisville Rd, Houston, Texas	Project No. 19119232
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Photo No. 31	Date: 7/16/2020
-------------------------	----------------------------

Rolloff and Drum Staging Locations



3 rolloff boxes, 2 drums staged at the south end of the yard along the fenceline.

Latitude: 29.782131
Longitude: -95.319528



Photo No. 32	Date: 7/16/2020
-------------------------	----------------------------

End of Project Equipment Staging and Barricading

Rented equipment staged in stalls B108 (TP-01) and B109 for pickup. All pits barricaded similarly to B108 for several days to allow concrete to dry.

Latitude: 29.784169
Longitude: -95.320969





PHOTOGRAPHIC LOG

Client Name: Union Pacific Railroad

**Site Location: Englewood Intermodal Yard
5500 Wallisville Rd, Houston, Texas**

**Project No.
19119232**

**Photo No.
33**

**Date:
2/4/2021**

Location of TP-07

Slot A010, no tar-like material seeps observed where test pit conducted, looking southwest.

Lat: 29.7855833,
Long: -95.318375



**Photo No.
34**

**Date:
2/4/2021**

Location of TP-05

Slot A021, no tar-like material seeps observed where test pit conducted, looking south.

Lat: 29.785392,
Long: -95.318655





PHOTOGRAPHIC LOG

Client Name: Union Pacific Railroad

**Site Location: Englewood Intermodal Yard
5500 Wallisville Rd, Houston, Texas**

Project No.
19119232

Photo No.
35

Date:
2/4/2021

Location of TP-04

Slot B057, no tar-like material seeps observed where test pit conducted, looking northeast.

Lat: 29.7847472
Long: - 95.3195417



Photo No.
36

Date:
2/4/2021

Location of TP-06

Slot B013, no tar-like material seeps observed where test pit conducted.

Lat: 29.785217
Long: - 95.318261





PHOTOGRAPHIC LOG

Client Name: Union Pacific Railroad

**Site Location: Englewood Intermodal Yard
5500 Wallisville Rd, Houston, Texas**

**Project No.
19119232**

**Photo No.
37**

**Date:
2/4/2021**

Location of TP-03

Slot B096, no tar-like material seeps observed where test pit conducted, looking north.

Lat: 29.7842528
Long: - 95.3206250



**Photo No.
38**

**Date:
2/4/2021**

Location of TP-01

Slot B108, view of NAPL Collection System (Sump B107/B108 and test pit in background). No tar-like material seeps observed where test pit conducted, looking northeast.

Lat: 29.784125
Long: - 95.320989





PHOTOGRAPHIC LOG

**Client Name: Union Pacific
Railroad**

**Site Location: Englewood Intermodal Yard
5500 Wallisville Rd, Houston, Texas**

Project No.
19119232

Photo No.
39

Date:
1/29/2021

Location of TP-02

Slot A098, no lar-like
material seeps
observed where test pit
conducted, looking
south.



ATTACHMENT B

Laboratory Analytical Reports –
Test Pit Evaluation



Memorandum

August 6, 2020

Revision: September 15, 2020

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

From: ^{CK} Chris G. Knight/eew/704-NF Tel: 512-506-8803

CC: Jesse Orth, Jon Lang; Julie Lidstone

**Subject: Data Usability Summary
HWPW Soil and Groundwater Sampling Event/Englewood IM Yard Test Pits
Union Pacific Railroad (UPRR)/Houston TX-Wood Preserving Works
Houston, Texas
July 2020**

1. Scope of Data Usability Study

This document details a Data Usability Summary (DUS) of analytical results for soil and groundwater samples collected in support of the HWPW Soil and Groundwater Sampling Event/Englewood IM Yard Test Pits at the Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works site during July 2020. Samples were submitted to ALS Environmental (ALS), located in Houston, Texas and are reported in data packages HS20070629, HS20070701, and HS20071470. The intended use of the data is to support the HWPW Soil and Groundwater Sampling Event/Englewood IM Yard Test Pits at the site by providing current concentration of chemicals of concern.

Data were reviewed and validated by Chris G. Knight of GHD, in accordance with Title 30 of the Texas Administrative Code Section 350.54 (30 TAC 350.54) as described in the Texas Commission on Environmental Quality (TCEQ) Regulatory Guidance document entitled "Review and Reporting of COC Concentration Data under TRRP", (RG-366/TRRP-13), revised May 2010, herein referred to as "TRRP-13 Guidance". Evaluation of the data was based on information obtained from the chain of custody forms, the finished report forms, method blank data, recovery data from surrogate spikes/laboratory control samples (LCS)/matrix spikes (MS)/duplicate data, the laboratory review checklists (LRC), and the laboratory exception reports (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 2A and Table 2B. A summary of the analytical methodology is presented in Table 3.



2. Laboratory Qualifications

The Laboratory's quality assurance program is consistent with the quality standards outlined in the National Environmental Laboratory Accreditation Program (NELAP). This laboratory was accredited under Texas Certification number # TX104704231 at the time the analysis was performed and the certificate is included in Attachment A.

3. Project Objectives

3.1 Sampling/Analytical QA/QC Objectives

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

4. Data Review/Validation Results

4.1 Sample Holding Time and Preservation

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

- i) WPW-1620-TP-07-20-20200716 was received in a properly preserved container for metals analysis, however the pH did not meet the method requirement of <2 . After pH adjustment by the laboratory, the pH remained >2 . All associated metals results were qualified as estimated; biased low (see Table 4).

The sample chain of custody documents and the analytical reports were used to determine sample holding times. All samples were prepared and analyzed within the required holding times with the following exception (see Table 5):

- i) WPW-1620-TP-02-20-20200714 and WG-1620-MW77A-20200731 were analyzed outside of the established holding time for pH analysis. The associated sample results were 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 packages.

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 packages.

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

- i) Two method blanks yielded low level detections for arsenic and/or chromium. All associated sample results were significantly greater than the method blank detections and were not affected. No further actions were required.

4.5 Internal Standard and Surrogate Spike Recoveries

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

In accordance with the methods employed, all samples, blanks, and QC samples analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and total petroleum hydrocarbons (TPH) determinations are spiked with surrogate compounds prior to sample analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project. Each individual surrogate compound is expected to meet the laboratory control limits. According to the TRRP-13 Guidelines, one outlying surrogate is acceptable for methods with multiple surrogate spike compounds as long as the recovery is at least ten percent. Sample analyzed at elevated sample dilutions (five times or greater) were not assessed.

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

4.6 Laboratory Control Sample Analysis

LCS 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 RPDs were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision (where applicable) with the following exception:

- i) One LCS was reported with an elevated recovery for methylene chloride. All associated sample results were non-detect and not affected by the indicated high bias. No further action was required.

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.

MS/MSD analyses were performed as specified in Table 1. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project.

The MS/MSD samples were spiked with all analytes specified in the methods. All percent recoveries and RPD values were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision with the following exception:

- i) One MS/MSD was reported with a low MS recovery for chloride. The original sample concentration was significantly greater than the spike concentration. Therefore, the recoveries were not assessed. No further action was required.

The laboratory also performed additional MS/MSD analyses on non-site samples. These 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 for metals, alkalinity, pH, and total dissolved solids (TDS) analyses as specified in Table 1. 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 Procedures

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



4.10 Analyte Reporting

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

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

All soil results were reported on a dry weight basis.

5. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2A and Table 2B are usable for the purpose of supporting the HWPW Soil and Groundwater Sampling Event/Englewood IM Yard Test Pits at the site by providing current concentration of chemicals of concern in soil and groundwater samples with the specific qualifications noted herein.

Table 1

**Sample Collection and Analysis Summary
HWPW Soil and Groundwater Sampling Event/Englewood IM Yard Test Pits
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2020**

Sample Identification	Location	Matrix	Initial Sample Depth (ft bgs)	Final Sample Depth (ft bgs)	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Analysis/Parameters													Comments			
							VOCs	SVOCs	TPH	Metals	Mercury	Alkalinty	Chloride	Nitrate (as N)	Nitrite (as N)	Sulfate	TDS	pH					
SO-1620-TP-03-20(2-4)-20200714	TP-03	Soil	2	4	07/14/2020	12:10	X	X	X	X	X												
WPW-1620-TP-02-20-20200714	TP-02	Water			07/14/2020	14:00	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
SO-1620-TP-01-20(2-4)-20200714	TP-01	Soil	2	4	07/14/2020	15:50	X	X	X	X	X												
SO-1620-TP-04-20(2-4)-20200714	TP-04	Soil	2	4	07/14/2020	16:00	X	X	X	X	X												
SO-1620-TP-02-20(2-4)-20200714	TP-02	Soil	2	4	07/14/2020	16:20	X	X	X	X	X												
SO-1620-TP05-20(1-4)-20200715	TP-05	Soil	1	4	07/15/2020	12:00	X	X	X	X	X												
SO-1620-TP06-20(1-4)-20200715	TP-06	Soil	1	4	07/15/2020	12:10	X	X	X	X	X												
SO-1620-TP07-20(1-4)-20200715	TP-07	Soil	1	4	07/15/2020	12:20	X	X	X	X	X												
WPW-1620-TP07-20-20200716	TP-07	Water			07/16/2020	08:45	X	X	X	X	X												
WG-1620-MW77A-20200731	MW-77A	Water			07/31/2020	13:30			X			X	X	X	X	X	X	X	X	X	X	X	MS/MSD-P; DUP-P

Notes:

- ft bgs - Feet Below Ground Surface
- VOCs - Volatile Organic Compounds
- SVOCs - Semi-volatile Organic Compounds
- TPH - Total Petroleum Hydrocarbons
- N - Nitrogen
- TDS - Total Dissolved Solids
- MS/MSD-P - Matrix Spike/Matrix Spike Duplicate (partial parameters)
- DUP-P - Laboratory Duplicate (partial parameters)

Table 2A

Analytical Results Summary
HWPW Soil and Groundwater Sampling Event/Englewood IM Yard Test Pits
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2020

Location ID:	TP-01	TP-02	TP-03	TP-04
Sample Name:	SO-1620-TP-01-20(2-4)-20200714	SO-1620-TP-02-20(2-4)-20200714	SO-1620-TP-03-20(2-4)-20200714	SO-1620-TP-04-20(2-4)-20200714
Sample Date:	07/14/2020	07/14/2020	07/14/2020	07/14/2020
Depth:	2-4 ft bgs	2-4 ft bgs	2-4 ft bgs	2-4 ft bgs
Parameters	Unit			
Volatile Organic Compounds				
1,2-Dichloroethane	mg/kg	<0.00085	<0.00063	<0.00079
Benzene	mg/kg	<0.00071	<0.00053	<0.00066
Chlorobenzene	mg/kg	<0.00085	<0.00063	<0.00079
Ethylbenzene	mg/kg	<0.0010	0.0011 J	0.035
Methylene chloride	mg/kg	<0.0014	<0.0011	<0.0013
Toluene	mg/kg	<0.00085	0.0016 J	<0.00079
Xylenes (total)	mg/kg	0.0049 J	0.0095	0.058
Semi-volatile Organic Compounds				
1,2-Diphenylhydrazine	mg/kg	<0.013	<0.014	<0.013
2,4-Dimethylphenol	mg/kg	0.058 J	<0.041	<0.040
2,4-Dinitrotoluene	mg/kg	<0.011	<0.011	<0.011
2,6-Dinitrotoluene	mg/kg	<0.039	<0.041	<0.040
2-Chloronaphthalene	mg/kg	<0.015	<0.016	<0.016
2-Methylnaphthalene	mg/kg	0.12	0.10	1.9
4,6-Dinitro-2-methylphenol	mg/kg	<0.025	<0.026	<0.025
4-Nitrophenol	mg/kg	<0.022	<0.024	<0.023
Acenaphthene	mg/kg	1.0	0.41	4.4
Acenaphthylene	mg/kg	0.25	0.027 J	0.14
Anthracene	mg/kg	1.5	0.63	7.1
Benzo(a)anthracene	mg/kg	3.1	0.65	3.5
Benzo(a)pyrene	mg/kg	6.7	0.81	1.6
bis(2-Chloroethoxy)methane	mg/kg	<0.011	<0.011	<0.011

Table 2A

Analytical Results Summary
HWPW Soil and Groundwater Sampling Event/Englewood IM Yard Test Pits
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2020

	Location ID:	TP-01	TP-02	TP-03	TP-04
	Sample Name:	SO-1620-TP-01-20(2-4)-20200714	SO-1620-TP-02-20(2-4)-20200714	SO-1620-TP-03-20(2-4)-20200714	SO-1620-TP-04-20(2-4)-20200714
	Sample Date:	07/14/2020	07/14/2020	07/14/2020	07/14/2020
	Depth:	2-4 ft bgs	2-4 ft bgs	2-4 ft bgs	2-4 ft bgs
Parameters	Unit				
Semi-volatile Organic Compounds (Continued)					
bis(2-Ethylhexyl)phthalate (DEHP)	mg/kg	0.75	10	0.36	<0.020
Chrysene	mg/kg	1.6	0.71	3.7	0.25
Di-n-butylphthalate (DBP)	mg/kg	0.16	0.23	<0.014	<0.014
Dibenzofuran	mg/kg	0.27	0.19	3.6	0.21
Fluoranthene	mg/kg	5.9	2.4	17	1.0
Fluorene	mg/kg	0.94	0.58	7.7	0.56
N-Nitrosodiphenylamine	mg/kg	<0.0082	<0.0088	<0.0084	<0.0082
Naphthalene	mg/kg	0.17	0.13	0.42	1.7
Nitrobenzene	mg/kg	<0.011	<0.011	<0.011	<0.011
Pentachlorophenol	mg/kg	<0.039	<0.041	<0.040	<0.039
Phenanthrene	mg/kg	4.2	2.6	28	1.7
Phenol	mg/kg	<0.013	<0.014	<0.013	<0.013
Pyrene	mg/kg	8.5	1.8	10	0.72
Total Petroleum Hydrocarbons					
Total Petroleum Hydrocarbons	mg/kg	520	1670	10500	3900
Total Petroleum Hydrocarbons (>C12-C28)	mg/kg	300	1200	8200	2700
Total Petroleum Hydrocarbons (>C28-C35)	mg/kg	220	470	2300	1200
Total Petroleum Hydrocarbons (C6-C12)	mg/kg	<13	<16	<140	<41

Table 2A

Analytical Results Summary
HWPW Soil and Groundwater Sampling Event/Englewood IM Yard Test Pits
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2020

Location ID:	TP-01	TP-02	TP-03	TP-04
Sample Name:	SO-1620-TP-01-20(2-4)-20200714	SO-1620-TP-02-20(2-4)-20200714	SO-1620-TP-03-20(2-4)-20200714	SO-1620-TP-04-20(2-4)-20200714
Sample Date:	07/14/2020	07/14/2020	07/14/2020	07/14/2020
Depth:	2-4 ft bgs	2-4 ft bgs	2-4 ft bgs	2-4 ft bgs

Parameters	Unit	TP-01	TP-02	TP-03	TP-04
Metals					
Arsenic	mg/kg	19.5	3.76	11.4	2.24
Barium	mg/kg	812	242	462	167
Cadmium	mg/kg	15.7	6.05	10.4	4.51
Chromium	mg/kg	122	18.2	44.8	14.8
Lead	mg/kg	3000	319	1370	63.2
Mercury	mg/kg	0.785	0.0536	0.204	0.0174
Selenium	mg/kg	0.628	0.434 J	1.12	0.200 J
Silver	mg/kg	4.42	0.487 J	2.07	0.163 J

Table 2A

Analytical Results Summary
HWPW Soil and Groundwater Sampling Event/Englewood IM Yard Test Pits
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2020

	Location ID:	TP-05	TP-06	TP-07
	Sample Name:	SO-1620-TP05-20(1-4)-20200715	SO-1620-TP06-20(1-4)-20200715	SO-1620-TP07-20(1-4)-20200715
	Sample Date:	07/15/2020	07/15/2020	07/15/2020
	Depth:	1-4 ft bgs	1-4 ft bgs	1-4 ft bgs
Parameters	Unit			
Volatile Organic Compounds				
1,2-Dichloroethane	mg/kg	<0.00057	<0.00063	<0.00088
Benzene	mg/kg	0.0086	<0.00052	<0.00073
Chlorobenzene	mg/kg	<0.00057	<0.00063	<0.00088
Ethylbenzene	mg/kg	0.022	0.0036 J	<0.0010
Methylene chloride	mg/kg	<0.00094	<0.0010	<0.0015
Toluene	mg/kg	0.0089	<0.00063	<0.00088
Xylenes (total)	mg/kg	0.035	0.0077	<0.0015
Semi-volatile Organic Compounds				
1,2-Diphenylhydrazine	mg/kg	<0.013	<0.013	<0.037
2,4-Dimethylphenol	mg/kg	<0.038	<0.040	<0.11
2,4-Dinitrotoluene	mg/kg	<0.010	<0.011	<0.031
2,6-Dinitrotoluene	mg/kg	<0.038	<0.040	<0.11
2-Chloronaphthalene	mg/kg	<0.015	<0.016	<0.044
2-Methylnaphthalene	mg/kg	1.3	0.15	54
4,6-Dinitro-2-methylphenol	mg/kg	<0.024	<0.025	<0.072
4-Nitrophenol	mg/kg	<0.022	<0.023	<0.065
Acenaphthene	mg/kg	1.3	0.30	4.0
Acenaphthylene	mg/kg	0.20	<0.012	0.80
Anthracene	mg/kg	2.9	0.31	4.2
Benzo(a)anthracene	mg/kg	2.1	0.39	3.1
Benzo(a)pyrene	mg/kg	0.59	0.15	1.6
bis(2-Chloroethoxy)methane	mg/kg	<0.010	<0.011	<0.031

Table 2A

Analytical Results Summary
HWPW Soil and Groundwater Sampling Event/Englewood IM Yard Test Pits
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2020

	Location ID:	TP-05	TP-06	TP-07
	Sample Name:	SO-1620-TP05-20(1-4)-20200715	SO-1620-TP06-20(1-4)-20200715	SO-1620-TP07-20(1-4)-20200715
	Sample Date:	07/15/2020	07/15/2020	07/15/2020
	Depth:	1-4 ft bgs	1-4 ft bgs	1-4 ft bgs
Parameters	Unit			
Semi-volatile Organic Compounds (Continued)				
bis(2-Ethylhexyl)phthalate (DEHP)	mg/kg	<0.020	<0.021	1.2
Chrysene	mg/kg	2.2	0.93	4.4
Di-n-butylphthalate (DBP)	mg/kg	<0.014	<0.015	<0.041
Dibenzofuran	mg/kg	<0.0081	0.30	1.4
Fluoranthene	mg/kg	14	1.7	9.5
Fluorene	mg/kg	2.0	0.53	5.0
N-Nitrosodiphenylamine	mg/kg	<0.0081	<0.0085	<0.024
Naphthalene	mg/kg	0.19	0.14	8.9
Nitrobenzene	mg/kg	<0.010	<0.011	<0.031
Pentachlorophenol	mg/kg	<0.038	<0.040	<0.11
Phenanthrene	mg/kg	13	2.4	16
Phenol	mg/kg	<0.013	<0.013	0.12 J
Pyrene	mg/kg	9.2	1.6	17
Total Petroleum Hydrocarbons				
Total Petroleum Hydrocarbons	mg/kg	2230	21300	22200
Total Petroleum Hydrocarbons (>C12-C28)	mg/kg	1600	17000	18000
Total Petroleum Hydrocarbons (>C28-C35)	mg/kg	630	4300	3700
Total Petroleum Hydrocarbons (C6-C12)	mg/kg	<37	<330	520 J

Table 2A

Analytical Results Summary
HWPW Soil and Groundwater Sampling Event/Englewood IM Yard Test Pits
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2020

Location ID:	TP-05	TP-06	TP-07
Sample Name:	SO-1620-TP05-20(1-4)-20200715	SO-1620-TP06-20(1-4)-20200715	SO-1620-TP07-20(1-4)-20200715
Sample Date:	07/15/2020	07/15/2020	07/15/2020
Depth:	1-4 ft bgs	1-4 ft bgs	1-4 ft bgs

Parameters	Unit			
Metals				
Arsenic	mg/kg	2.41	1.64	7.80
Barium	mg/kg	81.9	67.5	623
Cadmium	mg/kg	1.64	1.97	3.09
Chromium	mg/kg	7.85	5.81	57.4
Lead	mg/kg	69.8	29.6	630
Mercury	mg/kg	0.0825	0.0102	0.290
Selenium	mg/kg	0.181 J	0.344 J	0.242 J
Silver	mg/kg	0.113 J	0.0332 J	0.884

Notes:

ft bgs - Feet below ground surface

< - Not detected at the associated reporting limit

J - Estimated concentration

Analytical Results Summary
HWPW Soil and Groundwater Sampling Event/Englewood IM Yard Test Pits
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2020

Location ID:	TP-02	TP-07	MW-77A
Sample Name:	WPW-1620-TP-02-20-20200714	WPW-1620-TP07-20-20200716	WG-1620-MW77A-20200731
Sample Date:	07/14/2020	07/16/2020	07/31/2020
Parameters	Unit		
Volatile Organic Compounds			
1,2-Dichloroethane	mg/L	<0.0020	<0.010
Benzene	mg/L	<0.0020	<0.010
Chlorobenzene	mg/L	<0.0030	<0.015
Ethylbenzene	mg/L	<0.0030	<0.015
Methylene chloride	mg/L	<0.010	<0.050
Toluene	mg/L	<0.0020	<0.010
Xylenes (total)	mg/L	<0.0030	<0.015
Semi-volatile Organic Compounds			
1,2-Diphenylhydrazine	mg/L	<0.00021	<0.00021
2,4-Dimethylphenol	mg/L	0.00055 J	0.0033
2,4-Dinitrotoluene	mg/L	<0.00058	<0.00058
2,6-Dinitrotoluene	mg/L	<0.00042	<0.00042
2-Chloronaphthalene	mg/L	<0.00021	<0.00021
2-Methylnaphthalene	mg/L	<0.00019	0.0043
4,6-Dinitro-2-methylphenol	mg/L	<0.00020	<0.00020
4-Nitrophenol	mg/L	<0.00047	<0.00047
Acenaphthene	mg/L	0.00057 J	0.0028
Acenaphthylene	mg/L	<0.00015	<0.00015
Anthracene	mg/L	0.00050 J	0.0031
Benzo(a)anthracene	mg/L	0.00051 J	<0.00050
Benzo(a)pyrene	mg/L	0.00064 J	<0.00020
bis(2-Chloroethoxy)methane	mg/L	<0.00030	<0.00030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	0.00064 J	<0.00037
Chrysene	mg/L	0.00078 J	<0.00021
Di-n-butylphthalate (DBP)	mg/L	<0.00020	<0.00020
Dibenzofuran	mg/L	<0.00020	0.0018

Analytical Results Summary
HWPW Soil and Groundwater Sampling Event/Englewood IM Yard Test Pits
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2020

Location ID:	TP-02	TP-07	MW-77A
Sample Name:	WPW-1620-TP-02-20-20200714	WPW-1620-TP07-20-20200716	WG-1620-MW77A-20200731
Sample Date:	07/14/2020	07/16/2020	07/31/2020
Parameters	Unit		
Semi-volatile Organic Compounds (Continued)			
Fluoranthene	mg/L	0.0019	0.0031
Fluorene	mg/L	<0.00030	0.0027
N-Nitrosodiphenylamine	mg/L	<0.00025	<0.00025
Naphthalene	mg/L	0.00042 J	0.016
Nitrobenzene	mg/L	<0.00024	<0.00024
Pentachlorophenol	mg/L	<0.00079	0.0051
Phenanthrene	mg/L	0.00098 J	0.0076
Phenol	mg/L	0.0016 J	0.0076
Pyrene	mg/L	0.0022	0.0026
Total Petroleum Hydrocarbons			
Total Petroleum Hydrocarbons	mg/L	2.30	28.8
Total Petroleum Hydrocarbons (>C12-C28)	mg/L	1.2	25
Total Petroleum Hydrocarbons (>C28-C35)	mg/L	1.1	3.8
Total Petroleum Hydrocarbons (C6-C12)	mg/L	<0.20	<0.20
Metals			
Arsenic	mg/L	0.0703	0.543 JL
Barium	mg/L	0.0729	0.561 JL
Cadmium	mg/L	0.00195 J	0.00830 JL
Calcium	mg/L	22.8	--
Chromium	mg/L	0.0382	0.651 JL
Lead	mg/L	0.219	2.88 JL
Mercury	mg/L	0.000116 J	0.00140 JL
Selenium	mg/L	0.00409	0.0132 JL
Silver	mg/L	0.00196 J	0.00516 JL

**Analytical Results Summary
HWPW Soil and Groundwater Sampling Event/Englewood IM Yard Test Pits
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2020**

Location ID:	TP-02	TP-07	MW-77A
Sample Name:	WPW-1620-TP-02-20-20200714	WPW-1620-TP07-20-20200716	WG-1620-MW77A-20200731
Sample Date:	07/14/2020	07/16/2020	07/31/2020

Parameters	Unit	TP-02	TP-07	MW-77A
General Chemistry				
Alkalinity, bicarbonate	mg/L	<5.00	--	490
Alkalinity, carbonate	mg/L	885	--	<5.00
Alkalinity, hydroxide	mg/L	106	--	<5.00
Alkalinity, total (as CaCO ₃)	mg/L	991	--	490
Chloride	mg/L	99.9	--	144
Nitrate (as N)	mg/L	0.635	--	0.0584 J
Nitrite (as N)	mg/L	<0.0600	--	<0.0300
Sulfate	mg/L	189	--	1.06
TDS	mg/L	2520	--	688
pH	s.u.	10.8 JL	--	7.09 JL

Notes:

- ft bgs - Feet below ground surface
- < - Not detected at the associated reporting limit
- J - Estimated concentration
- JL - Estimated concentration; biased low
- CaCO₃ - Calcium Carbonate
- N - Nitrogen
- TDS - Total dissolved solids
- "--" - Not Applicable

Table 3

Analytical Methods
HWPW Soil and Groundwater Sampling Event/Englewood IM Yard Test Pits
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2020

Parameter	Method	Matrix	Holding Time	
			Collection to Extraction (Days)	Extraction to Analysis (Days)
VOCs	SW-846 8260C	Soil/Water	-	14
SVOCs	SW-846 8270D	Soil	14	40
		Water	7	40
TPH	TX1005	Soil/Water	14	40
Metals	SW-846 6020A	Soil/Water	-	180
Mercury	SW-846 7471B	Soil	-	28
	SW-846 7470A	Water	-	28
Alkalinity	SM 2320B	Water	-	14
Chloride	SW-846 9056A	Water	-	28
Nitrate (as N)	SW-846 9056A	Water	-	2
Nitrite (as N)	SW-846 9056A	Water	-	2
Sulfate	SW-846 9056A	Water	-	28
TDS	SM 2540C	Water	-	7
pH	SW-846 9040C	Water	-	immediate

Notes:

- VOCs - Volatile Organic Compounds
SVOCs - Semi-volatile Organic Compounds
TPH - Total Petroleum Hydrocarbons
N - Nitrogen
TDS - Total Dissolved Solids
"- " - Not Applicable

Methods:

- SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions
SM - "Standard Methods for the Examination of Water and Wastewater", 18th Edition, 1992, with subsequent revisions

Table 4

Qualified Sample Data Due to Insufficient Sample Preservation
HWPW Soil and Groundwater Sampling Event/Englewood IM Yard Test Pits
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2020

Parameter	Sample ID	pH Upon Receipt at Laboratory	pH After Adjustment at Laboratory	Required pH	Analyte	Qualified Result	Units
Metals	WPW-1620-TP07-20-20200716	>6	6	<2	Arsenic	0.543 JL	mg/L
					Barium	0.561 JL	mg/L
					Cadmium	0.00830 JL	mg/L
					Chromium	0.651 JL	mg/L
					Lead	2.88 JL	mg/L
					Mercury	0.00140 JL	mg/L
					Selenium	0.0132 JL	mg/L
					Silver	0.00516 JL	mg/L

Notes:

JL - Estimated concentration; biased low

Table 5

Qualified Sample Results Due to Holding Time Exceedance
HWPW Soil and Groundwater Sampling Event/Englewood IM Yard Test Pits
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2020

Parameter	Sample ID	Holding Time (days)	Holding Time Criteria (days)	Analyte	Qualified Sample Results	Units
General Chemistry	WPW-1620-TP-02-20-20200714	7	immediate	pH	10.8 JL	s.u.
	WG-1620-MW77A-20200731	11			7.09 JL	s.u.

Notes:

JL - Estimated concentration; biased low

Attachment A
Laboratory NELAP Certificate



Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation



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

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

Certificate: T104704231-20-26
Expiration Date: 4/30/2021
Issue Date: 5/1/2020

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

Matrix: *Drinking Water*

Method EPA 1613

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

Method EPA 200.8

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



Texas Commission on Environmental Quality



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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



Texas Commission on Environmental Quality

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

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Issue Date: 5/1/2020

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Matrix: Non-Potable Water

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

Method EPA 245.1

Analyte	AB	Analyte ID	Method ID
Mercury	TX	1095	10036609

Method EPA 300.0

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

Method EPA 325.1

Analyte	AB	Analyte ID	Method ID
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Matrix: Non-Potable Water

Chloride	TX	1575	10056801
Method EPA 335.1			
Analyte	AB	Analyte ID	Method ID
Amenable cyanide	TX	1510	10060001
Method EPA 335.2			
Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	10278203
Method EPA 335.4			
Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	10061402
Method EPA 350.3			
Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	10064401
Method EPA 365.3			
Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	10070801
Phosphorus	TX	1910	10070801
Method EPA 375.4			
Analyte	AB	Analyte ID	Method ID
Sulfate	TX	2000	10073800
Method EPA 376.1			
Analyte	AB	Analyte ID	Method ID
Sulfide	TX	2005	10074201
Method EPA 410.4			
Analyte	AB	Analyte ID	Method ID
Chemical oxygen demand (COD)	TX	1565	10077404
Method EPA 415.1			
Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	10078407
Method EPA 420.1			
Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10079400



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Matrix: Non-Potable Water

Method EPA 420.4

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10080203

Method EPA 6020

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



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Matrix: Non-Potable Water

Vanadium	TX	1185	10156419
Zinc	TX	1190	10156419
Method EPA 608			
Analyte	AB	Analyte ID	Method ID
4,4'-DDD	TX	7355	10103603
4,4'-DDE	TX	7360	10103603
4,4'-DDT	TX	7365	10103603
Aldrin	TX	7025	10103603
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10103603
alpha-Chlordane	TX	7240	10103603
Aroclor-1016 (PCB-1016)	TX	8880	10103603
Aroclor-1221 (PCB-1221)	TX	8885	10103603
Aroclor-1232 (PCB-1232)	TX	8890	10103603
Aroclor-1242 (PCB-1242)	TX	8895	10103603
Aroclor-1248 (PCB-1248)	TX	8900	10103603
Aroclor-1254 (PCB-1254)	TX	8905	10103603
Aroclor-1260 (PCB-1260)	TX	8910	10103603
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10103603
Chlordane (tech.)	TX	7250	10103603
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10103603
Dieldrin	TX	7470	10103603
Endosulfan I	TX	7510	10103603
Endosulfan II	TX	7515	10103603
Endosulfan sulfate	TX	7520	10103603
Endrin	TX	7540	10103603
Endrin aldehyde	TX	7530	10103603
Endrin ketone	TX	7535	10103603
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10103603
gamma-Chlordane	TX	7245	10103603
Heptachlor	TX	7685	10103603



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Matrix: Non-Potable Water

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

Method EPA 624

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



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Matrix: Non-Potable Water

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

Method EPA 625

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



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Matrix: Non-Potable Water

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



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Matrix: Non-Potable Water

Dimethyl phthalate	TX	6135	10107401
Di-n-butyl phthalate	TX	5925	10107401
Di-n-octyl phthalate	TX	6200	10107401
Fluoranthene	TX	6265	10107401
Fluorene	TX	6270	10107401
Hexachlorobenzene	TX	6275	10107401
Hexachlorobutadiene	TX	4835	10107401
Hexachlorocyclopentadiene	TX	6285	10107401
Hexachloroethane	TX	4840	10107401
Indeno(1,2,3-cd) pyrene	TX	6315	10107401
Isophorone	TX	6320	10107401
Naphthalene	TX	5005	10107401
Nitrobenzene	TX	5015	10107401
n-Nitrosodiethylamine	TX	6525	10107401
n-Nitrosodimethylamine	TX	6530	10107401
n-Nitrosodi-n-butylamine	TX	5025	10107401
n-Nitrosodi-n-propylamine	TX	6545	10107401
n-Nitrosodiphenylamine	TX	6535	10107401
Pentachlorobenzene	TX	6590	10107401
Pentachlorophenol	TX	6605	10107401
Phenanthrene	TX	6615	10107401
Phenol	TX	6625	10107401
Pyrene	TX	6665	10107401
Pyridine	TX	5095	10107401
Method EPA 7196			
Analyte	AB	Analyte ID	Method ID
Chromium (VI)	TX	1045	10162206
Method EPA 7470			
Analyte	AB	Analyte ID	Method ID
Mercury	TX	1095	10165603



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Matrix: Non-Potable Water

Method EPA 8011

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

Method EPA 8015

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

Method EPA 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
Endosulfan I	TX	7510	10178402



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Matrix: Non-Potable Water

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
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



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Matrix: Non-Potable Water

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
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



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Matrix: Non-Potable Water

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
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



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Matrix: Non-Potable Water

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
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
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



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Issue Date: 5/1/2020

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Matrix: Non-Potable Water

o-Xylene	TX	5250	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

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



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Matrix: Non-Potable Water

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
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



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Matrix: Non-Potable Water

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
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



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Matrix: Non-Potable Water

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
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



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Matrix: Non-Potable Water

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
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



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Matrix: Non-Potable Water

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
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



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Matrix: Non-Potable Water

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
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



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Matrix: Non-Potable Water

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: Non-Potable Water

Method	Analyte	AB	Analyte ID	Method ID
EPA 9040	pH	TX	1900	10196802
EPA 9050	Conductivity	TX	1610	10198604
EPA 9056	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
EPA 9060	Total Organic Carbon (TOC)	TX	2040	10200201
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



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Matrix: Non-Potable Water

Ethane	TX	4747	10212905
Ethene	TX	4752	10212905
Methane	TX	4926	10212905
n-Butane	TX	5007	10212905
n-Propane	TX	5029	10212905
Method HACH 8000			
Analyte	AB	Analyte ID	Method ID
Chemical oxygen demand (COD)	TX	1565	60003001
Method SM 2120 B			
Analyte	AB	Analyte ID	Method ID
Color	TX	1605	20223807
Method SM 2310 B (4a)			
Analyte	AB	Analyte ID	Method ID
Acidity, as CaCO ₃	TX	1500	20002806
Method SM 2320 B			
Analyte	AB	Analyte ID	Method ID
Alkalinity as CaCO ₃	TX	1505	20045005
Method SM 2340 B			
Analyte	AB	Analyte ID	Method ID
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



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Matrix: Non-Potable Water

Residue-nonfilterable (TSS)	TX	1960	20004802
Method SM 3500-Cr B			
Analyte Chromium (VI)	AB TX	Analyte ID 1045	Method ID 20065809
Method SM 4500-CI F			
Analyte Total residual chlorine	AB TX	Analyte ID 1940	Method ID 20080482
Method SM 4500-Cl ⁻ E			
Analyte Chloride	AB TX	Analyte ID 1575	Method ID 20019209
Method SM 4500-CN ⁻ C			
Analyte Total cyanide	AB TX	Analyte ID 1645	Method ID 20020808
Method SM 4500-CN ⁻ E			
Analyte Total cyanide	AB TX	Analyte ID 1645	Method ID 20021209
Method SM 4500-CN ⁻ G			
Analyte Amenable cyanide	AB TX	Analyte ID 1510	Method ID 20021607
Method SM 4500-H+ B			
Analyte pH	AB TX	Analyte ID 1900	Method ID 20104603
Method SM 4500-NH3 D			
Analyte Ammonia as N	AB TX	Analyte ID 1515	Method ID 20108809
Kjeldahl Nitrogen (Total Kjeldahl Nitrogen-TKN)	TX	1790	20108809
Method SM 4500-NH3 F			
Analyte Ammonia as N	AB TX	Analyte ID 1515	Method ID 20023001
Method SM 4500-O G			
Analyte Oxygen, dissolved	AB TX	Analyte ID 1880	Method ID 20025405



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Matrix: Non-Potable Water

Method	Analyte	AB	Analyte ID	Method ID
Method SM 4500-P E				
	Orthophosphate as P	TX	1870	20025803
	Phosphorus	TX	1910	20025803
Method SM 4500-S2 ⁻ D				
	Sulfide	TX	2005	20125400
Method SM 4500-S2 ⁻ F				
	Sulfide	TX	2005	20126209
Method SM 4500-SiO2 D				
	Silica as SiO2	TX	1990	20127202
Method SM 4500-SO3 ⁻ B				
	Sulfite	TX	2015	20026806
Method SM 5210 B				
	Biochemical oxygen demand (BOD)	TX	1530	20027401
	Carbonaceous BOD, CBOD	TX	1555	20027401
Method SM 5310 B				
	Total Organic Carbon (TOC)	TX	2040	20137206
Method SM 5310 C				
	Total Organic Carbon (TOC)	TX	2040	20138209
Method SM 5540 C				
	Surfactants - MBAS	TX	2025	20144405
Method TCEQ 1005				
	Total Petroleum Hydrocarbons (TPH)	TX	2050	90019208



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Matrix: Solid & Chemical Materials

Method ASTM D2216

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

Method EPA 1010

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10116606

Method EPA 1030

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10117201

Method EPA 1311

Analyte	AB	Analyte ID	Method ID
TCLP	TX	849	10118806

Method EPA 1312

Analyte	AB	Analyte ID	Method ID
SPLP	TX	850	10119003

Method EPA 200.8

Analyte	AB	Analyte ID	Method ID
Uranium	TX	3035	10014605

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



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Matrix: Solid & Chemical Materials

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
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



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Matrix: Solid & Chemical Materials

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
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 8081			
Analyte	AB	Analyte ID	Method ID
4,4'-DDD	TX	7355	10178402



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Matrix: Solid & Chemical Materials

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
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



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Matrix: Solid & Chemical Materials

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
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



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Matrix: Solid & Chemical Materials

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
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



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Matrix: Solid & Chemical Materials

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
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



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Matrix: Solid & Chemical Materials

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
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



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Matrix: Solid & Chemical Materials

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-Acetylamino fluorene	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



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Matrix: Solid & Chemical Materials

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
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



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Matrix: Solid & Chemical Materials

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
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



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Matrix: Solid & Chemical Materials

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
Kepone	TX	7740	10185203
Malathion	TX	7770	10185203
Methapyrilene	TX	6345	10185203
Methyl methanesulfonate	TX	6375	10185203
Methyl parathion (Parathion, methyl)	TX	7825	10185203
Mevinphos	TX	7850	10185203
Naphthalene	TX	5005	10185203
Nitrobenzene	TX	5015	10185203
n-Nitrosodiethylamine	TX	6525	10185203
n-Nitrosodimethylamine	TX	6530	10185203
n-Nitrosodi-n-butylamine	TX	5025	10185203
n-Nitrosodi-n-propylamine	TX	6545	10185203
n-Nitrosodiphenylamine	TX	6535	10185203
n-Nitrosomethylethylamine	TX	6550	10185203
n-Nitrosomorpholine	TX	6555	10185203
n-Nitrosopiperidine	TX	6560	10185203
n-Nitrosopyrrolidine	TX	6565	10185203
o,o,o-Triethyl phosphorothioate	TX	8290	10185203
o-Anisidine	TX	5550	10185203
Parathion, ethyl	TX	7955	10185203



Texas Commission on Environmental Quality



NELAP - Recognized Laboratory Fields of Accreditation

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

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

Certificate: T104704231-20-26
Expiration Date: 4/30/2021
Issue Date: 5/1/2020

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Matrix: Solid & Chemical Materials

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
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



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Matrix: Solid & Chemical Materials

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
Methyl-2,4,6-trinitrophenylnitramine (tetryl)	TX	6415	10189807



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Matrix: Solid & Chemical Materials

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
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



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Matrix: Solid & Chemical Materials

Method	Analyte	AB	Analyte ID	Method ID
EPA 9060	Total Organic Carbon (TOC)	TX	2040	10200201
EPA 9065	Total phenolics	TX	1905	10200405
EPA 9071	n-Hexane Extractable Material (HEM) (O&G)	TX	1803	10201204
EPA 9095	Paint Filter Liquids Test	TX	10312	10204009
EPA 9250	Chloride	TX	1575	10207202
SM 2320 B	Alkalinity as CaCO3	TX	1505	20045005
SM 2510 B	Conductivity	TX	1610	20048004
SM 2540 G	Residue-total (total solids)	TX	1950	20005203
SSA/ASA Part 3:34	Carbon, organic (Walkley-Black)	TX	10340	SSA/ASA Pt 3:34
TCEQ 1005	Total Petroleum Hydrocarbons (TPH)	TX	2050	90019208



10450 Stancliff Rd. Suite 210
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July 28, 2020

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

Work Order: **HS20070629**

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

Dear Eric Matzner,

ALS Environmental received 5 sample(s) on Jul 15, 2020 for the analysis presented in the following report.

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

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

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

Sincerely,

A handwritten signature in black ink, appearing to read 'Dane J. Wacasey'.

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629

**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: HS20070629

**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: 07/28/2020				
Project Name: Houston TX-Wood Preserving Works				Laboratory Job Number: HS20070629				
Reviewer Name: Dane Wacasey				Prep Batch Number: 155424,155466,155474,155480,155505,155567,155570,155613,R365137 .R365194,R36502,R365348,R365372,R365396,R365606				
# 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				2
R5	OI	Test reports/summary forms for blank samples						
		Were appropriate type(s) of blanks analyzed?	X					
		Were blanks analyzed at the appropriate frequency?	X					
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X					
		Were blank concentrations < MQL?	X					
R6	OI	Laboratory control samples (LCS):						
		Were all COCs included in the LCS?	X					
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X					
		Were LCSs analyzed at the required frequency?	X					
		Were LCS (and LCSd, if applicable) %Rs within the laboratory QC limits?	X					
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X					
		Was the LCSd RPD within QC limits?	X					
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data						
		Were the project/method specified analytes included in the MS and MSD?	X					
		Were MS/MSD analyzed at the appropriate frequency?	X					
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X				3
		Were MS/MSD RPDs within laboratory QC limits?		X				4
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 DCs 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					5
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X					

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 07/28/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20070629				
Reviewer Name: Dane Wacasey			Prep Batch Number: 155424,155466,155474,155480,155505,155567,155570,155613,R36 5137,R365194,R36502,R365348,R365372,R365396,R365606				
# 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			6
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			7
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: 07/28/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20070629
Reviewer Name: Dane Wacasey	Prep Batch Number: 155424,155466,155474,155480,155505,155567,155570,155613,R365137,R365194,R36502,R365348,R365372,R365396,R365606

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	Semivolatile Organics Method SW8270, samples SO-1620-TP-03-20(2-4)-20200714, SO-1620-TP-01-20(2-4)-20200714, SO-1620-TP-02-20(2-4)-20200714, the surrogate recoveries could not be determined due to dilution below the calibration range.
3	Batch 155480, Texas TPH by TX1005, sample HS20070646-01, MS and MSD were performed on unrelated sample. Batch 155505, Metals Method SW6020, sample HS20070472-02, MS and MSD were performed on unrelated sample. Batch 155613, Metals Method SW6020, sample HS20070594-01 MS and MSD were performed on unrelated sample. Batch R362194, Anions Method SW9056, sample HS20070625-04, MS and MSD were performed on unrelated sample.
4	Batch 155570, Semivolatile Organics Method SW8270, sample HS20070683-03, MS/MSD RPD is for an unrelated sample.
5	Batch 155570, Semivolatile Organics Method SW8270, samples SO-1620-TP-03-20(2-4)-20200714, SO-1620-TP-01-20(2-4)-20200714, SO-1620-TP-04-20(2-4)-20200714, SO-1620-TP-02-20(2-4)-20200714, WPW-1620-TP-02-20-20200714: the GCMS semi-volatile extract of the samples were run at a dilution due to a high level of matrix interference. Batch R365396, Volatile Organics Method SW8260, sample WPW-1620-TP-02-20-20200714: Lowest practical dilution of 10x performed due to sample matrix. Batch R365194, Anions Method SW9056, sample WPW-1620-TP-02-20-20200714 ran at 2X due to sample matrix.
6	See Run Log and CCB Exceptions Report.
7	Batch 155505, Metals Method SW6020, sample HS20070472-02, PDS was performed on unrelated sample

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.
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FORM 13 - ANALYSIS RUN LOG

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629
Start Date: 15-Jul-2020 **End Date:** 16-Jul-2020

Run ID: ICS-Integrion_365194
Instrument: ICS-Integrion
Method: SW9056

Sample No.	D/F	Time	FileID	Analytes
CCB 1	1	15-Jul-2020 13:36		CL NO2N NO3N SO4
CCV 1	1	15-Jul-2020 13:54		CL NO2N NO3N SO4
CCB 2	1	15-Jul-2020 17:31		CL NO2N NO3N SO4
ZZZZZMS	1	15-Jul-2020 19:20		CL NO2N NO3N SO4
ZZZZZMSD	1	15-Jul-2020 19:38		CL NO2N NO3N SO4
CCV 2	1	15-Jul-2020 20:51		CL NO2N NO3N SO4
CCB 3	1	15-Jul-2020 21:09		CL NO2N NO3N SO4
CCB 4	1	15-Jul-2020 22:57		CL NO2N NO3N SO4
CCV 3	1	15-Jul-2020 23:16		CL NO2N NO3N SO4
MBLK-071520	1	15-Jul-2020 23:34		CL NO2N NO3N SO4
LCS-071520	1	15-Jul-2020 23:52		CL NO2N NO3N SO4
CCB 5	1	16-Jul-2020 00:46		CL NO2N NO3N SO4
CCV 4	1	16-Jul-2020 04:05		CL NO2N NO3N SO4
CCB 6	1	16-Jul-2020 04:23		CL NO2N NO3N SO4
WPW-1620-TP-02-20-20200714	2	16-Jul-2020 05:00		CL NO2N NO3N SO4
CCB 7	1	16-Jul-2020 08:01		CL NO2N NO3N SO4
CCV 5	1	16-Jul-2020 10:44		CL NO2N NO3N SO4
CCB 8	1	16-Jul-2020 11:02		CL NO2N NO3N SO4

CCB EXCEPTIONS REPORT

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629

Run ID:ICS-Integriion_365194
Instrument:ICS-Integriion
Method:SW9056

CCB 1	Date: 15-Jul-2020 13:36	Seq: 5664512	D/F: 1	Units: ug/L
	Analyte	Result	MDL	Report Limit
	Sulfate	216.2	200	500
CCB 2	Date: 15-Jul-2020 17:31	Seq: 5664521	D/F: 1	Units: ug/L
	Analyte	Result	MDL	Report Limit
	Sulfate	256	200	500
CCB 3	Date: 15-Jul-2020 21:09	Seq: 5664525	D/F: 1	Units: ug/L
	Analyte	Result	MDL	Report Limit
	Chloride	1586	200	500
	Sulfate	602.3	200	500
CCB 4	Date: 15-Jul-2020 22:57	Seq: 5664526	D/F: 1	Units: ug/L
	Analyte	Result	MDL	Report Limit
	Sulfate	219.5	200	500
CCB 5	Date: 16-Jul-2020 00:46	Seq: 5664531	D/F: 1	Units: ug/L
	Analyte	Result	MDL	Report Limit
	Sulfate	246.4	200	500
CCB 6	Date: 16-Jul-2020 04:23	Seq: 5664533	D/F: 1	Units: ug/L
	Analyte	Result	MDL	Report Limit
	Sulfate	280.2	200	500
CCB 7	Date: 16-Jul-2020 08:01	Seq: 5664538	D/F: 1	Units: ug/L
	Analyte	Result	MDL	Report Limit
	Sulfate	272.1	200	500
CCB 8	Date: 16-Jul-2020 11:02	Seq: 5664543	D/F: 1	Units: ug/L
	Analyte	Result	MDL	Report Limit
	Sulfate	233.3	200	500

FORM 13 - ANALYSIS RUN LOG

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629
Start Date: 24-Jul-2020 **End Date:** 25-Jul-2020

Run ID: ICPMS06_365577
Instrument: ICPMS06
Method: SW6020

Sample No.	D/F	Time	FileID	Analytes
ICV	1	24-Jul-2020 10:11	020_ICV.d	AG AS BA CA CD CR PB SE
LLICV2	1	24-Jul-2020 10:13	021LCV2.d	AG AS BA CD CR PB SE
LLICV5	1	24-Jul-2020 10:15	022LCV5.d	AG AS BA CD CR PB SE
ICB	1	24-Jul-2020 10:17	023_ICB.d	AG AS BA CA CD CR PB SE
ICSA	1	24-Jul-2020 10:28	025ICSA.d	AG AS BA CD CR PB SE
ICSAB	1	24-Jul-2020 10:30	026ICSB.d	AG AS BA CD CR PB SE
CCV 1	1	24-Jul-2020 11:30	045_CCV.d	AG AS BA CA CD CR PB SE
CCB 1	1	24-Jul-2020 11:31	046_CCB.d	AG AS BA CA CD CR PB SE
MBLK-155613	1	24-Jul-2020 11:34	047SMPL.d	AG AS BA CD CR PB SE
LCS-155613	1	24-Jul-2020 11:36	048SMPL.d	AG AS BA CD CR PB SE
ZZZZZSD	5	24-Jul-2020 11:39	050SMPL.d	AG AS BA CD CR PB SE
ZZZZZMS	1	24-Jul-2020 11:41	051SMPL.d	AG AS BA CD CR PB SE
ZZZZZMSD	1	24-Jul-2020 11:43	052SMPL.d	AG AS BA CD CR PB SE
ZZZZZPDS	1	24-Jul-2020 11:45	053SMPL.d	AG AS BA CD CR PB SE
CCV 2	1	24-Jul-2020 12:08	057_CCV.d	AG AS BA CA CD CR PB SE
CCB 2	1	24-Jul-2020 12:10	058_CCB.d	AG AS BA CA CD CR PB SE
SO-1620-TP-03-20(2-4)-20200714	1	24-Jul-2020 12:23	064SMPL.d	AG AS CD CR SE
SO-1620-TP-01-20(2-4)-20200714	1	24-Jul-2020 12:25	065SMPL.d	AG AS CD CR SE
SO-1620-TP-04-20(2-4)-20200714	1	24-Jul-2020 12:27	066SMPL.d	AG AS BA CD CR PB SE
SO-1620-TP-02-20(2-4)-20200714	1	24-Jul-2020 12:29	067SMPL.d	AG AS CD CR SE
CCV 3	1	24-Jul-2020 12:33	069_CCV.d	AG AS BA CA CD CR PB SE
CCB 3	1	24-Jul-2020 12:35	070_CCB.d	AG AS BA CA CD CR PB SE
CCV 4	1	24-Jul-2020 13:00	081_CCV.d	AG AS BA CA CD CR PB SE
CCB 4	1	24-Jul-2020 13:01	082_CCB.d	AG AS BA CA CD CR PB SE
CCV 5	1	24-Jul-2020 14:09	117_CCV.d	AG AS BA CA CD CR PB SE
CCB 5	1	24-Jul-2020 14:10	118_CCB.d	AG AS BA CA CD CR PB SE
SO-1620-TP-03-20(2-4)-20200714	50	24-Jul-2020 14:37	123SMPL.d	BA PB
SO-1620-TP-01-20(2-4)-20200714	100	24-Jul-2020 14:39	124SMPL.d	BA PB
SO-1620-TP-02-20(2-4)-20200714	20	24-Jul-2020 14:41	125SMPL.d	BA PB
CCV 6	1	24-Jul-2020 14:48	129_CCV.d	AG AS BA CA CD CR PB SE
CCB 6	1	24-Jul-2020 14:50	130_CCB.d	AG AS BA CA CD CR PB SE
ICCV 7	1	24-Jul-2020 20:38	196_ICV.d	AG AS BA CA CD CR PB SE
LLICCV2	1	24-Jul-2020 20:39	197LCV2.d	AG AS BA CD CR PB SE
LLICCV5	1	24-Jul-2020 20:41	198LCV5.d	AG AS BA CD CR PB SE
ICCB 7	1	24-Jul-2020 20:43	199_ICB.d	AG AS BA CA CD CR PB SE
CCV 8	1	24-Jul-2020 21:41	229_CCV.d	AG AS BA CA CD CR PB SE
CCB 8	1	24-Jul-2020 21:42	230_CCB.d	AG AS BA CA CD CR PB SE
CCV 9	1	24-Jul-2020 21:58	238_CCV.d	AG AS BA CA CD CR PB SE
CCB 9	1	24-Jul-2020 22:00	239_CCB.d	AG AS BA CA CD CR PB SE
CCV 10	1	24-Jul-2020 22:21	250_CCV.d	AG AS BA CA CD CR PB SE
CCB 10	1	24-Jul-2020 22:23	251_CCB.d	AG AS BA CA CD CR PB SE
CCV 11	1	24-Jul-2020 22:45	262_CCV.d	AG AS BA CA CD CR PB SE
CCB 11	1	24-Jul-2020 22:47	263_CCB.d	AG AS BA CA CD CR PB SE
ICSA	1	24-Jul-2020 22:49	264ICSA.d	AG AS BA CD CR PB SE
ICSAB	1	24-Jul-2020 22:50	265ICSB.d	AG AS BA CD CR PB SE
CCV 12	1	24-Jul-2020 23:08	274_CCV.d	AG AS BA CA CD CR PB SE
CCB 12	1	24-Jul-2020 23:10	275_CCB.d	AG AS BA CA CD CR PB SE

CCB EXCEPTIONS REPORT

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629

Run ID:ICPMS06_365577
Instrument:ICPMS06
Method:SW6020

CCB 3	Date: 24-Jul-2020 12:35	Seq: 5673432	D/F: 1	Units: ug/L
Analyte		Result	MDL	Report Limit
Lead		0.814	0.6	2

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20070629

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20070629-01	SO-1620-TP-03-20(2-4)-20200714	Soil		14-Jul-2020 12:10	15-Jul-2020 12:30	<input type="checkbox"/>
HS20070629-02	SO-1620-TP-01-20(2-4)-20200714	Soil		14-Jul-2020 15:50	15-Jul-2020 12:30	<input type="checkbox"/>
HS20070629-03	SO-1620-TP-04-20(2-4)-20200714	Soil		14-Jul-2020 16:00	15-Jul-2020 12:30	<input type="checkbox"/>
HS20070629-04	SO-1620-TP-02-20(2-4)-20200714	Soil		14-Jul-2020 16:20	15-Jul-2020 12:30	<input type="checkbox"/>
HS20070629-05	WPW-1620-TP-02-20-20200714	Groundwater		14-Jul-2020 14:00	15-Jul-2020 12:30	<input type="checkbox"/>

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works
 Sample ID: SO-1620-TP-03-20(2-4)-20200714
 Collection Date: 14-Jul-2020 12:10

ANALYTICAL REPORT
 WorkOrder:HS20070629
 Lab ID:HS20070629-01
 Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MLL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		Method:SW8260			Analyst: WLR		
1,2-Dichloroethane	< 0.00079		0.00079	0.0066	mg/Kg-dry	1	16-Jul-2020 10:24
Benzene	< 0.00066		0.00066	0.0066	mg/Kg-dry	1	16-Jul-2020 10:24
Chlorobenzene	< 0.00079		0.00079	0.0066	mg/Kg-dry	1	16-Jul-2020 10:24
Ethylbenzene	0.035		0.00092	0.0066	mg/Kg-dry	1	16-Jul-2020 10:24
Methylene chloride	< 0.0013		0.0013	0.013	mg/Kg-dry	1	16-Jul-2020 10:24
Toluene	< 0.00079		0.00079	0.0066	mg/Kg-dry	1	16-Jul-2020 10:24
Xylenes, Total	0.058		0.0013	0.0066	mg/Kg-dry	1	16-Jul-2020 10:24
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>91.8</i>			<i>70-126</i>	<i>%REC</i>	<i>1</i>	<i>16-Jul-2020 10:24</i>
<i>Surr: 4-Bromofluorobenzene</i>	<i>77.6</i>			<i>70-130</i>	<i>%REC</i>	<i>1</i>	<i>16-Jul-2020 10:24</i>
<i>Surr: Dibromofluoromethane</i>	<i>93.7</i>			<i>70-130</i>	<i>%REC</i>	<i>1</i>	<i>16-Jul-2020 10:24</i>
<i>Surr: Toluene-d8</i>	<i>120</i>			<i>70-130</i>	<i>%REC</i>	<i>1</i>	<i>16-Jul-2020 10:24</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: SO-1620-TP-03-20(2-4)-20200714
 Collection Date: 14-Jul-2020 12:10

ANALYTICAL REPORT
 WorkOrder:HS20070629
 Lab ID:HS20070629-01
 Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		Method:SW8270		Prep:SW3541 / 20-Jul-2020		Analyst: GEY	
1,2-Diphenylhydrazine	< 0.013		0.013	0.080	mg/Kg-dry	10	24-Jul-2020 20:32
2,4-Dimethylphenol	< 0.040		0.040	0.080	mg/Kg-dry	10	24-Jul-2020 20:32
2,4-Dinitrotoluene	< 0.011		0.011	0.080	mg/Kg-dry	10	24-Jul-2020 20:32
2,6-Dinitrotoluene	< 0.040		0.040	0.080	mg/Kg-dry	10	24-Jul-2020 20:32
2-Chloronaphthalene	< 0.016		0.016	0.080	mg/Kg-dry	10	24-Jul-2020 20:32
2-Methylnaphthalene	1.9		0.0060	0.040	mg/Kg-dry	10	24-Jul-2020 20:32
4,6-Dinitro-2-methylphenol	< 0.025		0.025	0.080	mg/Kg-dry	10	24-Jul-2020 20:32
4-Nitrophenol	< 0.023		0.023	0.16	mg/Kg-dry	10	24-Jul-2020 20:32
Acenaphthene	4.4		0.060	0.40	mg/Kg-dry	100	24-Jul-2020 21:51
Acenaphthylene	0.14		0.012	0.040	mg/Kg-dry	10	24-Jul-2020 20:32
Anthracene	7.1		0.060	0.40	mg/Kg-dry	100	24-Jul-2020 21:51
Benz(a)anthracene	3.5		0.019	0.040	mg/Kg-dry	10	24-Jul-2020 20:32
Benzo(a)pyrene	1.6		0.012	0.040	mg/Kg-dry	10	24-Jul-2020 20:32
Bis(2-chloroethoxy)methane	< 0.011		0.011	0.080	mg/Kg-dry	10	24-Jul-2020 20:32
Bis(2-ethylhexyl)phthalate	0.36		0.021	0.080	mg/Kg-dry	10	24-Jul-2020 20:32
Chrysene	3.7		0.0097	0.040	mg/Kg-dry	10	24-Jul-2020 20:32
Dibenzofuran	3.6		0.0084	0.040	mg/Kg-dry	10	24-Jul-2020 20:32
Di-n-butyl phthalate	< 0.014		0.014	0.080	mg/Kg-dry	10	24-Jul-2020 20:32
Fluoranthene	17		0.13	0.40	mg/Kg-dry	100	24-Jul-2020 21:51
Fluorene	7.7		0.13	0.40	mg/Kg-dry	100	24-Jul-2020 21:51
Naphthalene	0.42		0.0072	0.040	mg/Kg-dry	10	24-Jul-2020 20:32
Nitrobenzene	< 0.011		0.011	0.080	mg/Kg-dry	10	24-Jul-2020 20:32
N-Nitrosodiphenylamine	< 0.0084		0.0084	0.080	mg/Kg-dry	10	24-Jul-2020 20:32
Pentachlorophenol	< 0.040		0.040	0.080	mg/Kg-dry	10	24-Jul-2020 20:32
Phenanthrene	28		0.18	0.40	mg/Kg-dry	100	24-Jul-2020 21:51
Phenol	< 0.013		0.013	0.080	mg/Kg-dry	10	24-Jul-2020 20:32
Pyrene	10		0.072	0.40	mg/Kg-dry	100	24-Jul-2020 21:51
<i>Surr: 2,4,6-Tribromophenol</i>	<i>47.6</i>			<i>36-126</i>	<i>%REC</i>	<i>10</i>	<i>24-Jul-2020 20:32</i>
<i>Surr: 2,4,6-Tribromophenol</i>	<i>0</i>	<i>S</i>		<i>36-126</i>	<i>%REC</i>	<i>100</i>	<i>24-Jul-2020 21:51</i>
<i>Surr: 2-Fluorobiphenyl</i>	<i>0</i>	<i>S</i>		<i>43-125</i>	<i>%REC</i>	<i>100</i>	<i>24-Jul-2020 21:51</i>
<i>Surr: 2-Fluorobiphenyl</i>	<i>47.5</i>			<i>43-125</i>	<i>%REC</i>	<i>10</i>	<i>24-Jul-2020 20:32</i>
<i>Surr: 2-Fluorophenol</i>	<i>50.0</i>			<i>37-125</i>	<i>%REC</i>	<i>10</i>	<i>24-Jul-2020 20:32</i>
<i>Surr: 2-Fluorophenol</i>	<i>0</i>	<i>S</i>		<i>37-125</i>	<i>%REC</i>	<i>100</i>	<i>24-Jul-2020 21:51</i>
<i>Surr: 4-Terphenyl-d14</i>	<i>0</i>	<i>S</i>		<i>32-125</i>	<i>%REC</i>	<i>100</i>	<i>24-Jul-2020 21:51</i>
<i>Surr: 4-Terphenyl-d14</i>	<i>56.8</i>			<i>32-125</i>	<i>%REC</i>	<i>10</i>	<i>24-Jul-2020 20:32</i>
<i>Surr: Nitrobenzene-d5</i>	<i>60.1</i>			<i>37-125</i>	<i>%REC</i>	<i>10</i>	<i>24-Jul-2020 20:32</i>
<i>Surr: Nitrobenzene-d5</i>	<i>0</i>	<i>S</i>		<i>37-125</i>	<i>%REC</i>	<i>100</i>	<i>24-Jul-2020 21:51</i>
<i>Surr: Phenol-d6</i>	<i>0</i>	<i>S</i>		<i>40-125</i>	<i>%REC</i>	<i>100</i>	<i>24-Jul-2020 21:51</i>
<i>Surr: Phenol-d6</i>	<i>48.0</i>			<i>40-125</i>	<i>%REC</i>	<i>10</i>	<i>24-Jul-2020 20:32</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: SO-1620-TP-03-20(2-4)-20200714
 Collection Date: 14-Jul-2020 12:10

ANALYTICAL REPORT
 WorkOrder:HS20070629
 Lab ID:HS20070629-01
 Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MLL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005		Method:TX1005		Prep:TX1005PR / 16-Jul-2020		Analyst: MBG	
nC6 to nC12	< 140		140	940	mg/Kg-dry	10	17-Jul-2020 06:25
>nC12 to nC28	8,200		180	940	mg/Kg-dry	10	17-Jul-2020 06:25
>nC28 to nC35	2,300		180	940	mg/Kg-dry	10	17-Jul-2020 06:25
Total Petroleum Hydrocarbon	10,500		140	940	mg/Kg-dry	10	17-Jul-2020 06:25
Surr: 2-Fluorobiphenyl	84.9			70-130	%REC	10	17-Jul-2020 06:25
Surr: Trifluoromethyl benzene	77.9			70-130	%REC	10	17-Jul-2020 06:25
METALS BY SW6020A		Method:SW6020		Prep:SW3050A / 23-Jul-2020		Analyst: JHD	
Arsenic	11.4		0.0786	0.562	mg/Kg-dry	1	24-Jul-2020 12:23
Barium	462		1.69	28.1	mg/Kg-dry	50	24-Jul-2020 14:37
Cadmium	10.4		0.0303	0.562	mg/Kg-dry	1	24-Jul-2020 12:23
Chromium	44.8		0.0258	0.562	mg/Kg-dry	1	24-Jul-2020 12:23
Lead	1,370		0.730	28.1	mg/Kg-dry	50	24-Jul-2020 14:37
Selenium	1.12		0.102	0.562	mg/Kg-dry	1	24-Jul-2020 12:23
Silver	2.07		0.0169	0.562	mg/Kg-dry	1	24-Jul-2020 12:23
MERCURY BY SW7471B		Method:SW7471A		Prep:SW7471A / 15-Jul-2020		Analyst: FO	
Mercury	0.204		0.000590	0.00417	mg/Kg-dry	1	15-Jul-2020 18:44
MOISTURE - ASTM D2216		Method:ASTM D2216				Analyst: JAC	
Percent Moisture	18.2		0.0100	0.0100	wt%	1	23-Jul-2020 17:21

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

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works
 Sample ID: SO-1620-TP-01-20(2-4)-20200714
 Collection Date: 14-Jul-2020 15:50

ANALYTICAL REPORT
 WorkOrder:HS20070629
 Lab ID:HS20070629-02
 Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MLL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		Method:SW8260			Analyst: WLR		
1,2-Dichloroethane	< 0.00085		0.00085	0.0071	mg/Kg-dry	1	16-Jul-2020 10:50
Benzene	< 0.00071		0.00071	0.0071	mg/Kg-dry	1	16-Jul-2020 10:50
Chlorobenzene	< 0.00085		0.00085	0.0071	mg/Kg-dry	1	16-Jul-2020 10:50
Ethylbenzene	< 0.0010		0.0010	0.0071	mg/Kg-dry	1	16-Jul-2020 10:50
Methylene chloride	< 0.0014		0.0014	0.014	mg/Kg-dry	1	16-Jul-2020 10:50
Toluene	< 0.00085		0.00085	0.0071	mg/Kg-dry	1	16-Jul-2020 10:50
Xylenes, Total	0.0049	J	0.0014	0.0071	mg/Kg-dry	1	16-Jul-2020 10:50
Surr: 1,2-Dichloroethane-d4	87.5			70-126	%REC	1	16-Jul-2020 10:50
Surr: 4-Bromofluorobenzene	89.6			70-130	%REC	1	16-Jul-2020 10:50
Surr: Dibromofluoromethane	89.6			70-130	%REC	1	16-Jul-2020 10:50
Surr: Toluene-d8	111			70-130	%REC	1	16-Jul-2020 10:50

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

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works
 Sample ID: SO-1620-TP-01-20(2-4)-20200714
 Collection Date: 14-Jul-2020 15:50

ANALYTICAL REPORT
 WorkOrder:HS20070629
 Lab ID:HS20070629-02
 Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		Method:SW8270		Prep:SW3541 / 20-Jul-2020		Analyst: GEY	
1,2-Diphenylhydrazine	< 0.013		0.013	0.077	mg/Kg-dry	10	24-Jul-2020 20:52
2,4-Dimethylphenol	0.058	J	0.039	0.077	mg/Kg-dry	10	24-Jul-2020 20:52
2,4-Dinitrotoluene	< 0.011		0.011	0.077	mg/Kg-dry	10	24-Jul-2020 20:52
2,6-Dinitrotoluene	< 0.039		0.039	0.077	mg/Kg-dry	10	24-Jul-2020 20:52
2-Chloronaphthalene	< 0.015		0.015	0.077	mg/Kg-dry	10	24-Jul-2020 20:52
2-Methylnaphthalene	0.12		0.0058	0.039	mg/Kg-dry	10	24-Jul-2020 20:52
4,6-Dinitro-2-methylphenol	< 0.025		0.025	0.077	mg/Kg-dry	10	24-Jul-2020 20:52
4-Nitrophenol	< 0.022		0.022	0.15	mg/Kg-dry	10	24-Jul-2020 20:52
Acenaphthene	1.0		0.0058	0.039	mg/Kg-dry	10	24-Jul-2020 20:52
Acenaphthylene	0.25		0.012	0.039	mg/Kg-dry	10	24-Jul-2020 20:52
Anthracene	1.5		0.0058	0.039	mg/Kg-dry	10	24-Jul-2020 20:52
Benz(a)anthracene	3.1		0.019	0.039	mg/Kg-dry	10	24-Jul-2020 20:52
Benzo(a)pyrene	6.7		0.12	0.39	mg/Kg-dry	100	24-Jul-2020 22:11
Bis(2-chloroethoxy)methane	< 0.011		0.011	0.077	mg/Kg-dry	10	24-Jul-2020 20:52
Bis(2-ethylhexyl)phthalate	0.75		0.020	0.077	mg/Kg-dry	10	24-Jul-2020 20:52
Chrysene	1.6		0.0093	0.039	mg/Kg-dry	10	24-Jul-2020 20:52
Dibenzofuran	0.27		0.0082	0.039	mg/Kg-dry	10	24-Jul-2020 20:52
Di-n-butyl phthalate	0.16		0.014	0.077	mg/Kg-dry	10	24-Jul-2020 20:52
Fluoranthene	5.9		0.13	0.39	mg/Kg-dry	100	24-Jul-2020 22:11
Fluorene	0.94		0.013	0.039	mg/Kg-dry	10	24-Jul-2020 20:52
Naphthalene	0.17		0.0070	0.039	mg/Kg-dry	10	24-Jul-2020 20:52
Nitrobenzene	< 0.011		0.011	0.077	mg/Kg-dry	10	24-Jul-2020 20:52
N-Nitrosodiphenylamine	< 0.0082		0.0082	0.077	mg/Kg-dry	10	24-Jul-2020 20:52
Pentachlorophenol	< 0.039		0.039	0.077	mg/Kg-dry	10	24-Jul-2020 20:52
Phenanthrene	4.2		0.18	0.39	mg/Kg-dry	100	24-Jul-2020 22:11
Phenol	< 0.013		0.013	0.077	mg/Kg-dry	10	24-Jul-2020 20:52
Pyrene	8.5		0.070	0.39	mg/Kg-dry	100	24-Jul-2020 22:11
<i>Surr: 2,4,6-Tribromophenol</i>	0	S		36-126	%REC	100	24-Jul-2020 22:11
<i>Surr: 2,4,6-Tribromophenol</i>	49.6			36-126	%REC	10	24-Jul-2020 20:52
<i>Surr: 2-Fluorobiphenyl</i>	68.4			43-125	%REC	10	24-Jul-2020 20:52
<i>Surr: 2-Fluorobiphenyl</i>	0	S		43-125	%REC	100	24-Jul-2020 22:11
<i>Surr: 2-Fluorophenol</i>	0	S		37-125	%REC	100	24-Jul-2020 22:11
<i>Surr: 2-Fluorophenol</i>	55.8			37-125	%REC	10	24-Jul-2020 20:52
<i>Surr: 4-Terphenyl-d14</i>	75.3			32-125	%REC	10	24-Jul-2020 20:52
<i>Surr: 4-Terphenyl-d14</i>	0	S		32-125	%REC	100	24-Jul-2020 22:11
<i>Surr: Nitrobenzene-d5</i>	90.1			37-125	%REC	10	24-Jul-2020 20:52
<i>Surr: Nitrobenzene-d5</i>	0	S		37-125	%REC	100	24-Jul-2020 22:11
<i>Surr: Phenol-d6</i>	0	S		40-125	%REC	100	24-Jul-2020 22:11
<i>Surr: Phenol-d6</i>	59.4			40-125	%REC	10	24-Jul-2020 20:52

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

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works
 Sample ID: SO-1620-TP-01-20(2-4)-20200714
 Collection Date: 14-Jul-2020 15:50

ANALYTICAL REPORT

WorkOrder:HS20070629
 Lab ID:HS20070629-02
 Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MLL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005		Method:TX1005		Prep:TX1005PR / 16-Jul-2020		Analyst: MBG	
nC6 to nC12	< 13		13	88	mg/Kg-dry	1	17-Jul-2020 06:54
>nC12 to nC28	300		17	88	mg/Kg-dry	1	17-Jul-2020 06:54
>nC28 to nC35	220		17	88	mg/Kg-dry	1	17-Jul-2020 06:54
Total Petroleum Hydrocarbon	520		13	88	mg/Kg-dry	1	17-Jul-2020 06:54
Surr: 2-Fluorobiphenyl	79.5			70-130	%REC	1	17-Jul-2020 06:54
Surr: Trifluoromethyl benzene	84.1			70-130	%REC	1	17-Jul-2020 06:54
METALS BY SW6020A		Method:SW6020		Prep:SW3050A / 23-Jul-2020		Analyst: JHD	
Arsenic	19.5		0.0798	0.570	mg/Kg-dry	1	24-Jul-2020 12:25
Barium	812		3.42	57.0	mg/Kg-dry	100	24-Jul-2020 14:39
Cadmium	15.7		0.0308	0.570	mg/Kg-dry	1	24-Jul-2020 12:25
Chromium	122		0.0262	0.570	mg/Kg-dry	1	24-Jul-2020 12:25
Lead	3,000		1.48	57.0	mg/Kg-dry	100	24-Jul-2020 14:39
Selenium	0.628		0.104	0.570	mg/Kg-dry	1	24-Jul-2020 12:25
Silver	4.42		0.0171	0.570	mg/Kg-dry	1	24-Jul-2020 12:25
MERCURY BY SW7471B		Method:SW7471A		Prep:SW7471A / 15-Jul-2020		Analyst: FO	
Mercury	0.785		0.000569	0.00402	mg/Kg-dry	1	15-Jul-2020 18:45
MOISTURE - ASTM D2216		Method:ASTM D2216				Analyst: JAC	
Percent Moisture	15.6		0.0100	0.0100	wt%	1	23-Jul-2020 17:21

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

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works
 Sample ID: SO-1620-TP-04-20(2-4)-20200714
 Collection Date: 14-Jul-2020 16:00

ANALYTICAL REPORT
 WorkOrder:HS20070629
 Lab ID:HS20070629-03
 Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		Method:SW8260			Analyst: WLR		
1,2-Dichloroethane	< 0.00054		0.00054	0.0045	mg/Kg-dry	1	16-Jul-2020 11:16
Benzene	0.0010	J	0.00045	0.0045	mg/Kg-dry	1	16-Jul-2020 11:16
Chlorobenzene	< 0.00054		0.00054	0.0045	mg/Kg-dry	1	16-Jul-2020 11:16
Ethylbenzene	0.0081		0.00063	0.0045	mg/Kg-dry	1	16-Jul-2020 11:16
Methylene chloride	< 0.00089		0.00089	0.0089	mg/Kg-dry	1	16-Jul-2020 11:16
Toluene	0.0072		0.00054	0.0045	mg/Kg-dry	1	16-Jul-2020 11:16
Xylenes, Total	0.016		0.00089	0.0045	mg/Kg-dry	1	16-Jul-2020 11:16
Surr: 1,2-Dichloroethane-d4	105			70-126	%REC	1	16-Jul-2020 11:16
Surr: 4-Bromofluorobenzene	74.0			70-130	%REC	1	16-Jul-2020 11:16
Surr: Dibromofluoromethane	101			70-130	%REC	1	16-Jul-2020 11:16
Surr: Toluene-d8	127			70-130	%REC	1	16-Jul-2020 11:16

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

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works
 Sample ID: SO-1620-TP-04-20(2-4)-20200714
 Collection Date: 14-Jul-2020 16:00

ANALYTICAL REPORT
 WorkOrder:HS20070629
 Lab ID:HS20070629-03
 Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	Method:SW8270				Prep:SW3541 / 20-Jul-2020		Analyst: GEY
1,2-Diphenylhydrazine	< 0.013		0.013	0.077	mg/Kg-dry	10	24-Jul-2020 21:12
2,4-Dimethylphenol	< 0.039		0.039	0.077	mg/Kg-dry	10	24-Jul-2020 21:12
2,4-Dinitrotoluene	< 0.011		0.011	0.077	mg/Kg-dry	10	24-Jul-2020 21:12
2,6-Dinitrotoluene	< 0.039		0.039	0.077	mg/Kg-dry	10	24-Jul-2020 21:12
2-Chloronaphthalene	< 0.015		0.015	0.077	mg/Kg-dry	10	24-Jul-2020 21:12
2-Methylnaphthalene	0.35		0.0058	0.039	mg/Kg-dry	10	24-Jul-2020 21:12
4,6-Dinitro-2-methylphenol	< 0.025		0.025	0.077	mg/Kg-dry	10	24-Jul-2020 21:12
4-Nitrophenol	< 0.022		0.022	0.15	mg/Kg-dry	10	24-Jul-2020 21:12
Acenaphthene	0.52		0.0058	0.039	mg/Kg-dry	10	24-Jul-2020 21:12
Acenaphthylene	0.049		0.012	0.039	mg/Kg-dry	10	24-Jul-2020 21:12
Anthracene	0.58		0.0058	0.039	mg/Kg-dry	10	24-Jul-2020 21:12
Benz(a)anthracene	0.24		0.019	0.039	mg/Kg-dry	10	24-Jul-2020 21:12
Benzo(a)pyrene	< 0.012		0.012	0.039	mg/Kg-dry	10	24-Jul-2020 21:12
Bis(2-chloroethoxy)methane	< 0.011		0.011	0.077	mg/Kg-dry	10	24-Jul-2020 21:12
Bis(2-ethylhexyl)phthalate	< 0.020		0.020	0.077	mg/Kg-dry	10	24-Jul-2020 21:12
Chrysene	0.25		0.0094	0.039	mg/Kg-dry	10	24-Jul-2020 21:12
Dibenzofuran	0.21		0.0082	0.039	mg/Kg-dry	10	24-Jul-2020 21:12
Di-n-butyl phthalate	< 0.014		0.014	0.077	mg/Kg-dry	10	24-Jul-2020 21:12
Fluoranthene	1.0		0.013	0.039	mg/Kg-dry	10	24-Jul-2020 21:12
Fluorene	0.56		0.013	0.039	mg/Kg-dry	10	24-Jul-2020 21:12
Naphthalene	1.7		0.0070	0.039	mg/Kg-dry	10	24-Jul-2020 21:12
Nitrobenzene	< 0.011		0.011	0.077	mg/Kg-dry	10	24-Jul-2020 21:12
N-Nitrosodiphenylamine	< 0.0082		0.0082	0.077	mg/Kg-dry	10	24-Jul-2020 21:12
Pentachlorophenol	< 0.039		0.039	0.077	mg/Kg-dry	10	24-Jul-2020 21:12
Phenanthrene	1.7		0.018	0.039	mg/Kg-dry	10	24-Jul-2020 21:12
Phenol	< 0.013		0.013	0.077	mg/Kg-dry	10	24-Jul-2020 21:12
Pyrene	0.72		0.0070	0.039	mg/Kg-dry	10	24-Jul-2020 21:12
<i>Surr: 2,4,6-Tribromophenol</i>	68.9			36-126	%REC	10	24-Jul-2020 21:12
<i>Surr: 2-Fluorobiphenyl</i>	62.5			43-125	%REC	10	24-Jul-2020 21:12
<i>Surr: 2-Fluorophenol</i>	60.0			37-125	%REC	10	24-Jul-2020 21:12
<i>Surr: 4-Terphenyl-d14</i>	81.0			32-125	%REC	10	24-Jul-2020 21:12
<i>Surr: Nitrobenzene-d5</i>	70.8			37-125	%REC	10	24-Jul-2020 21:12
<i>Surr: Phenol-d6</i>	47.4			40-125	%REC	10	24-Jul-2020 21:12

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

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works
 Sample ID: SO-1620-TP-04-20(2-4)-20200714
 Collection Date: 14-Jul-2020 16:00

ANALYTICAL REPORT
 WorkOrder:HS20070629
 Lab ID:HS20070629-03
 Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005		Method:TX1005		Prep:TX1005PR / 16-Jul-2020		Analyst: MBG	
nC6 to nC12	< 41		41	280	mg/Kg-dry	5	20-Jul-2020 12:38
>nC12 to nC28	2,700		54	280	mg/Kg-dry	5	20-Jul-2020 12:38
>nC28 to nC35	1,200		54	280	mg/Kg-dry	5	20-Jul-2020 12:38
Total Petroleum Hydrocarbon	3,900		41	280	mg/Kg-dry	5	20-Jul-2020 12:38
Surr: 2-Fluorobiphenyl	83.7			70-130	%REC	5	20-Jul-2020 12:38
Surr: Trifluoromethyl benzene	85.1			70-130	%REC	5	20-Jul-2020 12:38
METALS BY SW6020A		Method:SW6020		Prep:SW3050A / 23-Jul-2020		Analyst: JHD	
Arsenic	2.24		0.0820	0.586	mg/Kg-dry	1	24-Jul-2020 12:27
Barium	167		0.0351	0.586	mg/Kg-dry	1	24-Jul-2020 12:27
Cadmium	4.51		0.0316	0.586	mg/Kg-dry	1	24-Jul-2020 12:27
Chromium	14.8		0.0269	0.586	mg/Kg-dry	1	24-Jul-2020 12:27
Lead	63.2		0.0152	0.586	mg/Kg-dry	1	24-Jul-2020 12:27
Selenium	0.200	J	0.107	0.586	mg/Kg-dry	1	24-Jul-2020 12:27
Silver	0.163	J	0.0176	0.586	mg/Kg-dry	1	24-Jul-2020 12:27
MERCURY BY SW7471B		Method:SW7471A		Prep:SW7471A / 15-Jul-2020		Analyst: FO	
Mercury	0.0174		0.000583	0.00412	mg/Kg-dry	1	15-Jul-2020 18:47
MOISTURE - ASTM D2216		Method:ASTM D2216				Analyst: JAC	
Percent Moisture	15.0		0.0100	0.0100	wt%	1	23-Jul-2020 17:21

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

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works
 Sample ID: SO-1620-TP-02-20(2-4)-20200714
 Collection Date: 14-Jul-2020 16:20

ANALYTICAL REPORT
 WorkOrder:HS20070629
 Lab ID:HS20070629-04
 Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MLL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		Method:SW8260			Analyst: WLR		
1,2-Dichloroethane	< 0.00063		0.00063	0.0053	mg/Kg-dry	1	16-Jul-2020 11:42
Benzene	< 0.00053		0.00053	0.0053	mg/Kg-dry	1	16-Jul-2020 11:42
Chlorobenzene	< 0.00063		0.00063	0.0053	mg/Kg-dry	1	16-Jul-2020 11:42
Ethylbenzene	0.0011	J	0.00074	0.0053	mg/Kg-dry	1	16-Jul-2020 11:42
Methylene chloride	< 0.0011		0.0011	0.011	mg/Kg-dry	1	16-Jul-2020 11:42
Toluene	0.0016	J	0.00063	0.0053	mg/Kg-dry	1	16-Jul-2020 11:42
Xylenes, Total	0.0095		0.0011	0.0053	mg/Kg-dry	1	16-Jul-2020 11:42
<i>Surr: 1,2-Dichloroethane-d4</i>	93.4			70-126	%REC	1	16-Jul-2020 11:42
<i>Surr: 4-Bromofluorobenzene</i>	95.5			70-130	%REC	1	16-Jul-2020 11:42
<i>Surr: Dibromofluoromethane</i>	90.3			70-130	%REC	1	16-Jul-2020 11:42
<i>Surr: Toluene-d8</i>	105			70-130	%REC	1	16-Jul-2020 11:42

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

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works
 Sample ID: SO-1620-TP-02-20(2-4)-20200714
 Collection Date: 14-Jul-2020 16:20

ANALYTICAL REPORT
 WorkOrder:HS20070629
 Lab ID:HS20070629-04
 Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		Method:SW8270		Prep:SW3541 / 20-Jul-2020		Analyst: GEY	
1,2-Diphenylhydrazine	< 0.014		0.014	0.083	mg/Kg-dry	10	24-Jul-2020 21:32
2,4-Dimethylphenol	< 0.041		0.041	0.083	mg/Kg-dry	10	24-Jul-2020 21:32
2,4-Dinitrotoluene	< 0.011		0.011	0.083	mg/Kg-dry	10	24-Jul-2020 21:32
2,6-Dinitrotoluene	< 0.041		0.041	0.083	mg/Kg-dry	10	24-Jul-2020 21:32
2-Chloronaphthalene	< 0.016		0.016	0.083	mg/Kg-dry	10	24-Jul-2020 21:32
2-Methylnaphthalene	0.10		0.0063	0.041	mg/Kg-dry	10	24-Jul-2020 21:32
4,6-Dinitro-2-methylphenol	< 0.026		0.026	0.083	mg/Kg-dry	10	24-Jul-2020 21:32
4-Nitrophenol	< 0.024		0.024	0.17	mg/Kg-dry	10	24-Jul-2020 21:32
Acenaphthene	0.41		0.0063	0.041	mg/Kg-dry	10	24-Jul-2020 21:32
Acenaphthylene	0.027	J	0.013	0.041	mg/Kg-dry	10	24-Jul-2020 21:32
Anthracene	0.63		0.0063	0.041	mg/Kg-dry	10	24-Jul-2020 21:32
Benz(a)anthracene	0.65		0.020	0.041	mg/Kg-dry	10	24-Jul-2020 21:32
Benzo(a)pyrene	0.81		0.013	0.041	mg/Kg-dry	10	24-Jul-2020 21:32
Bis(2-chloroethoxy)methane	< 0.011		0.011	0.083	mg/Kg-dry	10	24-Jul-2020 21:32
Bis(2-ethylhexyl)phthalate	10		0.21	0.83	mg/Kg-dry	100	25-Jul-2020 20:17
Chrysene	0.71		0.010	0.041	mg/Kg-dry	10	24-Jul-2020 21:32
Dibenzofuran	0.19		0.0088	0.041	mg/Kg-dry	10	24-Jul-2020 21:32
Di-n-butyl phthalate	0.23		0.015	0.083	mg/Kg-dry	10	24-Jul-2020 21:32
Fluoranthene	2.4		0.014	0.041	mg/Kg-dry	10	24-Jul-2020 21:32
Fluorene	0.58		0.014	0.041	mg/Kg-dry	10	24-Jul-2020 21:32
Naphthalene	0.13		0.0075	0.041	mg/Kg-dry	10	24-Jul-2020 21:32
Nitrobenzene	< 0.011		0.011	0.083	mg/Kg-dry	10	24-Jul-2020 21:32
N-Nitrosodiphenylamine	< 0.0088		0.0088	0.083	mg/Kg-dry	10	24-Jul-2020 21:32
Pentachlorophenol	< 0.041		0.041	0.083	mg/Kg-dry	10	24-Jul-2020 21:32
Phenanthrene	2.6		0.019	0.041	mg/Kg-dry	10	24-Jul-2020 21:32
Phenol	< 0.014		0.014	0.083	mg/Kg-dry	10	24-Jul-2020 21:32
Pyrene	1.8		0.0075	0.041	mg/Kg-dry	10	24-Jul-2020 21:32
<i>Surr: 2,4,6-Tribromophenol</i>	72.4			36-126	%REC	10	24-Jul-2020 21:32
<i>Surr: 2,4,6-Tribromophenol</i>	0	S		36-126	%REC	100	25-Jul-2020 20:17
<i>Surr: 2-Fluorobiphenyl</i>	0	S		43-125	%REC	100	25-Jul-2020 20:17
<i>Surr: 2-Fluorobiphenyl</i>	67.2			43-125	%REC	10	24-Jul-2020 21:32
<i>Surr: 2-Fluorophenol</i>	60.6			37-125	%REC	10	24-Jul-2020 21:32
<i>Surr: 2-Fluorophenol</i>	0	S		37-125	%REC	100	25-Jul-2020 20:17
<i>Surr: 4-Terphenyl-d14</i>	0	S		32-125	%REC	100	25-Jul-2020 20:17
<i>Surr: 4-Terphenyl-d14</i>	94.1			32-125	%REC	10	24-Jul-2020 21:32
<i>Surr: Nitrobenzene-d5</i>	60.1			37-125	%REC	10	24-Jul-2020 21:32
<i>Surr: Nitrobenzene-d5</i>	0	S		37-125	%REC	100	25-Jul-2020 20:17
<i>Surr: Phenol-d6</i>	0	S		40-125	%REC	100	25-Jul-2020 20:17
<i>Surr: Phenol-d6</i>	65.7			40-125	%REC	10	24-Jul-2020 21:32

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

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works
 Sample ID: SO-1620-TP-02-20(2-4)-20200714
 Collection Date: 14-Jul-2020 16:20

ANALYTICAL REPORT
 WorkOrder:HS20070629
 Lab ID:HS20070629-04
 Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MLL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005		Method:TX1005		Prep:TX1005PR / 16-Jul-2020		Analyst: MBG	
nC6 to nC12	< 16		16	110	mg/Kg-dry	2	20-Jul-2020 13:06
>nC12 to nC28	1,200		21	110	mg/Kg-dry	2	20-Jul-2020 13:06
>nC28 to nC35	470		21	110	mg/Kg-dry	2	20-Jul-2020 13:06
Total Petroleum Hydrocarbon	1,670		16	110	mg/Kg-dry	2	20-Jul-2020 13:06
Surr: 2-Fluorobiphenyl	85.6			70-130	%REC	2	20-Jul-2020 13:06
Surr: Trifluoromethyl benzene	89.9			70-130	%REC	2	20-Jul-2020 13:06
METALS BY SW6020A		Method:SW6020		Prep:SW3050A / 23-Jul-2020		Analyst: JHD	
Arsenic	3.76		0.0802	0.573	mg/Kg-dry	1	24-Jul-2020 12:29
Barium	242		0.687	11.5	mg/Kg-dry	20	24-Jul-2020 14:41
Cadmium	6.05		0.0309	0.573	mg/Kg-dry	1	24-Jul-2020 12:29
Chromium	18.2		0.0263	0.573	mg/Kg-dry	1	24-Jul-2020 12:29
Lead	319		0.298	11.5	mg/Kg-dry	20	24-Jul-2020 14:41
Selenium	0.434	J	0.104	0.573	mg/Kg-dry	1	24-Jul-2020 12:29
Silver	0.487	J	0.0172	0.573	mg/Kg-dry	1	24-Jul-2020 12:29
MERCURY BY SW7471B		Method:SW7471A		Prep:SW7471A / 15-Jul-2020		Analyst: FO	
Mercury	0.0536		0.000628	0.00444	mg/Kg-dry	1	15-Jul-2020 18:49
MOISTURE - ASTM D2216		Method:ASTM D2216				Analyst: JAC	
Percent Moisture	20.3		0.0100	0.0100	wt%	1	23-Jul-2020 17:21

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

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works
 Sample ID: WPW-1620-TP-02-20-20200714
 Collection Date: 14-Jul-2020 14:00

ANALYTICAL REPORT

WorkOrder:HS20070629
 Lab ID:HS20070629-05
 Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP			
1,2-Dichloroethane	< 0.0020		0.0020	0.010	mg/L	10	21-Jul-2020 18:13
Benzene	< 0.0020		0.0020	0.010	mg/L	10	21-Jul-2020 18:13
Chlorobenzene	< 0.0030		0.0030	0.010	mg/L	10	21-Jul-2020 18:13
Ethylbenzene	< 0.0030		0.0030	0.010	mg/L	10	21-Jul-2020 18:13
Methylene chloride	< 0.010		0.010	0.020	mg/L	10	21-Jul-2020 18:13
Toluene	< 0.0020		0.0020	0.010	mg/L	10	21-Jul-2020 18:13
Xylenes, Total	< 0.0030		0.0030	0.010	mg/L	10	21-Jul-2020 18:13
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>101</i>			<i>70-126</i>	<i>%REC</i>	<i>10</i>	<i>21-Jul-2020 18:13</i>
<i>Surr: 4-Bromofluorobenzene</i>	<i>101</i>			<i>81-113</i>	<i>%REC</i>	<i>10</i>	<i>21-Jul-2020 18:13</i>
<i>Surr: Dibromofluoromethane</i>	<i>101</i>			<i>77-123</i>	<i>%REC</i>	<i>10</i>	<i>21-Jul-2020 18:13</i>
<i>Surr: Toluene-d8</i>	<i>99.7</i>			<i>82-127</i>	<i>%REC</i>	<i>10</i>	<i>21-Jul-2020 18:13</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: WPW-1620-TP-02-20-20200714
 Collection Date: 14-Jul-2020 14:00

ANALYTICAL REPORT
 WorkOrder:HS20070629
 Lab ID:HS20070629-05
 Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MLL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		Method:SW8270		Prep:SW3510 / 16-Jul-2020		Analyst: QX	
1,2-Diphenylhydrazine	< 0.00021		0.00021	0.0020	mg/L	10	17-Jul-2020 18:24
2,4-Dimethylphenol	0.00055	J	0.00040	0.0020	mg/L	10	17-Jul-2020 18:24
2,4-Dinitrotoluene	< 0.00058		0.00058	0.0020	mg/L	10	17-Jul-2020 18:24
2,6-Dinitrotoluene	< 0.00042		0.00042	0.0020	mg/L	10	17-Jul-2020 18:24
2-Chloronaphthalene	< 0.00021		0.00021	0.0020	mg/L	10	17-Jul-2020 18:24
2-Methylnaphthalene	< 0.00019		0.00019	0.0010	mg/L	10	17-Jul-2020 18:24
4,6-Dinitro-2-methylphenol	< 0.00020		0.00020	0.0020	mg/L	10	17-Jul-2020 18:24
4-Nitrophenol	< 0.00047		0.00047	0.010	mg/L	10	17-Jul-2020 18:24
Acenaphthene	0.00057	J	0.00027	0.0010	mg/L	10	17-Jul-2020 18:24
Acenaphthylene	< 0.00015		0.00015	0.0010	mg/L	10	17-Jul-2020 18:24
Anthracene	0.00050	J	0.00014	0.0010	mg/L	10	17-Jul-2020 18:24
Benz(a)anthracene	0.00051	J	0.00050	0.0010	mg/L	10	17-Jul-2020 18:24
Benzo(a)pyrene	0.00064	J	0.00020	0.0010	mg/L	10	17-Jul-2020 18:24
Bis(2-chloroethoxy)methane	< 0.00030		0.00030	0.0020	mg/L	10	17-Jul-2020 18:24
Bis(2-ethylhexyl)phthalate	0.00064	J	0.00037	0.0020	mg/L	10	17-Jul-2020 18:24
Chrysene	0.00078	J	0.00021	0.0010	mg/L	10	17-Jul-2020 18:24
Dibenzofuran	< 0.00020		0.00020	0.0010	mg/L	10	17-Jul-2020 18:24
Di-n-butyl phthalate	< 0.00020		0.00020	0.0020	mg/L	10	17-Jul-2020 18:24
Fluoranthene	0.0019		0.00010	0.0010	mg/L	10	17-Jul-2020 18:24
Fluorene	< 0.00030		0.00030	0.0010	mg/L	10	17-Jul-2020 18:24
Naphthalene	0.00042	J	0.00020	0.0010	mg/L	10	17-Jul-2020 18:24
Nitrobenzene	< 0.00024		0.00024	0.0020	mg/L	10	17-Jul-2020 18:24
N-Nitrosodiphenylamine	< 0.00025		0.00025	0.0020	mg/L	10	17-Jul-2020 18:24
Pentachlorophenol	< 0.00079		0.00079	0.0020	mg/L	10	17-Jul-2020 18:24
Phenanthrene	0.00098	J	0.00021	0.0010	mg/L	10	17-Jul-2020 18:24
Phenol	0.0016	J	0.00035	0.0020	mg/L	10	17-Jul-2020 18:24
Pyrene	0.0022		0.00019	0.0010	mg/L	10	17-Jul-2020 18:24
<i>Surr: 2,4,6-Tribromophenol</i>	83.3			34-129	%REC	10	17-Jul-2020 18:24
<i>Surr: 2-Fluorobiphenyl</i>	59.2			40-125	%REC	10	17-Jul-2020 18:24
<i>Surr: 2-Fluorophenol</i>	41.2			20-120	%REC	10	17-Jul-2020 18:24
<i>Surr: 4-Terphenyl-d14</i>	73.4			40-135	%REC	10	17-Jul-2020 18:24
<i>Surr: Nitrobenzene-d5</i>	67.0			41-120	%REC	10	17-Jul-2020 18:24
<i>Surr: Phenol-d6</i>	60.0			20-120	%REC	10	17-Jul-2020 18:24

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

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works
 Sample ID: WPW-1620-TP-02-20-20200714
 Collection Date: 14-Jul-2020 14:00

ANALYTICAL REPORT
 WorkOrder:HS20070629
 Lab ID:HS20070629-05
 Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL TEXAS TPH BY TX1005		Method:TX1005		Prep:TX1005PR / 16-Jul-2020		Analyst: MBG	
nC6 to nC12	< 0.20		0.20	0.50	mg/L	1	16-Jul-2020 22:38
>nC12 to nC28	1.2		0.20	0.50	mg/L	1	16-Jul-2020 22:38
>nC28 to nC35	1.1		0.20	0.50	mg/L	1	16-Jul-2020 22:38
Total Petroleum Hydrocarbon	2.30		0.20	0.50	mg/L	1	16-Jul-2020 22:38
Surr: 2-Fluorobiphenyl	96.4			70-130	%REC	1	16-Jul-2020 22:38
Surr: Trifluoromethyl benzene	97.6			70-130	%REC	1	16-Jul-2020 22:38
ICP-MS METALS BY SW6020A		Method:SW6020		Prep:SW3010A / 17-Jul-2020		Analyst: JHD	
Calcium	22.8		0.0340	0.500	mg/L	1	23-Jul-2020 13:49
Arsenic	0.0703		0.000400	0.00200	mg/L	1	23-Jul-2020 13:49
Barium	0.0729		0.00190	0.00400	mg/L	1	23-Jul-2020 13:49
Cadmium	0.00195	J	0.000200	0.00200	mg/L	1	23-Jul-2020 13:49
Chromium	0.0382		0.000400	0.00400	mg/L	1	23-Jul-2020 13:49
Lead	0.219		0.000600	0.00200	mg/L	1	23-Jul-2020 13:49
Selenium	0.00409		0.00110	0.00200	mg/L	1	23-Jul-2020 13:49
Silver	0.00196	J	0.000200	0.00200	mg/L	1	23-Jul-2020 13:49
MERCURY BY SW7470A		Method:SW7470		Prep:SW7470 / 20-Jul-2020		Analyst: FO	
Mercury	0.000116	J	0.0000300	0.000200	mg/L	1	20-Jul-2020 15:20
TOTAL DISSOLVED SOLIDS BY SM2540C		Method:M2540C				Analyst: KAH	
Total Dissolved Solids (Residue, Filterable)	2,520		5.00	10.0	mg/L	1	20-Jul-2020 15:50
ALKALINITY BY SM2320B		Method:SM2320B				Analyst: TH	
Alkalinity, Bicarbonate (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	16-Jul-2020 21:53
Alkalinity, Carbonate (As CaCO3)	885		5.00	5.00	mg/L	1	16-Jul-2020 21:53
Alkalinity, Hydroxide (As CaCO3)	106		5.00	5.00	mg/L	1	16-Jul-2020 21:53
Alkalinity, Total (As CaCO3)	991		5.00	5.00	mg/L	1	16-Jul-2020 21:53
PH BY SW9040C		Method:SW9040C				Analyst: YP	
pH	10.8	H	0.100	0.100	pH Units	1	21-Jul-2020 11:32
Temp Deg C @pH	27.7	H	0	0	DEG C	1	21-Jul-2020 11:32
ANIONS BY SW9056A		Method:SW9056				Analyst: YP	
Chloride	99.9		0.400	1.00	mg/L	2	16-Jul-2020 05:00
Nitrogen, Nitrate (As N)	0.635		0.0600	0.200	mg/L	2	16-Jul-2020 05:00
Nitrogen, Nitrite (As N)	< 0.0600		0.0600	0.200	mg/L	2	16-Jul-2020 05:00
Sulfate	189		0.400	1.00	mg/L	2	16-Jul-2020 05:00

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

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629

Batch ID: 3820 **Start Date:** 15 Jul 2020 09:08 **End Date:** 15 Jul 2020 09:08

Method: VOLATILES BY SW8260C

Sample ID	Container	Sample Wt/Vol	Final Volume	Weight Factor	Container Type
HS20070629-01	1	4.643 (g)	5 (mL)	1.08	TerraCore (5035A)
HS20070629-02	1	4.181 (g)	5 (mL)	1.2	TerraCore (5035A)
HS20070629-03	1	6.538 (g)	5 (mL)	0.76	TerraCore (5035A)
HS20070629-04	1	5.922 (g)	5 (mL)	0.84	TerraCore (5035A)

Batch ID: 155424 **Start Date:** 15 Jul 2020 11:00 **End Date:** 15 Jul 2020 13:00

Method: MERCURY PREP - SOLID - 7471B

Prep Code: HG_S_LOWPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20070629-01		0.5848 (grams)	40 (mL)	68.4
HS20070629-02		0.5877 (grams)	40 (mL)	68.06
HS20070629-03		0.5695 (grams)	40 (mL)	70.24
HS20070629-04		0.5636 (grams)	40 (mL)	70.97

Batch ID: 155466 **Start Date:** 16 Jul 2020 09:20 **End Date:** 16 Jul 2020 11:25

Method: TX 1005 PREP

Prep Code: TX 1005_W PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20070629-05	1	29.83 (g)	3 (mL)	0.1006

Batch ID: 155474 **Start Date:** 16 Jul 2020 08:30 **End Date:** 16 Jul 2020 14:00

Method: SV AQ SEP FUN EXTRACT-LOWLEV - 3510C

Prep Code: 3510_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20070629-05	1	1000 (mL)	1 (mL)	0.001

Batch ID: 155480 **Start Date:** 16 Jul 2020 12:25 **End Date:** 16 Jul 2020 13:55

Method: TX 1005 PREP

Prep Code: TX 1005_S PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20070629-01	1	6.48 (g)	10 (mL)	1.543
HS20070629-02	1	6.74 (g)	10 (mL)	1.484
HS20070629-03	1	10.6 (g)	10 (mL)	0.9434
HS20070629-04	1	11.6 (g)	10 (mL)	0.8621

Batch ID: 155505 **Start Date:** 17 Jul 2020 09:00 **End Date:** 17 Jul 2020 13:00

Method: WATER - SW3010A

Prep Code: 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20070629-05		10 (mL)	10 (mL)	1

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629

Batch ID: 155567 **Start Date:** 20 Jul 2020 11:00 **End Date:** 20 Jul 2020 13:00
Method: MERCURY PREP BY 7470A- WATER **Prep Code:** HG_WPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20070629-05		10 (mL)	10 (mL)	1

Batch ID: 155570 **Start Date:** 20 Jul 2020 11:30 **End Date:** 20 Jul 2020 16:30
Method: SV SOXHLET EXTRACT-LOWLEVEL-SW3541 **Prep Code:** 3541_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20070629-01		30.4 (g)	1 (mL)	0.03289
HS20070629-02		30.44 (g)	1 (mL)	0.03285
HS20070629-03		30.19 (g)	1 (mL)	0.03312
HS20070629-04		30.06 (g)	1 (mL)	0.03327

Batch ID: 155613 **Start Date:** 23 Jul 2020 08:00 **End Date:** 23 Jul 2020 14:00
Method: METALS PREP - SOLIDS - SW3050B **Prep Code:** 3050_I_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20070629-01		0.5441 (g)	50 (mL)	91.89
HS20070629-02		0.5197 (g)	50 (mL)	96.21
HS20070629-03		0.5023 (g)	50 (mL)	99.54
HS20070629-04		0.5479 (g)	50 (mL)	91.26

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 155424 (0)		Test Name : MERCURY BY SW7471B			Matrix: Soil	
HS20070629-01	SO-1620-TP-03-20(2-4)-20200714	14 Jul 2020 12:10		15 Jul 2020 11:00	15 Jul 2020 18:44	1
HS20070629-02	SO-1620-TP-01-20(2-4)-20200714	14 Jul 2020 15:50		15 Jul 2020 11:00	15 Jul 2020 18:45	1
HS20070629-03	SO-1620-TP-04-20(2-4)-20200714	14 Jul 2020 16:00		15 Jul 2020 11:00	15 Jul 2020 18:47	1
HS20070629-04	SO-1620-TP-02-20(2-4)-20200714	14 Jul 2020 16:20		15 Jul 2020 11:00	15 Jul 2020 18:49	1
Batch ID: 155466 (0)		Test Name : LOW-LEVEL TEXAS TPH BY TX1005			Matrix: Groundwater	
HS20070629-05	WPW-1620-TP-02-20-20200714	14 Jul 2020 14:00		16 Jul 2020 09:20	16 Jul 2020 22:38	1
Batch ID: 155474 (0)		Test Name : LOW-LEVEL SEMIVOLATILES BY 8270D			Matrix: Groundwater	
HS20070629-05	WPW-1620-TP-02-20-20200714	14 Jul 2020 14:00		16 Jul 2020 11:30	17 Jul 2020 18:24	10
Batch ID: 155480 (0)		Test Name : TEXAS TPH BY TX1005			Matrix: Soil	
HS20070629-01	SO-1620-TP-03-20(2-4)-20200714	14 Jul 2020 12:10		16 Jul 2020 12:52	17 Jul 2020 06:25	10
HS20070629-02	SO-1620-TP-01-20(2-4)-20200714	14 Jul 2020 15:50		16 Jul 2020 12:52	17 Jul 2020 06:54	1
HS20070629-03	SO-1620-TP-04-20(2-4)-20200714	14 Jul 2020 16:00		16 Jul 2020 12:52	20 Jul 2020 12:38	5
HS20070629-04	SO-1620-TP-02-20(2-4)-20200714	14 Jul 2020 16:20		16 Jul 2020 12:52	20 Jul 2020 13:06	2
Batch ID: 155505 (0)		Test Name : ICP-MS METALS BY SW6020A			Matrix: Groundwater	
HS20070629-05	WPW-1620-TP-02-20-20200714	14 Jul 2020 14:00		17 Jul 2020 13:00	23 Jul 2020 13:49	1
Batch ID: 155567 (0)		Test Name : MERCURY BY SW7470A			Matrix: Groundwater	
HS20070629-05	WPW-1620-TP-02-20-20200714	14 Jul 2020 14:00		20 Jul 2020 11:00	20 Jul 2020 15:20	1
Batch ID: 155570 (0)		Test Name : LOW-LEVEL SEMIVOLATILES BY 8270D			Matrix: Soil	
HS20070629-01	SO-1620-TP-03-20(2-4)-20200714	14 Jul 2020 12:10		20 Jul 2020 11:30	24 Jul 2020 21:51	100
HS20070629-01	SO-1620-TP-03-20(2-4)-20200714	14 Jul 2020 12:10		20 Jul 2020 11:30	24 Jul 2020 20:32	10
HS20070629-02	SO-1620-TP-01-20(2-4)-20200714	14 Jul 2020 15:50		20 Jul 2020 11:30	24 Jul 2020 22:11	100
HS20070629-02	SO-1620-TP-01-20(2-4)-20200714	14 Jul 2020 15:50		20 Jul 2020 11:30	24 Jul 2020 20:52	10
HS20070629-03	SO-1620-TP-04-20(2-4)-20200714	14 Jul 2020 16:00		20 Jul 2020 11:30	24 Jul 2020 21:12	10
HS20070629-04	SO-1620-TP-02-20(2-4)-20200714	14 Jul 2020 16:20		20 Jul 2020 11:30	25 Jul 2020 20:17	100
HS20070629-04	SO-1620-TP-02-20(2-4)-20200714	14 Jul 2020 16:20		20 Jul 2020 11:30	24 Jul 2020 21:32	10

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 155613 (0)		Test Name : METALS BY SW6020A			Matrix: Soil	
HS20070629-01	SO-1620-TP-03-20(2-4)-20200714	14 Jul 2020 12:10		23 Jul 2020 14:00	24 Jul 2020 14:37	50
HS20070629-01	SO-1620-TP-03-20(2-4)-20200714	14 Jul 2020 12:10		23 Jul 2020 14:00	24 Jul 2020 12:23	1
HS20070629-02	SO-1620-TP-01-20(2-4)-20200714	14 Jul 2020 15:50		23 Jul 2020 14:00	24 Jul 2020 14:39	100
HS20070629-02	SO-1620-TP-01-20(2-4)-20200714	14 Jul 2020 15:50		23 Jul 2020 14:00	24 Jul 2020 12:25	1
HS20070629-03	SO-1620-TP-04-20(2-4)-20200714	14 Jul 2020 16:00		23 Jul 2020 14:00	24 Jul 2020 12:27	1
HS20070629-04	SO-1620-TP-02-20(2-4)-20200714	14 Jul 2020 16:20		23 Jul 2020 14:00	24 Jul 2020 14:41	20
HS20070629-04	SO-1620-TP-02-20(2-4)-20200714	14 Jul 2020 16:20		23 Jul 2020 14:00	24 Jul 2020 12:29	1
Batch ID: R365137 (0)		Test Name : VOLATILES BY SW8260C			Matrix: Soil	
HS20070629-01	SO-1620-TP-03-20(2-4)-20200714	14 Jul 2020 12:10			16 Jul 2020 10:24	1
HS20070629-02	SO-1620-TP-01-20(2-4)-20200714	14 Jul 2020 15:50			16 Jul 2020 10:50	1
HS20070629-03	SO-1620-TP-04-20(2-4)-20200714	14 Jul 2020 16:00			16 Jul 2020 11:16	1
HS20070629-04	SO-1620-TP-02-20(2-4)-20200714	14 Jul 2020 16:20			16 Jul 2020 11:42	1
Batch ID: R365194 (0)		Test Name : ANIONS BY SW9056A			Matrix: Groundwater	
HS20070629-05	WPW-1620-TP-02-20-20200714	14 Jul 2020 14:00			16 Jul 2020 05:00	2
Batch ID: R365202 (0)		Test Name : ALKALINITY BY SM2320B			Matrix: Groundwater	
HS20070629-05	WPW-1620-TP-02-20-20200714	14 Jul 2020 14:00			16 Jul 2020 21:53	1
Batch ID: R365348 (0)		Test Name : PH BY SW9040C			Matrix: Groundwater	
HS20070629-05	WPW-1620-TP-02-20-20200714	14 Jul 2020 14:00			21 Jul 2020 11:32	1
Batch ID: R365372 (0)		Test Name : TOTAL DISSOLVED SOLIDS BY SM2540C			Matrix: Groundwater	
HS20070629-05	WPW-1620-TP-02-20-20200714	14 Jul 2020 14:00			20 Jul 2020 15:50	1
Batch ID: R365396 (0)		Test Name : LOW LEVEL VOLATILES BY SW8260C			Matrix: Groundwater	
HS20070629-05	WPW-1620-TP-02-20-20200714	14 Jul 2020 14:00			21 Jul 2020 18:13	10
Batch ID: R365606 (0)		Test Name : MOISTURE - ASTM D2216			Matrix: Soil	
HS20070629-01	SO-1620-TP-03-20(2-4)-20200714	14 Jul 2020 12:10			23 Jul 2020 17:21	1
HS20070629-02	SO-1620-TP-01-20(2-4)-20200714	14 Jul 2020 15:50			23 Jul 2020 17:21	1
HS20070629-03	SO-1620-TP-04-20(2-4)-20200714	14 Jul 2020 16:00			23 Jul 2020 17:21	1
HS20070629-04	SO-1620-TP-02-20(2-4)-20200714	14 Jul 2020 16:20			23 Jul 2020 17:21	1

WorkOrder: HS20070629
 InstrumentID: FID-10
 Test Code: TX1005_S_REV3
 Test Number: TX1005
 Test Name: Texas TPH by TX1005

**METHOD DETECTION /
 REPORTING LIMITS**

Matrix: Solid

Units: mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	nC6 to nC12	TPH-1005-1	25	24	7.4	50
A	>nC12 to nC28	TPH-1005-2	25	21	9.8	50
A	>nC28 to nC35	TPH-1005-4	25	21	9.8	50
A	Total Petroleum Hydrocarbon	TPH	25	21	7.4	50
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	Trifluoromethyl benzene	98-08-8	0	0	0	0

WorkOrder: HS20070629
 InstrumentID: FID-10
 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	0.23	0.20	0.50
A	>nC12 to nC28	TPH-1005-2	0.25	0.25	0.20	0.50
A	>nC28 to nC35	TPH-1005-4	0.25	0.23	0.20	0.50
A	Total Petroleum Hydrocarbon	TPH	0.25	0.23	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: HS20070629
InstrumentID: HG03
Test Code: HG_S_Low
Test Number: SW7471A
Test Name: Mercury by SW7471B

**METHOD DETECTION /
REPORTING LIMITS**

Matrix: Solid

Units: mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Mercury	7439-97-6	0.00167	0.00200	0.000470	0.00332

WorkOrder: HS20070629
 InstrumentID: HG03
 Test Code: HG_W
 Test Number: SW7470
 Test Name: Mercury by SW7470A

**METHOD DETECTION /
 REPORTING LIMITS**

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

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Mercury	7439-97-6	0.000100	0.000106	0.0000300	0.000200

WorkOrder: HS20070629
 InstrumentID: ICPMS06
 Test Code: ICP_S_Low
 Test Number: SW6020
 Test Name: Metals by SW6020A

**METHOD DETECTION /
 REPORTING LIMITS**

Matrix: Solid

Units: mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Arsenic	7440-38-2	0.100	0.129	0.0700	0.500
A	Barium	7440-39-3	0.100	0.108	0.0300	0.500
A	Cadmium	7440-43-9	0.100	0.106	0.0270	0.500
A	Chromium	7440-47-3	0.100	0.132	0.0230	0.500
A	Lead	7439-92-1	0.100	0.105	0.0130	0.500
A	Selenium	7782-49-2	0.200	0.214	0.0910	0.500
A	Silver	7440-22-4	0.100	0.105	0.0150	0.500

WorkOrder: HS20070629
 InstrumentID: ICPMS06
 Test Code: ICP_TW
 Test Number: SW6020
 Test Name: ICP-MS Metals by SW6020A

**METHOD DETECTION /
 REPORTING LIMITS**

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

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Calcium	7440-70-2	0.0500	0.0151	0.0340	0.500
A	Arsenic	7440-38-2	0.00100	0.000928	0.000400	0.00200
A	Barium	7440-39-3	0.00250	0.00265	0.00190	0.00400
A	Cadmium	7440-43-9	0.000500	0.000488	0.000200	0.00200
A	Chromium	7440-47-3	0.00100	0.000854	0.000400	0.00400
A	Lead	7439-92-1	0.00100	0.000946	0.000600	0.00200
A	Selenium	7782-49-2	0.00250	0.00253	0.00110	0.00200
A	Silver	7440-22-4	0.000500	0.000458	0.000200	0.00200

WorkOrder: HS20070629
 InstrumentID: SV-7
 Test Code: 8270_LOW_S
 Test Number: SW8270
 Test Name: Low-Level Semivolatiles by 8270D

**METHOD DETECTION /
 REPORTING LIMITS**

Matrix: Solid

Units: mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Diphenylhydrazine	122-66-7	0.0033	0.0025	0.0011	0.0066
A	2,4-Dimethylphenol	105-67-9	0.0033	0.0024	0.0033	0.0066
A	2,4-Dinitrotoluene	121-14-2	0.0033	0.0029	0.00090	0.0066
A	2,6-Dinitrotoluene	606-20-2	0.0033	0.0036	0.0033	0.0066
A	2-Chloronaphthalene	91-58-7	0.0033	0.0035	0.0013	0.0066
A	2-Methylnaphthalene	91-57-6	0.0033	0.0031	0.00050	0.0033
A	4,6-Dinitro-2-methylphenol	534-52-1	0.0033	0.0018	0.0021	0.0066
A	4-Nitrophenol	100-02-7	0.0033	0.0024	0.0019	0.013
A	Acenaphthene	83-32-9	0.0017	0.0016	0.00050	0.0033
A	Acenaphthylene	208-96-8	0.0017	0.0016	0.0010	0.0033
A	Anthracene	120-12-7	0.0017	0.0017	0.00050	0.0033
A	Benz(a)anthracene	56-55-3	0.0017	0.0015	0.0016	0.0033
A	Benzo(a)pyrene	50-32-8	0.0017	0.0013	0.0010	0.0033
A	Bis(2-chloroethoxy)methane	111-91-1	0.0033	0.0030	0.00090	0.0066
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.0033	0.0021	0.0017	0.0066
A	Chrysene	218-01-9	0.0017	0.0017	0.00080	0.0033
A	Dibenzofuran	132-64-9	0.0017	0.0015	0.00070	0.0033
A	Di-n-butyl phthalate	84-74-2	0.0033	0.0030	0.0012	0.0066
A	Fluoranthene	206-44-0	0.0017	0.0012	0.0011	0.0033
A	Fluorene	86-73-7	0.0017	0.0016	0.0011	0.0033
A	Naphthalene	91-20-3	0.0017	0.0018	0.00060	0.0033
A	Nitrobenzene	98-95-3	0.0033	0.0032	0.00090	0.0066
A	N-Nitrosodiphenylamine	86-30-6	0.0033	0.0027	0.00070	0.0066
A	Pentachlorophenol	87-86-5	0.0033	0.00089	0.0033	0.0066
A	Phenanthrene	85-01-8	0.0017	0.0018	0.0015	0.0033
A	Phenol	108-95-2	0.0033	0.0030	0.0011	0.0066
A	Pyrene	129-00-0	0.0017	0.0016	0.00060	0.0033
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	2-Fluorophenol	367-12-4	0	0	0	0
S	4-Terphenyl-d14	1718-51-0	0	0	0	0
S	Nitrobenzene-d5	4165-60-0	0	0	0	0
S	Phenol-d6	13127-88-3	0	0	0	0

WorkOrder: HS20070629
 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	1,2-Diphenylhydrazine	122-66-7	0.00010	0.000073	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.000085	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.000088	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.000082	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.000084	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.000050	0.000040	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000056	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00010	0.000075	0.000047	0.0010
A	Acenaphthene	83-32-9	0.000050	0.000045	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000039	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.000040	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.000050	0.000036	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.000050	0.000029	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.000085	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.000072	0.000037	0.00020
A	Chrysene	218-01-9	0.000050	0.000040	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.000050	0.000045	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.000073	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000033	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.000045	0.000030	0.00010
A	Naphthalene	91-20-3	0.000050	0.000066	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.000098	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.000079	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.000060	0.000079	0.00020
A	Phenanthrene	85-01-8	0.000050	0.000042	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.000090	0.000035	0.00020
A	Pyrene	129-00-0	0.000050	0.000044	0.000019	0.00010
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0.00020
S	2-Fluorobiphenyl	321-60-8	0	0	0	0.00020
S	2-Fluorophenol	367-12-4	0	0	0	0.00020
S	4-Terphenyl-d14	1718-51-0	0	0	0	0.00020
S	Nitrobenzene-d5	4165-60-0	0	0	0	0.00020
S	Phenol-d6	13127-88-3	0	0	0	0.00020

WorkOrder: HS20070629
 InstrumentID: VOA2
 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	1,2-Dichloroethane	107-06-2	0.00050	0.00063	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00052	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.0010	0.0011	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.0010	0.0011	0.00030	0.0010
A	Methylene chloride	75-09-2	0.0020	0.00081	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00056	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.0010	0.0032	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

WorkOrder: HS20070629
 InstrumentID: VOA5
 Test Code: 8260_S
 Test Number: SW8260
 Test Name: Volatiles by SW8260C

**METHOD DETECTION /
 REPORTING LIMITS**

Matrix: Solid

Units: mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.0012	0.0013	0.00060	0.0050
A	Benzene	71-43-2	0.0012	0.0012	0.00050	0.0050
A	Chlorobenzene	108-90-7	0.0012	0.0013	0.00060	0.0050
A	Ethylbenzene	100-41-4	0.0012	0.0012	0.00070	0.0050
A	Methylene chloride	75-09-2	0.0025	0.0038	0.0010	0.010
A	Toluene	108-88-3	0.0025	0.0022	0.00060	0.0050
A	Xylenes, Total	1330-20-7	0.0012	0.0032	0.0010	0.0050
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0
S	4-Bromofluorobenzene	460-00-4	0	0	0	0
S	Dibromofluoromethane	1868-53-7	0	0	0	0
S	Toluene-d8	2037-26-5	0	0	0	0

WorkOrder: HS20070629
 InstrumentID: ICS-Integrion
 Test Code: 9056_anions_W
 Test Number: SW9056
 Test Name: Anions by SW9056A

**METHOD DETECTION /
 REPORTING LIMITS**

Matrix: Aqueous

Units: mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Chloride	16887-00-6	0.500	0.454	0.200	0.500
A	Nitrogen, Nitrate (As N)	14797-55-8	0.100	0.108	0.0300	0.100
A	Nitrogen, Nitrite (As N)	7632-00-0	0.100	0.127	0.0300	0.100
A	Sulfate	14808-79-8	0.500	0.499	0.200	0.500

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629

QC BATCH REPORT

Batch ID: 155466 (0)		Instrument: FID-10		Method: LOW-LEVEL TEXAS TPH BY TX1005						
MBLK	Sample ID: MBLK-155466	Units: mg/L			Analysis Date: 16-Jul-2020 13:19					
Client ID:		Run ID: FID-10_365254		SeqNo: 5665527		PrepDate: 16-Jul-2020		DF: 1		
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	
nC6 to nC12	< 0.20	0.50								
>nC12 to nC28	< 0.20	0.50								
>nC28 to nC35	< 0.20	0.50								
Total Petroleum Hydrocarbon	< 0.20	0.50								
Surr: 2-Fluorobiphenyl	1.918	0	2.5	0	76.7	70 - 130				
Surr: Trifluoromethyl benzene	2.123	0	2.5	0	84.9	70 - 130				
LCS	Sample ID: LCS-155466	Units: mg/L			Analysis Date: 16-Jul-2020 13:49					
Client ID:		Run ID: FID-10_365254		SeqNo: 5665528		PrepDate: 16-Jul-2020		DF: 1		
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	
nC6 to nC12	21.58	0.50	25	0	86.3	75 - 125				
>nC12 to nC28	22.38	0.50	25	0	89.5	75 - 125				
Surr: 2-Fluorobiphenyl	2.084	0	2.5	0	83.4	70 - 130				
Surr: Trifluoromethyl benzene	2.061	0	2.5	0	82.4	70 - 130				
LCSD	Sample ID: LCSD-155466	Units: mg/L			Analysis Date: 16-Jul-2020 14:18					
Client ID:		Run ID: FID-10_365254		SeqNo: 5665529		PrepDate: 16-Jul-2020		DF: 1		
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	
nC6 to nC12	22.13	0.50	25	0	88.5	75 - 125	21.58	2.51	20	
>nC12 to nC28	22.84	0.50	25	0	91.4	75 - 125	22.38	2.06	20	
Surr: 2-Fluorobiphenyl	2.119	0	2.5	0	84.8	70 - 130	2.084	1.67	20	
Surr: Trifluoromethyl benzene	2.111	0	2.5	0	84.4	70 - 130	2.061	2.39	20	
MS	Sample ID: HS20070624-01MS	Units: mg/L			Analysis Date: 17-Jul-2020 12:45					
Client ID:		Run ID: FID-10_365254		SeqNo: 5665557		PrepDate: 16-Jul-2020		DF: 1		
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	
nC6 to nC12	22.7	0.48	23.96	0	94.8	75 - 125				
>nC12 to nC28	25.5	0.48	23.96	0	106	75 - 125				
Surr: 2-Fluorobiphenyl	2.341	0	2.396	0	97.7	70 - 130				
Surr: Trifluoromethyl benzene	2.094	0	2.396	0	87.4	70 - 130				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629

QC BATCH REPORT

Batch ID: 155466 (0) **Instrument:** FID-10 **Method:** LOW-LEVEL TEXAS TPH BY TX1005

MSD Sample ID: **HS20070624-01MSD** Units: **mg/L** Analysis Date: **17-Jul-2020 14:12**
 Client ID: Run ID: **FID-10_365254** SeqNo: **5665558** PrepDate: **16-Jul-2020** DF: **1**
 Analyte Result MQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %RPD RPD Limit Qual

nC6 to nC12	23.72	0.49	24.32	0	97.5	75 - 125	22.7	4.36	20
>nC12 to nC28	24.22	0.49	24.32	0	99.6	75 - 125	25.5	5.14	20
Surr: 2-Fluorobiphenyl	2.363	0	2.432	0	97.2	70 - 130	2.341	0.955	20
Surr: Trifluoromethyl benzene	2.212	0	2.432	0	91.0	70 - 130	2.094	5.5	20

The following samples were analyzed in this batch: HS20070629-05

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629

QC BATCH REPORT

Batch ID: 155480 (0)		Instrument: FID-10		Method: TEXAS TPH BY TX1005					
MBLK	Sample ID: MBLK-155480	Units: mg/Kg			Analysis Date: 17-Jul-2020 03:30				
Client ID:		Run ID: FID-10_365285		SeqNo: 5666281		PrepDate: 16-Jul-2020		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

nC6 to nC12	< 7.4	50							
>nC12 to nC28	< 9.8	50							
>nC28 to nC35	< 9.8	50							
Total Petroleum Hydrocarbon	< 7.4	50							
Surr: 2-Fluorobiphenyl	18.84	0	25	0	75.4	70 - 130			
Surr: Trifluoromethyl benzene	20.81	0	25	0	83.3	70 - 130			

LCS	Sample ID: LCS-155480	Units: mg/Kg			Analysis Date: 17-Jul-2020 03:59				
Client ID:		Run ID: FID-10_365285		SeqNo: 5666282		PrepDate: 16-Jul-2020		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

nC6 to nC12	240.4	50	250	0	96.2	75 - 125			
>nC12 to nC28	257.9	50	250	0	103	75 - 125			
Surr: 2-Fluorobiphenyl	23.87	0	25	0	95.5	70 - 130			
Surr: Trifluoromethyl benzene	22.57	0	25	0	90.3	70 - 130			

LCSD	Sample ID: LCSD-155480	Units: mg/Kg			Analysis Date: 17-Jul-2020 04:28				
Client ID:		Run ID: FID-10_365285		SeqNo: 5666283		PrepDate: 16-Jul-2020		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

nC6 to nC12	221.1	50	250	0	88.4	75 - 125	240.4	8.36	20
>nC12 to nC28	237	50	250	0	94.8	75 - 125	257.9	8.45	20
Surr: 2-Fluorobiphenyl	21.79	0	25	0	87.2	70 - 130	23.87	9.13	20
Surr: Trifluoromethyl benzene	21.38	0	25	0	85.5	70 - 130	22.57	5.43	20

MS	Sample ID: HS20070646-01MS	Units: mg/Kg			Analysis Date: 17-Jul-2020 05:27				
Client ID:		Run ID: FID-10_365285		SeqNo: 5666285		PrepDate: 16-Jul-2020		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

nC6 to nC12	308.5	46	231.1	38.85	117	75 - 125			
>nC12 to nC28	803.1	46	231.1	270.2	231	75 - 125			S
Surr: 2-Fluorobiphenyl	28.82	0	23.11	0	125	70 - 130			
Surr: Trifluoromethyl benzene	21.48	0	23.11	0	93.0	70 - 130			

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629

QC BATCH REPORT

Batch ID: 155480 (0)		Instrument: FID-10		Method: TEXAS TPH BY TX1005					
MSD	Sample ID: HS20070646-01MSD	Units: mg/Kg			Analysis Date: 17-Jul-2020 05:56				
Client ID:	Run ID: FID-10_365285	SeqNo: 5666286		PrepDate: 16-Jul-2020		DF: 1			
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

nC6 to nC12	306.9	46	232.3	38.85	115	75 - 125	308.5	0.544	20
>nC12 to nC28	814.1	46	232.3	270.2	234	75 - 125	803.1	1.36	20 S
<i>Surr: 2-Fluorobiphenyl</i>	28.33	0	23.23	0	122	70 - 130	28.82	1.71	20
<i>Surr: Trifluoromethyl benzene</i>	21.51	0	23.23	0	92.6	70 - 130	21.48	0.115	20

The following samples were analyzed in this batch:

HS20070629-01	HS20070629-02	HS20070629-03	HS20070629-04
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Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629

QC BATCH REPORT

Batch ID: 155424 (0)	Instrument: HG03	Method: MERCURY BY SW7471B
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MBLK	Sample ID: MBLK-155424	Units: ug/Kg	Analysis Date: 15-Jul-2020 15:00							
Client ID:	Run ID: HG03_365103	SeqNo: 5663158	PrepDate: 15-Jul-2020 DF: 1							
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Mercury < 0.470 3.32

LCS	Sample ID: LCS-155424	Units: ug/Kg	Analysis Date: 15-Jul-2020 15:01							
Client ID:	Run ID: HG03_365103	SeqNo: 5663159	PrepDate: 15-Jul-2020 DF: 1							
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Mercury 351.3 3.32 333.3 0 105 80 - 120

MS	Sample ID: HS20070440-08MS	Units: ug/Kg	Analysis Date: 15-Jul-2020 15:07							
Client ID:	Run ID: HG03_365103	SeqNo: 5663161	PrepDate: 15-Jul-2020 DF: 1							
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Mercury 352.7 3.40 341.1 8.054 101 80 - 120

MSD	Sample ID: HS20070440-08MSD	Units: ug/Kg	Analysis Date: 15-Jul-2020 15:08							
Client ID:	Run ID: HG03_365103	SeqNo: 5663162	PrepDate: 15-Jul-2020 DF: 1							
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Mercury 348.7 3.42 343.2 8.054 99.3 80 - 120 352.7 1.14 20

The following samples were analyzed in this batch: HS20070629-01 HS20070629-02 HS20070629-03 HS20070629-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629

QC BATCH REPORT

Batch ID: 155505 (0)		Instrument: ICPMS06		Method: ICP-MS METALS BY SW6020A						
MBLK	Sample ID: MBLK-155505	Units: mg/L			Analysis Date: 22-Jul-2020 15:45					
Client ID:	Run ID: ICPMS06_365437	SeqNo: 5670252	PrepDate: 17-Jul-2020	DF: 1						
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	< 0.000400	0.00200								
Barium	< 0.00190	0.00400								
Cadmium	< 0.000200	0.00200								
Calcium	< 0.0340	0.500								
Chromium	< 0.000400	0.00400								
Lead	< 0.000600	0.00200								
Selenium	< 0.00110	0.00200								
Silver	< 0.000200	0.00200								
LCS	Sample ID: LCS-155505	Units: mg/L			Analysis Date: 22-Jul-2020 15:47					
Client ID:	Run ID: ICPMS06_365437	SeqNo: 5670253	PrepDate: 17-Jul-2020	DF: 1						
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04589	0.00200	0.05	0	91.8	80 - 120				
Barium	0.04685	0.00400	0.05	0	93.7	80 - 120				
Cadmium	0.04871	0.00200	0.05	0	97.4	80 - 120				
Calcium	4.294	0.500	5	0	85.9	80 - 120				
Chromium	0.04401	0.00400	0.05	0	88.0	80 - 120				
Lead	0.0456	0.00200	0.05	0	91.2	80 - 120				
Selenium	0.04557	0.00200	0.05	0	91.1	80 - 120				
Silver	0.04536	0.00200	0.05	0	90.7	80 - 120				
MS	Sample ID: HS20070472-02MS	Units: mg/L			Analysis Date: 22-Jul-2020 14:32					
Client ID:	Run ID: ICPMS06_365437	SeqNo: 5670230	PrepDate: 17-Jul-2020	DF: 1						
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04819	0.00200	0.05	0.001141	94.1	80 - 120				
Barium	1.49	0.00400	0.05	1.452	75.3	80 - 120				SO
Cadmium	0.04616	0.00200	0.05	0.000192	91.9	80 - 120				
Calcium	137.3	0.500	5	135.8	28.9	80 - 120				SO
Chromium	0.04584	0.00400	0.05	0.001376	88.9	80 - 120				
Lead	0.04704	0.00200	0.05	0.000199	93.7	80 - 120				
Selenium	0.04343	0.00200	0.05	0.000614	85.6	80 - 120				
Silver	0.04312	0.00200	0.05	-0.000048	86.3	80 - 120				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629

QC BATCH REPORT

Batch ID: 155505 (0)										
Instrument: ICPMS06				Method: ICP-MS METALS BY SW6020A						
MSD		Sample ID: HS20070472-02MSD			Units: mg/L		Analysis Date: 22-Jul-2020 14:34			
Client ID:		Run ID: ICPMS06_365437			SeqNo: 5670231		PrepDate: 17-Jul-2020		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04889	0.00200	0.05	0.001141	95.5	80 - 120	0.04819	1.44	20	
Barium	1.478	0.00400	0.05	1.452	52.1	80 - 120	1.49	0.78	20	SO
Cadmium	0.0468	0.00200	0.05	0.000192	93.2	80 - 120	0.04616	1.39	20	
Calcium	142.2	0.500	5	135.8	128	80 - 120	137.3	3.56	20	SO
Chromium	0.04698	0.00400	0.05	0.001376	91.2	80 - 120	0.04584	2.45	20	
Lead	0.04757	0.00200	0.05	0.000199	94.7	80 - 120	0.04704	1.13	20	
Selenium	0.04596	0.00200	0.05	0.000614	90.7	80 - 120	0.04343	5.67	20	
Silver	0.0437	0.00200	0.05	-0.000048	87.5	80 - 120	0.04312	1.33	20	
PDS		Sample ID: HS20070472-02PDS			Units: mg/L		Analysis Date: 22-Jul-2020 14:36			
Client ID:		Run ID: ICPMS06_365437			SeqNo: 5670232		PrepDate: 17-Jul-2020		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.09124	0.00200	0.1	0.001141	90.1	75 - 125				
Barium	1.418	0.00400	0.1	1.452	-33.8	75 - 125				SO
Cadmium	0.08928	0.00200	0.1	0.000192	89.1	75 - 125				
Calcium	135.5	0.500	10	135.8	-3.16	75 - 125				SO
Chromium	0.08695	0.00400	0.1	0.001376	85.6	75 - 125				
Lead	0.09365	0.00200	0.1	0.000199	93.4	75 - 125				
Selenium	0.08705	0.00200	0.1	0.000614	86.4	75 - 125				
Silver	0.08556	0.00200	0.1	-0.000048	85.6	75 - 125				
SD		Sample ID: HS20070472-02SD			Units: mg/L		Analysis Date: 22-Jul-2020 14:30			
Client ID:		Run ID: ICPMS06_365437			SeqNo: 5670229		PrepDate: 17-Jul-2020		DF: 5	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	< 0.00200	0.0100		0.001141			0.001141	0	10	
Barium	1.549	0.0200		1.452			1.452	6.68	10	
Cadmium	< 0.00100	0.0100		0.000192			0.000192	0	10	
Calcium	137.1	2.50		135.8			135.8	0.939	10	
Chromium	< 0.00200	0.0200		0.001376			0.001376	0	10	
Lead	< 0.00300	0.0100		0.000199			0.000199	0	10	
Selenium	< 0.00550	0.0100		0.000614			0.000614	0	10	
Silver	< 0.00100	0.0100		-0.000048			-0.000048	0	10	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629

QC BATCH REPORT

Batch ID: 155505 (0) **Instrument:** ICPMS06 **Method:** ICP-MS METALS BY SW6020A

The following samples were analyzed in this batch:

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629

QC BATCH REPORT

Batch ID: 155567 (0) **Instrument:** HG03 **Method:** MERCURY BY SW7470A

MBLK	Sample ID: MBLK-155567	Units: mg/L			Analysis Date: 20-Jul-2020 15:04				
Client ID:		Run ID: HG03_365316	SeqNo: 5667105	PrepDate: 20-Jul-2020	DF: 1				
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual

Mercury < 0.0000300 0.000200

LCS	Sample ID: LCS-155567	Units: mg/L			Analysis Date: 20-Jul-2020 15:14				
Client ID:		Run ID: HG03_365316	SeqNo: 5667106	PrepDate: 20-Jul-2020	DF: 1				
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual

Mercury 0.00512 0.000200 0.005 0 102 80 - 120

MS	Sample ID: HS20070783-19MS	Units: mg/L			Analysis Date: 20-Jul-2020 15:17				
Client ID:		Run ID: HG03_365316	SeqNo: 5667108	PrepDate: 20-Jul-2020	DF: 1				
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual

Mercury 0.00503 0.000200 0.005 0.000111 98.4 75 - 125

MSD	Sample ID: HS20070783-19MSD	Units: mg/L			Analysis Date: 20-Jul-2020 15:19				
Client ID:		Run ID: HG03_365316	SeqNo: 5667109	PrepDate: 20-Jul-2020	DF: 1				
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual

Mercury 0.00521 0.000200 0.005 0.000111 102 75 - 125 0.00503 3.52 20

The following samples were analyzed in this batch: HS20070629-05

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629

QC BATCH REPORT

Batch ID: 155613 (0)		Instrument: ICPMS06		Method: METALS BY SW6020A						
MBLK	Sample ID: MBLK-155613	Units: mg/Kg			Analysis Date: 24-Jul-2020 11:34					
Client ID:		Run ID: ICPMS06_365577	SeqNo: 5673409	PrepDate: 23-Jul-2020	DF: 1					
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Arsenic	< 0.0682	0.487								
Barium	< 0.0292	0.487								
Cadmium	< 0.0263	0.487								
Chromium	0.1086	0.487								J
Lead	< 0.0127	0.487								
Selenium	< 0.0887	0.487								
Silver	< 0.0146	0.487								

LCS	Sample ID: LCS-155613	Units: mg/Kg			Analysis Date: 24-Jul-2020 11:36					
Client ID:		Run ID: ICPMS06_365577	SeqNo: 5673410	PrepDate: 23-Jul-2020	DF: 1					
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Arsenic	9.169	0.491	9.817	0	93.4	80 - 120				
Barium	9.813	0.491	9.817	0	100.0	80 - 120				
Cadmium	10.12	0.491	9.817	0	103	80 - 120				
Chromium	9.009	0.491	9.817	0	91.8	80 - 120				
Lead	9.597	0.491	9.817	0	97.8	80 - 120				
Selenium	9.225	0.491	9.817	0	94.0	80 - 120				
Silver	10.48	0.491	9.817	0	107	80 - 120				

MS	Sample ID: HS20070594-01MS	Units: mg/Kg			Analysis Date: 24-Jul-2020 11:41					
Client ID:		Run ID: ICPMS06_365577	SeqNo: 5673413	PrepDate: 23-Jul-2020	DF: 1					
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Arsenic	10.75	0.479	9.575	1.99	91.5	75 - 125				
Barium	63.56	0.479	9.575	55.31	86.2	75 - 125				O
Cadmium	9.483	0.479	9.575	0.03494	98.7	75 - 125				
Chromium	12.93	0.479	9.575	3.246	101	75 - 125				
Lead	13.3	0.479	9.575	3.199	106	75 - 125				
Selenium	9.22	0.479	9.575	0.06864	95.6	75 - 125				
Silver	9.918	0.479	9.575	0.006835	104	75 - 125				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629

QC BATCH REPORT

Batch ID: 155613 (0)		Instrument: ICPMS06			Method: METALS BY SW6020A					
MSD		Sample ID: HS20070594-01MSD			Units: mg/Kg		Analysis Date: 24-Jul-2020 11:43			
Client ID:		Run ID: ICPMS06_365577			SeqNo: 5673414		PrepDate: 23-Jul-2020		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	10.9	0.488	9.75	1.99	91.4	75 - 125	10.75	1.39	20	
Barium	60.42	0.488	9.75	55.31	52.5	75 - 125	63.56	5.05	20	SO
Cadmium	9.848	0.488	9.75	0.03494	101	75 - 125	9.483	3.78	20	
Chromium	13.12	0.488	9.75	3.246	101	75 - 125	12.93	1.47	20	
Lead	12.86	0.488	9.75	3.199	99.1	75 - 125	13.3	3.4	20	
Selenium	9.364	0.488	9.75	0.06864	95.3	75 - 125	9.22	1.54	20	
Silver	10.18	0.488	9.75	0.006835	104	75 - 125	9.918	2.58	20	
PDS		Sample ID: HS20070594-01PDS			Units: mg/Kg		Analysis Date: 24-Jul-2020 11:45			
Client ID:		Run ID: ICPMS06_365577			SeqNo: 5673415		PrepDate: 23-Jul-2020		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	10.33	0.481	9.626	1.99	86.6	75 - 125				
Barium	62.6	0.481	9.626	55.31	75.8	75 - 125				O
Cadmium	8.28	0.481	9.626	0.03494	85.6	75 - 125				
Chromium	11.7	0.481	9.626	3.246	87.8	75 - 125				
Lead	11.76	0.481	9.626	3.199	88.9	75 - 125				
Selenium	8.217	0.481	9.626	0.06864	84.6	75 - 125				
Silver	8.637	0.481	9.626	0.006835	89.7	75 - 125				
SD		Sample ID: HS20070594-01SD			Units: mg/Kg		Analysis Date: 24-Jul-2020 11:39			
Client ID:		Run ID: ICPMS06_365577			SeqNo: 5673412		PrepDate: 23-Jul-2020		DF: 5	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	2.002	2.41					1.99	0	10	J
Barium	54.41	2.41					55.31	1.62	10	
Cadmium	< 0.130	2.41					0.03494	0	10	
Chromium	3.21	2.41					3.246	1.11	10	
Lead	3.214	2.41					3.199	0.494	10	
Selenium	< 0.438	2.41					0.06864	0	10	
Silver	< 0.0722	2.41					0.006835	0	10	

The following samples were analyzed in this batch: HS20070629-01 HS20070629-02 HS20070629-03 HS20070629-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629

QC BATCH REPORT

Batch ID: 155474 (0)		Instrument: SV-7		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
MBLK	Sample ID: MBLK-155474	Units: ug/L			Analysis Date: 16-Jul-2020 14:29					
Client ID:	Run ID: SV-7_365176	SeqNo: 5666720	PrepDate: 16-Jul-2020	DF: 1						
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	< 0.021	0.20								
2,4-Dimethylphenol	< 0.040	0.20								
2,4-Dinitrotoluene	< 0.058	0.20								
2,6-Dinitrotoluene	< 0.042	0.20								
2-Chloronaphthalene	< 0.021	0.20								
2-Methylnaphthalene	< 0.019	0.10								
4,6-Dinitro-2-methylphenol	< 0.020	0.20								
4-Nitrophenol	< 0.047	1.0								
Acenaphthene	< 0.027	0.10								
Acenaphthylene	< 0.015	0.10								
Anthracene	< 0.014	0.10								
Benz(a)anthracene	< 0.050	0.10								
Benzo(a)pyrene	< 0.020	0.10								
Bis(2-chloroethoxy)methane	< 0.030	0.20								
Bis(2-ethylhexyl)phthalate	< 0.037	0.20								
Chrysene	< 0.021	0.10								
Dibenzofuran	< 0.020	0.10								
Di-n-butyl phthalate	< 0.020	0.20								
Fluoranthene	< 0.010	0.10								
Fluorene	< 0.030	0.10								
Naphthalene	< 0.020	0.10								
Nitrobenzene	< 0.024	0.20								
N-Nitrosodiphenylamine	< 0.025	0.20								
Pentachlorophenol	< 0.079	0.20								
Phenanthrene	< 0.021	0.10								
Phenol	< 0.035	0.20								
Pyrene	< 0.019	0.10								
<i>Surr: 2,4,6-Tribromophenol</i>	3.619	0.20	5	0	72.4	34 - 129				
<i>Surr: 2-Fluorobiphenyl</i>	3.735	0.20	5	0	74.7	40 - 125				
<i>Surr: 2-Fluorophenol</i>	3.831	0.20	5	0	76.6	20 - 120				
<i>Surr: 4-Terphenyl-d14</i>	4.543	0.20	5	0	90.9	40 - 135				
<i>Surr: Nitrobenzene-d5</i>	3.765	0.20	5	0	75.3	41 - 120				
<i>Surr: Phenol-d6</i>	4.39	0.20	5	0	87.8	20 - 120				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629

QC BATCH REPORT

Batch ID: 155474 (0)		Instrument: SV-7		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
LCS	Sample ID: LCS-155474	Units: ug/L			Analysis Date: 16-Jul-2020 13:41					
Client ID:	Run ID: SV-7_365176	SeqNo: 5666719		PrepDate: 16-Jul-2020		DF: 1				
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	3.453	0.20	5	0	69.1	39 - 127				
2,4-Dimethylphenol	3.264	0.20	5	0	65.3	35 - 120				
2,4-Dinitrotoluene	3.881	0.20	5	0	77.6	50 - 122				
2,6-Dinitrotoluene	3.847	0.20	5	0	76.9	50 - 120				
2-Chloronaphthalene	3.868	0.20	5	0	77.4	50 - 120				
2-Methylnaphthalene	3.59	0.10	5	0	71.8	50 - 120				
4,6-Dinitro-2-methylphenol	3.991	0.20	5	0	79.8	25 - 121				
4-Nitrophenol	3.83	1.0	5	0	76.6	30 - 130				
Acenaphthene	3.289	0.10	5	0	65.8	45 - 120				
Acenaphthylene	3.772	0.10	5	0	75.4	47 - 120				
Anthracene	3.794	0.10	5	0	75.9	45 - 120				
Benz(a)anthracene	4.172	0.10	5	0	83.4	40 - 120				
Benzo(a)pyrene	3.775	0.10	5	0	75.5	45 - 120				
Bis(2-chloroethoxy)methane	3.64	0.20	5	0	72.8	45 - 120				
Bis(2-ethylhexyl)phthalate	4.613	0.20	5	0	92.3	40 - 139				
Chrysene	3.851	0.10	5	0	77.0	43 - 120				
Dibenzofuran	3.665	0.10	5	0	73.3	50 - 120				
Di-n-butyl phthalate	4.275	0.20	5	0	85.5	45 - 123				
Fluoranthene	3.909	0.10	5	0	78.2	45 - 125				
Fluorene	3.719	0.10	5	0	74.4	49 - 120				
Naphthalene	3.602	0.10	5	0	72.0	45 - 120				
Nitrobenzene	3.579	0.20	5	0	71.6	44 - 120				
N-Nitrosodiphenylamine	3.641	0.20	5	0	72.8	40 - 125				
Pentachlorophenol	3.354	0.20	5	0	67.1	19 - 121				
Phenanthrene	3.744	0.10	5	0	74.9	45 - 121				
Phenol	3.257	0.20	5	0	65.1	20 - 124				
Pyrene	3.929	0.10	5	0	78.6	40 - 130				
Surr: 2,4,6-Tribromophenol	4.479	0.20	5	0	89.6	34 - 129				
Surr: 2-Fluorobiphenyl	3.565	0.20	5	0	71.3	40 - 125				
Surr: 2-Fluorophenol	3.355	0.20	5	0	67.1	20 - 120				
Surr: 4-Terphenyl-d14	4.22	0.20	5	0	84.4	40 - 135				
Surr: Nitrobenzene-d5	3.461	0.20	5	0	69.2	41 - 120				
Surr: Phenol-d6	3.785	0.20	5	0	75.7	20 - 120				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629

QC BATCH REPORT

Batch ID: 155474 (0)		Instrument: SV-7		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
MS	Sample ID: HS20070620-06MS	Units: ug/L			Analysis Date: 16-Jul-2020 21:18					
Client ID:	Run ID: SV-7_365176	SeqNo: 5666682	PrepDate: 16-Jul-2020	DF: 1						
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	3.659	0.20	5	0	73.2	39 - 127				
2,4-Dimethylphenol	3.52	0.20	5	0	70.4	35 - 120				
2,4-Dinitrotoluene	4.057	0.20	5	0	81.1	50 - 122				
2,6-Dinitrotoluene	3.845	0.20	5	0	76.9	50 - 120				
2-Chloronaphthalene	3.662	0.20	5	0	73.2	50 - 120				
2-Methylnaphthalene	3.29	0.10	5	0.1254	63.3	50 - 120				
4,6-Dinitro-2-methylphenol	3.394	0.20	5	0	67.9	25 - 121				
4-Nitrophenol	2.397	1.0	5	0	47.9	30 - 130				
Acenaphthene	3.283	0.10	5	0	65.7	45 - 120				
Acenaphthylene	3.694	0.10	5	0	73.9	47 - 120				
Anthracene	4.27	0.10	5	0	85.4	45 - 120				
Benz(a)anthracene	5.004	0.10	5	0	100	40 - 120				
Benzo(a)pyrene	5.322	0.10	5	0	106	45 - 120				
Bis(2-chloroethoxy)methane	3.75	0.20	5	0	75.0	45 - 120				
Bis(2-ethylhexyl)phthalate	5.53	0.20	5	0	111	40 - 139				
Chrysene	4.298	0.10	5	0	86.0	43 - 120				
Dibenzofuran	3.706	0.10	5	0	74.1	50 - 120				
Di-n-butyl phthalate	4.855	0.20	5	0	97.1	45 - 123				
Fluoranthene	4.675	0.10	5	0	93.5	45 - 125				
Fluorene	3.785	0.10	5	0	75.7	49 - 120				
Naphthalene	3.522	0.10	5	0	70.4	45 - 120				
Nitrobenzene	3.47	0.20	5	0	69.4	44 - 120				
N-Nitrosodiphenylamine	4.071	0.20	5	0	81.4	40 - 125				
Pentachlorophenol	3.372	0.20	5	0	67.4	19 - 121				
Phenanthrene	4.201	0.10	5	0	84.0	45 - 121				
Phenol	3.212	0.20	5	0	64.2	20 - 124				
Pyrene	4.505	0.10	5	0	90.1	40 - 130				
Surr: 2,4,6-Tribromophenol	4.612	0.20	5	0	92.2	34 - 129				
Surr: 2-Fluorobiphenyl	3.389	0.20	5	0	67.8	40 - 125				
Surr: 2-Fluorophenol	3.175	0.20	5	0	63.5	20 - 120				
Surr: 4-Terphenyl-d14	4.531	0.20	5	0	90.6	40 - 135				
Surr: Nitrobenzene-d5	3.404	0.20	5	0	68.1	41 - 120				
Surr: Phenol-d6	3.839	0.20	5	0	76.8	20 - 120				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629

QC BATCH REPORT

Batch ID: 155474 (0)		Instrument: SV-7		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
MSD	Sample ID: HS20070620-06MSD	Units: ug/L			Analysis Date: 16-Jul-2020 21:37					
Client ID:	Run ID: SV-7_365176	SeqNo: 5666683		PrepDate: 16-Jul-2020		DF: 1				
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.015	0.20	5	0	80.3	39 - 127	3.659	9.28	20	
2,4-Dimethylphenol	3.333	0.20	5	0	66.7	35 - 120	3.52	5.45	20	
2,4-Dinitrotoluene	4.362	0.20	5	0	87.2	50 - 122	4.057	7.23	20	
2,6-Dinitrotoluene	3.906	0.20	5	0	78.1	50 - 120	3.845	1.58	20	
2-Chloronaphthalene	4.117	0.20	5	0	82.3	50 - 120	3.662	11.7	20	
2-Methylnaphthalene	3.801	0.10	5	0.1254	73.5	50 - 120	3.29	14.4	20	
4,6-Dinitro-2-methylphenol	3.407	0.20	5	0	68.1	25 - 121	3.394	0.376	30	
4-Nitrophenol	2.891	1.0	5	0	57.8	30 - 130	2.397	18.7	20	
Acenaphthene	3.496	0.10	5	0	69.9	45 - 120	3.283	6.29	20	
Acenaphthylene	3.892	0.10	5	0	77.8	47 - 120	3.694	5.21	20	
Anthracene	4.524	0.10	5	0	90.5	45 - 120	4.27	5.77	20	
Benz(a)anthracene	5.035	0.10	5	0	101	40 - 120	5.004	0.629	20	
Benzo(a)pyrene	5.584	0.10	5	0	112	45 - 120	5.322	4.81	20	
Bis(2-chloroethoxy)methane	3.447	0.20	5	0	68.9	45 - 120	3.75	8.41	20	
Bis(2-ethylhexyl)phthalate	5.749	0.20	5	0	115	40 - 139	5.53	3.89	20	
Chrysene	4.763	0.10	5	0	95.3	43 - 120	4.298	10.3	20	
Dibenzofuran	3.848	0.10	5	0	77.0	50 - 120	3.706	3.76	20	
Di-n-butyl phthalate	5.022	0.20	5	0	100	45 - 123	4.855	3.36	20	
Fluoranthene	4.912	0.10	5	0	98.2	45 - 125	4.675	4.96	20	
Fluorene	3.726	0.10	5	0	74.5	49 - 120	3.785	1.57	20	
Naphthalene	3.531	0.10	5	0	70.6	45 - 120	3.522	0.253	20	
Nitrobenzene	3.337	0.20	5	0	66.7	44 - 120	3.47	3.91	20	
N-Nitrosodiphenylamine	4.357	0.20	5	0	87.1	40 - 125	4.071	6.79	20	
Pentachlorophenol	3.421	0.20	5	0	68.4	19 - 121	3.372	1.44	20	
Phenanthrene	4.357	0.10	5	0	87.1	45 - 121	4.201	3.64	20	
Phenol	3.358	0.20	5	0	67.2	20 - 124	3.212	4.46	20	
Pyrene	5	0.10	5	0	100.0	40 - 130	4.505	10.4	20	
Surr: 2,4,6-Tribromophenol	4.933	0.20	5	0	98.7	34 - 129	4.612	6.73	20	
Surr: 2-Fluorobiphenyl	3.518	0.20	5	0	70.4	40 - 125	3.389	3.72	20	
Surr: 2-Fluorophenol	3.368	0.20	5	0	67.4	20 - 120	3.175	5.92	20	
Surr: 4-Terphenyl-d14	4.927	0.20	5	0	98.5	40 - 135	4.531	8.37	20	
Surr: Nitrobenzene-d5	3.2	0.20	5	0	64.0	41 - 120	3.404	6.18	20	
Surr: Phenol-d6	4.08	0.20	5	0	81.6	20 - 120	3.839	6.08	20	

The following samples were analyzed in this batch: HS20070629-05

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629

QC BATCH REPORT

Batch ID: 155570 (0)		Instrument: SV-7		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
MBLK	Sample ID: MBLK-155570	Units: ug/Kg			Analysis Date: 21-Jul-2020 10:51					
Client ID:	Run ID: SV-7_365425	SeqNo: 5669312	PrepDate: 20-Jul-2020	DF: 1						
Analyte	Result	SQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	< 1.1	6.6								
2,4-Dimethylphenol	< 3.3	6.6								
2,4-Dinitrotoluene	< 0.90	6.6								
2,6-Dinitrotoluene	< 3.3	6.6								
2-Chloronaphthalene	< 1.3	6.6								
2-Methylnaphthalene	< 0.50	3.3								
4,6-Dinitro-2-methylphenol	< 2.1	6.6								
4-Nitrophenol	< 1.9	13								
Acenaphthene	< 0.50	3.3								
Acenaphthylene	< 1.0	3.3								
Anthracene	< 0.50	3.3								
Benz(a)anthracene	< 1.6	3.3								
Benzo(a)pyrene	< 1.0	3.3								
Bis(2-chloroethoxy)methane	< 0.90	6.6								
Bis(2-ethylhexyl)phthalate	< 1.7	6.6								
Chrysene	< 0.80	3.3								
Dibenzofuran	< 0.70	3.3								
Di-n-butyl phthalate	< 1.2	6.6								
Fluoranthene	< 1.1	3.3								
Fluorene	< 1.1	3.3								
Naphthalene	< 0.60	3.3								
Nitrobenzene	< 0.90	6.6								
N-Nitrosodiphenylamine	< 0.70	6.6								
Pentachlorophenol	< 3.3	6.6								
Phenanthrene	< 1.5	3.3								
Phenol	< 1.1	6.6								
Pyrene	< 0.60	3.3								
<i>Surr: 2,4,6-Tribromophenol</i>	123.2	0	167	0	73.8	36 - 126				
<i>Surr: 2-Fluorobiphenyl</i>	119.2	0	167	0	71.4	43 - 125				
<i>Surr: 2-Fluorophenol</i>	123.9	0	167	0	74.2	37 - 125				
<i>Surr: 4-Terphenyl-d14</i>	164.5	0	167	0	98.5	32 - 125				
<i>Surr: Nitrobenzene-d5</i>	127.4	0	167	0	76.3	37 - 125				
<i>Surr: Phenol-d6</i>	137.6	0	167	0	82.4	40 - 125				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629

QC BATCH REPORT

Batch ID: 155570 (0)		Instrument: SV-7		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
LCS	Sample ID: LCS-155570	Units: ug/Kg			Analysis Date: 21-Jul-2020 11:10					
Client ID:	Run ID: SV-7_365425	SeqNo: 5669313		PrepDate: 20-Jul-2020		DF: 1				
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	
1,2-Diphenylhydrazine	145.6	6.6	167	0	87.2	50 - 135				
2,4-Dimethylphenol	113.2	6.6	167	0	67.8	45 - 120				
2,4-Dinitrotoluene	133.9	6.6	167	0	80.2	50 - 130				
2,6-Dinitrotoluene	134.9	6.6	167	0	80.8	50 - 125				
2-Chloronaphthalene	143.1	6.6	167	0	85.7	50 - 145				
2-Methylnaphthalene	129.8	3.3	167	0	77.7	50 - 120				
4,6-Dinitro-2-methylphenol	120.7	6.6	167	0	72.3	15 - 135				
4-Nitrophenol	130.4	13	167	0	78.1	40 - 147				
Acenaphthene	113.9	3.3	167	0	68.2	50 - 120				
Acenaphthylene	132.8	3.3	167	0	79.5	50 - 120				
Anthracene	135.8	3.3	167	0	81.3	50 - 123				
Benz(a)anthracene	149.7	3.3	167	0	89.6	50 - 131				
Benzo(a)pyrene	180.6	3.3	167	0	108	50 - 130				
Bis(2-chloroethoxy)methane	134.6	6.6	167	0	80.6	50 - 120				
Bis(2-ethylhexyl)phthalate	148.1	6.6	167	0	88.7	21 - 148				
Chrysene	139	3.3	167	0	83.3	50 - 130				
Dibenzofuran	129.8	3.3	167	0	77.7	50 - 125				
Di-n-butyl phthalate	146.7	6.6	167	0	87.9	50 - 140				
Fluoranthene	149.1	3.3	167	0	89.3	50 - 131				
Fluorene	136.2	3.3	167	0	81.5	50 - 125				
Naphthalene	131	3.3	167	0	78.5	50 - 125				
Nitrobenzene	148.5	6.6	167	0	88.9	50 - 125				
N-Nitrosodiphenylamine	134.5	6.6	167	0	80.6	50 - 130				
Pentachlorophenol	82.85	6.6	167	0	49.6	23 - 136				
Phenanthrene	136.8	3.3	167	0	81.9	50 - 125				
Phenol	139.2	6.6	167	0	83.3	45 - 130				
Pyrene	132.6	3.3	167	0	79.4	45 - 130				
<i>Surr: 2,4,6-Tribromophenol</i>	<i>141.8</i>	<i>0</i>	<i>167</i>	<i>0</i>	<i>84.9</i>	<i>36 - 126</i>				
<i>Surr: 2-Fluorobiphenyl</i>	<i>127.9</i>	<i>0</i>	<i>167</i>	<i>0</i>	<i>76.6</i>	<i>43 - 125</i>				
<i>Surr: 2-Fluorophenol</i>	<i>132.2</i>	<i>0</i>	<i>167</i>	<i>0</i>	<i>79.2</i>	<i>37 - 125</i>				
<i>Surr: 4-Terphenyl-d14</i>	<i>134.2</i>	<i>0</i>	<i>167</i>	<i>0</i>	<i>80.4</i>	<i>32 - 125</i>				
<i>Surr: Nitrobenzene-d5</i>	<i>137.9</i>	<i>0</i>	<i>167</i>	<i>0</i>	<i>82.6</i>	<i>37 - 125</i>				
<i>Surr: Phenol-d6</i>	<i>160.6</i>	<i>0</i>	<i>167</i>	<i>0</i>	<i>96.1</i>	<i>40 - 125</i>				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629

QC BATCH REPORT

Batch ID: 155570 (0)		Instrument: SV-7		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
MS	Sample ID: HS20070693-03MS	Units: ug/Kg			Analysis Date: 21-Jul-2020 14:01					
Client ID:	Run ID: SV-7_365425	SeqNo: 5669321	PrepDate: 20-Jul-2020	DF: 1						
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	116.7	6.6	166.5	0	70.1	50 - 135				
2,4-Dimethylphenol	105.2	6.6	166.5	0	63.2	45 - 120				
2,4-Dinitrotoluene	105.2	6.6	166.5	0	63.2	50 - 130				
2,6-Dinitrotoluene	110.1	6.6	166.5	0	66.1	50 - 125				
2-Chloronaphthalene	113	6.6	166.5	0	67.9	50 - 145				
2-Methylnaphthalene	108.3	3.3	166.5	0	65.0	50 - 120				
4,6-Dinitro-2-methylphenol	88.24	6.6	166.5	0	53.0	15 - 135				
4-Nitrophenol	76.88	13	166.5	0	46.2	40 - 147				
Acenaphthene	102.5	3.3	166.5	0	61.6	50 - 120				
Acenaphthylene	110.9	3.3	166.5	0	66.6	50 - 120				
Anthracene	135.4	3.3	166.5	0	81.3	50 - 123				
Benz(a)anthracene	122.9	3.3	166.5	1.308	73.0	50 - 131				
Benzo(a)pyrene	143.4	3.3	166.5	1.076	85.5	50 - 130				
Bis(2-chloroethoxy)methane	114.5	6.6	166.5	0	68.8	50 - 120				
Bis(2-ethylhexyl)phthalate	137.5	6.6	166.5	4.583	79.8	21 - 148				
Chrysene	140.3	3.3	166.5	1.437	83.4	50 - 130				
Dibenzofuran	109.7	3.3	166.5	0	65.9	50 - 125				
Di-n-butyl phthalate	138.4	6.6	166.5	0	83.1	50 - 140				
Fluoranthene	141.9	3.3	166.5	1.441	84.3	50 - 131				
Fluorene	113.2	3.3	166.5	0	68.0	50 - 125				
Naphthalene	108.9	3.3	166.5	0	65.4	50 - 125				
Nitrobenzene	121.6	6.6	166.5	0	73.1	50 - 125				
N-Nitrosodiphenylamine	115.1	6.6	166.5	0	69.2	50 - 130				
Pentachlorophenol	68.85	6.6	166.5	0	41.4	23 - 136				
Phenanthrene	126.8	3.3	166.5	0	76.1	50 - 125				
Phenol	115.8	6.6	166.5	20.98	57.0	45 - 130				
Pyrene	118.2	3.3	166.5	1.461	70.1	45 - 130				
<i>Surr: 2,4,6-Tribromophenol</i>	<i>118.4</i>	<i>0</i>	<i>166.5</i>	<i>0</i>	<i>71.1</i>	<i>36 - 126</i>				
<i>Surr: 2-Fluorobiphenyl</i>	<i>110</i>	<i>0</i>	<i>166.5</i>	<i>0</i>	<i>66.0</i>	<i>43 - 125</i>				
<i>Surr: 2-Fluorophenol</i>	<i>102.3</i>	<i>0</i>	<i>166.5</i>	<i>0</i>	<i>61.4</i>	<i>37 - 125</i>				
<i>Surr: 4-Terphenyl-d14</i>	<i>116.7</i>	<i>0</i>	<i>166.5</i>	<i>0</i>	<i>70.1</i>	<i>32 - 125</i>				
<i>Surr: Nitrobenzene-d5</i>	<i>112.5</i>	<i>0</i>	<i>166.5</i>	<i>0</i>	<i>67.6</i>	<i>37 - 125</i>				
<i>Surr: Phenol-d6</i>	<i>124.7</i>	<i>0</i>	<i>166.5</i>	<i>0</i>	<i>74.9</i>	<i>40 - 125</i>				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629

QC BATCH REPORT

Batch ID: 155570 (0)		Instrument: SV-7		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
MSD	Sample ID: HS20070693-03MSD	Units: ug/Kg			Analysis Date: 21-Jul-2020 14:20					
Client ID:	Run ID: SV-7_365425	SeqNo: 5669322	PrepDate: 20-Jul-2020	DF: 1						
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	128.1	6.6	166.3	0	77.0	50 - 135	116.7	9.27	30	
2,4-Dimethylphenol	109.7	6.6	166.3	0	66.0	45 - 120	105.2	4.18	30	
2,4-Dinitrotoluene	127.3	6.6	166.3	0	76.5	50 - 130	105.2	18.9	30	
2,6-Dinitrotoluene	122.5	6.6	166.3	0	73.7	50 - 125	110.1	10.7	30	
2-Chloronaphthalene	144.8	6.6	166.3	0	87.1	50 - 145	113	24.7	30	
2-Methylnaphthalene	118.8	3.3	166.3	0	71.4	50 - 120	108.3	9.26	30	
4,6-Dinitro-2-methylphenol	109.1	6.6	166.3	0	65.6	15 - 135	88.24	21.2	30	
4-Nitrophenol	108.8	13	166.3	0	65.4	40 - 147	76.88	34.3	30	R
Acenaphthene	104.7	3.3	166.3	0	62.9	50 - 120	102.5	2.05	30	
Acenaphthylene	117.9	3.3	166.3	0	70.9	50 - 120	110.9	6.11	30	
Anthracene	133	3.3	166.3	0	80.0	50 - 123	135.4	1.8	30	
Benz(a)anthracene	143.6	3.3	166.3	1.308	85.5	50 - 131	122.9	15.5	30	
Benzo(a)pyrene	159.9	3.3	166.3	1.076	95.5	50 - 130	143.4	10.9	30	
Bis(2-chloroethoxy)methane	117.7	6.6	166.3	0	70.7	50 - 120	114.5	2.73	30	
Bis(2-ethylhexyl)phthalate	149.4	6.6	166.3	4.583	87.1	21 - 148	137.5	8.32	30	
Chrysene	138.1	3.3	166.3	1.437	82.2	50 - 130	140.3	1.55	30	
Dibenzofuran	119.2	3.3	166.3	0	71.7	50 - 125	109.7	8.33	30	
Di-n-butyl phthalate	135.5	6.6	166.3	0	81.5	50 - 140	138.4	2.07	30	
Fluoranthene	138	3.3	166.3	1.441	82.1	50 - 131	141.9	2.76	30	
Fluorene	129.3	3.3	166.3	0	77.8	50 - 125	113.2	13.3	30	
Naphthalene	113.6	3.3	166.3	0	68.3	50 - 125	108.9	4.14	30	
Nitrobenzene	129.6	6.6	166.3	0	77.9	50 - 125	121.6	6.34	30	
N-Nitrosodiphenylamine	125.3	6.6	166.3	0	75.3	50 - 130	115.1	8.45	30	
Pentachlorophenol	96.27	6.6	166.3	0	57.9	23 - 136	68.85	33.2	30	R
Phenanthrene	127.7	3.3	166.3	0	76.8	50 - 125	126.8	0.709	30	
Phenol	118.3	6.6	166.3	20.98	58.5	45 - 130	115.8	2.08	30	
Pyrene	130.7	3.3	166.3	1.461	77.7	45 - 130	118.2	10.1	30	
Surr: 2,4,6-Tribromophenol	134.4	0	166.3	0	80.8	36 - 126	118.4	12.7	30	
Surr: 2-Fluorobiphenyl	116	0	166.3	0	69.7	43 - 125	110	5.36	30	
Surr: 2-Fluorophenol	104.7	0	166.3	0	63.0	37 - 125	102.3	2.37	30	
Surr: 4-Terphenyl-d14	133.2	0	166.3	0	80.1	32 - 125	116.7	13.2	30	
Surr: Nitrobenzene-d5	124.2	0	166.3	0	74.6	37 - 125	112.5	9.86	30	
Surr: Phenol-d6	125.9	0	166.3	0	75.7	40 - 125	124.7	0.971	30	

The following samples were analyzed in this batch: HS20070629-01 HS20070629-02 HS20070629-03 HS20070629-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629

QC BATCH REPORT

Batch ID: R365137 (0) **Instrument:** VOA5 **Method:** VOLATILES BY SW8260C

MBLK		Sample ID: VBLKS1-071620			Units: ug/Kg		Analysis Date: 16-Jul-2020 09:31			
Client ID:		Run ID: VOA5_365137			SeqNo: 5663678		PrepDate:		DF: 1	
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	< 0.60	5.0								
Benzene	< 0.50	5.0								
Chlorobenzene	< 0.60	5.0								
Ethylbenzene	< 0.70	5.0								
Methylene chloride	< 1.0	10								
Toluene	< 0.60	5.0								
Xylenes, Total	< 1.0	5.0								
<i>Surr: 1,2-Dichloroethane-d4</i>	45.88	0	50	0	91.8	76 - 125				
<i>Surr: 4-Bromofluorobenzene</i>	49.17	0	50	0	98.3	80 - 120				
<i>Surr: Dibromofluoromethane</i>	45.92	0	50	0	91.8	80 - 119				
<i>Surr: Toluene-d8</i>	52.4	0	50	0	105	81 - 118				

LCS		Sample ID: VLCSS1-071620			Units: ug/Kg		Analysis Date: 16-Jul-2020 08:39			
Client ID:		Run ID: VOA5_365137			SeqNo: 5663677		PrepDate:		DF: 1	
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	53.23	5.0	50	0	106	77 - 120				
Benzene	55.48	5.0	50	0	111	75 - 124				
Chlorobenzene	55.38	5.0	50	0	111	78 - 122				
Ethylbenzene	56.46	5.0	50	0	113	70 - 123				
Methylene chloride	55.74	10	50	0	111	71 - 125				
Toluene	54.07	5.0	50	0	108	76 - 122				
Xylenes, Total	170.8	5.0	150	0	114	77 - 128				
<i>Surr: 1,2-Dichloroethane-d4</i>	49.48	0	50	0	99.0	76 - 125				
<i>Surr: 4-Bromofluorobenzene</i>	50.05	0	50	0	100	80 - 120				
<i>Surr: Dibromofluoromethane</i>	49.12	0	50	0	98.2	80 - 119				
<i>Surr: Toluene-d8</i>	50.73	0	50	0	101	81 - 118				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629

QC BATCH REPORT

Batch ID: R365137 (0) **Instrument:** VOA5 **Method:** VOLATILES BY SW8260C

MS		Sample ID: HS20070581-12MS			Units: ug/Kg		Analysis Date: 16-Jul-2020 12:08			
Client ID:		Run ID: VOA5_365137			SeqNo: 5664124		PrepDate:		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	47.58	5.0	50.5	0	94.2	70 - 130				
Benzene	48.13	5.0	50.5	0	95.3	70 - 130				
Chlorobenzene	45.62	5.0	50.5	0	90.3	70 - 130				
Ethylbenzene	46.3	5.0	50.5	0	91.7	70 - 130				
Methylene chloride	54.1	10	50.5	0	107	70 - 130				
Toluene	46.36	5.0	50.5	0	91.8	70 - 130				
Xylenes, Total	138.7	5.0	151.5	0	91.6	70 - 130				
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>50.54</i>	<i>0</i>	<i>50.5</i>	<i>0</i>	<i>100</i>	<i>70 - 126</i>				
<i>Surr: 4-Bromofluorobenzene</i>	<i>51.27</i>	<i>0</i>	<i>50.5</i>	<i>0</i>	<i>102</i>	<i>70 - 130</i>				
<i>Surr: Dibromofluoromethane</i>	<i>50.38</i>	<i>0</i>	<i>50.5</i>	<i>0</i>	<i>99.8</i>	<i>70 - 130</i>				
<i>Surr: Toluene-d8</i>	<i>51.23</i>	<i>0</i>	<i>50.5</i>	<i>0</i>	<i>101</i>	<i>70 - 130</i>				

MSD		Sample ID: HS20070581-12MSD			Units: ug/Kg		Analysis Date: 16-Jul-2020 12:35			
Client ID:		Run ID: VOA5_365137			SeqNo: 5664125		PrepDate:		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	47.14	5.0	50.5	0	93.4	70 - 130	47.58	0.915	30	
Benzene	46.97	5.0	50.5	0	93.0	70 - 130	48.13	2.42	30	
Chlorobenzene	43.89	5.0	50.5	0	86.9	70 - 130	45.62	3.87	30	
Ethylbenzene	44.09	5.0	50.5	0	87.3	70 - 130	46.3	4.89	30	
Methylene chloride	56.03	10	50.5	0	111	70 - 130	54.1	3.49	30	
Toluene	45.33	5.0	50.5	0	89.8	70 - 130	46.36	2.24	30	
Xylenes, Total	132	5.0	151.5	0	87.1	70 - 130	138.7	5	30	
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>49.98</i>	<i>0</i>	<i>50.5</i>	<i>0</i>	<i>99.0</i>	<i>70 - 126</i>	<i>50.54</i>	<i>1.11</i>	<i>30</i>	
<i>Surr: 4-Bromofluorobenzene</i>	<i>50.96</i>	<i>0</i>	<i>50.5</i>	<i>0</i>	<i>101</i>	<i>70 - 130</i>	<i>51.27</i>	<i>0.616</i>	<i>30</i>	
<i>Surr: Dibromofluoromethane</i>	<i>49.31</i>	<i>0</i>	<i>50.5</i>	<i>0</i>	<i>97.7</i>	<i>70 - 130</i>	<i>50.38</i>	<i>2.13</i>	<i>30</i>	
<i>Surr: Toluene-d8</i>	<i>52.28</i>	<i>0</i>	<i>50.5</i>	<i>0</i>	<i>104</i>	<i>70 - 130</i>	<i>51.23</i>	<i>2.02</i>	<i>30</i>	

The following samples were analyzed in this batch: HS20070629-01 HS20070629-02 HS20070629-03 HS20070629-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629

QC BATCH REPORT

Batch ID: R365396 (0) **Instrument:** VOA2 **Method:** LOW LEVEL VOLATILES BY SW8260C

MBLK		Sample ID: VBLKW-200721		Units: ug/L		Analysis Date: 21-Jul-2020 12:17			
Client ID:		Run ID: VOA2_365396		SeqNo: 5668671		PrepDate:		DF: 1	
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
1,2-Dichloroethane	< 0.20	1.0							
Benzene	< 0.20	1.0							
Chlorobenzene	< 0.30	1.0							
Ethylbenzene	< 0.30	1.0							
Methylene chloride	< 1.0	2.0							
Toluene	< 0.20	1.0							
Xylenes, Total	< 0.30	1.0							
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>50.48</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>101</i>	<i>70 - 123</i>			
<i>Surr: 4-Bromofluorobenzene</i>	<i>49.81</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>99.6</i>	<i>82 - 115</i>			
<i>Surr: Dibromofluoromethane</i>	<i>51.39</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>103</i>	<i>73 - 126</i>			
<i>Surr: Toluene-d8</i>	<i>50.9</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>102</i>	<i>81 - 120</i>			

LCS		Sample ID: VLCSW-200721		Units: ug/L		Analysis Date: 21-Jul-2020 11:30			
Client ID:		Run ID: VOA2_365396		SeqNo: 5668670		PrepDate:		DF: 1	
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
1,2-Dichloroethane	18.6	1.0	20	0	93.0	70 - 124			
Benzene	18.66	1.0	20	0	93.3	74 - 120			
Chlorobenzene	18.61	1.0	20	0	93.1	76 - 113			
Ethylbenzene	18.88	1.0	20	0	94.4	77 - 117			
Methylene chloride	20.03	2.0	20	0	100	70 - 127			
Toluene	19.19	1.0	20	0	96.0	77 - 118			
Xylenes, Total	57.56	1.0	60	0	95.9	75 - 122			
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>52.05</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>104</i>	<i>70 - 130</i>			
<i>Surr: 4-Bromofluorobenzene</i>	<i>49.25</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>98.5</i>	<i>82 - 115</i>			
<i>Surr: Dibromofluoromethane</i>	<i>51.3</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>103</i>	<i>73 - 126</i>			
<i>Surr: Toluene-d8</i>	<i>49.43</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>98.9</i>	<i>81 - 120</i>			

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629

QC BATCH REPORT

Batch ID: R365396 (0) **Instrument:** VOA2 **Method:** LOW LEVEL VOLATILES BY SW8260C

MS		Sample ID: HS20070774-28MS			Units: ug/L		Analysis Date: 21-Jul-2020 15:03			
Client ID:		Run ID: VOA2_365396			SeqNo: 5669070		PrepDate:		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	18.47	1.0	20	0	92.3	70 - 127				
Benzene	20.3	1.0	20	1.683	93.1	70 - 127				
Chlorobenzene	18.65	1.0	20	0	93.2	70 - 114				
Ethylbenzene	20.3	1.0	20	1.482	94.1	70 - 124				
Methylene chloride	18.73	2.0	20	0	93.6	70 - 128				
Toluene	20.6	1.0	20	1.607	95.0	70 - 123				
Xylenes, Total	77.49	1.0	60	21.1	94.0	70 - 130				
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>52.59</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>105</i>	<i>70 - 126</i>				
<i>Surr: 4-Bromofluorobenzene</i>	<i>50.43</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>101</i>	<i>81 - 113</i>				
<i>Surr: Dibromofluoromethane</i>	<i>50.56</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>101</i>	<i>77 - 123</i>				
<i>Surr: Toluene-d8</i>	<i>49.5</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>99.0</i>	<i>82 - 127</i>				

MSD		Sample ID: HS20070774-28MSD			Units: ug/L		Analysis Date: 21-Jul-2020 15:27			
Client ID:		Run ID: VOA2_365396			SeqNo: 5669071		PrepDate:		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	19.21	1.0	20	0	96.0	70 - 127	18.47	3.93	20	
Benzene	21.12	1.0	20	1.683	97.2	70 - 127	20.3	3.95	20	
Chlorobenzene	19.28	1.0	20	0	96.4	70 - 114	18.65	3.36	20	
Ethylbenzene	20.89	1.0	20	1.482	97.0	70 - 124	20.3	2.88	20	
Methylene chloride	19.18	2.0	20	0	95.9	70 - 128	18.73	2.38	20	
Toluene	21.45	1.0	20	1.607	99.2	70 - 123	20.6	4.05	20	
Xylenes, Total	80.29	1.0	60	21.1	98.6	70 - 130	77.49	3.54	20	
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>51.69</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>103</i>	<i>70 - 126</i>	<i>52.59</i>	<i>1.73</i>	<i>20</i>	
<i>Surr: 4-Bromofluorobenzene</i>	<i>50.37</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>101</i>	<i>81 - 113</i>	<i>50.43</i>	<i>0.133</i>	<i>20</i>	
<i>Surr: Dibromofluoromethane</i>	<i>50.26</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>101</i>	<i>77 - 123</i>	<i>50.56</i>	<i>0.594</i>	<i>20</i>	
<i>Surr: Toluene-d8</i>	<i>50.01</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>100</i>	<i>82 - 127</i>	<i>49.5</i>	<i>1.03</i>	<i>20</i>	

The following samples were analyzed in this batch: HS20070629-05

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629

QC BATCH REPORT

Batch ID: R365194 (0)		Instrument: ICS-Integrion		Method: ANIONS BY SW9056A						
MBLK	Sample ID: MBLK-071520	Units: mg/L			Analysis Date: 15-Jul-2020 23:34					
Client ID:		Run ID: ICS-Integrion_365194	SeqNo: 5664528	PrepDate:	DF: 1					
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	< 0.200	0.500								
Nitrogen, Nitrate (As N)	< 0.0300	0.100								
Nitrogen, Nitrite (As N)	< 0.0300	0.100								
Sulfate	0.2267	0.500								J

LCS	Sample ID: LCS-071520	Units: mg/L			Analysis Date: 15-Jul-2020 23:52					
Client ID:		Run ID: ICS-Integrion_365194	SeqNo: 5664529	PrepDate:	DF: 1					
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.05	0.500	20	0	100	80 - 120				
Nitrogen, Nitrate (As N)	3.941	0.100	4	0	98.5	80 - 120				
Nitrogen, Nitrite (As N)	4.356	0.100	4	0	109	80 - 120				
Sulfate	19.54	0.500	20	0	97.7	80 - 120				

MS	Sample ID: HS20070625-04MS	Units: mg/L			Analysis Date: 15-Jul-2020 19:20					
Client ID:		Run ID: ICS-Integrion_365194	SeqNo: 5664559	PrepDate:	DF: 1					
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	1014	0.500	10	1025	-109	80 - 120				SEO
Nitrogen, Nitrate (As N)	3.293	0.100	2	0	165	80 - 120				S
Nitrogen, Nitrite (As N)	2.261	0.100	2	0	113	80 - 120				
Sulfate	915.8	0.500	10	931.5	-157	80 - 120				SEO

MSD	Sample ID: HS20070625-04MSD	Units: mg/L			Analysis Date: 15-Jul-2020 19:38					
Client ID:		Run ID: ICS-Integrion_365194	SeqNo: 5664587	PrepDate:	DF: 1					
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	1039	0.500	10	1025	139	80 - 120	1014	2.42	20	SEO
Nitrogen, Nitrate (As N)	3.332	0.100	2	0	167	80 - 120	3.293	1.18	20	S
Nitrogen, Nitrite (As N)	2.399	0.100	2	0	120	80 - 120	2.261	5.94	20	
Sulfate	942.6	0.500	10	931.5	111	80 - 120	915.8	2.88	20	EO

The following samples were analyzed in this batch: HS20070629-05

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629

QC BATCH REPORT

Batch ID: R365202 (0) **Instrument:** ManTech01 **Method:** ALKALINITY BY SM2320B

MBLK		Sample ID: WBLKW2-200716		Units: mg/L		Analysis Date: 16-Jul-2020 20:57			
Client ID:		Run ID: ManTech01_365202		SeqNo: 5664791		PrepDate:		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Alkalinity, Bicarbonate (As CaCO3)	< 5.00	5.00							
Alkalinity, Carbonate (As CaCO3)	< 5.00	5.00							
Alkalinity, Hydroxide (As CaCO3)	< 5.00	5.00							
Alkalinity, Total (As CaCO3)	< 5.00	5.00							

LCS		Sample ID: LCS2-200716		Units: mg/L		Analysis Date: 16-Jul-2020 21:06			
Client ID:		Run ID: ManTech01_365202		SeqNo: 5664792		PrepDate:		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Alkalinity, Carbonate (As CaCO3)	1031	5.00	1000	0	103	85 - 115			
Alkalinity, Total (As CaCO3)	1036	5.00	1000	0	104	85 - 115			

LCSD		Sample ID: LCSD2-200716		Units: mg/L		Analysis Date: 16-Jul-2020 21:15			
Client ID:		Run ID: ManTech01_365202		SeqNo: 5664793		PrepDate:		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Alkalinity, Carbonate (As CaCO3)	1030	5.00	1000	0	103	85 - 115	1031	0.128	20
Alkalinity, Total (As CaCO3)	1035	5.00	1000	0	104	85 - 115	1036	0.0541	20

DUP		Sample ID: HS20070637-01DUP		Units: mg/L		Analysis Date: 16-Jul-2020 21:44			
Client ID:		Run ID: ManTech01_365202		SeqNo: 5664797		PrepDate:		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Alkalinity, Bicarbonate (As CaCO3)	179.2	5.00					179.1	0.067	20
Alkalinity, Carbonate (As CaCO3)	< 5.00	5.00					0	0	20
Alkalinity, Hydroxide (As CaCO3)	< 5.00	5.00					0	0	20
Alkalinity, Total (As CaCO3)	179.2	5.00					179.1	0.067	20

The following samples were analyzed in this batch: HS20070629-05

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629

QC BATCH REPORT

Batch ID: R365348 (0)		Instrument: WetChem_HS		Method: PH BY SM4500H+ B					
DUP	Sample ID: HS20070637-01DUP	Units: pH Units			Analysis Date: 21-Jul-2020 11:32				
Client ID:	Run ID: WetChem_HS_365348	SeqNo: 5667799		PrepDate:			DF: 1		
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

pH	7.17	0.100					7.15	0.279	10
Temp Deg C @pH	20.2	0					20.4	0.985	10

The following samples were analyzed in this batch:

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629

QC BATCH REPORT

Batch ID: R365372 (0) **Instrument:** Balance1 **Method:** TOTAL DISSOLVED SOLIDS BY SM2540C

MBLK	Sample ID: WBLK-072020	Units: mg/L			Analysis Date: 20-Jul-2020 15:50					
Client ID:	Run ID: Balance1_365372	SeqNo: 5668124	PrepDate:	DF: 1						
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Total Dissolved Solids (Residue, Filterable) < 5.00 10.0

LCS	Sample ID: WLCS-072020	Units: mg/L			Analysis Date: 20-Jul-2020 15:50					
Client ID:	Run ID: Balance1_365372	SeqNo: 5668125	PrepDate:	DF: 1						
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Total Dissolved Solids (Residue, Filterable) 1064 10.0 1000 0 106 85 - 115

DUP	Sample ID: HS20070637-01DUP	Units: mg/L			Analysis Date: 20-Jul-2020 15:50					
Client ID:	Run ID: Balance1_365372	SeqNo: 5668117	PrepDate:	DF: 1						
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Total Dissolved Solids (Residue, Filterable) 10200 10.0 10260 0.587 5

The following samples were analyzed in this batch: HS20070629-05

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629

QC BATCH REPORT

Batch ID: R365606 (0) **Instrument:** Balance1 **Method:** MOISTURE - ASTM D2216

DUP	Sample ID: HS20071063-03DUP	Units: wt%	Analysis Date: 23-Jul-2020 17:21							
Client ID:	Run ID: Balance1_365606	SeqNo: 5673106	PrepDate: DF: 1							
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual

Percent Moisture	21	0.0100					21.2	0.948	20
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The following samples were analyzed in this batch:

HS20070629-01	HS20070629-02	HS20070629-03	HS20070629-04
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Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070629

**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/Kg-dry	Milligrams per Kilogram- Dry weight corrected
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	20-030-0	26-Mar-2021
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Illinois	2000322020-4	09-May-2021
Kansas	E-10352 2019-2020	31-Jul-2020
North Carolina	624-2020	31-Dec-2020
Oklahoma	2019-141	31-Aug-2020
Texas	T104704231-20-26	30-Apr-2021

Sample Receipt Checklist

Work Order ID: HS20070629

Date/Time Received: 15-Jul-2020 12:30

Client Name: PBW

Received by: Patrick Salome

Completed By: <u>/S/ Niles D. Ranchod</u>	<u>15-Jul-2020 13:43</u>	Reviewed by: _____	_____
eSignature	Date/Time	eSignature	Date/Time

Matrices: **Water/Soil**

Carrier name: **ALS Courier**

- Shipping container/cooler in good condition? Yes No Not Present
- Custody seals intact on shipping container/cooler? Yes No Not Present
- Custody seals intact on sample bottles? Yes No Not Present
- VOA/TX1005/TX1006 Solids in hermetically sealed vials? Yes No Not Present
- Chain of custody present? Yes No 2 Page(s)
- Chain of custody signed when relinquished and received? Yes No COC IDs:227179/227174
- Samplers name present on COC? Yes No
- Chain of custody agrees with sample labels? Yes No
- Samples in proper container/bottle? Yes No
- Sample containers intact? Yes No
- Sufficient sample volume for indicated test? Yes No
- All samples received within holding time? Yes No
- Container/Temp Blank temperature in compliance? Yes No

Temperature(s)/Thermometer(s):	1.0C UC/C	IR # 31
Cooler(s)/Kit(s):	45841	
Date/Time sample(s) sent to storage:	07/15/2020 14:00	
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	No VOA vials submitted <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	N/A <input type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>
pH adjusted by:	<div style="border: 1px solid black; height: 20px;"></div>	

Login Notes:

Client Contacted: _____ Date Contacted: _____ Person Contacted: _____

Contacted By: _____ Regarding: _____

Comments:

Corrective Action:



Cincinnati, OH
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Fort Collins, CO
+1 970 490 1511

Holland, MI
+1 616 399 6070

Chain of Custody Form

Page 1 of 2

COC ID: 227179

HS20070629

Golder Associates Inc.
Houston TX-Wood Preserving Works



Customer Information		Project Information		ALS Project Manager:	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A	8260_S (5632528 VOC Site Specific *5035*)
Work Order		Project Number	1620-22-Rev0 SR 92688 (SOIL)	B	TX1005_S_REV3 (5643233 TX1005 TPH *5035*)
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P	C	TX1006_S (5645481 TPH TX1006)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	8270_LOW_S (5632532 SemiVolatiles Site Specific)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	RCRA 8 Soil (5652643 RCRA 8 Metals)
				F	MOIST_ASTM (5631931 Moisture%)
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620-TP-03-20(2-4)-20200714	7-14-20	1210	Soil	8.9	7	X	X	X	X	X	X					
2	TP-01	↓	1550	↓	↓	↓	X	X	X	X	X	X					Hold
3	TP-04	↓	1600	↓	↓	↓	X	X	X	X	X	X					1000
4	TP-02	↓	1620	↓	↓	↓	X	X	X	X	X	X					Analy
5							X	X	X	X	X	X					Pending
6																	PM
7																	Approval
8																	
9																	
10																	

Depths for test pits
samples roughly the same
2'-4'

Sampler(s) Please Print & Sign <i>Blake Sokora</i>		Shipment Method		Required Turnaround Time: (Check Box)		Results Due Date:	
Relinquished by: <i>Blake Sokora</i>		Date: 7-15-20	Time: 1015	<input checked="" type="checkbox"/> STD 10 Wk Days		<input type="checkbox"/> 5 Wk Days	
Relinquished by: <i>Walt Johnson</i>		Date: 7-18-20	Time: 1230	<input type="checkbox"/> 2 Wk Days		<input type="checkbox"/> 24 Hour	
Logged by (Laboratory):		Date:	Time:	Received by: <i>Walt Johnson</i>		Notes: UPRR HWPW 1620-22 NO#92688	
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		Checked by (Laboratory):		Cooler ID: 45841	Cooler Temp: 1.0	QC Package: (Check One Box Below)	
						<input type="checkbox"/> Level II Std QC	
						<input type="checkbox"/> Level III Std QC/Raw Date	
						<input type="checkbox"/> Level IV SWB4/CLP	
						<input type="checkbox"/> Other	
						<input checked="" type="checkbox"/> TRRP Checklist	
						<input type="checkbox"/> TRRP Level IV	

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



Cincinnati, OH
+1 513 733 5336
Everett, WA
+1 425 356 2600

Fort Collins, CO
+1 970 490 1511
Holland, MI
+1 616 399 6070

Chain of Custody Form

Page 2 of 2

COC ID: 227174

HS20070629

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:



Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-22-Rev0 SR 92688 (GW)
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	W/PW 1620-TR-02-20-20200714	7-14-20	1400	Groundwa	1,2,8	9	X	X	X	X	X	X	X	X	X		
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Blake Skora Eric Skora

Shipment Method: _____ Required Turnaround Time: (Check Box) STD 10 Wk Days 5 Wk Days 2 Wk Days 24 Hour

Results Due Date: _____

Relinquished by: Blake Skora Date: 7-15-20 Time: 1015

Relinquished by: Eric Skora Date: 7-15-20 Time: 1230

Logged by (Laboratory): _____ Date: _____ Time: _____

Received by: Eric Skora

Received by (Laboratory): _____

Checked by (Laboratory): _____

Notes: UPRR HWPW 1620-22 WO# 92688

Cooler ID: _____ Cooler Temp.: _____

QC Package: (Check One Box Below)

Level II Std QC TRRP Checklist

Level III Std QC/Raw Date TRRP Level IV

Level IV SW846/CLP

Other

Preservative Key: 1-HCl 2-HNO₃ 3-H₂SO₄ 4-NaOH 5-Na₂S₂O₃ 6-NaHSO₄ 7-Other 8-4°C 9-5035

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

July 30, 2020

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

Work Order: **HS20070701**

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

Dear Eric Matzner,

ALS Environmental received 4 sample(s) on Jul 16, 2020 for the analysis presented in the following report.

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

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

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

Sincerely,

A handwritten signature in black ink, appearing to read 'Dane J. Wacasey'.

Generated By: DANE.WACASEY
Dane J. Wacasey

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070701

**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: HS20070701

**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: 7/30/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20070701				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 155538, 155542, 155547, 155570, 155586, 155624, 155661, 155702, R365209, R365396, R365633, R365650				
# 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				1
R2	OI	Sample and quality control (QC) identification					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	Test reports					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?	X				
		If required for the project, TICs reported?			X		
R4	O	Surrogate recovery data					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?		X			2
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			3
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			4
		Were MS/MSD RPDs within laboratory QC limits?		X			5
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				

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: Supporting Data								
Laboratory Name: ALS Laboratory Group					LRC Date: 7/30/2020			
Project Name: Houston TX-Wood Preserving Works					Laboratory Job Number: HS20070701			
Reviewer Name: Dane Wacasey					Prep Batch Number(s): 155538, 155542, 155547, 155570, 155586, 155624, 155661, 155702, R365209, R365396, R365633, R365650			
# 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 Data

Laboratory Name: ALS Laboratory Group		LRC Date: 7/30/2020
Project Name: Houston TX-Wood Preserving Works		Laboratory Job Number: HS20070701
Reviewer Name: Dane Wacasey		Prep Batch Number(s): 155538, 155542, 155547, 155570, 155586, 155624, 155661, 155702, R365209, R365396, R365633, R365650
ER# ⁵	Description	
1	Metals container for WPW-1620-TP-07-20-20200716 was received pH>2. Additional HNO3 was added upon receipt, however, was unable to achieve pH<2. Final adjusted pH=6.	
2	<p>Batch 155702, TPH by method TX1005, samples SO-1620-TP06-20(1-4)-20200715 (HS20070701-02), SO-1620-TP07-20(1-4)-20200715 (HS20070701-03), the surrogate recoveries could not be determined due to dilution below the calibration range.</p> <p>Batch 155570, Semivolatiles by method SW8270, Sample SO-1620-TP05-20(1-4)-20200715 (HS20070701-01), SO-1620-TP07-20(1-4)-20200715 (HS20070701-03), One or more surrogate recoveries were above the upper control limits. No target analytes were detected in the sample. The high surrogate recoveries did not impact the non-detect results for target analytes and/or the surrogate recoveries could not be determined due to dilution below the calibration range</p>	
3	Batch R3265209, Volatiles by method SW8260, sample VLCSS1-071720, LCS recovered high for Methylene Chloride. The analytes were not detected in the associated samples. CCV was acceptable	
4	Batch 155624, Metals by method SW6020, Sample HS20070627-MSD, MS and MSD are for an unrelated sample. Batch	
5	<p>Batch 155547, Semivolatiles by method SW8270, Sample HS20070658-13MSD, MSD RPD is for an unrelated sample.</p> <p>Batch 155570, Semivolatiles by method SW8270, Sample HS20070693-03MSD, MSD RPD is for an unrelated sample.</p>	
<p>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.</p> <p>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).</p>		

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20070701

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20070701-01	SO-1620-TP05-20(1-4)-20200715	Soil		15-Jul-2020 12:00	16-Jul-2020 13:00	<input type="checkbox"/>
HS20070701-02	SO-1620-TP06-20(1-4)-20200715	Soil		15-Jul-2020 12:10	16-Jul-2020 13:00	<input type="checkbox"/>
HS20070701-03	SO-1620-TP07-20(1-4)-20200715	Soil		15-Jul-2020 12:20	16-Jul-2020 13:00	<input type="checkbox"/>
HS20070701-04	WPW-1620-TP07-20-20200716	Groundwater		16-Jul-2020 08:45	16-Jul-2020 13:00	<input type="checkbox"/>

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works
 Sample ID: SO-1620-TP05-20(1-4)-20200715
 Collection Date: 15-Jul-2020 12:00

ANALYTICAL REPORT

WorkOrder:HS20070701
 Lab ID:HS20070701-01
 Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MLL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		Method:SW8260		Analyst: WLR			
1,2-Dichloroethane	< 0.00057		0.00057	0.0047	mg/Kg-dry	1	24-Jul-2020 16:49
Benzene	0.0086		0.00047	0.0047	mg/Kg-dry	1	24-Jul-2020 16:49
Chlorobenzene	< 0.00057		0.00057	0.0047	mg/Kg-dry	1	24-Jul-2020 16:49
Ethylbenzene	0.022		0.00066	0.0047	mg/Kg-dry	1	24-Jul-2020 16:49
Methylene chloride	< 0.00094		0.00094	0.0094	mg/Kg-dry	1	24-Jul-2020 16:49
Toluene	0.0089		0.00057	0.0047	mg/Kg-dry	1	24-Jul-2020 16:49
Xylenes, Total	0.035		0.00094	0.0047	mg/Kg-dry	1	24-Jul-2020 16:49
Surr: 1,2-Dichloroethane-d4	96.4			70-126	%REC	1	24-Jul-2020 16:49
Surr: 4-Bromofluorobenzene	86.1			70-130	%REC	1	24-Jul-2020 16:49
Surr: Dibromofluoromethane	96.9			70-130	%REC	1	24-Jul-2020 16:49
Surr: Toluene-d8	113			70-130	%REC	1	24-Jul-2020 16:49

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

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works
 Sample ID: SO-1620-TP05-20(1-4)-20200715
 Collection Date: 15-Jul-2020 12:00

ANALYTICAL REPORT
 WorkOrder:HS20070701
 Lab ID:HS20070701-01
 Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		Method:SW8270		Prep:SW3541 / 20-Jul-2020		Analyst: GEY	
1,2-Diphenylhydrazine	< 0.013		0.013	0.077	mg/Kg-dry	10	25-Jul-2020 20:37
2,4-Dimethylphenol	< 0.038		0.038	0.077	mg/Kg-dry	10	25-Jul-2020 20:37
2,4-Dinitrotoluene	< 0.010		0.010	0.077	mg/Kg-dry	10	25-Jul-2020 20:37
2,6-Dinitrotoluene	< 0.038		0.038	0.077	mg/Kg-dry	10	25-Jul-2020 20:37
2-Chloronaphthalene	< 0.015		0.015	0.077	mg/Kg-dry	10	25-Jul-2020 20:37
2-Methylnaphthalene	1.3		0.0058	0.038	mg/Kg-dry	10	25-Jul-2020 20:37
4,6-Dinitro-2-methylphenol	< 0.024		0.024	0.077	mg/Kg-dry	10	25-Jul-2020 20:37
4-Nitrophenol	< 0.022		0.022	0.15	mg/Kg-dry	10	25-Jul-2020 20:37
Acenaphthene	1.3		0.0058	0.038	mg/Kg-dry	10	25-Jul-2020 20:37
Acenaphthylene	0.20		0.012	0.038	mg/Kg-dry	10	25-Jul-2020 20:37
Anthracene	2.9		0.0058	0.038	mg/Kg-dry	10	25-Jul-2020 20:37
Benz(a)anthracene	2.1		0.019	0.038	mg/Kg-dry	10	25-Jul-2020 20:37
Benzo(a)pyrene	0.59		0.012	0.038	mg/Kg-dry	10	25-Jul-2020 20:37
Bis(2-chloroethoxy)methane	< 0.010		0.010	0.077	mg/Kg-dry	10	25-Jul-2020 20:37
Bis(2-ethylhexyl)phthalate	< 0.020		0.020	0.077	mg/Kg-dry	10	25-Jul-2020 20:37
Chrysene	2.2		0.0093	0.038	mg/Kg-dry	10	25-Jul-2020 20:37
Dibenzofuran	< 0.0081		0.0081	0.038	mg/Kg-dry	10	25-Jul-2020 20:37
Di-n-butyl phthalate	< 0.014		0.014	0.077	mg/Kg-dry	10	25-Jul-2020 20:37
Fluoranthene	14		0.13	0.38	mg/Kg-dry	100	28-Jul-2020 01:14
Fluorene	2.0		0.013	0.038	mg/Kg-dry	10	25-Jul-2020 20:37
Naphthalene	0.19		0.0070	0.038	mg/Kg-dry	10	25-Jul-2020 20:37
Nitrobenzene	< 0.010		0.010	0.077	mg/Kg-dry	10	25-Jul-2020 20:37
N-Nitrosodiphenylamine	< 0.0081		0.0081	0.077	mg/Kg-dry	10	25-Jul-2020 20:37
Pentachlorophenol	< 0.038		0.038	0.077	mg/Kg-dry	10	25-Jul-2020 20:37
Phenanthrene	13		0.17	0.38	mg/Kg-dry	100	28-Jul-2020 01:14
Phenol	< 0.013		0.013	0.077	mg/Kg-dry	10	25-Jul-2020 20:37
Pyrene	9.2		0.070	0.38	mg/Kg-dry	100	28-Jul-2020 01:14
<i>Surr: 2,4,6-Tribromophenol</i>	0	S		36-126	%REC	100	28-Jul-2020 01:14
<i>Surr: 2,4,6-Tribromophenol</i>	66.4			36-126	%REC	10	25-Jul-2020 20:37
<i>Surr: 2-Fluorobiphenyl</i>	50.3			43-125	%REC	10	25-Jul-2020 20:37
<i>Surr: 2-Fluorobiphenyl</i>	0	S		43-125	%REC	100	28-Jul-2020 01:14
<i>Surr: 2-Fluorophenol</i>	0	S		37-125	%REC	100	28-Jul-2020 01:14
<i>Surr: 2-Fluorophenol</i>	47.9			37-125	%REC	10	25-Jul-2020 20:37
<i>Surr: 4-Terphenyl-d14</i>	0	S		32-125	%REC	100	28-Jul-2020 01:14
<i>Surr: 4-Terphenyl-d14</i>	65.7			32-125	%REC	10	25-Jul-2020 20:37
<i>Surr: Nitrobenzene-d5</i>	0	S		37-125	%REC	100	28-Jul-2020 01:14
<i>Surr: Nitrobenzene-d5</i>	67.1			37-125	%REC	10	25-Jul-2020 20:37
<i>Surr: Phenol-d6</i>	70.2			40-125	%REC	10	25-Jul-2020 20:37
<i>Surr: Phenol-d6</i>	0	S		40-125	%REC	100	28-Jul-2020 01:14

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

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works
 Sample ID: SO-1620-TP05-20(1-4)-20200715
 Collection Date: 15-Jul-2020 12:00

ANALYTICAL REPORT
 WorkOrder:HS20070701
 Lab ID:HS20070701-01
 Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MLL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005		Method:TX1005		Prep:TX1005PR / 23-Jul-2020		Analyst: MBG	
nC6 to nC12	< 37		37	250	mg/Kg-dry	5	27-Jul-2020 15:56
>nC12 to nC28	1,600		48	250	mg/Kg-dry	5	27-Jul-2020 15:56
>nC28 to nC35	630		48	250	mg/Kg-dry	5	27-Jul-2020 15:56
Total Petroleum Hydrocarbon	2,230		37	250	mg/Kg-dry	5	27-Jul-2020 15:56
Surr: 2-Fluorobiphenyl	96.1			70-130	%REC	5	27-Jul-2020 15:56
Surr: Trifluoromethyl benzene	90.2			70-130	%REC	5	27-Jul-2020 15:56
METALS BY SW6020A		Method:SW6020		Prep:SW3050A / 20-Jul-2020		Analyst: JHD	
Arsenic	2.41		0.0796	0.569	mg/Kg-dry	1	21-Jul-2020 23:21
Barium	81.9		0.0341	0.569	mg/Kg-dry	1	21-Jul-2020 23:21
Cadmium	1.64		0.0307	0.569	mg/Kg-dry	1	21-Jul-2020 23:21
Chromium	7.85		0.0262	0.569	mg/Kg-dry	1	21-Jul-2020 23:21
Lead	69.8		0.0148	0.569	mg/Kg-dry	1	21-Jul-2020 23:21
Selenium	0.181	J	0.104	0.569	mg/Kg-dry	1	21-Jul-2020 23:21
Silver	0.113	J	0.0171	0.569	mg/Kg-dry	1	21-Jul-2020 23:21
MERCURY BY SW7471B		Method:SW7471A		Prep:SW7471A / 20-Jul-2020		Analyst: FO	
Mercury	0.0825		0.000570	0.00403	mg/Kg-dry	1	21-Jul-2020 16:10
MOISTURE - ASTM D2216		Method:ASTM D2216				Analyst: JAC	
Percent Moisture	15.1		0.0100	0.0100	wt%	1	24-Jul-2020 13:57

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

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works
 Sample ID: SO-1620-TP06-20(1-4)-20200715
 Collection Date: 15-Jul-2020 12:10

ANALYTICAL REPORT

WorkOrder:HS20070701
 Lab ID:HS20070701-02
 Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		Method:SW8260			Analyst: WLR		
1,2-Dichloroethane	< 0.00063		0.00063	0.0052	mg/Kg-dry	1	17-Jul-2020 19:04
Benzene	< 0.00052		0.00052	0.0052	mg/Kg-dry	1	17-Jul-2020 19:04
Chlorobenzene	< 0.00063		0.00063	0.0052	mg/Kg-dry	1	17-Jul-2020 19:04
Ethylbenzene	0.0036	J	0.00073	0.0052	mg/Kg-dry	1	17-Jul-2020 19:04
Methylene chloride	< 0.0010		0.0010	0.010	mg/Kg-dry	1	17-Jul-2020 19:04
Toluene	< 0.00063		0.00063	0.0052	mg/Kg-dry	1	17-Jul-2020 19:04
Xylenes, Total	0.0077		0.0010	0.0052	mg/Kg-dry	1	17-Jul-2020 19:04
<i>Surr: 1,2-Dichloroethane-d4</i>	96.1			70-126	%REC	1	17-Jul-2020 19:04
<i>Surr: 4-Bromofluorobenzene</i>	97.3			70-130	%REC	1	17-Jul-2020 19:04
<i>Surr: Dibromofluoromethane</i>	92.9			70-130	%REC	1	17-Jul-2020 19:04
<i>Surr: Toluene-d8</i>	114			70-130	%REC	1	17-Jul-2020 19:04

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

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works
 Sample ID: SO-1620-TP06-20(1-4)-20200715
 Collection Date: 15-Jul-2020 12:10

ANALYTICAL REPORT

WorkOrder:HS20070701
 Lab ID:HS20070701-02
 Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		Method:SW8270			Prep:SW3541 / 20-Jul-2020		Analyst: GEY
1,2-Diphenylhydrazine	< 0.013		0.013	0.080	mg/Kg-dry	10	25-Jul-2020 20:57
2,4-Dimethylphenol	< 0.040		0.040	0.080	mg/Kg-dry	10	25-Jul-2020 20:57
2,4-Dinitrotoluene	< 0.011		0.011	0.080	mg/Kg-dry	10	25-Jul-2020 20:57
2,6-Dinitrotoluene	< 0.040		0.040	0.080	mg/Kg-dry	10	25-Jul-2020 20:57
2-Chloronaphthalene	< 0.016		0.016	0.080	mg/Kg-dry	10	25-Jul-2020 20:57
2-Methylnaphthalene	0.15		0.0060	0.040	mg/Kg-dry	10	25-Jul-2020 20:57
4,6-Dinitro-2-methylphenol	< 0.025		0.025	0.080	mg/Kg-dry	10	25-Jul-2020 20:57
4-Nitrophenol	< 0.023		0.023	0.16	mg/Kg-dry	10	25-Jul-2020 20:57
Acenaphthene	0.30		0.0060	0.040	mg/Kg-dry	10	25-Jul-2020 20:57
Acenaphthylene	< 0.012		0.012	0.040	mg/Kg-dry	10	25-Jul-2020 20:57
Anthracene	0.31		0.0060	0.040	mg/Kg-dry	10	25-Jul-2020 20:57
Benz(a)anthracene	0.39		0.019	0.040	mg/Kg-dry	10	25-Jul-2020 20:57
Benzo(a)pyrene	0.15		0.012	0.040	mg/Kg-dry	10	25-Jul-2020 20:57
Bis(2-chloroethoxy)methane	< 0.011		0.011	0.080	mg/Kg-dry	10	25-Jul-2020 20:57
Bis(2-ethylhexyl)phthalate	< 0.021		0.021	0.080	mg/Kg-dry	10	25-Jul-2020 20:57
Chrysene	0.93		0.0097	0.040	mg/Kg-dry	10	25-Jul-2020 20:57
Dibenzofuran	0.30		0.0085	0.040	mg/Kg-dry	10	25-Jul-2020 20:57
Di-n-butyl phthalate	< 0.015		0.015	0.080	mg/Kg-dry	10	25-Jul-2020 20:57
Fluoranthene	1.7		0.013	0.040	mg/Kg-dry	10	25-Jul-2020 20:57
Fluorene	0.53		0.013	0.040	mg/Kg-dry	10	25-Jul-2020 20:57
Naphthalene	0.14		0.0073	0.040	mg/Kg-dry	10	25-Jul-2020 20:57
Nitrobenzene	< 0.011		0.011	0.080	mg/Kg-dry	10	25-Jul-2020 20:57
N-Nitrosodiphenylamine	< 0.0085		0.0085	0.080	mg/Kg-dry	10	25-Jul-2020 20:57
Pentachlorophenol	< 0.040		0.040	0.080	mg/Kg-dry	10	25-Jul-2020 20:57
Phenanthrene	2.4		0.018	0.040	mg/Kg-dry	10	25-Jul-2020 20:57
Phenol	< 0.013		0.013	0.080	mg/Kg-dry	10	25-Jul-2020 20:57
Pyrene	1.6		0.0073	0.040	mg/Kg-dry	10	25-Jul-2020 20:57
<i>Surr: 2,4,6-Tribromophenol</i>	68.7			36-126	%REC	10	25-Jul-2020 20:57
<i>Surr: 2-Fluorobiphenyl</i>	76.8			43-125	%REC	10	25-Jul-2020 20:57
<i>Surr: 2-Fluorophenol</i>	47.4			37-125	%REC	10	25-Jul-2020 20:57
<i>Surr: 4-Terphenyl-d14</i>	82.7			32-125	%REC	10	25-Jul-2020 20:57
<i>Surr: Nitrobenzene-d5</i>	95.9			37-125	%REC	10	25-Jul-2020 20:57
<i>Surr: Phenol-d6</i>	65.7			40-125	%REC	10	25-Jul-2020 20:57

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

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works
 Sample ID: SO-1620-TP06-20(1-4)-20200715
 Collection Date: 15-Jul-2020 12:10

ANALYTICAL REPORT
 WorkOrder:HS20070701
 Lab ID:HS20070701-02
 Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	SQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005		Method:TX1005		Prep:TX1005PR / 23-Jul-2020		Analyst: MBG	
nC6 to nC12	< 330		330	2200	mg/Kg-dry	40	27-Jul-2020 16:26
>nC12 to nC28	17,000		440	2200	mg/Kg-dry	40	27-Jul-2020 16:26
>nC28 to nC35	4,300		440	2200	mg/Kg-dry	40	27-Jul-2020 16:26
Total Petroleum Hydrocarbon	21,300		330	2200	mg/Kg-dry	40	27-Jul-2020 16:26
Surr: 2-Fluorobiphenyl	0	S		70-130	%REC	40	27-Jul-2020 16:26
Surr: Trifluoromethyl benzene	0	S		70-130	%REC	40	27-Jul-2020 16:26
METALS BY SW6020A		Method:SW6020		Prep:SW3050A / 20-Jul-2020		Analyst: JHD	
Arsenic	1.64		0.0809	0.578	mg/Kg-dry	1	21-Jul-2020 23:23
Barium	67.5		0.0347	0.578	mg/Kg-dry	1	21-Jul-2020 23:23
Cadmium	1.97		0.0312	0.578	mg/Kg-dry	1	21-Jul-2020 23:23
Chromium	5.81		0.0266	0.578	mg/Kg-dry	1	21-Jul-2020 23:23
Lead	29.6		0.0150	0.578	mg/Kg-dry	1	21-Jul-2020 23:23
Selenium	0.344	J	0.105	0.578	mg/Kg-dry	1	21-Jul-2020 23:23
Silver	0.0332	J	0.0173	0.578	mg/Kg-dry	1	21-Jul-2020 23:23
MERCURY BY SW7471B		Method:SW7471A		Prep:SW7471A / 20-Jul-2020		Analyst: FO	
Mercury	0.0102		0.000596	0.00422	mg/Kg-dry	1	21-Jul-2020 15:41
MOISTURE - ASTM D2216		Method:ASTM D2216				Analyst: JAC	
Percent Moisture	18.7		0.0100	0.0100	wt%	1	24-Jul-2020 13:57

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

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works
 Sample ID: SO-1620-TP07-20(1-4)-20200715
 Collection Date: 15-Jul-2020 12:20

ANALYTICAL REPORT

WorkOrder:HS20070701
 Lab ID:HS20070701-03
 Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MLL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		Method:SW8260			Analyst: WLR		
1,2-Dichloroethane	< 0.00088		0.00088	0.0073	mg/Kg-dry	1	17-Jul-2020 18:38
Benzene	< 0.00073		0.00073	0.0073	mg/Kg-dry	1	17-Jul-2020 18:38
Chlorobenzene	< 0.00088		0.00088	0.0073	mg/Kg-dry	1	17-Jul-2020 18:38
Ethylbenzene	< 0.0010		0.0010	0.0073	mg/Kg-dry	1	17-Jul-2020 18:38
Methylene chloride	< 0.0015		0.0015	0.015	mg/Kg-dry	1	17-Jul-2020 18:38
Toluene	< 0.00088		0.00088	0.0073	mg/Kg-dry	1	17-Jul-2020 18:38
Xylenes, Total	< 0.0015		0.0015	0.0073	mg/Kg-dry	1	17-Jul-2020 18:38
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>97.1</i>			<i>70-126</i>	<i>%REC</i>	<i>1</i>	<i>17-Jul-2020 18:38</i>
<i>Surr: 4-Bromofluorobenzene</i>	<i>88.2</i>			<i>70-130</i>	<i>%REC</i>	<i>1</i>	<i>17-Jul-2020 18:38</i>
<i>Surr: Dibromofluoromethane</i>	<i>92.7</i>			<i>70-130</i>	<i>%REC</i>	<i>1</i>	<i>17-Jul-2020 18:38</i>
<i>Surr: Toluene-d8</i>	<i>116</i>			<i>70-130</i>	<i>%REC</i>	<i>1</i>	<i>17-Jul-2020 18:38</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: SO-1620-TP07-20(1-4)-20200715
 Collection Date: 15-Jul-2020 12:20

ANALYTICAL REPORT
 WorkOrder:HS20070701
 Lab ID:HS20070701-03
 Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		Method:SW8270			Prep:SW3541 / 20-Jul-2020		Analyst: GEY
1,2-Diphenylhydrazine	< 0.037		0.037	0.22	mg/Kg-dry	10	25-Jul-2020 21:16
2,4-Dimethylphenol	< 0.11		0.11	0.22	mg/Kg-dry	10	25-Jul-2020 21:16
2,4-Dinitrotoluene	< 0.031		0.031	0.22	mg/Kg-dry	10	25-Jul-2020 21:16
2,6-Dinitrotoluene	< 0.11		0.11	0.22	mg/Kg-dry	10	25-Jul-2020 21:16
2-Chloronaphthalene	< 0.044		0.044	0.22	mg/Kg-dry	10	25-Jul-2020 21:16
2-Methylnaphthalene	54		0.17	1.1	mg/Kg-dry	100	27-Jul-2020 23:36
4,6-Dinitro-2-methylphenol	< 0.072		0.072	0.22	mg/Kg-dry	10	25-Jul-2020 21:16
4-Nitrophenol	< 0.065		0.065	0.45	mg/Kg-dry	10	25-Jul-2020 21:16
Acenaphthene	4.0		0.017	0.11	mg/Kg-dry	10	25-Jul-2020 21:16
Acenaphthylene	0.80		0.034	0.11	mg/Kg-dry	10	25-Jul-2020 21:16
Anthracene	4.2		0.017	0.11	mg/Kg-dry	10	25-Jul-2020 21:16
Benz(a)anthracene	3.1		0.054	0.11	mg/Kg-dry	10	25-Jul-2020 21:16
Benzo(a)pyrene	1.6		0.034	0.11	mg/Kg-dry	10	25-Jul-2020 21:16
Bis(2-chloroethoxy)methane	< 0.031		0.031	0.22	mg/Kg-dry	10	25-Jul-2020 21:16
Bis(2-ethylhexyl)phthalate	1.2		0.058	0.22	mg/Kg-dry	10	25-Jul-2020 21:16
Chrysene	4.4		0.027	0.11	mg/Kg-dry	10	25-Jul-2020 21:16
Dibenzofuran	1.4		0.024	0.11	mg/Kg-dry	10	25-Jul-2020 21:16
Di-n-butyl phthalate	< 0.041		0.041	0.22	mg/Kg-dry	10	25-Jul-2020 21:16
Fluoranthene	9.5		0.037	0.11	mg/Kg-dry	10	25-Jul-2020 21:16
Fluorene	5.0		0.037	0.11	mg/Kg-dry	10	25-Jul-2020 21:16
Naphthalene	8.9		0.020	0.11	mg/Kg-dry	10	25-Jul-2020 21:16
Nitrobenzene	< 0.031		0.031	0.22	mg/Kg-dry	10	25-Jul-2020 21:16
N-Nitrosodiphenylamine	< 0.024		0.024	0.22	mg/Kg-dry	10	25-Jul-2020 21:16
Pentachlorophenol	< 0.11		0.11	0.22	mg/Kg-dry	10	25-Jul-2020 21:16
Phenanthrene	16		0.51	1.1	mg/Kg-dry	100	27-Jul-2020 23:36
Phenol	0.12	J	0.037	0.22	mg/Kg-dry	10	25-Jul-2020 21:16
Pyrene	17		0.20	1.1	mg/Kg-dry	100	27-Jul-2020 23:36
<i>Surr: 2,4,6-Tribromophenol</i>	0	S		36-126	%REC	100	27-Jul-2020 23:36
<i>Surr: 2,4,6-Tribromophenol</i>	76.5			36-126	%REC	10	25-Jul-2020 21:16
<i>Surr: 2-Fluorobiphenyl</i>	81.0			43-125	%REC	10	25-Jul-2020 21:16
<i>Surr: 2-Fluorobiphenyl</i>	0	S		43-125	%REC	100	27-Jul-2020 23:36
<i>Surr: 2-Fluorophenol</i>	0	S		37-125	%REC	100	27-Jul-2020 23:36
<i>Surr: 2-Fluorophenol</i>	38.0			37-125	%REC	10	25-Jul-2020 21:16
<i>Surr: 4-Terphenyl-d14</i>	116			32-125	%REC	10	25-Jul-2020 21:16
<i>Surr: 4-Terphenyl-d14</i>	0	S		32-125	%REC	100	27-Jul-2020 23:36
<i>Surr: Nitrobenzene-d5</i>	0	S		37-125	%REC	100	27-Jul-2020 23:36
<i>Surr: Nitrobenzene-d5</i>	89.2			37-125	%REC	10	25-Jul-2020 21:16
<i>Surr: Phenol-d6</i>	59.3			40-125	%REC	10	25-Jul-2020 21:16
<i>Surr: Phenol-d6</i>	0	S		40-125	%REC	100	27-Jul-2020 23:36

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

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works
 Sample ID: SO-1620-TP07-20(1-4)-20200715
 Collection Date: 15-Jul-2020 12:20

ANALYTICAL REPORT
 WorkOrder:HS20070701
 Lab ID:HS20070701-03
 Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005		Method:TX1005		Prep:TX1005PR / 23-Jul-2020		Analyst: MBG	
nC6 to nC12	520	J	490	3300	mg/Kg-dry	50	27-Jul-2020 15:27
>nC12 to nC28	18,000		650	3300	mg/Kg-dry	50	27-Jul-2020 15:27
>nC28 to nC35	3,700		650	3300	mg/Kg-dry	50	27-Jul-2020 15:27
Total Petroleum Hydrocarbon	22,200		490	3300	mg/Kg-dry	50	27-Jul-2020 15:27
Surr: 2-Fluorobiphenyl	0	S		70-130	%REC	50	27-Jul-2020 15:27
Surr: Trifluoromethyl benzene	0	S		70-130	%REC	50	27-Jul-2020 15:27
METALS BY SW6020A		Method:SW6020		Prep:SW3050A / 20-Jul-2020		Analyst: JHD	
Arsenic	7.80		0.0767	0.548	mg/Kg-dry	1	21-Jul-2020 23:29
Barium	623		1.64	27.4	mg/Kg-dry	50	22-Jul-2020 12:52
Cadmium	3.09		0.0296	0.548	mg/Kg-dry	1	21-Jul-2020 23:29
Chromium	57.4		0.0252	0.548	mg/Kg-dry	1	21-Jul-2020 23:29
Lead	630		0.712	27.4	mg/Kg-dry	50	22-Jul-2020 12:52
Selenium	0.242	J	0.0997	0.548	mg/Kg-dry	1	21-Jul-2020 23:29
Silver	0.884		0.0164	0.548	mg/Kg-dry	1	21-Jul-2020 23:29
MERCURY BY SW7471B		Method:SW7471A		Prep:SW7471A / 20-Jul-2020		Analyst: FO	
Mercury	0.290		0.000570	0.00403	mg/Kg-dry	1	21-Jul-2020 15:43
MOISTURE - ASTM D2216		Method:ASTM D2216				Analyst: JAC	
Percent Moisture	12.7		0.0100	0.0100	wt%	1	24-Jul-2020 13:57

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

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works
 Sample ID: WPW-1620-TP07-20-20200716
 Collection Date: 16-Jul-2020 08:45

ANALYTICAL REPORT

WorkOrder:HS20070701
 Lab ID:HS20070701-04
 Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP			
1,2-Dichloroethane	< 0.010		0.010	0.050	mg/L	50	21-Jul-2020 18:37
Benzene	< 0.010		0.010	0.050	mg/L	50	21-Jul-2020 18:37
Chlorobenzene	< 0.015		0.015	0.050	mg/L	50	21-Jul-2020 18:37
Ethylbenzene	< 0.015		0.015	0.050	mg/L	50	21-Jul-2020 18:37
Methylene chloride	< 0.050		0.050	0.10	mg/L	50	21-Jul-2020 18:37
Toluene	< 0.010		0.010	0.050	mg/L	50	21-Jul-2020 18:37
Xylenes, Total	< 0.015		0.015	0.050	mg/L	50	21-Jul-2020 18:37
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>101</i>			<i>70-126</i>	<i>%REC</i>	<i>50</i>	<i>21-Jul-2020 18:37</i>
<i>Surr: 4-Bromofluorobenzene</i>	<i>99.0</i>			<i>81-113</i>	<i>%REC</i>	<i>50</i>	<i>21-Jul-2020 18:37</i>
<i>Surr: Dibromofluoromethane</i>	<i>102</i>			<i>77-123</i>	<i>%REC</i>	<i>50</i>	<i>21-Jul-2020 18:37</i>
<i>Surr: Toluene-d8</i>	<i>103</i>			<i>82-127</i>	<i>%REC</i>	<i>50</i>	<i>21-Jul-2020 18:37</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: WPW-1620-TP07-20-20200716
 Collection Date: 16-Jul-2020 08:45

ANALYTICAL REPORT
 WorkOrder:HS20070701
 Lab ID:HS20070701-04
 Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		Method:SW8270		Prep:SW3510 / 20-Jul-2020		Analyst: GEY	
1,2-Diphenylhydrazine	< 0.00021		0.00021	0.0020	mg/L	10	27-Jul-2020 21:39
2,4-Dimethylphenol	0.0033		0.00040	0.0020	mg/L	10	27-Jul-2020 21:39
2,4-Dinitrotoluene	< 0.00058		0.00058	0.0020	mg/L	10	27-Jul-2020 21:39
2,6-Dinitrotoluene	< 0.00042		0.00042	0.0020	mg/L	10	27-Jul-2020 21:39
2-Chloronaphthalene	< 0.00021		0.00021	0.0020	mg/L	10	27-Jul-2020 21:39
2-Methylnaphthalene	0.0043		0.00019	0.0010	mg/L	10	27-Jul-2020 21:39
4,6-Dinitro-2-methylphenol	< 0.00020		0.00020	0.0020	mg/L	10	27-Jul-2020 21:39
4-Nitrophenol	< 0.00047		0.00047	0.010	mg/L	10	27-Jul-2020 21:39
Acenaphthene	0.0028		0.00027	0.0010	mg/L	10	27-Jul-2020 21:39
Acenaphthylene	< 0.00015		0.00015	0.0010	mg/L	10	27-Jul-2020 21:39
Anthracene	0.0031		0.00014	0.0010	mg/L	10	27-Jul-2020 21:39
Benz(a)anthracene	< 0.00050		0.00050	0.0010	mg/L	10	27-Jul-2020 21:39
Benzo(a)pyrene	< 0.00020		0.00020	0.0010	mg/L	10	27-Jul-2020 21:39
Bis(2-chloroethoxy)methane	< 0.00030		0.00030	0.0020	mg/L	10	27-Jul-2020 21:39
Bis(2-ethylhexyl)phthalate	< 0.00037		0.00037	0.0020	mg/L	10	27-Jul-2020 21:39
Chrysene	< 0.00021		0.00021	0.0010	mg/L	10	27-Jul-2020 21:39
Dibenzofuran	0.0018		0.00020	0.0010	mg/L	10	27-Jul-2020 21:39
Di-n-butyl phthalate	< 0.00020		0.00020	0.0020	mg/L	10	27-Jul-2020 21:39
Fluoranthene	0.0031		0.00010	0.0010	mg/L	10	27-Jul-2020 21:39
Fluorene	0.0027		0.00030	0.0010	mg/L	10	27-Jul-2020 21:39
Naphthalene	0.016		0.00020	0.0010	mg/L	10	27-Jul-2020 21:39
Nitrobenzene	< 0.00024		0.00024	0.0020	mg/L	10	27-Jul-2020 21:39
N-Nitrosodiphenylamine	< 0.00025		0.00025	0.0020	mg/L	10	27-Jul-2020 21:39
Pentachlorophenol	0.0051		0.00079	0.0020	mg/L	10	27-Jul-2020 21:39
Phenanthrene	0.0076		0.00021	0.0010	mg/L	10	27-Jul-2020 21:39
Phenol	0.0076		0.00035	0.0020	mg/L	10	27-Jul-2020 21:39
Pyrene	0.0026		0.00019	0.0010	mg/L	10	27-Jul-2020 21:39
<i>Surr: 2,4,6-Tribromophenol</i>	<i>123</i>			<i>34-129</i>	<i>%REC</i>	<i>10</i>	<i>27-Jul-2020 21:39</i>
<i>Surr: 2-Fluorobiphenyl</i>	<i>83.9</i>			<i>40-125</i>	<i>%REC</i>	<i>10</i>	<i>27-Jul-2020 21:39</i>
<i>Surr: 2-Fluorophenol</i>	<i>89.2</i>			<i>20-120</i>	<i>%REC</i>	<i>10</i>	<i>27-Jul-2020 21:39</i>
<i>Surr: 4-Terphenyl-d14</i>	<i>107</i>			<i>40-135</i>	<i>%REC</i>	<i>10</i>	<i>27-Jul-2020 21:39</i>
<i>Surr: Nitrobenzene-d5</i>	<i>89.6</i>			<i>41-120</i>	<i>%REC</i>	<i>10</i>	<i>27-Jul-2020 21:39</i>
<i>Surr: Phenol-d6</i>	<i>111</i>			<i>20-120</i>	<i>%REC</i>	<i>10</i>	<i>27-Jul-2020 21:39</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: WPW-1620-TP07-20-20200716
 Collection Date: 16-Jul-2020 08:45

ANALYTICAL REPORT
 WorkOrder:HS20070701
 Lab ID:HS20070701-04
 Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL TEXAS TPH BY TX1005		Method:TX1005		Prep:TX1005PR / 20-Jul-2020		Analyst: MBG	
nC6 to nC12	< 0.20		0.20	0.50	mg/L	1	20-Jul-2020 20:01
>nC12 to nC28	25		0.20	0.50	mg/L	1	20-Jul-2020 20:01
>nC28 to nC35	3.8		0.20	0.50	mg/L	1	20-Jul-2020 20:01
Total Petroleum Hydrocarbon	28.8		0.20	0.50	mg/L	1	20-Jul-2020 20:01
Surr: 2-Fluorobiphenyl	105			70-130	%REC	1	20-Jul-2020 20:01
Surr: Trifluoromethyl benzene	101			70-130	%REC	1	20-Jul-2020 20:01
ICP-MS METALS BY SW6020A		Method:SW6020		Prep:SW3010A / 22-Jul-2020		Analyst: JHD	
Arsenic	0.543		0.00400	0.0200	mg/L	1	24-Jul-2020 11:20
Barium	0.561		0.0190	0.0400	mg/L	1	24-Jul-2020 11:20
Cadmium	0.00830	J	0.00200	0.0200	mg/L	1	24-Jul-2020 11:20
Chromium	0.651		0.00400	0.0400	mg/L	1	24-Jul-2020 11:20
Lead	2.88		0.00600	0.0200	mg/L	1	24-Jul-2020 11:20
Selenium	0.0132	J	0.0110	0.0200	mg/L	1	24-Jul-2020 11:20
Silver	0.00516	J	0.00200	0.0200	mg/L	1	24-Jul-2020 11:20
MERCURY BY SW7470A		Method:SW7470		Prep:SW7470 / 22-Jul-2020		Analyst: FO	
Mercury	0.00140	J	0.000300	0.00200	mg/L	1	22-Jul-2020 16:52

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

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070701

Batch ID: 3822 **Start Date:** 17 Jul 2020 07:28 **End Date:** 17 Jul 2020 07:28
Method: VOLATILES BY SW8260C

Sample ID	Container	Sample Wt/Vol	Final Volume	Weight Factor	Container Type
HS20070701-01	1	6.273 (g)	5 (mL)	0.8	TerraCore (5035A)
HS20070701-02	1	5.899 (g)	5 (mL)	0.85	TerraCore (5035A)
HS20070701-03	1	3.894 (g)	5 (mL)	1.28	TerraCore (5035A)

Batch ID: 155538 **Start Date:** 20 Jul 2020 07:30 **End Date:** 20 Jul 2020 13:30
Method: METALS PREP - SOLIDS - SW3050B **Prep Code:** 3050_I_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20070701-01		0.5177 (g)	50 (mL)	96.58
HS20070701-02		0.532 (g)	50 (mL)	93.98
HS20070701-03		0.5227 (g)	50 (mL)	95.66

Batch ID: 155542 **Start Date:** 20 Jul 2020 09:10 **End Date:** 20 Jul 2020 12:00
Method: TX 1005 PREP **Prep Code:** TX 1005_W PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20070701-04	1	30.19 (g)	3 (mL)	0.09937

Batch ID: 155547 **Start Date:** 20 Jul 2020 07:00 **End Date:** 20 Jul 2020 12:30
Method: SV AQ SEP FUN EXTRACT-LOWLEV - 3510C **Prep Code:** 3510_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20070701-04	1	1000 (mL)	1 (mL)	0.001

Batch ID: 155570 **Start Date:** 20 Jul 2020 11:30 **End Date:** 20 Jul 2020 16:30
Method: SV SOXHLET EXTRACT-LOWLEVEL-SW3541 **Prep Code:** 3541_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20070701-01		30.38 (g)	1 (mL)	0.03292
HS20070701-02		30.5 (g)	1 (mL)	0.03279
HS20070701-03		30.27 (g)	3 (mL)	0.09911

Batch ID: 155586 **Start Date:** 20 Jul 2020 13:00 **End Date:** 20 Jul 2020 15:00
Method: MERCURY PREP - SOLID - 7471B **Prep Code:** HG_S_LOWPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20070701-01		0.5828 (grams)	40 (mL)	68.63
HS20070701-02		0.5815 (grams)	40 (mL)	68.79
HS20070701-03		0.5672 (grams)	40 (mL)	70.52

Batch ID: 155624 **Start Date:** 22 Jul 2020 09:00 **End Date:** 22 Jul 2020 13:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20070701-04		1 (mL)	10 (mL)	10

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070701

Batch ID: 155661 **Start Date:** 22 Jul 2020 11:00 **End Date:** 22 Jul 2020 13:00
Method: MERCURY PREP BY 7470A- WATER **Prep Code:** HG_WPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20070701-04		1 (mL)	10 (mL)	10

Batch ID: 155702 **Start Date:** 23 Jul 2020 11:42 **End Date:** 23 Jul 2020 13:50
Method: TX 1005 PREP **Prep Code:** TX 1005_S PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20070701-01	1	11.92 (g)	10 (mL)	0.8389
HS20070701-02	1	11 (g)	10 (mL)	0.9091
HS20070701-03	1	8.65 (g)	10 (mL)	1.156

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070701

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 155538 (0)		Test Name : METALS BY SW6020A			Matrix: Soil	
HS20070701-01	SO-1620-TP05-20(1-4)-20200715	15 Jul 2020 12:00		20 Jul 2020 13:30	21 Jul 2020 23:21	1
HS20070701-02	SO-1620-TP06-20(1-4)-20200715	15 Jul 2020 12:10		20 Jul 2020 13:30	21 Jul 2020 23:23	1
HS20070701-03	SO-1620-TP07-20(1-4)-20200715	15 Jul 2020 12:20		20 Jul 2020 13:30	22 Jul 2020 12:52	50
HS20070701-03	SO-1620-TP07-20(1-4)-20200715	15 Jul 2020 12:20		20 Jul 2020 13:30	21 Jul 2020 23:29	1
Batch ID: 155542 (0)		Test Name : LOW-LEVEL TEXAS TPH BY TX1005			Matrix: Groundwater	
HS20070701-04	WPW-1620-TP07-20-20200716	16 Jul 2020 08:45		20 Jul 2020 09:10	20 Jul 2020 20:01	1
Batch ID: 155547 (0)		Test Name : LOW-LEVEL SEMIVOLATILES BY 8270D			Matrix: Groundwater	
HS20070701-04	WPW-1620-TP07-20-20200716	16 Jul 2020 08:45		20 Jul 2020 11:28	27 Jul 2020 21:39	10
Batch ID: 155570 (0)		Test Name : LOW-LEVEL SEMIVOLATILES BY 8270D			Matrix: Soil	
HS20070701-01	SO-1620-TP05-20(1-4)-20200715	15 Jul 2020 12:00		20 Jul 2020 11:30	28 Jul 2020 01:14	100
HS20070701-01	SO-1620-TP05-20(1-4)-20200715	15 Jul 2020 12:00		20 Jul 2020 11:30	25 Jul 2020 20:37	10
HS20070701-02	SO-1620-TP06-20(1-4)-20200715	15 Jul 2020 12:10		20 Jul 2020 11:30	25 Jul 2020 20:57	10
HS20070701-03	SO-1620-TP07-20(1-4)-20200715	15 Jul 2020 12:20		20 Jul 2020 11:30	27 Jul 2020 23:36	100
HS20070701-03	SO-1620-TP07-20(1-4)-20200715	15 Jul 2020 12:20		20 Jul 2020 11:30	25 Jul 2020 21:16	10
Batch ID: 155586 (0)		Test Name : MERCURY BY SW7471B			Matrix: Soil	
HS20070701-01	SO-1620-TP05-20(1-4)-20200715	15 Jul 2020 12:00		20 Jul 2020 13:00	21 Jul 2020 16:10	1
HS20070701-02	SO-1620-TP06-20(1-4)-20200715	15 Jul 2020 12:10		20 Jul 2020 13:00	21 Jul 2020 15:41	1
HS20070701-03	SO-1620-TP07-20(1-4)-20200715	15 Jul 2020 12:20		20 Jul 2020 13:00	21 Jul 2020 15:43	1
Batch ID: 155624 (0)		Test Name : ICP-MS METALS BY SW6020A			Matrix: Groundwater	
HS20070701-04	WPW-1620-TP07-20-20200716	16 Jul 2020 08:45		22 Jul 2020 13:00	24 Jul 2020 11:20	1
Batch ID: 155661 (0)		Test Name : MERCURY BY SW7470A			Matrix: Groundwater	
HS20070701-04	WPW-1620-TP07-20-20200716	16 Jul 2020 08:45		22 Jul 2020 11:00	22 Jul 2020 16:52	1
Batch ID: 155702 (0)		Test Name : TEXAS TPH BY TX1005			Matrix: Soil	
HS20070701-01	SO-1620-TP05-20(1-4)-20200715	15 Jul 2020 12:00		23 Jul 2020 11:42	27 Jul 2020 15:56	5
HS20070701-02	SO-1620-TP06-20(1-4)-20200715	15 Jul 2020 12:10		23 Jul 2020 11:42	27 Jul 2020 16:26	40
HS20070701-03	SO-1620-TP07-20(1-4)-20200715	15 Jul 2020 12:20		23 Jul 2020 11:42	27 Jul 2020 15:27	50
Batch ID: R365209 (0)		Test Name : VOLATILES BY SW8260C			Matrix: Soil	
HS20070701-02	SO-1620-TP06-20(1-4)-20200715	15 Jul 2020 12:10			17 Jul 2020 19:04	1
HS20070701-03	SO-1620-TP07-20(1-4)-20200715	15 Jul 2020 12:20			17 Jul 2020 18:38	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070701

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R365396 (0)		Test Name : LOW LEVEL VOLATILES BY SW8260C			Matrix: Groundwater	
HS20070701-04	WPW-1620-TP07-20-20200716	16 Jul 2020 08:45			21 Jul 2020 18:37	50
Batch ID: R365633 (0)		Test Name : MOISTURE - ASTM D2216			Matrix: Soil	
HS20070701-01	SO-1620-TP05-20(1-4)-20200715	15 Jul 2020 12:00			24 Jul 2020 13:57	1
HS20070701-02	SO-1620-TP06-20(1-4)-20200715	15 Jul 2020 12:10			24 Jul 2020 13:57	1
HS20070701-03	SO-1620-TP07-20(1-4)-20200715	15 Jul 2020 12:20			24 Jul 2020 13:57	1
Batch ID: R365650 (0)		Test Name : VOLATILES BY SW8260C			Matrix: Soil	
HS20070701-01	SO-1620-TP05-20(1-4)-20200715	15 Jul 2020 12:00			24 Jul 2020 16:49	1

WorkOrder: HS20070701
 InstrumentID: FID-11
 Test Code: TX1005_S_REV3
 Test Number: TX1005
 Test Name: Texas TPH by TX1005

**METHOD DETECTION /
 REPORTING LIMITS**

Matrix: Solid

Units: mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	nC6 to nC12	TPH-1005-1	25	21	7.4	50
A	>nC12 to nC28	TPH-1005-2	25	23	9.8	50
A	>nC28 to nC35	TPH-1005-4	25	21	9.8	50
A	Total Petroleum Hydrocarbon	TPH	25	21	7.4	50
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	Trifluoromethyl benzene	98-08-8	0	0	0	0

WorkOrder: HS20070701
 InstrumentID: FID-11
 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	0.24	0.20	0.50
A	>nC12 to nC28	TPH-1005-2	0.25	0.28	0.20	0.50
A	>nC28 to nC35	TPH-1005-4	0.25	0.24	0.20	0.50
A	Total Petroleum Hydrocarbon	TPH	0.25	0.24	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: HS20070701
InstrumentID: HG03
Test Code: HG_S_Low
Test Number: SW7471A
Test Name: Mercury by SW7471B

**METHOD DETECTION /
REPORTING LIMITS**

Matrix: Solid

Units: mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Mercury	7439-97-6	0.00167	0.00200	0.000470	0.00332

WorkOrder: HS20070701
 InstrumentID: HG03
 Test Code: HG_W
 Test Number: SW7470
 Test Name: Mercury by SW7470A

**METHOD DETECTION /
 REPORTING LIMITS**

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

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Mercury	7439-97-6	0.000100	0.000106	0.0000300	0.000200

WorkOrder: HS20070701
 InstrumentID: ICPMS06
 Test Code: ICP_S_Low
 Test Number: SW6020
 Test Name: Metals by SW6020A

**METHOD DETECTION /
 REPORTING LIMITS**

Matrix: Solid

Units: mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Arsenic	7440-38-2	0.100	0.129	0.0700	0.500
A	Barium	7440-39-3	0.100	0.108	0.0300	0.500
A	Cadmium	7440-43-9	0.100	0.106	0.0270	0.500
A	Chromium	7440-47-3	0.100	0.132	0.0230	0.500
A	Lead	7439-92-1	0.100	0.105	0.0130	0.500
A	Selenium	7782-49-2	0.200	0.214	0.0910	0.500
A	Silver	7440-22-4	0.100	0.105	0.0150	0.500

WorkOrder: HS20070701
 InstrumentID: ICPMS06
 Test Code: ICP_TW
 Test Number: SW6020
 Test Name: ICP-MS Metals by SW6020A

**METHOD DETECTION /
 REPORTING LIMITS**

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

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Arsenic	7440-38-2	0.00100	0.000928	0.000400	0.00200
A	Barium	7440-39-3	0.00250	0.00265	0.00190	0.00400
A	Cadmium	7440-43-9	0.000500	0.000488	0.000200	0.00200
A	Chromium	7440-47-3	0.00100	0.000854	0.000400	0.00400
A	Lead	7439-92-1	0.00100	0.000946	0.000600	0.00200
A	Selenium	7782-49-2	0.00250	0.00253	0.00110	0.00200
A	Silver	7440-22-4	0.000500	0.000458	0.000200	0.00200

WorkOrder: HS20070701
 InstrumentID: SV-7
 Test Code: 8270_LOW_S
 Test Number: SW8270
 Test Name: Low-Level Semivolatiles by 8270D

**METHOD DETECTION /
 REPORTING LIMITS**

Matrix: Solid

Units: mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Diphenylhydrazine	122-66-7	0.0033	0.0025	0.0011	0.0066
A	2,4-Dimethylphenol	105-67-9	0.0033	0.0024	0.0033	0.0066
A	2,4-Dinitrotoluene	121-14-2	0.0033	0.0029	0.00090	0.0066
A	2,6-Dinitrotoluene	606-20-2	0.0033	0.0036	0.0033	0.0066
A	2-Chloronaphthalene	91-58-7	0.0033	0.0035	0.0013	0.0066
A	2-Methylnaphthalene	91-57-6	0.0033	0.0031	0.00050	0.0033
A	2-Methylnaphthalene	91-57-6	0.0017	0.0015	0.00050	0.0033
A	4,6-Dinitro-2-methylphenol	534-52-1	0.0033	0.0018	0.0021	0.0066
A	4-Nitrophenol	100-02-7	0.0033	0.0024	0.0019	0.013
A	Acenaphthene	83-32-9	0.0017	0.0016	0.00050	0.0033
A	Acenaphthylene	208-96-8	0.0017	0.0016	0.0010	0.0033
A	Anthracene	120-12-7	0.0017	0.0017	0.00050	0.0033
A	Benz(a)anthracene	56-55-3	0.0017	0.0015	0.0016	0.0033
A	Benzo(a)pyrene	50-32-8	0.0017	0.0013	0.0010	0.0033
A	Bis(2-chloroethoxy)methane	111-91-1	0.0033	0.0030	0.00090	0.0066
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.0033	0.0021	0.0017	0.0066
A	Chrysene	218-01-9	0.0017	0.0017	0.00080	0.0033
A	Dibenzofuran	132-64-9	0.0017	0.0015	0.00070	0.0033
A	Di-n-butyl phthalate	84-74-2	0.0033	0.0030	0.0012	0.0066
A	Fluoranthene	206-44-0	0.0017	0.0012	0.0011	0.0033
A	Fluorene	86-73-7	0.0017	0.0016	0.0011	0.0033
A	Naphthalene	91-20-3	0.0017	0.0018	0.00060	0.0033
A	Nitrobenzene	98-95-3	0.0033	0.0032	0.00090	0.0066
A	N-Nitrosodiphenylamine	86-30-6	0.0033	0.0027	0.00070	0.0066
A	Pentachlorophenol	87-86-5	0.0033	0.00089	0.0033	0.0066
A	Phenanthrene	85-01-8	0.0017	0.0018	0.0015	0.0033
A	Phenol	108-95-2	0.0033	0.0030	0.0011	0.0066
A	Pyrene	129-00-0	0.0017	0.0016	0.00060	0.0033
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	2-Fluorophenol	367-12-4	0	0	0	0
S	4-Terphenyl-d14	1718-51-0	0	0	0	0
S	Nitrobenzene-d5	4165-60-0	0	0	0	0
S	Phenol-d6	13127-88-3	0	0	0	0

WorkOrder: HS20070701
 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	1,2-Diphenylhydrazine	122-66-7	0.00010	0.000073	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.000085	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.000088	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.000082	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.000084	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.000050	0.000040	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000056	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00010	0.000075	0.000047	0.0010
A	Acenaphthene	83-32-9	0.000050	0.000045	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000039	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.000040	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.000050	0.000036	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.000050	0.000029	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.000085	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.000072	0.000037	0.00020
A	Chrysene	218-01-9	0.000050	0.000040	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.000050	0.000045	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.000073	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000033	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.000045	0.000030	0.00010
A	Naphthalene	91-20-3	0.000050	0.000066	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.000098	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.000079	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.000060	0.000079	0.00020
A	Phenanthrene	85-01-8	0.000050	0.000042	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.000090	0.000035	0.00020
A	Pyrene	129-00-0	0.000050	0.000044	0.000019	0.00010
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0.00020
S	2-Fluorobiphenyl	321-60-8	0	0	0	0.00020
S	2-Fluorophenol	367-12-4	0	0	0	0.00020
S	4-Terphenyl-d14	1718-51-0	0	0	0	0.00020
S	Nitrobenzene-d5	4165-60-0	0	0	0	0.00020
S	Phenol-d6	13127-88-3	0	0	0	0.00020

WorkOrder: HS20070701
 InstrumentID: VOA2
 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	1,2-Dichloroethane	107-06-2	0.00050	0.00063	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00052	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.0010	0.0011	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.0010	0.0011	0.00030	0.0010
A	Methylene chloride	75-09-2	0.0020	0.00081	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00056	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.0010	0.0032	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

WorkOrder: HS20070701
 InstrumentID: VOA5
 Test Code: 8260_S
 Test Number: SW8260
 Test Name: Volatiles by SW8260C

**METHOD DETECTION /
 REPORTING LIMITS**

Matrix: Solid

Units: mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.0012	0.0013	0.00060	0.0050
A	Benzene	71-43-2	0.0012	0.0012	0.00050	0.0050
A	Chlorobenzene	108-90-7	0.0012	0.0013	0.00060	0.0050
A	Ethylbenzene	100-41-4	0.0012	0.0012	0.00070	0.0050
A	Methylene chloride	75-09-2	0.0025	0.0038	0.0010	0.010
A	Toluene	108-88-3	0.0025	0.0022	0.00060	0.0050
A	Xylenes, Total	1330-20-7	0.0012	0.0032	0.0010	0.0050
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0
S	4-Bromofluorobenzene	460-00-4	0	0	0	0
S	Dibromofluoromethane	1868-53-7	0	0	0	0
S	Toluene-d8	2037-26-5	0	0	0	0

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070701

QC BATCH REPORT

Batch ID: 155542 (0)		Instrument: FID-11		Method: LOW-LEVEL TEXAS TPH BY TX1005						
MBLK	Sample ID: MBLK-155542	Units: mg/L			Analysis Date: 20-Jul-2020 16:07					
Client ID:	Run ID: FID-11_365336	SeqNo: 5667507		PrepDate: 20-Jul-2020		DF: 1				
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	< 0.20	0.50								
>nC12 to nC28	< 0.20	0.50								
>nC28 to nC35	< 0.20	0.50								
Total Petroleum Hydrocarbon	< 0.20	0.50								
Surr: 2-Fluorobiphenyl	2.224	0	2.5	0	89.0	70 - 130				
Surr: Trifluoromethyl benzene	2.344	0	2.5	0	93.8	70 - 130				
LCS	Sample ID: LCS-155542	Units: mg/L			Analysis Date: 20-Jul-2020 16:36					
Client ID:	Run ID: FID-11_365336	SeqNo: 5667508		PrepDate: 20-Jul-2020		DF: 1				
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	23.78	0.50	25	0	95.1	75 - 125				
>nC12 to nC28	26.1	0.50	25	0	104	75 - 125				
Surr: 2-Fluorobiphenyl	2.445	0	2.5	0	97.8	70 - 130				
Surr: Trifluoromethyl benzene	2.266	0	2.5	0	90.6	70 - 130				
LCSD	Sample ID: LCSD-155542	Units: mg/L			Analysis Date: 20-Jul-2020 17:06					
Client ID:	Run ID: FID-11_365336	SeqNo: 5667509		PrepDate: 20-Jul-2020		DF: 1				
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	24.96	0.50	25	0	99.9	75 - 125	23.78	4.87	20	
>nC12 to nC28	26.44	0.50	25	0	106	75 - 125	26.1	1.32	20	
Surr: 2-Fluorobiphenyl	2.522	0	2.5	0	101	70 - 130	2.445	3.07	20	
Surr: Trifluoromethyl benzene	2.379	0	2.5	0	95.2	70 - 130	2.266	4.89	20	
MS	Sample ID: HS20070677-01MS	Units: mg/L			Analysis Date: 20-Jul-2020 18:04					
Client ID:	Run ID: FID-11_365336	SeqNo: 5667511		PrepDate: 20-Jul-2020		DF: 1				
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	26.14	0.48	24.19	0	108	75 - 125				
>nC12 to nC28	28.4	0.48	24.19	0	117	75 - 125				
Surr: 2-Fluorobiphenyl	2.823	0	2.419	0	117	70 - 130				
Surr: Trifluoromethyl benzene	2.541	0	2.419	0	105	70 - 130				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070701

QC BATCH REPORT

Batch ID: 155542 (0)		Instrument: FID-11		Method: LOW-LEVEL TEXAS TPH BY TX1005					
MSD	Sample ID: HS20070677-01MSD	Units: mg/L			Analysis Date: 20-Jul-2020 18:33				
Client ID:	Run ID: FID-11_365336	SeqNo: 5667512		PrepDate: 20-Jul-2020		DF: 1			
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

nC6 to nC12	26.25	0.49	24.39	0	108	75 - 125	26.14	0.407	20
>nC12 to nC28	26.4	0.49	24.39	0	108	75 - 125	28.4	7.29	20
Surr: 2-Fluorobiphenyl	2.693	0	2.439	0	110	70 - 130	2.823	4.71	20
Surr: Trifluoromethyl benzene	2.447	0	2.439	0	100	70 - 130	2.541	3.78	20

The following samples were analyzed in this batch: HS20070701-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070701

QC BATCH REPORT

Batch ID: 155702 (0) **Instrument:** FID-11 **Method:** TEXAS TPH BY TX1005

MBLK		Sample ID: MBLK-155702		Units: mg/Kg		Analysis Date: 23-Jul-2020 18:26			
Client ID:		Run ID: FID-11_365598		SeqNo: 5672968		PrepDate: 23-Jul-2020		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
nC6 to nC12	< 7.4	50							
>nC12 to nC28	< 9.8	50							
>nC28 to nC35	< 9.8	50							
Total Petroleum Hydrocarbon	< 7.4	50							
<i>Surr: 2-Fluorobiphenyl</i>	25.1	0	25	0	100	70 - 130			
<i>Surr: Trifluoromethyl benzene</i>	25.24	0	25	0	101	70 - 130			

LCS		Sample ID: LCS-155702		Units: mg/Kg		Analysis Date: 23-Jul-2020 18:56			
Client ID:		Run ID: FID-11_365598		SeqNo: 5672969		PrepDate: 23-Jul-2020		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
nC6 to nC12	248.7	50	250	0	99.5	75 - 125			
>nC12 to nC28	272.3	50	250	0	109	75 - 125			
<i>Surr: 2-Fluorobiphenyl</i>	26.41	0	25	0	106	70 - 130			
<i>Surr: Trifluoromethyl benzene</i>	20.63	0	25	0	82.5	70 - 130			

LCSD		Sample ID: LCSD-155702		Units: mg/Kg		Analysis Date: 23-Jul-2020 19:26			
Client ID:		Run ID: FID-11_365598		SeqNo: 5672970		PrepDate: 23-Jul-2020		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
nC6 to nC12	251.7	50	250	0	101	75 - 125	248.7	1.21	20
>nC12 to nC28	274.3	50	250	0	110	75 - 125	272.3	0.738	20
<i>Surr: 2-Fluorobiphenyl</i>	26.45	0	25	0	106	70 - 130	26.41	0.14	20
<i>Surr: Trifluoromethyl benzene</i>	23.32	0	25	0	93.3	70 - 130	20.63	12.2	20

MS		Sample ID: HS20070830-05MS		Units: mg/Kg		Analysis Date: 23-Jul-2020 20:26			
Client ID:		Run ID: FID-11_365598		SeqNo: 5672972		PrepDate: 23-Jul-2020		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
nC6 to nC12	241.1	49	244.6	0	98.6	75 - 125			
>nC12 to nC28	283.9	49	244.6	0	116	75 - 125			
<i>Surr: 2-Fluorobiphenyl</i>	23.27	0	24.46	0	95.1	70 - 130			
<i>Surr: Trifluoromethyl benzene</i>	20.1	0	24.46	0	82.2	70 - 130			

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070701

QC BATCH REPORT

Batch ID: 155702 (0)		Instrument: FID-11		Method: TEXAS TPH BY TX1005					
MSD	Sample ID: HS20070830-05MSD	Units: mg/Kg			Analysis Date: 23-Jul-2020 20:56				
Client ID:	Run ID: FID-11_365598	SeqNo: 5672973		PrepDate: 23-Jul-2020		DF: 1			
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

nC6 to nC12	246.3	49	243.9	0	101	75 - 125	241.1	2.12	20
>nC12 to nC28	276.5	49	243.9	0	113	75 - 125	283.9	2.66	20
<i>Surr: 2-Fluorobiphenyl</i>	22.95	0	24.39	0	94.1	70 - 130	23.27	1.39	20
<i>Surr: Trifluoromethyl benzene</i>	19.94	0	24.39	0	81.8	70 - 130	20.1	0.805	20

The following samples were analyzed in this batch:

HS20070701-01	HS20070701-02	HS20070701-03
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Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070701

QC BATCH REPORT

Batch ID: 155538 (0)		Instrument: ICPMS06		Method: METALS BY SW6020A						
MBLK	Sample ID: MBLK-155538	Units: mg/Kg			Analysis Date: 21-Jul-2020 22:46					
Client ID:	Run ID: ICPMS06_365351	SeqNo: 5668954		PrepDate: 20-Jul-2020		DF: 1				
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	
Arsenic	0.2027	0.496							J	
Barium	< 0.0298	0.496								
Cadmium	< 0.0268	0.496								
Chromium	0.02938	0.496							J	
Lead	< 0.0129	0.496								
Selenium	< 0.0903	0.496								
Silver	< 0.0149	0.496								
LCS	Sample ID: LCS-155538	Units: mg/Kg			Analysis Date: 21-Jul-2020 22:49					
Client ID:	Run ID: ICPMS06_365351	SeqNo: 5668955		PrepDate: 20-Jul-2020		DF: 1				
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	
Arsenic	9.892	0.503	10.06	0	98.3	80 - 120				
Barium	10.09	0.503	10.06	0	100	80 - 120				
Cadmium	10.08	0.503	10.06	0	100	80 - 120				
Chromium	9.949	0.503	10.06	0	98.9	80 - 120				
Lead	10.24	0.503	10.06	0	102	80 - 120				
Selenium	9.97	0.503	10.06	0	99.1	80 - 120				
Silver	10.03	0.503	10.06	0	99.7	80 - 120				
MS	Sample ID: HS20070397-02MS	Units: mg/Kg			Analysis Date: 21-Jul-2020 22:55					
Client ID:	Run ID: ICPMS06_365351	SeqNo: 5668958		PrepDate: 20-Jul-2020		DF: 1				
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	
Arsenic	11.27	0.485	9.709	2.085	94.6	75 - 125				
Barium	84.17	0.485	9.709	57.35	276	75 - 125			SO	
Cadmium	9.733	0.485	9.709	0.04713	99.8	75 - 125				
Chromium	14.22	0.485	9.709	4.784	97.2	75 - 125				
Lead	19.13	0.485	9.709	9.774	96.4	75 - 125				
Selenium	9.254	0.485	9.709	0.6621	88.5	75 - 125				
Silver	9.606	0.485	9.709	0.04573	98.5	75 - 125				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070701

QC BATCH REPORT

Batch ID: 155538 (0)		Instrument: ICPMS06			Method: METALS BY SW6020A					
MSD		Sample ID: HS20070397-02MSD			Units: mg/Kg		Analysis Date: 21-Jul-2020 22:57			
Client ID:		Run ID: ICPMS06_365351			SeqNo: 5668959		PrepDate: 20-Jul-2020		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	10.39	0.472	9.441	2.085	88.0	75 - 125	11.27	8.07	20	
Barium	73.47	0.472	9.441	57.35	171	75 - 125	84.17	13.6	20	SO
Cadmium	9.474	0.472	9.441	0.04713	99.8	75 - 125	9.733	2.7	20	
Chromium	15.15	0.472	9.441	4.784	110	75 - 125	14.22	6.35	20	
Lead	20.19	0.472	9.441	9.774	110	75 - 125	19.13	5.4	20	
Selenium	9.127	0.472	9.441	0.6621	89.7	75 - 125	9.254	1.39	20	
Silver	9.448	0.472	9.441	0.04573	99.6	75 - 125	9.606	1.66	20	
PDS		Sample ID: HS20070397-02PDS			Units: mg/Kg		Analysis Date: 21-Jul-2020 22:59			
Client ID:		Run ID: ICPMS06_365351			SeqNo: 5668960		PrepDate: 20-Jul-2020		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	10.74	0.466	9.314	2.085	93.0	75 - 125				
Barium	67.22	0.466	9.314	57.35	106	75 - 125				O
Cadmium	9.018	0.466	9.314	0.04713	96.3	75 - 125				
Chromium	13.56	0.466	9.314	4.784	94.2	75 - 125				
Lead	18.95	0.466	9.314	9.774	98.5	75 - 125				
Selenium	9.385	0.466	9.314	0.6621	93.7	75 - 125				
Silver	8.998	0.466	9.314	0.04573	96.1	75 - 125				
SD		Sample ID: HS20070397-02SD			Units: mg/Kg		Analysis Date: 21-Jul-2020 22:53			
Client ID:		Run ID: ICPMS06_365351			SeqNo: 5668957		PrepDate: 20-Jul-2020		DF: 5	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	2.259	2.33					2.085	0	10	J
Barium	59.47	2.33					57.35	3.69	10	
Cadmium	< 0.126	2.33					0.04713	0	10	
Chromium	4.974	2.33					4.784	3.96	10	
Lead	9.636	2.33					9.774	1.41	10	
Selenium	0.5106	2.33					0.6621	0	10	J
Silver	< 0.0699	2.33					0.04573	0	10	

The following samples were analyzed in this batch: HS20070701-01 HS20070701-02 HS20070701-03

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070701

QC BATCH REPORT

Batch ID: 155586 (0)	Instrument: HG03	Method: MERCURY BY SW7471B
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MBLK	Sample ID: MBLK-155586	Units: ug/Kg	Analysis Date: 21-Jul-2020 15:28							
Client ID:	Run ID: HG03_365393	SeqNo: 5668615	PrepDate: 20-Jul-2020 DF: 1							
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Mercury < 0.470 3.32

LCS	Sample ID: LCS-155586	Units: ug/Kg	Analysis Date: 21-Jul-2020 15:29							
Client ID:	Run ID: HG03_365393	SeqNo: 5668616	PrepDate: 20-Jul-2020 DF: 1							
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Mercury 340 3.32 333.3 0 102 80 - 120

MS	Sample ID: HS20070753-03MS	Units: ug/Kg	Analysis Date: 21-Jul-2020 15:33							
Client ID:	Run ID: HG03_365393	SeqNo: 5668618	PrepDate: 20-Jul-2020 DF: 1							
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Mercury 368.5 3.45 345.7 4.159 105 80 - 120

MSD	Sample ID: HS20070753-03MSD	Units: ug/Kg	Analysis Date: 21-Jul-2020 15:34							
Client ID:	Run ID: HG03_365393	SeqNo: 5668619	PrepDate: 20-Jul-2020 DF: 1							
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Mercury 363.3 3.48 348.7 4.159 103 80 - 120 368.5 1.41 20

The following samples were analyzed in this batch: HS20070701-01 HS20070701-02 HS20070701-03

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070701

QC BATCH REPORT

Batch ID: 155624 (0) **Instrument:** ICPMS06 **Method:** ICP-MS METALS BY SW6020A

MBLK		Sample ID: MBLK-155624		Units: mg/L		Analysis Date: 23-Jul-2020 23:34			
Client ID:		Run ID: ICPMS06_365516		SeqNo: 5672350		PrepDate: 22-Jul-2020		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Arsenic	< 0.000400	0.00200							
Barium	< 0.00190	0.00400							
Cadmium	< 0.000200	0.00200							
Chromium	< 0.000400	0.00400							
Lead	< 0.000600	0.00200							
Selenium	< 0.00110	0.00200							
Silver	< 0.000200	0.00200							

LCS		Sample ID: LCS-155624		Units: mg/L		Analysis Date: 23-Jul-2020 23:36			
Client ID:		Run ID: ICPMS06_365516		SeqNo: 5672351		PrepDate: 22-Jul-2020		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Arsenic	0.04992	0.00200	0.05	0	99.8	80 - 120			
Barium	0.04926	0.00400	0.05	0	98.5	80 - 120			
Cadmium	0.0501	0.00200	0.05	0	100	80 - 120			
Chromium	0.04872	0.00400	0.05	0	97.4	80 - 120			
Lead	0.05099	0.00200	0.05	0	102	80 - 120			
Selenium	0.05287	0.00200	0.05	0	106	80 - 120			
Silver	0.04892	0.00200	0.05	0	97.8	80 - 120			

MS		Sample ID: HS20070627-03MS		Units: mg/L		Analysis Date: 23-Jul-2020 23:42			
Client ID:		Run ID: ICPMS06_365516		SeqNo: 5672354		PrepDate: 22-Jul-2020		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Arsenic	0.04914	0.00200	0.05	0.000547	97.2	80 - 120			
Barium	0.09695	0.00400	0.05	0.04822	97.5	80 - 120			
Cadmium	0.0478	0.00200	0.05	0.000061	95.5	80 - 120			
Chromium	0.04646	0.00400	0.05	0.000496	91.9	80 - 120			
Lead	0.05007	0.00200	0.05	0.000092	100.0	80 - 120			
Selenium	0.04994	0.00200	0.05	0.00023	99.4	80 - 120			
Silver	0.04646	0.00200	0.05	0.000006	92.9	80 - 120			

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070701

QC BATCH REPORT

Batch ID: 155624 (0) **Instrument:** ICPMS06 **Method:** ICP-MS METALS BY SW6020A

MSD		Sample ID: HS20070627-03MSD			Units: mg/L		Analysis Date: 23-Jul-2020 23:44			
Client ID:		Run ID: ICPMS06_365516			SeqNo: 5672355		PrepDate: 22-Jul-2020		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04792	0.00200	0.05	0.000547	94.7	80 - 120	0.04914	2.52	20	
Barium	0.09365	0.00400	0.05	0.04822	90.9	80 - 120	0.09695	3.47	20	
Cadmium	0.04546	0.00200	0.05	0.000061	90.8	80 - 120	0.0478	5.03	20	
Chromium	0.04527	0.00400	0.05	0.000496	89.5	80 - 120	0.04646	2.59	20	
Lead	0.04746	0.00200	0.05	0.000092	94.7	80 - 120	0.05007	5.35	20	
Selenium	0.04804	0.00200	0.05	0.00023	95.6	80 - 120	0.04994	3.88	20	
Silver	0.04414	0.00200	0.05	0.000006	88.3	80 - 120	0.04646	5.12	20	

PDS		Sample ID: HS20070627-03PDS			Units: mg/L		Analysis Date: 23-Jul-2020 23:46			
Client ID:		Run ID: ICPMS06_365516			SeqNo: 5672356		PrepDate: 22-Jul-2020		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.09896	0.00200	0.1	0.000547	98.4	75 - 125				
Barium	0.1475	0.00400	0.1	0.04822	99.3	75 - 125				
Cadmium	0.09646	0.00200	0.1	0.000061	96.4	75 - 125				
Chromium	0.09554	0.00400	0.1	0.000496	95.0	75 - 125				
Lead	0.1008	0.00200	0.1	0.000092	101	75 - 125				
Selenium	0.09846	0.00200	0.1	0.00023	98.2	75 - 125				
Silver	0.09544	0.00200	0.1	0.000006	95.4	75 - 125				

SD		Sample ID: HS20070627-03SD			Units: mg/L		Analysis Date: 23-Jul-2020 23:40			
Client ID:		Run ID: ICPMS06_365516			SeqNo: 5672353		PrepDate: 22-Jul-2020		DF: 5	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	< 0.00200	0.0100					0.000547	0	10	
Barium	0.04695	0.0200					0.04822	2.63	10	
Cadmium	< 0.00100	0.0100					0.000061	0	10	
Chromium	< 0.00200	0.0200					0.000496	0	10	
Lead	< 0.00300	0.0100					0.000092	0	10	
Selenium	< 0.00550	0.0100					0.00023	0	10	
Silver	< 0.00100	0.0100					0.000006	0	10	

The following samples were analyzed in this batch: HS20070701-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070701

QC BATCH REPORT

Batch ID: 155661 (0)	Instrument: HG03	Method: MERCURY BY SW7470A
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MBLK	Sample ID: MBLK-155661	Units: mg/L	Analysis Date: 22-Jul-2020 16:27							
Client ID:	Run ID: HG03_365472	SeqNo: 5670341	PrepDate: 22-Jul-2020 DF: 1							
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Mercury < 0.0000300 0.000200

LCS	Sample ID: LCS-155661	Units: mg/L	Analysis Date: 22-Jul-2020 16:28							
Client ID:	Run ID: HG03_365472	SeqNo: 5670342	PrepDate: 22-Jul-2020 DF: 1							
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Mercury 0.00514 0.000200 0.005 0 103 80 - 120

MS	Sample ID: HS20070596-03MS	Units: mg/L	Analysis Date: 22-Jul-2020 16:32							
Client ID:	Run ID: HG03_365472	SeqNo: 5670344	PrepDate: 22-Jul-2020 DF: 1							
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Mercury 0.00522 0.000200 0.005 0.000021 104 75 - 125

MSD	Sample ID: HS20070596-03MSD	Units: mg/L	Analysis Date: 22-Jul-2020 16:33							
Client ID:	Run ID: HG03_365472	SeqNo: 5670345	PrepDate: 22-Jul-2020 DF: 1							
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Mercury 0.00519 0.000200 0.005 0.000021 103 75 - 125 0.00522 0.576 20

The following samples were analyzed in this batch: HS20070701-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070701

QC BATCH REPORT

Batch ID: 155547 (0)		Instrument: SV-7		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
MBLK	Sample ID: MBLK-155547	Units: ug/L			Analysis Date: 20-Jul-2020 13:50					
Client ID:	Run ID: SV-7_365364	SeqNo: 5668015	PrepDate: 20-Jul-2020	DF: 1						
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	< 0.021	0.20								
2,4-Dimethylphenol	< 0.040	0.20								
2,4-Dinitrotoluene	< 0.058	0.20								
2,6-Dinitrotoluene	< 0.042	0.20								
2-Chloronaphthalene	< 0.021	0.20								
2-Methylnaphthalene	< 0.019	0.10								
4,6-Dinitro-2-methylphenol	< 0.020	0.20								
4-Nitrophenol	< 0.047	1.0								
Acenaphthene	< 0.027	0.10								
Acenaphthylene	< 0.015	0.10								
Anthracene	< 0.014	0.10								
Benz(a)anthracene	< 0.050	0.10								
Benzo(a)pyrene	< 0.020	0.10								
Bis(2-chloroethoxy)methane	< 0.030	0.20								
Bis(2-ethylhexyl)phthalate	< 0.037	0.20								
Chrysene	< 0.021	0.10								
Dibenzofuran	< 0.020	0.10								
Di-n-butyl phthalate	< 0.020	0.20								
Fluoranthene	< 0.010	0.10								
Fluorene	< 0.030	0.10								
Naphthalene	< 0.020	0.10								
Nitrobenzene	< 0.024	0.20								
N-Nitrosodiphenylamine	< 0.025	0.20								
Pentachlorophenol	< 0.079	0.20								
Phenanthrene	< 0.021	0.10								
Phenol	< 0.035	0.20								
Pyrene	< 0.019	0.10								
<i>Surr: 2,4,6-Tribromophenol</i>	<i>3.103</i>	<i>0.20</i>	<i>5</i>	<i>0</i>	<i>62.1</i>	<i>34 - 129</i>				
<i>Surr: 2-Fluorobiphenyl</i>	<i>3.506</i>	<i>0.20</i>	<i>5</i>	<i>0</i>	<i>70.1</i>	<i>40 - 125</i>				
<i>Surr: 2-Fluorophenol</i>	<i>3.547</i>	<i>0.20</i>	<i>5</i>	<i>0</i>	<i>70.9</i>	<i>20 - 120</i>				
<i>Surr: 4-Terphenyl-d14</i>	<i>4.607</i>	<i>0.20</i>	<i>5</i>	<i>0</i>	<i>92.1</i>	<i>40 - 135</i>				
<i>Surr: Nitrobenzene-d5</i>	<i>3.696</i>	<i>0.20</i>	<i>5</i>	<i>0</i>	<i>73.9</i>	<i>41 - 120</i>				
<i>Surr: Phenol-d6</i>	<i>4.108</i>	<i>0.20</i>	<i>5</i>	<i>0</i>	<i>82.2</i>	<i>20 - 120</i>				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070701

QC BATCH REPORT

Batch ID: 155547 (0)		Instrument: SV-7		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
LCS	Sample ID: LCS-155547	Units: ug/L			Analysis Date: 20-Jul-2020 15:11					
Client ID:	Run ID: SV-7_365364	SeqNo: 5668017		PrepDate: 20-Jul-2020		DF: 1				
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	
1,2-Diphenylhydrazine	3.193	0.20	5	0	63.9	39 - 127				
2,4-Dimethylphenol	3.313	0.20	5	0	66.3	35 - 120				
2,4-Dinitrotoluene	4.06	0.20	5	0	81.2	50 - 122				
2,6-Dinitrotoluene	3.794	0.20	5	0	75.9	50 - 120				
2-Chloronaphthalene	3.786	0.20	5	0	75.7	50 - 120				
2-Methylnaphthalene	2.822	0.10	5	0	56.4	50 - 120				
4,6-Dinitro-2-methylphenol	2.957	0.20	5	0	59.1	25 - 121				
4-Nitrophenol	2.276	1.0	5	0	45.5	30 - 130				
Acenaphthene	3.315	0.10	5	0	66.3	45 - 120				
Acenaphthylene	3.682	0.10	5	0	73.6	47 - 120				
Anthracene	4.019	0.10	5	0	80.4	45 - 120				
Benz(a)anthracene	4.782	0.10	5	0	95.6	40 - 120				
Benzo(a)pyrene	5.395	0.10	5	0	108	45 - 120				
Bis(2-chloroethoxy)methane	3.637	0.20	5	0	72.7	45 - 120				
Bis(2-ethylhexyl)phthalate	5.115	0.20	5	0	102	40 - 139				
Chrysene	4.665	0.10	5	0	93.3	43 - 120				
Dibenzofuran	3.619	0.10	5	0	72.4	50 - 120				
Di-n-butyl phthalate	4.658	0.20	5	0	93.2	45 - 123				
Fluoranthene	4.467	0.10	5	0	89.3	45 - 125				
Fluorene	3.884	0.10	5	0	77.7	49 - 120				
Naphthalene	3.599	0.10	5	0	72.0	45 - 120				
Nitrobenzene	4.043	0.20	5	0	80.9	44 - 120				
N-Nitrosodiphenylamine	3.988	0.20	5	0	79.8	40 - 125				
Pentachlorophenol	2.026	0.20	5	0	40.5	19 - 121				
Phenanthrene	4.035	0.10	5	0	80.7	45 - 121				
Phenol	3.713	0.20	5	0	74.3	20 - 124				
Pyrene	4.262	0.10	5	0	85.2	40 - 130				
<i>Surr: 2,4,6-Tribromophenol</i>	<i>4.567</i>	<i>0.20</i>	<i>5</i>	<i>0</i>	<i>91.3</i>	<i>34 - 129</i>				
<i>Surr: 2-Fluorobiphenyl</i>	<i>3.532</i>	<i>0.20</i>	<i>5</i>	<i>0</i>	<i>70.6</i>	<i>40 - 125</i>				
<i>Surr: 2-Fluorophenol</i>	<i>3.567</i>	<i>0.20</i>	<i>5</i>	<i>0</i>	<i>71.3</i>	<i>20 - 120</i>				
<i>Surr: 4-Terphenyl-d14</i>	<i>4.594</i>	<i>0.20</i>	<i>5</i>	<i>0</i>	<i>91.9</i>	<i>40 - 135</i>				
<i>Surr: Nitrobenzene-d5</i>	<i>3.79</i>	<i>0.20</i>	<i>5</i>	<i>0</i>	<i>75.8</i>	<i>41 - 120</i>				
<i>Surr: Phenol-d6</i>	<i>3.979</i>	<i>0.20</i>	<i>5</i>	<i>0</i>	<i>79.6</i>	<i>20 - 120</i>				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070701

QC BATCH REPORT

Batch ID: 155547 (0)		Instrument: SV-7		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
MS	Sample ID: HS20070658-13MS	Units: ug/L			Analysis Date: 20-Jul-2020 19:18					
Client ID:	Run ID: SV-7_365364	SeqNo: 5668022	PrepDate: 20-Jul-2020	DF: 1						
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	2.94	0.20	5	0	58.8	39 - 127				
2,4-Dimethylphenol	2.882	0.20	5	0	57.6	35 - 120				
2,4-Dinitrotoluene	3.601	0.20	5	0	72.0	50 - 122				
2,6-Dinitrotoluene	3.146	0.20	5	0	62.9	50 - 120				
2-Chloronaphthalene	3.425	0.20	5	0	68.5	50 - 120				
2-Methylnaphthalene	3.153	0.10	5	0	63.1	50 - 120				
4,6-Dinitro-2-methylphenol	3.16	0.20	5	0	63.2	25 - 121				
4-Nitrophenol	1.749	1.0	5	0	35.0	30 - 130				
Acenaphthene	2.947	0.10	5	0	58.9	45 - 120				
Acenaphthylene	3.282	0.10	5	0	65.6	47 - 120				
Anthracene	3.665	0.10	5	0	73.3	45 - 120				
Benz(a)anthracene	4.141	0.10	5	0	82.8	40 - 120				
Benzo(a)pyrene	5.016	0.10	5	0	100	45 - 120				
Bis(2-chloroethoxy)methane	2.883	0.20	5	0	57.7	45 - 120				
Bis(2-ethylhexyl)phthalate	4.59	0.20	5	0	91.8	40 - 139				
Chrysene	4.128	0.10	5	0	82.6	43 - 120				
Dibenzofuran	3.246	0.10	5	0	64.9	50 - 120				
Di-n-butyl phthalate	4.268	0.20	5	0	85.4	45 - 123				
Fluoranthene	4.311	0.10	5	0	86.2	45 - 125				
Fluorene	3.474	0.10	5	0	69.5	49 - 120				
Naphthalene	3.07	0.10	5	0	61.4	45 - 120				
Nitrobenzene	2.876	0.20	5	0	57.5	44 - 120				
N-Nitrosodiphenylamine	3.779	0.20	5	0	75.6	40 - 125				
Pentachlorophenol	2.799	0.20	5	0	56.0	19 - 121				
Phenanthrene	3.747	0.10	5	0	74.9	45 - 121				
Phenol	2.853	0.20	5	0	57.1	20 - 124				
Pyrene	3.863	0.10	5	0	77.3	40 - 130				
<i>Surr: 2,4,6-Tribromophenol</i>	<i>4.187</i>	<i>0.20</i>	<i>5</i>	<i>0</i>	<i>83.7</i>	<i>34 - 129</i>				
<i>Surr: 2-Fluorobiphenyl</i>	<i>3.121</i>	<i>0.20</i>	<i>5</i>	<i>0</i>	<i>62.4</i>	<i>40 - 125</i>				
<i>Surr: 2-Fluorophenol</i>	<i>2.793</i>	<i>0.20</i>	<i>5</i>	<i>0</i>	<i>55.9</i>	<i>20 - 120</i>				
<i>Surr: 4-Terphenyl-d14</i>	<i>4.106</i>	<i>0.20</i>	<i>5</i>	<i>0</i>	<i>82.1</i>	<i>40 - 135</i>				
<i>Surr: Nitrobenzene-d5</i>	<i>2.825</i>	<i>0.20</i>	<i>5</i>	<i>0</i>	<i>56.5</i>	<i>41 - 120</i>				
<i>Surr: Phenol-d6</i>	<i>3.132</i>	<i>0.20</i>	<i>5</i>	<i>0</i>	<i>62.6</i>	<i>20 - 120</i>				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070701

QC BATCH REPORT

Batch ID: 155547 (0)		Instrument: SV-7		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
MSD	Sample ID: HS20070658-13MSD	Units: ug/L			Analysis Date: 20-Jul-2020 19:37					
Client ID:	Run ID: SV-7_365364	SeqNo: 5668023	PrepDate: 20-Jul-2020	DF: 1						
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	2.752	0.20	5	0	55.0	39 - 127	2.94	6.59	20	
2,4-Dimethylphenol	2.764	0.20	5	0	55.3	35 - 120	2.882	4.18	20	
2,4-Dinitrotoluene	3.308	0.20	5	0	66.2	50 - 122	3.601	8.49	20	
2,6-Dinitrotoluene	3.191	0.20	5	0	63.8	50 - 120	3.146	1.42	20	
2-Chloronaphthalene	3.239	0.20	5	0	64.8	50 - 120	3.425	5.6	20	
2-Methylnaphthalene	2.824	0.10	5	0	56.5	50 - 120	3.153	11	20	
4,6-Dinitro-2-methylphenol	3.122	0.20	5	0	62.4	25 - 121	3.16	1.23	30	
4-Nitrophenol	2.688	1.0	5	0	53.8	30 - 130	1.749	42.3	20	R
Acenaphthene	2.77	0.10	5	0	55.4	45 - 120	2.947	6.19	20	
Acenaphthylene	2.996	0.10	5	0	59.9	47 - 120	3.282	9.11	20	
Anthracene	3.494	0.10	5	0	69.9	45 - 120	3.665	4.79	20	
Benz(a)anthracene	4.178	0.10	5	0	83.6	40 - 120	4.141	0.9	20	
Benzo(a)pyrene	5.001	0.10	5	0	100	45 - 120	5.016	0.293	20	
Bis(2-chloroethoxy)methane	2.624	0.20	5	0	52.5	45 - 120	2.883	9.44	20	
Bis(2-ethylhexyl)phthalate	4.632	0.20	5	0	92.6	40 - 139	4.59	0.916	20	
Chrysene	4.031	0.10	5	0	80.6	43 - 120	4.128	2.39	20	
Dibenzofuran	3.069	0.10	5	0	61.4	50 - 120	3.246	5.62	20	
Di-n-butyl phthalate	3.896	0.20	5	0	77.9	45 - 123	4.268	9.1	20	
Fluoranthene	3.867	0.10	5	0	77.3	45 - 125	4.311	10.9	20	
Fluorene	3.3	0.10	5	0	66.0	49 - 120	3.474	5.14	20	
Naphthalene	2.842	0.10	5	0	56.8	45 - 120	3.07	7.71	20	
Nitrobenzene	2.63	0.20	5	0	52.6	44 - 120	2.876	8.95	20	
N-Nitrosodiphenylamine	3.423	0.20	5	0	68.5	40 - 125	3.779	9.89	20	
Pentachlorophenol	2.5	0.20	5	0	50.0	19 - 121	2.799	11.2	20	
Phenanthrene	3.506	0.10	5	0	70.1	45 - 121	3.747	6.65	20	
Phenol	2.833	0.20	5	0	56.7	20 - 124	2.853	0.727	20	
Pyrene	3.964	0.10	5	0	79.3	40 - 130	3.863	2.59	20	
<i>Surr: 2,4,6-Tribromophenol</i>	3.624	0.20	5	0	72.5	34 - 129	4.187	14.4	20	
<i>Surr: 2-Fluorobiphenyl</i>	2.715	0.20	5	0	54.3	40 - 125	3.121	13.9	20	
<i>Surr: 2-Fluorophenol</i>	2.687	0.20	5	0	53.7	20 - 120	2.793	3.87	20	
<i>Surr: 4-Terphenyl-d14</i>	3.842	0.20	5	0	76.8	40 - 135	4.106	6.65	20	
<i>Surr: Nitrobenzene-d5</i>	2.44	0.20	5	0	48.8	41 - 120	2.825	14.6	20	
<i>Surr: Phenol-d6</i>	3.07	0.20	5	0	61.4	20 - 120	3.132	2.01	20	

The following samples were analyzed in this batch: HS20070701-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070701

QC BATCH REPORT

Batch ID: 155570 (0)		Instrument: SV-7		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
MBLK	Sample ID: MBLK-155570	Units: ug/Kg			Analysis Date: 21-Jul-2020 10:51					
Client ID:	Run ID: SV-7_365425	SeqNo: 5669312	PrepDate: 20-Jul-2020	DF: 1						
Analyte	Result	SQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	< 1.1	6.6								
2,4-Dimethylphenol	< 3.3	6.6								
2,4-Dinitrotoluene	< 0.90	6.6								
2,6-Dinitrotoluene	< 3.3	6.6								
2-Chloronaphthalene	< 1.3	6.6								
2-Methylnaphthalene	< 0.50	3.3								
4,6-Dinitro-2-methylphenol	< 2.1	6.6								
4-Nitrophenol	< 1.9	13								
Acenaphthene	< 0.50	3.3								
Acenaphthylene	< 1.0	3.3								
Anthracene	< 0.50	3.3								
Benz(a)anthracene	< 1.6	3.3								
Benzo(a)pyrene	< 1.0	3.3								
Bis(2-chloroethoxy)methane	< 0.90	6.6								
Bis(2-ethylhexyl)phthalate	< 1.7	6.6								
Chrysene	< 0.80	3.3								
Dibenzofuran	< 0.70	3.3								
Di-n-butyl phthalate	< 1.2	6.6								
Fluoranthene	< 1.1	3.3								
Fluorene	< 1.1	3.3								
Naphthalene	< 0.60	3.3								
Nitrobenzene	< 0.90	6.6								
N-Nitrosodiphenylamine	< 0.70	6.6								
Pentachlorophenol	< 3.3	6.6								
Phenanthrene	< 1.5	3.3								
Phenol	< 1.1	6.6								
Pyrene	< 0.60	3.3								
<i>Surr: 2,4,6-Tribromophenol</i>	123.2	0	167	0	73.8	36 - 126				
<i>Surr: 2-Fluorobiphenyl</i>	119.2	0	167	0	71.4	43 - 125				
<i>Surr: 2-Fluorophenol</i>	123.9	0	167	0	74.2	37 - 125				
<i>Surr: 4-Terphenyl-d14</i>	164.5	0	167	0	98.5	32 - 125				
<i>Surr: Nitrobenzene-d5</i>	127.4	0	167	0	76.3	37 - 125				
<i>Surr: Phenol-d6</i>	137.6	0	167	0	82.4	40 - 125				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070701

QC BATCH REPORT

Batch ID: 155570 (0)		Instrument: SV-7		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
LCS	Sample ID: LCS-155570	Units: ug/Kg			Analysis Date: 21-Jul-2020 11:10					
Client ID:	Run ID: SV-7_365425	SeqNo: 5669313		PrepDate: 20-Jul-2020		DF: 1				
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	145.6	6.6	167	0	87.2	50 - 135				
2,4-Dimethylphenol	113.2	6.6	167	0	67.8	45 - 120				
2,4-Dinitrotoluene	133.9	6.6	167	0	80.2	50 - 130				
2,6-Dinitrotoluene	134.9	6.6	167	0	80.8	50 - 125				
2-Chloronaphthalene	143.1	6.6	167	0	85.7	50 - 145				
2-Methylnaphthalene	129.8	3.3	167	0	77.7	50 - 120				
4,6-Dinitro-2-methylphenol	120.7	6.6	167	0	72.3	15 - 135				
4-Nitrophenol	130.4	13	167	0	78.1	40 - 147				
Acenaphthene	113.9	3.3	167	0	68.2	50 - 120				
Acenaphthylene	132.8	3.3	167	0	79.5	50 - 120				
Anthracene	135.8	3.3	167	0	81.3	50 - 123				
Benz(a)anthracene	149.7	3.3	167	0	89.6	50 - 131				
Benzo(a)pyrene	180.6	3.3	167	0	108	50 - 130				
Bis(2-chloroethoxy)methane	134.6	6.6	167	0	80.6	50 - 120				
Bis(2-ethylhexyl)phthalate	148.1	6.6	167	0	88.7	21 - 148				
Chrysene	139	3.3	167	0	83.3	50 - 130				
Dibenzofuran	129.8	3.3	167	0	77.7	50 - 125				
Di-n-butyl phthalate	146.7	6.6	167	0	87.9	50 - 140				
Fluoranthene	149.1	3.3	167	0	89.3	50 - 131				
Fluorene	136.2	3.3	167	0	81.5	50 - 125				
Naphthalene	131	3.3	167	0	78.5	50 - 125				
Nitrobenzene	148.5	6.6	167	0	88.9	50 - 125				
N-Nitrosodiphenylamine	134.5	6.6	167	0	80.6	50 - 130				
Pentachlorophenol	82.85	6.6	167	0	49.6	23 - 136				
Phenanthrene	136.8	3.3	167	0	81.9	50 - 125				
Phenol	139.2	6.6	167	0	83.3	45 - 130				
Pyrene	132.6	3.3	167	0	79.4	45 - 130				
<i>Surr: 2,4,6-Tribromophenol</i>	<i>141.8</i>	<i>0</i>	<i>167</i>	<i>0</i>	<i>84.9</i>	<i>36 - 126</i>				
<i>Surr: 2-Fluorobiphenyl</i>	<i>127.9</i>	<i>0</i>	<i>167</i>	<i>0</i>	<i>76.6</i>	<i>43 - 125</i>				
<i>Surr: 2-Fluorophenol</i>	<i>132.2</i>	<i>0</i>	<i>167</i>	<i>0</i>	<i>79.2</i>	<i>37 - 125</i>				
<i>Surr: 4-Terphenyl-d14</i>	<i>134.2</i>	<i>0</i>	<i>167</i>	<i>0</i>	<i>80.4</i>	<i>32 - 125</i>				
<i>Surr: Nitrobenzene-d5</i>	<i>137.9</i>	<i>0</i>	<i>167</i>	<i>0</i>	<i>82.6</i>	<i>37 - 125</i>				
<i>Surr: Phenol-d6</i>	<i>160.6</i>	<i>0</i>	<i>167</i>	<i>0</i>	<i>96.1</i>	<i>40 - 125</i>				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070701

QC BATCH REPORT

Batch ID: 155570 (0)		Instrument: SV-7		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
MS	Sample ID: HS20070693-03MS	Units: ug/Kg			Analysis Date: 21-Jul-2020 14:01					
Client ID:	Run ID: SV-7_365425	SeqNo: 5669321	PrepDate: 20-Jul-2020	DF: 1						
Analyte	Result	SQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	116.7	6.6	166.5	0	70.1	50 - 135				
2,4-Dimethylphenol	105.2	6.6	166.5	0	63.2	45 - 120				
2,4-Dinitrotoluene	105.2	6.6	166.5	0	63.2	50 - 130				
2,6-Dinitrotoluene	110.1	6.6	166.5	0	66.1	50 - 125				
2-Chloronaphthalene	113	6.6	166.5	0	67.9	50 - 145				
2-Methylnaphthalene	108.3	3.3	166.5	0	65.0	50 - 120				
4,6-Dinitro-2-methylphenol	88.24	6.6	166.5	0	53.0	15 - 135				
4-Nitrophenol	76.88	13	166.5	0	46.2	40 - 147				
Acenaphthene	102.5	3.3	166.5	0	61.6	50 - 120				
Acenaphthylene	110.9	3.3	166.5	0	66.6	50 - 120				
Anthracene	135.4	3.3	166.5	0	81.3	50 - 123				
Benz(a)anthracene	122.9	3.3	166.5	1.308	73.0	50 - 131				
Benzo(a)pyrene	143.4	3.3	166.5	1.076	85.5	50 - 130				
Bis(2-chloroethoxy)methane	114.5	6.6	166.5	0	68.8	50 - 120				
Bis(2-ethylhexyl)phthalate	137.5	6.6	166.5	4.583	79.8	21 - 148				
Chrysene	140.3	3.3	166.5	1.437	83.4	50 - 130				
Dibenzofuran	109.7	3.3	166.5	0	65.9	50 - 125				
Di-n-butyl phthalate	138.4	6.6	166.5	0	83.1	50 - 140				
Fluoranthene	141.9	3.3	166.5	1.441	84.3	50 - 131				
Fluorene	113.2	3.3	166.5	0	68.0	50 - 125				
Naphthalene	108.9	3.3	166.5	0	65.4	50 - 125				
Nitrobenzene	121.6	6.6	166.5	0	73.1	50 - 125				
N-Nitrosodiphenylamine	115.1	6.6	166.5	0	69.2	50 - 130				
Pentachlorophenol	68.85	6.6	166.5	0	41.4	23 - 136				
Phenanthrene	126.8	3.3	166.5	0	76.1	50 - 125				
Phenol	115.8	6.6	166.5	20.98	57.0	45 - 130				
Pyrene	118.2	3.3	166.5	1.461	70.1	45 - 130				
<i>Surr: 2,4,6-Tribromophenol</i>	<i>118.4</i>	<i>0</i>	<i>166.5</i>	<i>0</i>	<i>71.1</i>	<i>36 - 126</i>				
<i>Surr: 2-Fluorobiphenyl</i>	<i>110</i>	<i>0</i>	<i>166.5</i>	<i>0</i>	<i>66.0</i>	<i>43 - 125</i>				
<i>Surr: 2-Fluorophenol</i>	<i>102.3</i>	<i>0</i>	<i>166.5</i>	<i>0</i>	<i>61.4</i>	<i>37 - 125</i>				
<i>Surr: 4-Terphenyl-d14</i>	<i>116.7</i>	<i>0</i>	<i>166.5</i>	<i>0</i>	<i>70.1</i>	<i>32 - 125</i>				
<i>Surr: Nitrobenzene-d5</i>	<i>112.5</i>	<i>0</i>	<i>166.5</i>	<i>0</i>	<i>67.6</i>	<i>37 - 125</i>				
<i>Surr: Phenol-d6</i>	<i>124.7</i>	<i>0</i>	<i>166.5</i>	<i>0</i>	<i>74.9</i>	<i>40 - 125</i>				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070701

QC BATCH REPORT

Batch ID: 155570 (0)		Instrument: SV-7		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
MSD	Sample ID: HS20070693-03MSD	Units: ug/Kg			Analysis Date: 21-Jul-2020 14:20					
Client ID:	Run ID: SV-7_365425	SeqNo: 5669322	PrepDate: 20-Jul-2020	DF: 1						
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	128.1	6.6	166.3	0	77.0	50 - 135	116.7	9.27	30	
2,4-Dimethylphenol	109.7	6.6	166.3	0	66.0	45 - 120	105.2	4.18	30	
2,4-Dinitrotoluene	127.3	6.6	166.3	0	76.5	50 - 130	105.2	18.9	30	
2,6-Dinitrotoluene	122.5	6.6	166.3	0	73.7	50 - 125	110.1	10.7	30	
2-Chloronaphthalene	144.8	6.6	166.3	0	87.1	50 - 145	113	24.7	30	
2-Methylnaphthalene	118.8	3.3	166.3	0	71.4	50 - 120	108.3	9.26	30	
4,6-Dinitro-2-methylphenol	109.1	6.6	166.3	0	65.6	15 - 135	88.24	21.2	30	
4-Nitrophenol	108.8	13	166.3	0	65.4	40 - 147	76.88	34.3	30	R
Acenaphthene	104.7	3.3	166.3	0	62.9	50 - 120	102.5	2.05	30	
Acenaphthylene	117.9	3.3	166.3	0	70.9	50 - 120	110.9	6.11	30	
Anthracene	133	3.3	166.3	0	80.0	50 - 123	135.4	1.8	30	
Benz(a)anthracene	143.6	3.3	166.3	1.308	85.5	50 - 131	122.9	15.5	30	
Benzo(a)pyrene	159.9	3.3	166.3	1.076	95.5	50 - 130	143.4	10.9	30	
Bis(2-chloroethoxy)methane	117.7	6.6	166.3	0	70.7	50 - 120	114.5	2.73	30	
Bis(2-ethylhexyl)phthalate	149.4	6.6	166.3	4.583	87.1	21 - 148	137.5	8.32	30	
Chrysene	138.1	3.3	166.3	1.437	82.2	50 - 130	140.3	1.55	30	
Dibenzofuran	119.2	3.3	166.3	0	71.7	50 - 125	109.7	8.33	30	
Di-n-butyl phthalate	135.5	6.6	166.3	0	81.5	50 - 140	138.4	2.07	30	
Fluoranthene	138	3.3	166.3	1.441	82.1	50 - 131	141.9	2.76	30	
Fluorene	129.3	3.3	166.3	0	77.8	50 - 125	113.2	13.3	30	
Naphthalene	113.6	3.3	166.3	0	68.3	50 - 125	108.9	4.14	30	
Nitrobenzene	129.6	6.6	166.3	0	77.9	50 - 125	121.6	6.34	30	
N-Nitrosodiphenylamine	125.3	6.6	166.3	0	75.3	50 - 130	115.1	8.45	30	
Pentachlorophenol	96.27	6.6	166.3	0	57.9	23 - 136	68.85	33.2	30	R
Phenanthrene	127.7	3.3	166.3	0	76.8	50 - 125	126.8	0.709	30	
Phenol	118.3	6.6	166.3	20.98	58.5	45 - 130	115.8	2.08	30	
Pyrene	130.7	3.3	166.3	1.461	77.7	45 - 130	118.2	10.1	30	
Surr: 2,4,6-Tribromophenol	134.4	0	166.3	0	80.8	36 - 126	118.4	12.7	30	
Surr: 2-Fluorobiphenyl	116	0	166.3	0	69.7	43 - 125	110	5.36	30	
Surr: 2-Fluorophenol	104.7	0	166.3	0	63.0	37 - 125	102.3	2.37	30	
Surr: 4-Terphenyl-d14	133.2	0	166.3	0	80.1	32 - 125	116.7	13.2	30	
Surr: Nitrobenzene-d5	124.2	0	166.3	0	74.6	37 - 125	112.5	9.86	30	
Surr: Phenol-d6	125.9	0	166.3	0	75.7	40 - 125	124.7	0.971	30	

The following samples were analyzed in this batch: HS20070701-01 HS20070701-02 HS20070701-03

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070701

QC BATCH REPORT

Batch ID: R365209 (0)	Instrument: VOA5	Method: VOLATILES BY SW8260C
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MBLK		Sample ID: VBLKS1-071720			Units: ug/Kg		Analysis Date: 17-Jul-2020 09:29			
Client ID:		Run ID: VOA5_365209			SeqNo: 5664897		PrepDate:		DF: 1	
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	< 0.60	5.0								
Benzene	< 0.50	5.0								
Chlorobenzene	< 0.60	5.0								
Ethylbenzene	< 0.70	5.0								
Methylene chloride	< 1.0	10								
Toluene	< 0.60	5.0								
Xylenes, Total	< 1.0	5.0								
<i>Surr: 1,2-Dichloroethane-d4</i>	47.88	0	50	0	95.8	76 - 125				
<i>Surr: 4-Bromofluorobenzene</i>	49.25	0	50	0	98.5	80 - 120				
<i>Surr: Dibromofluoromethane</i>	46.31	0	50	0	92.6	80 - 119				
<i>Surr: Toluene-d8</i>	51.45	0	50	0	103	81 - 118				

LCS		Sample ID: VLCSS1-071720			Units: ug/Kg		Analysis Date: 17-Jul-2020 08:37			
Client ID:		Run ID: VOA5_365209			SeqNo: 5664896		PrepDate:		DF: 1	
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	49.66	5.0	50	0	99.3	77 - 120				
Benzene	53.46	5.0	50	0	107	75 - 124				
Chlorobenzene	51.75	5.0	50	0	103	78 - 122				
Ethylbenzene	53.8	5.0	50	0	108	70 - 123				
Methylene chloride	78.85	10	50	0	158	71 - 125				S
Toluene	51.84	5.0	50	0	104	76 - 122				
Xylenes, Total	161.8	5.0	150	0	108	77 - 128				
<i>Surr: 1,2-Dichloroethane-d4</i>	50.18	0	50	0	100	76 - 125				
<i>Surr: 4-Bromofluorobenzene</i>	49.49	0	50	0	99.0	80 - 120				
<i>Surr: Dibromofluoromethane</i>	50.1	0	50	0	100	80 - 119				
<i>Surr: Toluene-d8</i>	49.75	0	50	0	99.5	81 - 118				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070701

QC BATCH REPORT

Batch ID: R365209 (0)	Instrument: VOA5	Method: VOLATILES BY SW8260C
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MS		Sample ID: HS20070696-01MS			Units: ug/Kg		Analysis Date: 17-Jul-2020 12:31			
Client ID:		Run ID: VOA5_365209			SeqNo: 5665456		PrepDate:		DF: 1	
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	40.97	4.8	48.5	0	84.5	70 - 130				
Benzene	43.31	4.8	48.5	0	89.3	70 - 130				
Chlorobenzene	43.49	4.8	48.5	0	89.7	70 - 130				
Ethylbenzene	44.72	4.8	48.5	0	92.2	70 - 130				
Methylene chloride	52.05	9.7	48.5	0	107	70 - 130				
Toluene	43.25	4.8	48.5	0	89.2	70 - 130				
Xylenes, Total	133.3	4.8	145.5	0	91.6	70 - 130				
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>48.92</i>	<i>0</i>	<i>48.5</i>	<i>0</i>	<i>101</i>	<i>70 - 126</i>				
<i>Surr: 4-Bromofluorobenzene</i>	<i>49.47</i>	<i>0</i>	<i>48.5</i>	<i>0</i>	<i>102</i>	<i>70 - 130</i>				
<i>Surr: Dibromofluoromethane</i>	<i>47.77</i>	<i>0</i>	<i>48.5</i>	<i>0</i>	<i>98.5</i>	<i>70 - 130</i>				
<i>Surr: Toluene-d8</i>	<i>49.83</i>	<i>0</i>	<i>48.5</i>	<i>0</i>	<i>103</i>	<i>70 - 130</i>				

MSD		Sample ID: HS20070696-01MSD			Units: ug/Kg		Analysis Date: 17-Jul-2020 12:57			
Client ID:		Run ID: VOA5_365209			SeqNo: 5665457		PrepDate:		DF: 1	
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	40.68	4.9	49	0	83.0	70 - 130	40.97	0.706	30	
Benzene	41.03	4.9	49	0	83.7	70 - 130	43.31	5.41	30	
Chlorobenzene	40.9	4.9	49	0	83.5	70 - 130	43.49	6.14	30	
Ethylbenzene	41.36	4.9	49	0	84.4	70 - 130	44.72	7.83	30	
Methylene chloride	51.93	9.8	49	0	106	70 - 130	52.05	0.235	30	
Toluene	39.94	4.9	49	0	81.5	70 - 130	43.25	7.95	30	
Xylenes, Total	124	4.9	147	0	84.4	70 - 130	133.3	7.17	30	
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>50.46</i>	<i>0</i>	<i>49</i>	<i>0</i>	<i>103</i>	<i>70 - 126</i>	<i>48.92</i>	<i>3.11</i>	<i>30</i>	
<i>Surr: 4-Bromofluorobenzene</i>	<i>49.83</i>	<i>0</i>	<i>49</i>	<i>0</i>	<i>102</i>	<i>70 - 130</i>	<i>49.47</i>	<i>0.72</i>	<i>30</i>	
<i>Surr: Dibromofluoromethane</i>	<i>48.77</i>	<i>0</i>	<i>49</i>	<i>0</i>	<i>99.5</i>	<i>70 - 130</i>	<i>47.77</i>	<i>2.09</i>	<i>30</i>	
<i>Surr: Toluene-d8</i>	<i>49.62</i>	<i>0</i>	<i>49</i>	<i>0</i>	<i>101</i>	<i>70 - 130</i>	<i>49.83</i>	<i>0.419</i>	<i>30</i>	

The following samples were analyzed in this batch: HS20070701-02 HS20070701-03

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070701

QC BATCH REPORT

Batch ID: R365396 (0) **Instrument:** VOA2 **Method:** LOW LEVEL VOLATILES BY SW8260C

MBLK		Sample ID: VBLKW-200721		Units: ug/L		Analysis Date: 21-Jul-2020 12:17				
Client ID:		Run ID: VOA2_365396		SeqNo: 5668671		PrepDate:		DF: 1		
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	< 0.20	1.0								
Benzene	< 0.20	1.0								
Chlorobenzene	< 0.30	1.0								
Ethylbenzene	< 0.30	1.0								
Methylene chloride	< 1.0	2.0								
Toluene	< 0.20	1.0								
Xylenes, Total	< 0.30	1.0								
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>50.48</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>101</i>	<i>70 - 123</i>				
<i>Surr: 4-Bromofluorobenzene</i>	<i>49.81</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>99.6</i>	<i>82 - 115</i>				
<i>Surr: Dibromofluoromethane</i>	<i>51.39</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>103</i>	<i>73 - 126</i>				
<i>Surr: Toluene-d8</i>	<i>50.9</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>102</i>	<i>81 - 120</i>				

LCS		Sample ID: VLCSW-200721		Units: ug/L		Analysis Date: 21-Jul-2020 11:30				
Client ID:		Run ID: VOA2_365396		SeqNo: 5668670		PrepDate:		DF: 1		
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	18.6	1.0	20	0	93.0	70 - 124				
Benzene	18.66	1.0	20	0	93.3	74 - 120				
Chlorobenzene	18.61	1.0	20	0	93.1	76 - 113				
Ethylbenzene	18.88	1.0	20	0	94.4	77 - 117				
Methylene chloride	20.03	2.0	20	0	100	70 - 127				
Toluene	19.19	1.0	20	0	96.0	77 - 118				
Xylenes, Total	57.56	1.0	60	0	95.9	75 - 122				
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>52.05</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>104</i>	<i>70 - 130</i>				
<i>Surr: 4-Bromofluorobenzene</i>	<i>49.25</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>98.5</i>	<i>82 - 115</i>				
<i>Surr: Dibromofluoromethane</i>	<i>51.3</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>103</i>	<i>73 - 126</i>				
<i>Surr: Toluene-d8</i>	<i>49.43</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>98.9</i>	<i>81 - 120</i>				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070701

QC BATCH REPORT

Batch ID: R365396 (0) **Instrument:** VOA2 **Method:** LOW LEVEL VOLATILES BY SW8260C

MS		Sample ID: HS20070774-28MS			Units: ug/L		Analysis Date: 21-Jul-2020 15:03			
Client ID:		Run ID: VOA2_365396			SeqNo: 5669070		PrepDate:		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	18.47	1.0	20	0	92.3	70 - 127				
Benzene	20.3	1.0	20	1.683	93.1	70 - 127				
Chlorobenzene	18.65	1.0	20	0	93.2	70 - 114				
Ethylbenzene	20.3	1.0	20	1.482	94.1	70 - 124				
Methylene chloride	18.73	2.0	20	0	93.6	70 - 128				
Toluene	20.6	1.0	20	1.607	95.0	70 - 123				
Xylenes, Total	77.49	1.0	60	21.1	94.0	70 - 130				
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>52.59</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>105</i>	<i>70 - 126</i>				
<i>Surr: 4-Bromofluorobenzene</i>	<i>50.43</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>101</i>	<i>81 - 113</i>				
<i>Surr: Dibromofluoromethane</i>	<i>50.56</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>101</i>	<i>77 - 123</i>				
<i>Surr: Toluene-d8</i>	<i>49.5</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>99.0</i>	<i>82 - 127</i>				

MSD		Sample ID: HS20070774-28MSD			Units: ug/L		Analysis Date: 21-Jul-2020 15:27			
Client ID:		Run ID: VOA2_365396			SeqNo: 5669071		PrepDate:		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	19.21	1.0	20	0	96.0	70 - 127	18.47	3.93	20	
Benzene	21.12	1.0	20	1.683	97.2	70 - 127	20.3	3.95	20	
Chlorobenzene	19.28	1.0	20	0	96.4	70 - 114	18.65	3.36	20	
Ethylbenzene	20.89	1.0	20	1.482	97.0	70 - 124	20.3	2.88	20	
Methylene chloride	19.18	2.0	20	0	95.9	70 - 128	18.73	2.38	20	
Toluene	21.45	1.0	20	1.607	99.2	70 - 123	20.6	4.05	20	
Xylenes, Total	80.29	1.0	60	21.1	98.6	70 - 130	77.49	3.54	20	
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>51.69</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>103</i>	<i>70 - 126</i>	<i>52.59</i>	<i>1.73</i>	<i>20</i>	
<i>Surr: 4-Bromofluorobenzene</i>	<i>50.37</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>101</i>	<i>81 - 113</i>	<i>50.43</i>	<i>0.133</i>	<i>20</i>	
<i>Surr: Dibromofluoromethane</i>	<i>50.26</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>101</i>	<i>77 - 123</i>	<i>50.56</i>	<i>0.594</i>	<i>20</i>	
<i>Surr: Toluene-d8</i>	<i>50.01</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>100</i>	<i>82 - 127</i>	<i>49.5</i>	<i>1.03</i>	<i>20</i>	

The following samples were analyzed in this batch: HS20070701-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070701

QC BATCH REPORT

Batch ID: R365650 (0)	Instrument: VOA5	Method: VOLATILES BY SW8260C
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MBLK		Sample ID: VBLKS1-072420			Units: ug/Kg		Analysis Date: 24-Jul-2020 14:38			
Client ID:		Run ID: VOA5_365650			SeqNo: 5674228		PrepDate:		DF: 1	
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	< 0.60	5.0								
Benzene	< 0.50	5.0								
Chlorobenzene	< 0.60	5.0								
Ethylbenzene	< 0.70	5.0								
Methylene chloride	< 1.0	10								
Toluene	< 0.60	5.0								
Xylenes, Total	< 1.0	5.0								
<i>Surr: 1,2-Dichloroethane-d4</i>	47.87	0	50	0	95.7	76 - 125				
<i>Surr: 4-Bromofluorobenzene</i>	49.26	0	50	0	98.5	80 - 120				
<i>Surr: Dibromofluoromethane</i>	46.93	0	50	0	93.9	80 - 119				
<i>Surr: Toluene-d8</i>	50.23	0	50	0	100	81 - 118				

LCS		Sample ID: VLCSS1-072420			Units: ug/Kg		Analysis Date: 24-Jul-2020 13:45			
Client ID:		Run ID: VOA5_365650			SeqNo: 5674227		PrepDate:		DF: 1	
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	43.78	5.0	50	0	87.6	77 - 120				
Benzene	45.91	5.0	50	0	91.8	75 - 124				
Chlorobenzene	44.16	5.0	50	0	88.3	78 - 122				
Ethylbenzene	45.5	5.0	50	0	91.0	70 - 123				
Methylene chloride	40.52	10	50	0	81.0	71 - 125				
Toluene	42.77	5.0	50	0	85.5	76 - 122				
Xylenes, Total	136.3	5.0	150	0	90.9	77 - 128				
<i>Surr: 1,2-Dichloroethane-d4</i>	50.41	0	50	0	101	76 - 125				
<i>Surr: 4-Bromofluorobenzene</i>	50.9	0	50	0	102	80 - 120				
<i>Surr: Dibromofluoromethane</i>	50.06	0	50	0	100	80 - 119				
<i>Surr: Toluene-d8</i>	49.04	0	50	0	98.1	81 - 118				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070701

QC BATCH REPORT

Batch ID: R365650 (0) **Instrument:** VOA5 **Method:** VOLATILES BY SW8260C

MS		Sample ID: HS20071065-01MS			Units: ug/Kg		Analysis Date: 24-Jul-2020 17:15			
Client ID:		Run ID: VOA5_365650			SeqNo: 5674231		PrepDate:		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	46.56	4.8	47.5	0	98.0	70 - 130				
Benzene	44.89	4.8	47.5	0	94.5	70 - 130				
Chlorobenzene	43.5	4.8	47.5	0	91.6	70 - 130				
Ethylbenzene	44.29	4.8	47.5	0	93.2	70 - 130				
Methylene chloride	50.17	9.5	47.5	0	106	70 - 130				
Toluene	41.43	4.8	47.5	0	87.2	70 - 130				
Xylenes, Total	128.2	4.8	142.5	0	90.0	70 - 130				
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>47.15</i>	<i>0</i>	<i>47.5</i>	<i>0</i>	<i>99.3</i>	<i>70 - 126</i>				
<i>Surr: 4-Bromofluorobenzene</i>	<i>48.39</i>	<i>0</i>	<i>47.5</i>	<i>0</i>	<i>102</i>	<i>70 - 130</i>				
<i>Surr: Dibromofluoromethane</i>	<i>47.11</i>	<i>0</i>	<i>47.5</i>	<i>0</i>	<i>99.2</i>	<i>70 - 130</i>				
<i>Surr: Toluene-d8</i>	<i>47.26</i>	<i>0</i>	<i>47.5</i>	<i>0</i>	<i>99.5</i>	<i>70 - 130</i>				

MSD		Sample ID: HS20071065-01MSD			Units: ug/Kg		Analysis Date: 24-Jul-2020 17:41			
Client ID:		Run ID: VOA5_365650			SeqNo: 5674232		PrepDate:		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	42.51	4.8	48.5	0	87.6	70 - 130	46.56	9.09	30	
Benzene	41.7	4.8	48.5	0	86.0	70 - 130	44.89	7.35	30	
Chlorobenzene	40.69	4.8	48.5	0	83.9	70 - 130	43.5	6.67	30	
Ethylbenzene	40.25	4.8	48.5	0	83.0	70 - 130	44.29	9.54	30	
Methylene chloride	44.28	9.7	48.5	0	91.3	70 - 130	50.17	12.5	30	
Toluene	38.76	4.8	48.5	0	79.9	70 - 130	41.43	6.66	30	
Xylenes, Total	118.9	4.8	145.5	0	81.7	70 - 130	128.2	7.55	30	
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>48.82</i>	<i>0</i>	<i>48.5</i>	<i>0</i>	<i>101</i>	<i>70 - 126</i>	<i>47.15</i>	<i>3.5</i>	<i>30</i>	
<i>Surr: 4-Bromofluorobenzene</i>	<i>48.85</i>	<i>0</i>	<i>48.5</i>	<i>0</i>	<i>101</i>	<i>70 - 130</i>	<i>48.39</i>	<i>0.944</i>	<i>30</i>	
<i>Surr: Dibromofluoromethane</i>	<i>48.75</i>	<i>0</i>	<i>48.5</i>	<i>0</i>	<i>101</i>	<i>70 - 130</i>	<i>47.11</i>	<i>3.43</i>	<i>30</i>	
<i>Surr: Toluene-d8</i>	<i>48.52</i>	<i>0</i>	<i>48.5</i>	<i>0</i>	<i>100</i>	<i>70 - 130</i>	<i>47.26</i>	<i>2.62</i>	<i>30</i>	

The following samples were analyzed in this batch: HS20070701-01

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070701

QC BATCH REPORT

Batch ID: R365633 (0) **Instrument:** Balance1 **Method:** MOISTURE - ASTM D2216

DUP	Sample ID: HS20070755-02DUP	Units: wt%	Analysis Date: 24-Jul-2020 13:57							
Client ID:	Run ID: Balance1_365633	SeqNo: 5673971	PrepDate: DF: 1							
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual

Percent Moisture	19.4	0.0100					19.7	1.53	20
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The following samples were analyzed in this batch:

HS20070701-01	HS20070701-02	HS20070701-03
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Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20070701

**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/Kg-dry	Milligrams per Kilogram- Dry weight corrected
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	20-030-0	26-Mar-2021
California	2919, 2020-2021	30-Apr-2021
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-30-07/01/2020	30-Jun-2021
Illinois	2000322020-4	09-May-2021
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2020-2021	30-Apr-2021
Louisiana	03087, 2020-2021	30-Jun-2021
Maryland	343, 2019-2020	30-Sep-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2020-2021	30-Apr-2021
Oklahoma	2019-141	31-Aug-2020
Texas	T104704231-20-26	30-Apr-2021

Sample Receipt Checklist

Work Order ID: HS20070701

Date/Time Received: 16-Jul-2020 13:00

Client Name: PBW

Received by: Patrick Salome

Completed By: /S/ Paresh M. Giga	16-Jul-2020 18:18	Reviewed by: /S/ Dane J. Wacasey	16-Jul-2020 19:29
eSignature	Date/Time	eSignature	Date/Time

Matrices: **Soil/GW**

Carrier name: **ALS Courier**

- Shipping container/cooler in good condition? Yes No Not Present
- Custody seals intact on shipping container/cooler? Yes No Not Present
- Custody seals intact on sample bottles? Yes No Not Present
- VOA/TX1005/TX1006 Solids in hermetically sealed vials? Yes No Not Present
- Chain of custody present? Yes No 2 Page(s)
- Chain of custody signed when relinquished and received? Yes No COC IDs:227178, 227176
- Samplers name present on COC? Yes No
- Chain of custody agrees with sample labels? Yes No
- Samples in proper container/bottle? Yes No
- Sample containers intact? Yes No
- Sufficient sample volume for indicated test? Yes No
- All samples received within holding time? Yes No
- Container/Temp Blank temperature in compliance? Yes No

Temperature(s)/Thermometer(s):	1.1°C corrected	IR31
Cooler(s)/Kit(s):	43572	
Date/Time sample(s) sent to storage:	7/16/2020 18:40	
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	No VOA vials submitted <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>
pH adjusted?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	N/A <input type="checkbox"/>
pH adjusted by:	Paresh M. Giga	

Login Notes: WPW-1620-TP-07-20-20200716 Metals pH >2 (7); Preserved with 0.5ml HNO3 7/16/2020 @ 18:15. Final pH (6)

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:



Cincinnati, OH
+1 513 733 5336

Everett, WA
+1 425 356 2600

Fort Collins, CO
+1 970 490 1511

Holland, MI
+1 616 399 6070

Chain of Custody Form

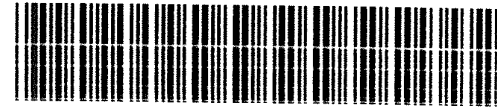
Page 1 of 3

COC ID: 227178

HS20070701

Golder Associates Inc.
Houston TX-Wood Preserving Works

wv



ALS Project Manager:

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-22-Rev0 SR 92688 (SOIL)
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- AVP
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street
			Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620-TP-05-20(1-4)-20200715	7-15-20	1200	Soil	8,9	7	X	X	X	X	X	X					
2	TP-06	↓	1210	↓	↓	↓	X	X	X	X	X	X					
3	TP-07	↓	1220	↓	↓	↓	X	X	X	X	X	X					
4																	
5																	
6																	
7																	
8																	
9																	
10																	

All samples from pits roughly 1-4'

Hold
VOC
Samples
pending
PM
approval

Sampler(s) Please Print & Sign
Blake Skorn

Relinquished by: *Blake Skorn* Date: 7-16-20 Time: 1100
Received by: *[Signature]*

Relinquished by: *[Signature]* Date: 7-16-20 Time: 1300
Received by (Laboratory): *[Signature]*

Logged by (Laboratory): *[Signature]* Date: _____ Time: _____
Checked by (Laboratory): *[Signature]*

Shipment Method _____ Required Turnaround Time: (Check Box) STD 10 Wk Days 5 Wk Days 2 Wk Days 24 Hour Other _____ Results Due Date: _____

Notes: UPRR HWPW 1620-22 WO# 92688

Cooler ID: 43572 Cooler Temp: 1.1 QC Package: (Check One Box Below)
 Level II Std QC TRRP Checklist
 Level III Std QC/Raw Date TRRP Level IV
 Level IV SWB46/CLP
 Other

Preservative Key: 1-HCl 2-HNO₃ 3-H₂SO₄ 4-NaOH 5-Na₂S₂O₃ 6-NaHSO₄ 7-Other 8-4°C 9-5035

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



Cincinnati, OH
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+1 616 399 6070

Chain of Custody Form

Page 5 of 5

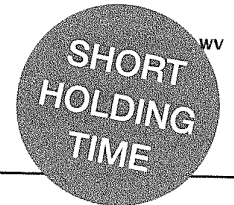
COC ID: 227176

Houston, TX
+1 281 530 5656

Middletown, PA
+1 717 944 5541

Spring City, PA
+1 610 948 4903

Salt Lake City, UT
+1 801 266 7700



Customer Information		ALS Project Manager:		ALS Work Order #:	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	Parameter/Method Request for Analysis	
Work Order		Project Number	1620-22-Rev0 SR 92688 (GW)	A	9056_anions_W (5652642 Anions: Cl, SO4, *NO3, NO2*)
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P	B	8260_LL_W (5632528 VOC Site Specific)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	C	TX1005_W_Low (5643233 TPH TX1005)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	D	8270_LOW_W (5632532 SemiVolatiles Site specific)
				E	RCRA 8 Waters (5652643 RCRA 8 Metals)
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	F	pH_W_9040C (5635957 pH)
Phone	(512) 671-3434	Phone		G	ALK_W_2320B (5635964 Alkalinity)
Fax	(512) 671-3446	Fax		H	TDS_W_2540C (5632360 TDS)
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address		I	ICP_TW (5636002 6020 Calcium)
				J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	<i>WFW</i> 1620-TP-07-20-20200716	7-16-20	0845	Groundwa	1,2,8	9		X	X	X	X						
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

HS20070701

Golder Associates Inc.
Houston TX-Wood Preserving Works



Sampler(s) Please Print & Sign <i>Blake Sobora</i>		Shipment Method		Required Turnaround Time: (Check Box)		Results Due Date:	
<i>Blake Sobora</i>				<input checked="" type="checkbox"/> STD 10 Wk Days <input type="checkbox"/> 5 Wk Days <input type="checkbox"/> 2 Wk Days <input type="checkbox"/> 24 Hour		<i>WO# 92688</i>	
Relinquished by:	Date:	Time:	Received by:	Notes: UPRR HWPW 1620-22			
<i>Blake Sobora</i>	<i>7-16-20</i>	<i>1100</i>	<i>Blake Sobora</i>	Cooler ID	Cooler Temp.	QC Package: (Check One Box Below)	
<i>Blake Sobora</i>	<i>7-16-20</i>	<i>1300</i>	<i>Blake Sobora</i>	<i>43572</i>	<i>11C</i>	<input type="checkbox"/> Level II Std QC	<input checked="" type="checkbox"/> TRRP Checklist
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):			<input type="checkbox"/> Level III Std QC/Raw Date	<input type="checkbox"/> TRRP Level IV
						<input type="checkbox"/> Level IV SWB48/CLP	
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							

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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September 11, 2020

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

Work Order: **HS20071470**

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

Dear Eric Matzner,

ALS Environmental received 1 sample(s) on Jul 31, 2020 for the analysis presented in the following report.

This is a REVISED REPORT. Please see the Case Narrative for discussion concerning this revision.

Regards,

Generated By: DAYNA.FISHER
Dane J. Wacasey

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20071470

**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: HS20071470

**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: 09/11/2020			
Project Name: Houston TX-Wood Preserving Works				Laboratory Job Number: HS20071470			
Reviewer Name: Dane Wacasey				Prep Batch Number(s): 155982, R366038, R366089, R366299, R366552			
# 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				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			2
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	Analytical duplicate data					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	Method quantitation limits (MQLs):					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	Other problems/anomalies					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group				LRC Date: 09/11/2020			
Project Name: Houston TX-Wood Preserving Works				Laboratory Job Number: HS20071470			
Reviewer Name: Dane Wacasey				Prep Batch Number(s): 155982, R366038, R366089, R366299, R366552			
# 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: 09/11/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20071470
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 155982, R366038, R366089, R366299, R366552

ER# ⁵	Description
1	<p>Sample received outside method holding time for pH. pH is an immediate test. Sample results are flagged with an "H" qualifier.</p> <p>The temperature at the time of pH is reported. Please note that all pH results are already normalized to a temperature of 25 °C.</p>
2	<p>Batch R366038, Anions by Method SW9056, Sample WG-1620-MW77A-20200731: MS recovered below lower limit for Chloride; however, the results in the parent sample is greater than 4x the spike amount</p>

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: HS20071470

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20071470-01	WG-1620-MW77A-20200731	Groundwater		31-Jul-2020 13:30	31-Jul-2020 14:20	<input type="checkbox"/>

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20071470

CASE NARRATIVE

Work Order Comments

- This report was revised September 11, 2020 in order to adjust from standard QC level reporting format to TRRP-13 format.
-

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works
 Sample ID: WG-1620-MW77A-20200731
 Collection Date: 31-Jul-2020 13:30

ANALYTICAL REPORT
 WorkOrder:HS20071470
 Lab ID:HS20071470-01
 Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MLL	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		Method:SW6020		Prep:SW3010A / 03-Aug-2020		Analyst: JHD	
Calcium	102		0.340	5.00	mg/L	10	04-Aug-2020 22:01
TOTAL DISSOLVED SOLIDS BY SM2540C		Method:M2540C				Analyst: JAC	
Total Dissolved Solids (Residue, Filterable)	688		5.00	10.0	mg/L	1	05-Aug-2020 13:57
ALKALINITY BY SM2320B		Method:SM2320B				Analyst: TH	
Alkalinity, Bicarbonate (As CaCO3)	490		5.00	5.00	mg/L	1	03-Aug-2020 17:56
Alkalinity, Carbonate (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	03-Aug-2020 17:56
Alkalinity, Hydroxide (As CaCO3)	< 5.00		5.00	5.00	mg/L	1	03-Aug-2020 17:56
Alkalinity, Total (As CaCO3)	490		5.00	5.00	mg/L	1	03-Aug-2020 17:56
PH BY SW9040C		Method:SW9040C				Analyst: JAC	
pH	7.09	H	0.100	0.100	pH Units	1	11-Aug-2020 14:14
Temp Deg C @pH	24.5	H	0	0	DEG C	1	11-Aug-2020 14:14
ANIONS BY SW9056A		Method:SW9056				Analyst: YP	
Chloride	144		2.00	5.00	mg/L	10	31-Jul-2020 18:03
Nitrogen, Nitrate (As N)	0.0584	J	0.0300	0.100	mg/L	1	31-Jul-2020 17:09
Nitrogen, Nitrite (As N)	< 0.0300		0.0300	0.100	mg/L	1	31-Jul-2020 17:09
Sulfate	1.06		0.200	0.500	mg/L	1	31-Jul-2020 17:09

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20071470

Batch ID: 155982	Start Date: 03 Aug 2020 12:00	End Date: 03 Aug 2020 16:00
Method: WATER - SW3010A		Prep Code: 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20071470-01		10 (mL)	10 (mL)	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20071470

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 155982 (0)		Test Name : ICP-MS METALS BY SW6020A			Matrix: Groundwater	
HS20071470-01	WG-1620-MW77A-20200731	31 Jul 2020 13:30		03 Aug 2020 16:00	04 Aug 2020 22:01	10
Batch ID: R366038 (0)		Test Name : ANIONS BY SW9056A			Matrix: Groundwater	
HS20071470-01	WG-1620-MW77A-20200731	31 Jul 2020 13:30			31 Jul 2020 18:03	10
HS20071470-01	WG-1620-MW77A-20200731	31 Jul 2020 13:30			31 Jul 2020 17:09	1
Batch ID: R366089 (0)		Test Name : ALKALINITY BY SM2320B			Matrix: Groundwater	
HS20071470-01	WG-1620-MW77A-20200731	31 Jul 2020 13:30			03 Aug 2020 17:56	1
Batch ID: R366299 (0)		Test Name : TOTAL DISSOLVED SOLIDS BY SM2540C			Matrix: Groundwater	
HS20071470-01	WG-1620-MW77A-20200731	31 Jul 2020 13:30			05 Aug 2020 13:57	1
Batch ID: R366552 (0)		Test Name : PH BY SW9040C			Matrix: Groundwater	
HS20071470-01	WG-1620-MW77A-20200731	31 Jul 2020 13:30			11 Aug 2020 14:14	1

WorkOrder: HS20071470
InstrumentID: ICPMS04
Test Code: ICP_TW
Test Number: SW6020
Test Name: ICP-MS Metals by SW6020A

**METHOD DETECTION /
REPORTING LIMITS**

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

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Calcium	7440-70-2	0.0500	0.0573	0.0340	0.500

WorkOrder: HS20071470
 InstrumentID: ICS-Integrion
 Test Code: 9056_anions_W
 Test Number: SW9056
 Test Name: Anions by SW9056A

**METHOD DETECTION /
 REPORTING LIMITS**

Matrix: Aqueous

Units: mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Chloride	16887-00-6	0.500	0.454	0.200	0.500
A	Nitrogen, Nitrate (As N)	14797-55-8	0.100	0.108	0.0300	0.100
A	Nitrogen, Nitrite (As N)	7632-00-0	0.100	0.127	0.0300	0.100
A	Sulfate	14808-79-8	0.500	0.499	0.200	0.500

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20071470

QC BATCH REPORT

Batch ID: 155982 (0)		Instrument: ICPMS04			Method: ICP-MS METALS BY SW6020A					
MBLK	Sample ID: MBLK-155982	Units: mg/L			Analysis Date: 04-Aug-2020 21:12					
Client ID:		Run ID: ICPMS04_366109			SeqNo: 5684647		PrepDate: 03-Aug-2020		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	< 0.0340	0.500								
LCS	Sample ID: LCS-155982	Units: mg/L			Analysis Date: 04-Aug-2020 21:14					
Client ID:		Run ID: ICPMS04_366109			SeqNo: 5684648		PrepDate: 03-Aug-2020		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	4.967	0.500	5	0	99.3	80 - 120				
MS	Sample ID: HS20071458-06MS	Units: mg/L			Analysis Date: 04-Aug-2020 21:20					
Client ID:		Run ID: ICPMS04_366109			SeqNo: 5684651		PrepDate: 03-Aug-2020		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	6.458	0.500	5	1.333	102	80 - 120				
MSD	Sample ID: HS20071458-06MSD	Units: mg/L			Analysis Date: 04-Aug-2020 21:22					
Client ID:		Run ID: ICPMS04_366109			SeqNo: 5684652		PrepDate: 03-Aug-2020		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	5.975	0.500	5	1.333	92.8	80 - 120	6.458	7.76	20	
PDS	Sample ID: HS20071458-06PDS	Units: mg/L			Analysis Date: 04-Aug-2020 21:24					
Client ID:		Run ID: ICPMS04_366109			SeqNo: 5684653		PrepDate: 03-Aug-2020		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	10.97	0.500	10	1.333	96.4	75 - 125				
SD	Sample ID: HS20071458-06SD	Units: mg/L			Analysis Date: 04-Aug-2020 21:18					
Client ID:		Run ID: ICPMS04_366109			SeqNo: 5684650		PrepDate: 03-Aug-2020		DF: 5	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	RPD Limit	Qual
Calcium	1.417	2.50					1.333	0	10	J

The following samples were analyzed in this batch: HS20071470-01

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20071470

QC BATCH REPORT

Batch ID: R366038 (0) **Instrument:** ICS-Integrion **Method:** ANIONS BY SW9056A

MBLK		Sample ID: MBLK-073120		Units: mg/L		Analysis Date: 31-Jul-2020 14:11				
Client ID:		Run ID: ICS-Integrion_366038		SeqNo: 5682474		PrepDate:		DF: 1		
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	< 0.200	0.500								
Nitrogen, Nitrate (As N)	< 0.0300	0.100								
Nitrogen, Nitrite (As N)	< 0.0300	0.100								
Sulfate	< 0.200	0.500								

LCS		Sample ID: LCS-073120		Units: mg/L		Analysis Date: 31-Jul-2020 14:47				
Client ID:		Run ID: ICS-Integrion_366038		SeqNo: 5682475		PrepDate:		DF: 1		
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.11	0.500	20	0	101	80 - 120				
Nitrogen, Nitrate (As N)	3.892	0.100	4	0	97.3	80 - 120				
Nitrogen, Nitrite (As N)	4.318	0.100	4	0	108	80 - 120				
Sulfate	20.13	0.500	20	0	101	80 - 120				

MS		Sample ID: HS20071470-01MS		Units: mg/L		Analysis Date: 31-Jul-2020 18:21				
Client ID: WG-1620-MW77A-20200731		Run ID: ICS-Integrion_366038		SeqNo: 5682480		PrepDate:		DF: 1		
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	151	0.500	10	143.6	74.0	80 - 120				SEO
Nitrogen, Nitrate (As N)	1.98	0.100	2	0.0584	96.1	80 - 120				
Nitrogen, Nitrite (As N)	2.229	0.100	2	0	111	80 - 120				
Sulfate	10.89	0.500	10	1.062	98.3	80 - 120				

MSD		Sample ID: HS20071470-01MSD		Units: mg/L		Analysis Date: 31-Jul-2020 18:39				
Client ID: WG-1620-MW77A-20200731		Run ID: ICS-Integrion_366038		SeqNo: 5682481		PrepDate:		DF: 1		
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	151.8	0.500	10	143.6	81.7	80 - 120	151	0.509	20	EO
Nitrogen, Nitrate (As N)	1.989	0.100	2	0.0584	96.5	80 - 120	1.98	0.433	20	
Nitrogen, Nitrite (As N)	2.235	0.100	2	0	112	80 - 120	2.229	0.26	20	
Sulfate	11.02	0.500	10	1.062	99.6	80 - 120	10.89	1.14	20	

The following samples were analyzed in this batch: HS20071470-01

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20071470

QC BATCH REPORT

Batch ID: R366089 (0)	Instrument: ManTech01	Method: ALKALINITY BY SM2320B
--------------------------------	------------------------------	--------------------------------------

MBLK	Sample ID: WBLKW1-080320	Units: mg/L	Analysis Date: 03-Aug-2020 17:19							
Client ID:	Run ID: ManTech01_366089	SeqNo: 5683509	PrepDate: DF: 1							
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Alkalinity, Bicarbonate (As CaCO3)	< 5.00	5.00								
Alkalinity, Carbonate (As CaCO3)	< 5.00	5.00								
Alkalinity, Hydroxide (As CaCO3)	< 5.00	5.00								
Alkalinity, Total (As CaCO3)	< 5.00	5.00								

LCS	Sample ID: WLCS1-080320	Units: mg/L	Analysis Date: 03-Aug-2020 17:27							
Client ID:	Run ID: ManTech01_366089	SeqNo: 5683510	PrepDate: DF: 1							
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Alkalinity, Carbonate (As CaCO3)	1027	5.00	1000	0	103	85 - 115				
Alkalinity, Total (As CaCO3)	1033	5.00	1000	0	103	85 - 115				

LCSD	Sample ID: WLCSD1-080320	Units: mg/L	Analysis Date: 03-Aug-2020 17:37							
Client ID:	Run ID: ManTech01_366089	SeqNo: 5683511	PrepDate: DF: 1							
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Alkalinity, Carbonate (As CaCO3)	1021	5.00	1000	0	102	85 - 115	1027	0.559	20	
Alkalinity, Total (As CaCO3)	1031	5.00	1000	0	103	85 - 115	1033	0.138	20	

DUP	Sample ID: HS20071411-01DUP	Units: mg/L	Analysis Date: 03-Aug-2020 17:50							
Client ID:	Run ID: ManTech01_366089	SeqNo: 5683513	PrepDate: DF: 1							
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Alkalinity, Bicarbonate (As CaCO3)	185.5	5.00					185.2	0.146	20	
Alkalinity, Carbonate (As CaCO3)	8.73	5.00					7.75	11.9	20	
Alkalinity, Hydroxide (As CaCO3)	< 5.00	5.00					0	0	20	
Alkalinity, Total (As CaCO3)	194.2	5.00					193	0.646	20	

The following samples were analyzed in this batch: HS20071470-01

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20071470

QC BATCH REPORT

Batch ID: R366299 (0) **Instrument:** Balance1 **Method:** TOTAL DISSOLVED SOLIDS BY SM2540C

MBLK	Sample ID: WBLK-080520	Units: mg/L			Analysis Date: 05-Aug-2020 13:57				
Client ID:	Run ID: Balance1_366299	SeqNo: 5687299	PrepDate:	DF: 1					
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual

Total Dissolved Solids (Residue, Filterable) < 5.00 10.0

LCS	Sample ID: WLCS-080520	Units: mg/L			Analysis Date: 05-Aug-2020 13:57				
Client ID:	Run ID: Balance1_366299	SeqNo: 5687300	PrepDate:	DF: 1					
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual

Total Dissolved Solids (Residue, Filterable) 1006 10.0 1000 0 101 85 - 115

DUP	Sample ID: HS20080095-02DUP	Units: mg/L			Analysis Date: 05-Aug-2020 13:57				
Client ID:	Run ID: Balance1_366299	SeqNo: 5687296	PrepDate:	DF: 1					
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual

Total Dissolved Solids (Residue, Filterable) 552 10.0 554 0.362 5

The following samples were analyzed in this batch: HS20071470-01

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20071470

QC BATCH REPORT

Batch ID: R366552 (0)		Instrument: WetChem_HS		Method: PH BY SW9040C						
DUP	Sample ID: HS20071470-01DUP	Units: pH Units			Analysis Date: 11-Aug-2020 14:14					
Client ID: WG-1620-MW77A-20200731	Run ID: WetChem_HS_366552	SeqNo: 5696197	PrepDate:	DF: 1						
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

pH	7.06	0.100					7.09	0.424	10	
Temp Deg C @pH	24.6	0					24.5	0.407	10	

The following samples were analyzed in this batch: HS20071470-01

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20071470

**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

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	20-030-0	26-Mar-2021
California	2919, 2020-2021	30-Apr-2021
Dept of Defense	PJLA L20-507	22-Dec-2021
Florida	E87611-30-07/01/2020	30-Jun-2021
Illinois	2000322020-4	09-May-2021
Kansas	E-10352 2020-2021	31-Jul-2021
Kentucky	123043, 2020-2021	30-Apr-2021
Louisiana	03087, 2020-2021	30-Jun-2021
Maryland	343, 2019-2020	30-Sep-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2020-2021	30-Apr-2021
Texas	T104704231-20-26	30-Apr-2021

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20071470

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS20071470-01	WG-1620-MW77A-20200731	Login	7/31/2020 3:18:15 PM	JRM	EXT127
HS20071470-01	WG-1620-MW77A-20200731	Login	7/31/2020 3:18:15 PM	JRM	MET034
HS20071470-01	WG-1620-MW77A-20200731	Login	7/31/2020 3:18:15 PM	JRM	VOA148

Sample Receipt Checklist

Work Order ID: HS20071470

Date/Time Received: 31-Jul-2020 14:20

Client Name: PBW

Received by: Donald Gilmore

Completed By: /S/ Jared R. Makan	29-Jul-2020 17:20	Reviewed by: /S/ Dane J. Wacasey	04-Aug-2020 19:14
eSignature	Date/Time	eSignature	Date/Time

Matrices: **Water**

Carrier name: **ALS Courier**

- Shipping container/cooler in good condition? Yes No Not Present
- Custody seals intact on shipping container/cooler? Yes No Not Present
- Custody seals intact on sample bottles? Yes No Not Present
- VOA/TX1005/TX1006 Solids in hermetically sealed vials? Yes No Not Present
- Chain of custody present? Yes No 1 Page(s)
- Chain of custody signed when relinquished and received? Yes No COC IDs:226664
- Samplers name present on COC? Yes No
- Chain of custody agrees with sample labels? Yes No
- Samples in proper container/bottle? Yes No
- Sample containers intact? Yes No
- Sufficient sample volume for indicated test? Yes No
- All samples received within holding time? Yes No
- Container/Temp Blank temperature in compliance? Yes No

Temperature(s)/Thermometer(s): 1.4°C/1.4°C UC/C IR31

Cooler(s)/Kit(s): Blue

Date/Time sample(s) sent to storage: 07/31/2020 15:40

Water - VOA vials have zero headspace? Yes No No VOA vials submitted

Water - pH acceptable upon receipt? Yes No N/A

pH adjusted? Yes No N/A

pH adjusted by:

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:



Cincinnati, OH
+1 513 733 5336

Fort Collins, CO
+1 970 490 1511

Everett, WA
+1 425 356 2600

Holland, MI
+1 616 399 6070

Chain of Custody Form

Page ____ of ____

COC ID: 226664

HS20071470

Golder Associates Inc.
Houston TX-Wood Preserving Works

vv

ALS Project Manager:



Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs 1622-22	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-22-Rev1 SR 92688 (GW)
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street
			Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	GW-1620 MW 77A 20200731	7-31-20	1330	Groundwa	1,2,8	2	X	X	X	X	X						
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign <i>Timms Spadden</i>		Shipment Method	Required Turnaround Time: (Check Box) <input checked="" type="checkbox"/> STD 10 Wk Days <input type="checkbox"/> 5 Wk Days <input type="checkbox"/> 2 Wk Days <input type="checkbox"/> 24 Hour		Results Due Date:
Relinquished by: <i>DS</i>	Date: 7-31-20	Time: 1430	Received by: <i>DS</i>	Notes: UPRR HWP/W 1620-22	
Relinquished by: <i>DS</i>	Date: 7-31-20	Time: 1530	Received by (Laboratory): <i>DS</i>	Cooler ID <i>Blue</i>	Cooler Temp. <i>1.4</i>
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	QC Package: (Check One Box Below) <input checked="" type="checkbox"/> Level II Std QC <input type="checkbox"/> TRRP Checklist <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	

Preservative Key: 1-HCl 2-HNO₃ 3-H₂SO₄ 4-NaOH 5-Na₂S₂O₃ 6-NaHSO₄ 7-Other 8-4°C 9-5035

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

Copyright 2011 by ALS Environmental.

	ALS	
	10450 Stancliff Rd., Suite 210	
	Houston, Texas 77099	Date: _____
	Tel. +1 281 530 5656 Fax. +1 281 530 5887	Name: _____ Company: _____

CUSTODY SEAL		Seal Broken By: _____
Date: <u>7-25-20</u>	Time: <u>14:10</u>	Signature: _____
Name: <u>Jim Mesple</u>		Date: <u>7/25/20</u>
y: <u>Boley</u>		

ATTACHMENT C

Manifests – Test Pit Excavation

Rileg

U-1117X

Form Approved, OMB No. 2050-0039

Please print or type.

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number 31547 / TXD000820266	2 Page 1 of 1	3. Emergency Response Phone (800)424-9300	4. Manifest Tracking Number 022088589 JJK	
5. Generator Name and Mailing Address USES COOPRR 950 Seaco Ave. Deer Park TX 77536 (414)267-4164		Generator's Site Address (if different than mailing address) Union Pacific Railroad 4910 Liberty Rd. Houston TX 77026				
6. Transporter 1 Company Name United States Environmental Services		U.S. EPA ID Number TXR000079834				
7. Transporter 2 Company Name		U.S. EPA ID Number				
8. Designated Facility Name and Site Address COASTAL PLAINS RDF 21000 E. HWY 6 ALVIN TX 77511 (281)388-1708		U.S. EPA ID Number 1721A TXR000084637				
9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No. Type		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
	1. Non RCRA, Non DOT regulated solids (Petroleum contaminated soils and asphalt/concrete)	01	CM	15	W Y	0400 3011
	2.					
	3.					
	4.					
14. Special Handling Instructions and Additional Information PROFILE # 988277TX						
Transporter Address:				Phone:		
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.						
Generator's/Officer's Printed/Typed Name Thomas Cappucci				Signature 		Month Day Year 9 29 2020
16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: _____ Date leaving U.S.: _____						
17. Transporter Acknowledgment of Receipt of Materials						
Transporter 1 Printed/Typed Name DARQUE ALEX				Signature 		Month Day Year 9 29 2020
Transporter 2 Printed/Typed Name				Signature		Month Day Year
18. Discrepancy						
18a Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection						
Manifest Reference Number:				U.S. EPA ID Number		
18b Alternate Facility (or Generator)						
Facility's Phone:				U.S. EPA ID Number		
18c. Signature of Alternate Facility (or Generator)						Month Day Year
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)						
1.	2.	3.	4.			
	H132					
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a						
Printed/Typed Name gn				Signature 		Month Day Year 9 29 2020

R169

CMR

Form Approved. OMB No. 2050-0039

Please print or type.

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number 31547 / TXD000820266	2. Page 1 of 1	3. Emergency Response Phone (800)424-8300	4. Manifest Tracking Number 022088585 JJK		
5. Generator's Name and Mailing Address USES C/O UPRR 950 Seaco Ave. Deer Park TX 77536 Generator's Phone: (414)267-4184		Generator's Site Address (if different than mailing address) Union Pacific Railroad 4910 Liberty Rd. Houston TX 77026					
6. Transporter 1 Company Name <i>United States Environmental Services</i>		U.S. EPA ID Number TXR000079834 88597					
7. Transporter 2 Company Name		U.S. EPA ID Number					
8. Designated Facility Name and Site Address COASTAL PLAINS RDF 21000 E. HWY 8 ALVIN TX 77511 (281)388-1708		U.S. EPA ID Number 1721A/TXR000084637					
9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No. Type		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes	
	1. Non RCRA, Non DOT regulated solids (Petroleum contaminated soils and asphalt/concrete)	01	CM	25	Y	0400 3011	
	2.						
	3.						
	4.						
14. Special Handling Instructions and Additional Information PROFILE #: 988277TX Transporter Address: _____ Phone: _____							
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true. Generator's/Offoror's Printed/Typed Name: <i>Thomas Cappucci</i> Signature: _____ Month: 9 Day: 29 Year: 2020							
16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: _____ Date leaving U.S.: _____ Transporter signature (for exports only): _____							
17. Transporter Acknowledgment of Receipt of Materials Transporter 1 Printed/Typed Name: <i>DARRIUS ADO</i> Signature: _____ Month: 9 Day: 30 Year: 20 Transporter 2 Printed/Typed Name: _____ Signature: _____ Month: _____ Day: _____ Year: _____							
18. Discrepancy 18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection Manifest Reference Number: _____ U.S. EPA ID Number: _____							
18b. Alternate Facility (or Generator) _____ U.S. EPA ID Number: _____ Facility's Phone: _____							
18c. Signature of Alternate Facility (or Generator) _____ Month: _____ Day: _____ Year: _____							
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems) 1. <i>H130</i> 2. _____ 3. _____ 4. _____							
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a Printed/Typed Name: _____ Signature: _____ Month: 9 Day: 30 Year: 20							

GENERATOR

INT'L

TRANSPORTER

DESIGNATED FACILITY

R169 CMR

Please print or type.

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator ID Number 31547 / TXD000820266	2. Page 1 of 1	3. Emergency Response Phone (800)424-9300	4. Manifest Tracking Number 022088590 JJK
---	--	-------------------	--	---

5. Generator's Name and Mailing Address USPS / UPRR 950 Seaco Ave. Deer Park TX 77536 Generator's Phone: (414)267-4164	Generator's Site Address (if different than mailing address) Union Pacific Railroad 4910 Liberty Rd. Houston TX 77026
--	--

6. Transporter 1 Company Name <i>United States Environmental Services</i>	U.S. EPA ID Number TXR000079834 / 88597
7. Transporter 2 Company Name	U.S. EPA ID Number

8. Designated Facility Name and Site Address COASTAL PLAINS RDF 21000 E. HWY 6 ALVIN TX 77511 Facility's Phone: (281)388-1708	U.S. EPA ID Number 1724W TXR000084637
---	--

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes	
		No.	Type				
	1. Non RCRA, Non DOT regulated solids (Petroleum contaminated soils and asphalt/concrete)	01	CM	25	Y	0400	3011
	2.						
	3.						
	4.						

Special Handling Instructions and Additional Information
PROFILE #: 988277TX

Transporter Address: _____ Phone: _____

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

Generator's/Offeror's Printed/Typed Name: *Thomas Cappucco* Signature: *[Signature]* Month: 9 Day: 29 Year: 2020

16. International Shipments Import to U.S. Export from U.S. Port of entry/exit: _____ Date leaving U.S.: _____

Transporter signature (for exports only): _____

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: *Dariusz Adams* Signature: *[Signature]* Month: 9 Day: 29 Year: 2020

Transporter 2 Printed/Typed Name: _____ Signature: _____ Month: _____ Day: _____ Year: _____

18. Discrepancy

18a. Discrepancy Indication Space Quantity Type Residue Partial Rejection Full Rejection

Manifest Reference Number: _____

18b. Alternate Facility (or Generator) U.S. EPA ID Number: _____

Facility's Phone: _____

18c. Signature of Alternate Facility (or Generator) Month: _____ Day: _____ Year: _____

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

1. *H132* 2. _____ 3. _____ 4. _____

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name: *DI* Signature: *[Signature]* Month: 9 Day: 30 Year: 2020

ATTACHMENT D

Camera Survey Reports



Section Summary

Project
GOLDER UPRR

12/11/2020

Number of sections	9
Total length of sewer network	1806.47 ft
Inspected length of sewer network	586.33 ft
Not inspected length of sewer network	1000.03 ft
Total abandoned inspections	6
Number of section inspection photos	53
Number of section inspection videos	9
Number of section inspection scans	0
Number of section inclination measurements	0

Pipe Segment Reference	Vault C131-EOR North	Upstream MH	Vault C131
City	Houston	Downstream MH	EOR North
Street	Wallisville	Shape	Circular 40mm
Total Length	200.0	Material	Corrugated Metal Pipe

	Distance	PACP Code	Observation
1	0.00	MWL	Water Level
2	0.00	DSC	Deposits Settled Compacted, 5% of cross sectional area at 5 o'clock
3	0.00	AJB	Junction Box
4	42.39	MSA	Survey Abandoned

Pipe Segment Reference	Vault C131-EOR S	Upstream MH	Vault C131
City	Houston	Downstream MH	EOR S
Street	Wallisville	Shape	Circular 40mm
Total Length	206.5	Material	Corrugated Metal Pipe

	Distance	PACP Code	Observation
1	0.00	MWL	Water Level
2	0.00	DSC	Deposits Settled Compacted, 10% of cross sectional area at 4 o'clock
3	0.00	AJB	Junction Box
4	0.00	DH	Deformed Horizontal, 10% changed, Start
5	17.75	OBR	Obstacles Rocks, 5% of cross sectional area from 5 o'clock to 7 o'clock
6	64.24	OBZ	Obstacles Other, 5% of cross sectional area at 7 o'clock
7	206.47	DH	Deformed Horizontal, 10% changed, Finish
8	206.47	AMH	Manhole

Pipe Segment Reference	Vault C131-EOR E	Upstream MH	Vault C131
City	Houston	Downstream MH	EOR E
Street	Wallisville	Shape	Circular 12mm
Total Length	200.0	Material	Concrete Pipe (non-reinforced)



Section Summary

Project
GOLDER UPRR

12/11/2020

	Distance	PACP Code	Observation
1	0.00	AJB	Junction Box
2	0.00	MWL	Water Level
3	0.49	MSA	Survey Abandoned

Pipe Segment Reference	Vault C131-EOR West	Upstream MH	Vault C131
City	Houston	Downstream MH	EOR West
Street	Wallisville	Shape	Circular 14mm
Total Length	200.0	Material	Concrete Pipe (non-reinforced)

	Distance	PACP Code	Observation
1	0.00	AJB	Junction Box
2	0.00	MWL	Water Level
3	20.14	DSGV	Deposits Settled Gravel, 10% of cross sectional area from 5 o'clock to 7 o'clock, Start
4	33.27	DSGV	Deposits Settled Gravel, 10% of cross sectional area from 5 o'clock to 7 o'clock, Finish
5	37.11	D	Deformed, 5% changed
6	38.68	MWL	Water Level
7	48.92	DSGV	Deposits Settled Gravel, 5% of cross sectional area from 5 o'clock to 7 o'clock, Start
8	65.88	DSGV	Deposits Settled Gravel, 5% of cross sectional area from 5 o'clock to 7 o'clock, Finish
9	68.50	OBZ	Obstacles Other, 5% of cross sectional area at 6 o'clock
10	87.93	OBZ	Obstacles Other, 5% of cross sectional area at 6 o'clock
11	97.44	OBZ	Obstacles Other, 5% of cross sectional area at 6 o'clock
12	120.01	DH	Deformed Horizontal, 10% changed
13	135.73	MWL	Water Level
14	137.66	DH	Deformed Horizontal, 5% changed, Start
15	147.05	DH	Deformed Horizontal, 5% changed, Finish
16	147.05	MCU	Camera Underwater
17	179.36	OBP	Obstacles External Pipe or Cable, 20% of cross sectional area from 4 o'clock to 9 o'clock

Pipe Segment Reference	CB C108 West-Vault C131	Upstream MH	CB C108 West
City	Houston	Downstream MH	Vault C131
Street	Wallisville	Shape	Circular 14mm
Total Length	200.0	Material	Concrete Pipe (non-reinforced)

	Distance	PACP Code	Observation
1	0.00	DSC	Deposits Settled Compacted, 15% of cross sectional area from 5 o'clock to 7 o'clock, Start
2	0.00	ACB	Catch Basin
3	0.00	MWL	Water Level
4	49.21	XP	Collapse Pipe Sewer, 45% lost
5	66.31	DSC	Deposits Settled Compacted, 15% of cross sectional area from 5 o'clock to 7 o'clock, Finish
6	75.43	MSA	Survey Abandoned

Pipe Segment Reference	CB C065-Vault C131	Upstream MH	CB C065
City	Houston	Downstream MH	Vault C131
Street	Wallisville	Shape	Circular 14mm
Total Length	200.0	Material	Concrete Pipe (non-reinforced)

	Distance	PACP Code	Observation
1	0.00	DSC	Deposits Settled Compacted, 10% of cross sectional area from 5 o'clock to 7 o'clock, Start
2	0.00	ACB	Catch Basin
3	0.00	MWL	Water Level
4	47.61	DSC	Deposits Settled Compacted, 10% of cross sectional area from 5 o'clock to 7 o'clock, Finish
5	55.02	MSA	Survey Abandoned



Section Summary

Project
GOLDER UPRR

12/11/2020

Pipe Segment Reference	CB C021-CB C044	Upstream MH	CB C021
City	Houston	Downstream MH	CB C044
Street	Wallisville	Shape	Circular 14mm
Total Length	200.0	Material	Concrete Pipe (non-reinforced)

	Distance	PACP Code	Observation
1	0.00	ACB	Catch Basin
2	0.00	MWL	Water Level
3	0.00	DSC	Deposits Settled Compacted, 40% of cross sectional area from 3 o'clock to 9 o'clock
4	0.52	MYV	Dye Test Visible

Pipe Segment Reference	CB C021-CB C002	Upstream MH	CB C021
City	Houston	Downstream MH	CB C002
Street	Wallisville	Shape	Circular 14mm
Total Length	200.0	Material	Concrete Pipe (non-reinforced)

	Distance	PACP Code	Observation
1	0.00	ACB	Catch Basin
2	0.00	MWL	Water Level
3	2.40	MCU	Camera Underwater
4	2.40	MSA	Survey Abandoned

Pipe Segment Reference	CB A28-CB A117	Upstream MH	CB A28
City	Houston	Downstream MH	CB A117
Street	Wallisville	Shape	Circular 14mm
Total Length	200.0	Material	Concrete Pipe (non-reinforced)

	Distance	PACP Code	Observation
1	0.00	ACB	Catch Basin
2	0.00	MWL	Water Level
3	0.30	D	Deformed, 15% changed, Start
4	2.66	DSC	Deposits Settled Compacted, 15% of cross sectional area from 5 o'clock to 7 o'clock, Start
5	24.25	DSC	Deposits Settled Compacted, 15% of cross sectional area from 5 o'clock to 7 o'clock, Finish
6	24.25	D	Deformed, 15% changed, Finish
7	24.25	MSA	Survey Abandoned



Inspection report

Date: 12/8/2020	Work Order: 01	Weather:	Surveyed By: U-1120-70400432	Certificate Number: U-1120-70400432	Pipe Segment Ref.: Vault C131-EOR North
Year laid:	Pre-cleaning: Not Known	Direction: Upstream	Pipe Joint Length:	Total Length: 200.0'	Length Surveyed: 42.4'

City: Houston	Drainage Area:	Upstream MH: Vault C131
Street: Wallisville	Media Label: n/a	Up Rim to Invert: 0.0
Location Code:	Flow Control:	Downstream MH: EOR North
Location Details:	Sheet Number:	Down Rim to Invert: 0.0
Pipe shape: Circular	Sewer Use: Stormwater	Total gallons used: 0.0
Pipe size: 40"	Sewer Category: SEC	Joints passed: 0
Pipe material: Corrugated Metal Pipe	Purpose:	Joints failed: 0
Lining Method:	Owner:	

Additional Info:

1:1510	Distance	Code	Observation	Counter	Photo	Grade
EOR North						
	0.00	MWL	Water Level			
	0.00	DSC	Deposits Settled Compacted, 5% of cross sectional area at 5 o'clock			
	0.00	AJB	Junction Box / vault			
	42.39	MSA	Survey Abandoned / could not make it, slick surface			
	200.00		End of pipe			
Vault C131						
QSR	QMR	QOR	SPR	MPR	OPR	SPRI
0000	2100	2100	0.0	2.0	2.0	0.0
						MPRI
						OPRI
						2.0
						2.0



Section Pictures - 12/8/2020 - Vault C131-EOR North

City	Street	Date	Pipe Segment Reference	Nr.
Houston	Wallisville	12/8/2020	Vault C131-EOR North	1



Vault C131 - EOR North_0001.bmp, , 0.00ft
Water Level



Vault C131 - EOR North_0002.bmp, , 0.00ft
Deposits Settled Compacted, 5% of cross sectional area at 5 o'clock



Vault C131 - EOR North_0000.bmp, , 0.00ft
Junction Box / vault



Vault C131 - EOR North_0003.bmp, , 42.39ft
Survey Abandoned / could not make it, slick surface



Inspection report

Date: 12/8/2020	Work Order: 01	Weather:	Surveyed By: U-1120-70400432	Certificate Number: U-1120-70400432	Pipe Segment Ref.: Vault C131-EOR S
Year laid:	Pre-cleaning: Not Known	Direction: Upstream	Pipe Joint Length:	Total Length: 206.5'	Length Surveyed: 206.5'

City: Houston	Drainage Area:	Upstream MH: Vault C131
Street: Wallisville	Media Label: n/a	Up Rim to Invert: 0.0
Location Code:	Flow Control:	Downstream MH: EOR S
Location Details:	Sheet Number:	Down Rim to Invert: 0.0
Pipe shape: Circular	Sewer Use: Stormwater	Total gallons used: 0.0
Pipe size: 40"	Sewer Category: SEC	Joints passed: 0
Pipe material: Corrugated Metal Pipe	Purpose:	Joints failed: 0
Lining Method:	Owner:	

Additional Info:

1:1559	Distance	Code	Observation	Counter	Photo	Grade		
EOR S	0.00	MWL	Water Level		Vault C131 - EOR S_0001.b			
	0.00	DSC	Deposits Settled Compacted, 10% of cross sectional area at 4 o'clock		Vault C131 - EOR S_0002.b	M2		
	0.00	AJB	Junction Box / vault		Vault C131 - EOR S_0000.b			
	0.00	S02 DH	Deformed Horizontal, 10% changed, Start					
	17.75	OBR	Obstacles Rocks, 5% of cross sectional area from 5 o'clock to 7 o'clock		Vault C131 - EOR S_0003.b	M2		
	64.24	OBZ	Obstacles Other, 5% of cross sectional area at 7 o'clock / unknown		Vault C131 - EOR S_0004.b	M2		
	206.47	F02 DH	Deformed Horizontal, 10% changed, Finish			S5		
Vault C131	206.47	AMH	Manhole / Vault C131					
QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI
5G00	2300	5G23	205.0	6.0	211.0	5.0	2.0	4.8



Section Pictures - 12/8/2020 - Vault C131-EOR S

City	Street	Date	Pipe Segment Reference	Nr.
Houston	Wallisville	12/8/2020	Vault C131-EOR S	2



Vault C131 - EOR S_0001.bmp, , 0.00ft
Water Level



Vault C131 - EOR S_0002.bmp, , 0.00ft
Deposits Settled Compacted, 10% of cross sectional area at 4 o'clock



Vault C131 - EOR S_0000.bmp, , 0.00ft
Junction Box / vault



Vault C131 - EOR S_0003.bmp, , 17.75ft
Obstacles Rocks, 5% of cross sectional area from 5 o'clock to 7 o'clock



Section Pictures - 12/8/2020 - Vault C131-EOR S

City Houston	Street Wallisville	Date 12/8/2020	Pipe Segment Reference Vault C131-EOR S	Nr. 2
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Vault C131 - EOR S_0004.bmp, , 64.24ft
Obstacles Other, 5% of cross sectional area at 7 o'clock / unknown



Vault C131 - EOR S_0005.bmp, , 64.24ft
Obstacles Other, 5% of cross sectional area at 7 o'clock / unknown



Inspection report

Date: 12/8/2020	Work Order: 01	Weather:	Surveyed By: U-1120-70400432	Certificate Number: U-1120-70400432	Pipe Segment Ref.: Vault C131-EOR E
Year laid:	Pre-cleaning: Not Known	Direction: Upstream	Pipe Joint Length:	Total Length: 200.0'	Length Surveyed: 0.5'

City: Houston	Drainage Area:	Upstream MH: Vault C131
Street: Wallisville	Media Label: n/a	Up Rim to Invert: 0.0
Location Code:	Flow Control:	Downstream MH: EOR E
Location Details:	Sheet Number:	Down Rim to Invert: 0.0
Pipe shape: Circular	Sewer Use:	Total gallons used: 0.0
Pipe size: 12"	Sewer Category: SEC	Joints passed: 0
Pipe material: Concrete Pipe (non-reinforced)	Purpose:	Joints failed: 0
Lining Method:	Owner:	

Additional Info:

1:1510	Distance	Code	Observation	Counter	Photo	Grade		
EOR E								
	0.00	AJB	Junction Box / vault		Vault C131 - EOR E_0000.b			
	0.00	MWL	Water Level		Vault C131 - EOR E_0001.b			
	0.49	MSA	Survey Abandoned / could not make it past obstruction		Vault C131 - EOR E_0002.b			
	200.00		End of pipe					
QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	0000	0000	0.0	0.0	0.0	0.0	0.0	0.0



Section Pictures - 12/8/2020 - Vault C131-EOR E

City	Street	Date	Pipe Segment Reference	Nr.
Houston	Wallisville	12/8/2020	Vault C131-EOR E	3



Vault C131 - EOR E_0000.bmp, , 0.00ft
Junction Box / vault



Vault C131 - EOR E_0001.bmp, , 0.00ft
Water Level



Vault C131 - EOR E_0002.bmp, , 0.49ft
Survey Abandoned / could not make it past obstruction



Inspection report

Date: 12/8/2020	Work Order: 01	Weather:	Surveyed By: U-1120-70400432	Certificate Number: U-1120-70400432	Pipe Segment Ref.: Vault C131-EOR West
Year laid:	Pre-cleaning: Not Known	Direction: Upstream	Pipe Joint Length:	Total Length: 200.0'	Length Surveyed: 179.4'

City: Houston	Drainage Area:	Upstream MH: Vault C131
Street: Wallisville	Media Label: n/a	Up Rim to Invert: 0.0
Location Code:	Flow Control:	Downstream MH: EOR West
Location Details:	Sheet Number:	Down Rim to Invert: 0.0
Pipe shape: Circular	Sewer Use:	Total gallons used: 0.0
Pipe size: 14"	Sewer Category: SEC	Joints passed: 0
Pipe material: Concrete Pipe (non-reinforced)	Purpose:	Joints failed: 0
Lining Method:	Owner:	

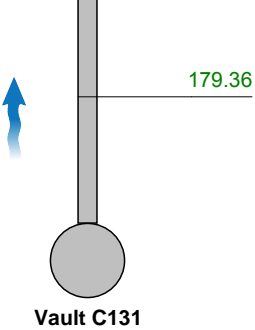
Additional Info:

1:1232	Distance	Code	Observation	Counter	Photo	Grade
EOR West	0.00	AJB	Junction Box / vault		Vault C131 - EOR West_000	
	0.00	MWL	Water Level		Vault C131 - EOR West_000	
	20.14	S01	DSGV Deposits Settled Gravel, 10% of cross sectional area from 5 o'clock to 7 o'clock, Start		Vault C131 - EOR West_000	
	33.27	F01	DSGV Deposits Settled Gravel, 10% of cross sectional area from 5 o'clock to 7 o'clock, Finish		Vault C131 - EOR West_000	M2
	37.11	D	Deformed, 5% changed		Vault C131 - EOR West_000	S4
	38.68	MWL	Water Level		Vault C131 - EOR West_000	
	48.92	S02	DSGV Deposits Settled Gravel, 5% of cross sectional area from 5 o'clock to 7 o'clock, Start		Vault C131 - EOR West_000	
	65.88	F02	DSGV Deposits Settled Gravel, 5% of cross sectional area from 5 o'clock to 7 o'clock, Finish		Vault C131 - EOR West_000	M2
	68.50	OBZ	Obstacles Other, 5% of cross sectional area at 6 o'clock / debris		Vault C131 - EOR West_000	M2
	87.93	OBZ	Obstacles Other, 5% of cross sectional area at 6 o'clock / debris		Vault C131 - EOR West_000	M2
	97.44	OBZ	Obstacles Other, 5% of cross sectional area at 6 o'clock / debris		Vault C131 - EOR West_001	M2
	120.01	DH	Deformed Horizontal, 10% changed		Vault C131 - EOR West_001	S5
	135.73	MWL	Water Level		Vault C131 - EOR West_001	
	137.66	S03	DH Deformed Horizontal, 5% changed, Start		Vault C131 - EOR West_001	
	147.05	F03	DH Deformed Horizontal, 5% changed, Finish		Vault C131 - EOR West_001	S5
	147.05	MCU	Camera Underwater		Vault C131 - EOR West_001	M4



Inspection report

Date: 12/8/2020	Work Order: 01	Weather:	Surveyed By: U-1120-70400432	Certificate Number: U-1120-70400432	Pipe Segment Ref.: Vault C131-EOR West
Year laid:	Pre-cleaning: Not Known	Direction: Upstream	Pipe Joint Length:	Total Length: 200.0'	Length Surveyed: 179.4'

1:1232	Distance	Code	Observation	Counter	Photo	Grade		
	179.36	OBP	Obstacles External Pipe or Cable, 20% of cross sectional area from 4 o'clock to 9 o'clock		Vault C131 - EOR West_001	M3		
Vault C131								
QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI
5341	4131	5342	19.0	25.0	44.0	4.8	2.3	2.9



Section Pictures - 12/8/2020 - Vault C131-EOR West

City	Street	Date	Pipe Segment Reference	Nr.
Houston	Wallisville	12/8/2020	Vault C131-EOR West	4



Vault C131 - EOR West_0000.bmp, , 0.00ft
Junction Box / vault



Vault C131 - EOR West_0001.bmp, , 0.00ft
Water Level



Vault C131 - EOR West_0002.bmp, , 20.14ft
Deposits Settled Gravel, 10% of cross sectional area from 5 o'clock, Start



Vault C131 - EOR West_0003.bmp, , 33.27ft
Deposits Settled Gravel, 10% of cross sectional area from 5 o'clock, Finish



Section Pictures - 12/8/2020 - Vault C131-EOR West

City	Street	Date	Pipe Segment Reference	Nr.
Houston	Wallisville	12/8/2020	Vault C131-EOR West	4



Vault C131 - EOR West_0004.bmp, , 37.11ft
Deformed, 5% changed



Vault C131 - EOR West_0005.bmp, , 38.68ft
Water Level



Vault C131 - EOR West_0006.bmp, , 48.92ft
Deposits Settled Gravel, 5% of cross sectional area from 5 o'clock, Start



Vault C131 - EOR West_0007.bmp, , 65.88ft
Deposits Settled Gravel, 5% of cross sectional area from 5 o'clock, Finish



Section Pictures - 12/8/2020 - Vault C131-EOR West

City	Street	Date	Pipe Segment Reference	Nr.
Houston	Wallisville	12/8/2020	Vault C131-EOR West	4



Vault C131 - EOR West_0008.bmp, , 68.50ft
Obstacles Other, 5% of cross sectional area at 6 o'clock / debris



Vault C131 - EOR West_0009.bmp, , 87.93ft
Obstacles Other, 5% of cross sectional area at 6 o'clock / debris



Vault C131 - EOR West_0010.bmp, , 97.44ft
Obstacles Other, 5% of cross sectional area at 6 o'clock / debris



Vault C131 - EOR West_0011.bmp, , 120.01ft
Deformed Horizontal, 10% changed



Section Pictures - 12/8/2020 - Vault C131-EOR West

City	Street	Date	Pipe Segment Reference	Nr.
Houston	Wallisville	12/8/2020	Vault C131-EOR West	4



Vault C131 - EOR West_0012.bmp, , 135.73ft
Water Level



Vault C131 - EOR West_0013.bmp, , 137.66ft
Deformed Horizontal, 5% changed, Start



Vault C131 - EOR West_0014.bmp, , 147.05ft
Deformed Horizontal, 5% changed, Finish



Vault C131 - EOR West_0015.bmp, , 147.05ft
Camera Underwater



Section Pictures - 12/8/2020 - Vault C131-EOR West

City Houston	Street Wallisville	Date 12/8/2020	Pipe Segment Reference Vault C131-EOR West	Nr. 4
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Vault C131 - EOR West_0016.bmp, , 179.36ft
Obstacles External Pipe or Cable, 20% of cross sectional area
from 4 o'clock to 9 o'clock



Inspection report

Date: 12/8/2020	Work Order: 01	Weather:	Surveyed By: U-1120-70400432	Certificate Number: U-1120-70400432	Pipe Segment Ref.: CB C108 West-Vault C131
Year laid:	Pre-cleaning: Not Known	Direction: Upstream	Pipe Joint Length:	Total Length: 200.0'	Length Surveyed: 75.4'

City: Houston	Drainage Area:	Upstream MH: CB C108 West
Street: Wallisville	Media Label: n/a	Up Rim to Invert: 0.0
Location Code:	Flow Control:	Downstream MH: Vault C131
Location Details:	Sheet Number:	Down Rim to Invert: 0.0
Pipe shape: Circular	Sewer Use:	Total gallons used: 0.0
Pipe size: 14"	Sewer Category: SEC	Joints passed: 0
Pipe material: Concrete Pipe (non-reinforced)	Purpose:	Joints failed: 0
Lining Method:	Owner:	

Additional Info:

1:1510	Distance	Code	Observation	Counter	Photo	Grade		
	0.00	S01	DSC		CB C108 West - Vault			
	0.00	ACB	Catch Basin		CB C108 West - Vault			
	0.00	MWL	Water Level		CB C108 West - Vault			
	49.21	XP	Collapse Pipe Sewer, 45% lost		CB C108 West - Vault	S5		
	66.31	F01	DSC			M3		
	75.43	MSA	Survey Abandoned / could not drive through deposit		CB C108 West - Vault			
	200.00		End of pipe					
QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI
5100	3A00	513A	5.0	39.0	44.0	5.0	3.0	3.1



Section Pictures - 12/8/2020 - CB C108 West-Vault C131

City	Street	Date	Pipe Segment Reference	Nr.
Houston	Wallisville	12/8/2020	CB C108 West-Vault C131	5



CB C108 West - Vault C131_0000.bmp, , 0.00ft
Deposits Settled Compacted, 15% of cross sectional area from 5 o'clock to 7 o'clock, Start



CB C108 West - Vault C131_0001.bmp, , 0.00ft
Catch Basin



CB C108 West - Vault C131_0002.bmp, , 0.00ft
Water Level



CB C108 West - Vault C131_0003.bmp, , 49.21ft
Collapse Pipe Sewer, 45% lost



Section Pictures - 12/8/2020 - CB C108 West-Vault C131

City	Street	Date	Pipe Segment Reference	Nr.
Houston	Wallisville	12/8/2020	CB C108 West-Vault C131	5



CB C108 West - Vault C131_0004.bmp , 75.43ft
Survey Abandoned / could not drive through deposit



Inspection report

Date: 12/8/2020	Work Order: 01	Weather:	Surveyed By: U-1120-70400432	Certificate Number: U-1120-70400432	Pipe Segment Ref.: CB C065-Vault C131
Year laid:	Pre-cleaning: Not Known	Direction: Upstream	Pipe Joint Length:	Total Length: 200.0'	Length Surveyed: 55.0'

City: Houston	Drainage Area:	Upstream MH: CB C065
Street: Wallisville	Media Label: n/a	Up Rim to Invert: 0.0
Location Code:	Flow Control:	Downstream MH: Vault C131
Location Details:	Sheet Number:	Down Rim to Invert: 0.0
Pipe shape: Circular	Sewer Use:	Total gallons used: 0.0
Pipe size: 14"	Sewer Category: SEC	Joints passed: 0
Pipe material: Concrete Pipe (non-reinforced)	Purpose:	Joints failed: 0
Lining Method:	Owner:	

Additional Info:

1:1510	Distance	Code	Observation	Counter	Photo	Grade		
Vault C131								
	0.00	S01	DSC	Deposits Settled Compacted, 10% of cross sectional area from 5 o'clock to 7 o'clock, Start	CB C065 - Vault C131_000			
	0.00	ACB	ACB	Catch Basin	CB C065 - Vault C131_000			
	0.00	MWL	MWL	Water Level	CB C065 - Vault C131_000			
	47.61	F01	DSC	Deposits Settled Compacted, 10% of cross sectional area from 5 o'clock to 7 o'clock, Finish	CB C065 - Vault C131_000	M2		
	55.02	MSA	MSA	Survey Abandoned / could not make it past deposit	CB C065 - Vault C131_000			
	200.00			End of pipe				
CB C065								
QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	2A00	2A00	0.0	20.0	20.0	0.0	2.0	2.0



Section Pictures - 12/8/2020 - CB C065-Vault C131

City	Street	Date	Pipe Segment Reference	Nr.
Houston	Wallisville	12/8/2020	CB C065-Vault C131	6



CB C065 - Vault C131_0002.bmp, , 0.00ft
Deposits Settled Compacted, 10% of cross sectional area from 5 o'clock to 7 o'clock, Start



CB C065 - Vault C131_0000.bmp, , 0.00ft
Catch Basin



CB C065 - Vault C131_0001.bmp, , 0.00ft
Water Level



CB C065 - Vault C131_0003.bmp, , 47.61ft
Deposits Settled Compacted, 10% of cross sectional area from 5 o'clock to 7 o'clock, Finish



Section Pictures - 12/8/2020 - CB C065-Vault C131

City Houston	Street Wallisville	Date 12/8/2020	Pipe Segment Reference CB C065-Vault C131	Nr. 6
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CB C065 - Vault C131_0004.bmp, , 55.02ft
Survey Abandoned / could not make it past deposit



Inspection report

Date: 12/8/2020	Work Order: 01	Weather:	Surveyed By: U-1120-70400432	Certificate Number: U-1120-70400432	Pipe Segment Ref.: CB C021-CB C044
Year laid:	Pre-cleaning: Not Known	Direction: Upstream	Pipe Joint Length:	Total Length: 200.0'	Length Surveyed: 0.5'

City: Houston	Drainage Area:	Upstream MH: CB C021
Street: Wallisville	Media Label: n/a	Up Rim to Invert: 0.0
Location Code:	Flow Control:	Downstream MH: CB C044
Location Details:	Sheet Number:	Down Rim to Invert: 0.0
Pipe shape: Circular	Sewer Use:	Total gallons used: 0.0
Pipe size: 14"	Sewer Category: SEC	Joints passed: 0
Pipe material: Concrete Pipe (non-reinforced)	Purpose:	Joints failed: 0
Lining Method:	Owner:	

Additional Info:

1:1510	Distance	Code	Observation	Counter	Photo	Grade		
CB C044								
	0.00	ACB	Catch Basin		CB C021 - CB C044_000			
	0.00	MWL	Water Level		CB C021 - CB C044_000			
	0.00	DSC	Deposits Settled Compacted, 40% of cross sectional area from 3 o'clock to 9 o'clock		CB C021 - CB C044_000	M5		
	0.52	MYV	Dye Test Visible / could not make it past deposit		CB C021 - CB C044_000	M5		
QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	5200	5200	0.0	10.0	10.0	0.0	5.0	5.0



Section Pictures - 12/8/2020 - CB C021-CB C044

City	Street	Date	Pipe Segment Reference	Nr.
Houston	Wallisville	12/8/2020	CB C021-CB C044	7



CB C021 - CB C044_0000.bmp, , 0.00ft
Catch Basin



CB C021 - CB C044_0001.bmp, , 0.00ft
Water Level



CB C021 - CB C044_0002.bmp, , 0.00ft
Deposits Settled Compacted, 40% of cross sectional area from
3 o'clock to 9 o'clock



CB C021 - CB C044_0003.bmp, , 0.52ft
Dye Test Visible / could not make it past deposit




Inspection report

Date: 12/8/2020	Work Order: 01	Weather:	Surveyed By: U-1120-70400432	Certificate Number: U-1120-70400432	Pipe Segment Ref.: CB C021-CB C002
Year laid:	Pre-cleaning: Not Known	Direction: Upstream	Pipe Joint Length:	Total Length: 200.0'	Length Surveyed: 2.4'

City: Houston	Drainage Area:	Upstream MH: CB C021
Street: Wallisville	Media Label: n/a	Up Rim to Invert: 0.0
Location Code:	Flow Control:	Downstream MH: CB C002
Location Details:	Sheet Number:	Down Rim to Invert: 0.0
Pipe shape: Circular	Sewer Use:	Total gallons used: 0.0
Pipe size: 14"	Sewer Category: SEC	Joints passed: 0
Pipe material: Concrete Pipe (non-reinforced)	Purpose:	Joints failed: 0
Lining Method:	Owner:	

Additional Info:

1:1510	Distance	Code	Observation	Counter	Photo	Grade		
CB C002								
	0.00	ACB	Catch Basin					
	0.00	MWL	Water Level					
	2.40	MCU	Camera Underwater					
	2.40	MSA	Survey Abandoned / camera underwater					
	200.00		End of pipe					
CB C021								
QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	4100	4100	0.0	4.0	4.0	0.0	4.0	4.0



Section Pictures - 12/8/2020 - CB C021-CB C002

City	Street	Date	Pipe Segment Reference	Nr.
Houston	Wallisville	12/8/2020	CB C021-CB C002	8



CB C021 - CB C002_0000.bmp, , 0.00ft
Catch Basin



CB C021 - CB C002_0001.bmp, , 0.00ft
Water Level



CB C021 - CB C002_0002.bmp, , 2.40ft
Camera Underwater



CB C021 - CB C002_0003.bmp, , 2.40ft
Survey Abandoned / camera underwater



Inspection report

Date: 12/8/2020	Work Order: 01	Weather:	Surveyed By: U-1120-70400432	Certificate Number: U-1120-70400432	Pipe Segment Ref.: CB A28-CB A117
Year laid:	Pre-cleaning: Not Known	Direction: Upstream	Pipe Joint Length:	Total Length: 200.0'	Length Surveyed: 24.2'

City: Houston	Drainage Area:	Upstream MH: CB A28
Street: Wallisville	Media Label: n/a	Up Rim to Invert: 0.0
Location Code:	Flow Control:	Downstream MH: CB A117
Location Details:	Sheet Number:	Down Rim to Invert: 0.0
Pipe shape: Circular	Sewer Use:	Total gallons used: 0.0
Pipe size: 14"	Sewer Category: SEC	Joints passed: 0
Pipe material: Concrete Pipe (non-reinforced)	Purpose:	Joints failed: 0
Lining Method:	Owner:	

Additional Info:

1:1510	Distance	Code	Observation	Counter	Photo	Grade
	0.00	ACB	Catch Basin		CB A28 - CB A117_000	
	0.00	MWL	Water Level		CB A28 - CB A117_000	
	0.30	S01	D Deformed, 15% changed, Start		CB A28 - CB A117_000	
	2.66	S02	DSC Deposits Settled Compacted, 15% of cross sectional area from 5 o'clock to 7 o'clock, Start		CB A28 - CB A117_000	
	24.25	F02	DSC Deposits Settled Compacted, 15% of cross sectional area from 5 o'clock to 7 o'clock, Finish			M3
	24.25	F01	D Deformed, 15% changed, Finish			S5
	24.25	MSA	Survey Abandoned / could not make it past deposit		CB A28 - CB A117_000	
	200.00		End of pipe			



Section Pictures - 12/8/2020 - CB A28-CB A117

City Houston	Street Wallisville	Date 12/8/2020	Pipe Segment Reference CB A28-CB A117	Nr. 9
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CB A28 - CB A117_0000.bmp, , 0.00ft
Catch Basin



CB A28 - CB A117_0001.bmp, , 0.00ft
Water Level



CB A28 - CB A117_0003.bmp, , 0.30ft
Deformed, 15% changed, Start



CB A28 - CB A117_0004.bmp, , 2.66ft
Deposits Settled Compacted, 15% of cross sectional area from
5 o'clock, to 7 o'clock, Start



Section Pictures - 12/8/2020 - CB A28-CB A117

City Houston	Street Wallisville	Date 12/8/2020	Pipe Segment Reference CB A28-CB A117	Nr. 9
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CB A28 - CB A117_0002.bmp, , 24.25ft
Survey Abandoned / could not make it past deposit



Section Summary

Project
GOLDER UPRR 2

1/13/2021

Number of sections	10
Total length of sewer network	568.93 ft
Inspected length of sewer network	568.93 ft
Not inspected length of sewer network	0.00 ft
Total abandoned inspections	8
Number of section inspection photos	41
Number of section inspection videos	10
Number of section inspection scans	0
Number of section inclination measurements	0

Pipe Segment Reference	C131 North-EOR	Upstream MH	C131 North
City	Houston	Downstream MH	EOR
Street	Wallisville Rd	Shape	Circular 42mm
Total Length	43.3	Material	Corrugated Metal Pipe

	Distance	PACP Code	Observation
1	0.01	MWL	Water Level
2	32.97	DSGV	Deposits Settled Gravel, 5% of cross sectional area from 4 o'clock to 8 o'clock, Start
3	43.24	DSGV	Deposits Settled Gravel, 5% of cross sectional area from 4 o'clock to 8 o'clock, Finish
4	43.27	MSA	Survey Abandoned

Pipe Segment Reference	C131 East-C108	Upstream MH	C131 East
City	Houston	Downstream MH	C108
Street	Wallisville Rd	Shape	Circular 16mm
Total Length	0.7	Material	Corrugated Metal Pipe

	Distance	PACP Code	Observation
1	0.00	DSC	Deposits Settled Compacted, 15% of cross sectional area from 4 o'clock to 8 o'clock, Start
2	0.00	SCP	Surface Corrosion Metal Pipe from 12 o'clock to 11 o'clock, Start
3	0.00	MWL	Water Level
4	0.62	SCP	Surface Corrosion Metal Pipe from 12 o'clock to 11 o'clock, Finish
5	0.66	MSA	Survey Abandoned

Pipe Segment Reference	C108-C131 East	Upstream MH	C108
City	Houston	Downstream MH	C131 East
Street	Wallisville Rd	Shape	Circular 16mm
Total Length	75.4	Material	Corrugated Metal Pipe

	Distance	PACP Code	Observation
1	0.00	MWL	Water Level
2	0.00	AOC	Special Chamber



Section Summary

Project
GOLDER UPRR 2

1/13/2021

	Distance	PACP Code	Observation
3	0.01	SCP	Surface Corrosion Metal Pipe from 12 o'clock to 11 o'clock, Start
4	16.83	OBZ	Obstacles Other, 10% of cross sectional area from 4 o'clock to 8 o'clock
5	20.90	OBZ	Obstacles Other, 10% of cross sectional area at 7 o'clock
6	32.19	DSGV	Deposits Settled Gravel, 5% of cross sectional area from 4 o'clock to 8 o'clock, Start
7	48.85	D	Deformed, 20% changed
8	74.97	D	Deformed, 5% changed
9	75.36	MSA	Survey Abandoned

Pipe Segment Reference	C065 East-C034	Upstream MH	C065 East
City	Houston	Downstream MH	C034
Street	Wallisville Rd	Shape	Circular 16mm
Total Length	55.5	Material	Corrugated Metal Pipe

	Distance	PACP Code	Observation
1	0.00	MWL	Water Level
2	0.00	DSZ	Deposits Settled Other, 10% of cross sectional area from 4 o'clock to 8 o'clock
3	16.54	DSGV	Deposits Settled Gravel, 5% of cross sectional area from 5 o'clock to 7 o'clock, Start
4	55.54	MSA	Survey Abandoned

Pipe Segment Reference	C021 West-EOR	Upstream MH	C021 West
City	Houston	Downstream MH	EOR
Street	Wallisville Rd	Shape	Circular 16mm
Total Length	9.5	Material	Corrugated Metal Pipe

	Distance	PACP Code	Observation
1	0.00	MWL	Water Level
2	0.46	MSA	Survey Abandoned
3	9.51	MCU	Camera Underwater

Pipe Segment Reference	C021 East-EOR	Upstream MH	C021 East
City	Houston	Downstream MH	EOR
Street	Wallisville Rd	Shape	Circular 16mm
Total Length	209.5	Material	Corrugated Metal Pipe

	Distance	PACP Code	Observation
1	0.03	MWL	Water Level
2	6.92	MCU	Camera Underwater
3	30.74	RMJ	Roots Medium Joint from 1 o'clock to 5 o'clock, 5% lost
4	81.14	D	Deformed, 10% changed, Start
5	94.19	D	Deformed, 10% changed, Finish
6	209.51	SZZ	Surface Other Unknown at 12 o'clock

Pipe Segment Reference	A028 North-EOR	Upstream MH	A028 North
City	Houston	Downstream MH	EOR
Street	Wallisville Rd	Shape	Circular 16mm
Total Length	1.9	Material	Corrugated Metal Pipe

	Distance	PACP Code	Observation
1	0.00	MWL	Water Level
2	0.00	D	Deformed, 10% changed, Start
3	1.87	MSA	Survey Abandoned



Section Summary

Project
GOLDER UPRR 2

1/13/2021

Pipe Segment Reference	A028 WEST-EOR	Upstream MH	A028 WEST
City	Houston	Downstream MH	EOR
Street	Wallisville Rd	Shape	Circular 16mm
Total Length	1.4	Material	Corrugated Metal Pipe

	Distance	PACP Code	Observation
1	0.00	MWL	Water Level
2	1.38	MSA	Survey Abandoned

Pipe Segment Reference	C131 SOUTH-COH	Upstream MH	C131 SOUTH
City	Houston	Downstream MH	COH
Street	Wallisville Rd	Shape	Circular 42mm
Total Length	103.0	Material	Corrugated Metal Pipe

	Distance	PACP Code	Observation
1	0.00	MWL	Water Level
2	0.49	DSC	Deposits Settled Compacted, 10% of cross sectional area from 4 o'clock to 6 o'clock
3	66.86	DH	Deformed Horizontal, 5% changed
4	102.95	SMWZ	Surface Missing Wall Unknown at 12 o'clock

Pipe Segment Reference	C131 North-EOR 2	Upstream MH	C131 North
City	Houston	Downstream MH	EOR 2
Street	Wallisville Rd	Shape	Circular 42mm
Total Length	68.9	Material	Corrugated Metal Pipe

	Distance	PACP Code	Observation
1	0.00	MWL	Water Level
2	68.86	MSA	Survey Abandoned


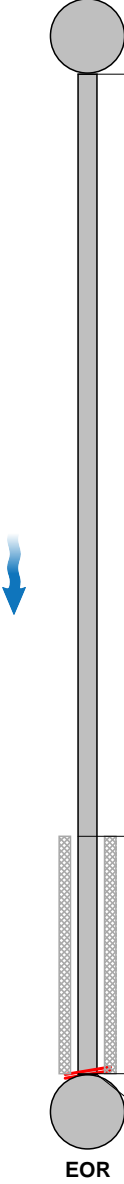



Inspection report

Date: 1/8/2021	Work Order: 01	Weather:	Surveyed By: U-1120-70400432	Certificate Number: U-1120-70400432	Pipe Segment Ref.: C131 North-EOR
Year laid:	Pre-cleaning: Not Known	Direction: Downstream	Pipe Joint Length:	Total Length: 43.3'	Length Surveyed: 43.3'

City: Houston	Drainage Area:	Upstream MH: C131 North
Street: Wallisville Rd	Media Label: n/a	Up Rim to Invert: 0.0
Location Code:	Flow Control:	Downstream MH: EOR
Location Details:	Sheet Number:	Down Rim to Invert: 0.0
Pipe shape: Circular	Sewer Use:	Total gallons used: 0.0
Pipe size: 42"	Sewer Category: SEC	Joints passed: 0
Pipe material: Corrugated Metal Pipe	Purpose:	Joints failed: 0
Lining Method:	Owner:	

Additional Info:

1:327	Distance	Code	Observation	Counter	Photo	Grade		
C131 North								
	0.01	MWL	Water Level		C131 North - EOR_0000			
	32.97	S01 DSGV	Deposits Settled Gravel, 5% of cross sectional area from 4 o'clock to 8 o'clock, Start		C131 North - EOR_0001			
	43.24	F01 DSGV	Deposits Settled Gravel, 5% of cross sectional area from 4 o'clock to 8 o'clock, Finish		C131 North - EOR_0002	M2		
	43.27	MSA	Survey Abandoned / stuck in mud		C131 North - EOR_0003			
EOR								
QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	2200	2200	0.0	4.0	4.0	0.0	2.0	2.0



Section Pictures - 1/8/2021 - C131 North-EOR

City	Street	Date	Pipe Segment Reference	Nr.
Houston	Wallisville Rd	1/8/2021	C131 North-EOR	1



C131 North - EOR_0000.bmp, , 0.01ft
Water Level



C131 North - EOR_0001.bmp, , 32.97ft
Deposits Settled Gravel, 5% of cross sectional area from 4 o'clock to 8 o'clock, Start



C131 North - EOR_0002.bmp, , 43.24ft
Deposits Settled Gravel, 5% of cross sectional area from 4 o'clock to 8 o'clock, Finish



C131 North - EOR_0003.bmp, , 43.27ft
Survey Abandoned / stuck in mud



Inspection report

Date: 1/8/2021	Work Order: 01	Weather:	Surveyed By: U-1120-70400432	Certificate Number: U-1120-70400432	Pipe Segment Ref.: C131 East-C108
Year laid:	Pre-cleaning: Not Known	Direction: Downstream	Pipe Joint Length:	Total Length: 0.7'	Length Surveyed: 0.7'

City: Houston	Drainage Area:	Upstream MH: C131 East
Street: Wallisville Rd	Media Label: n/a	Up Rim to Invert: 0.0
Location Code:	Flow Control:	Downstream MH: C108
Location Details:	Sheet Number:	Down Rim to Invert: 0.0
Pipe shape: Circular	Sewer Use:	Total gallons used: 0.0
Pipe size: 16"	Sewer Category: SEC	Joints passed: 0
Pipe material: Corrugated Metal Pipe	Purpose:	Joints failed: 0
Lining Method:	Owner:	

Additional Info:

1:50	Distance	Code	Observation	Counter	Photo	Grade
	0.00	S01	DSC		C131 East	M3
					-	
	0.00	S02	SCP		C108_000	
					C131 East	
					-	
	0.00	MWL	Water Level		C108_000	
					C131 East	
					-	
	0.62	F02	SCP		C108_000	
					C131 East	S3
					-	
	0.66	MSA	Survey Abandoned / stuck in mud		C108_000	
					C131 East	
					-	
					C108_000	

QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	0000	0000	0.0	0.0	0.0	0.0	0.0	0.0



Section Pictures - 1/8/2021 - C131 East-C108

City	Street	Date	Pipe Segment Reference	Nr.
Houston	Wallisville Rd	1/8/2021	C131 East-C108	2



C131 East - C108_0001.bmp, , 0.00ft
Deposits Settled Compacted, 15% of cross sectional area from 4 o'clock to 8 o'clock, Start



C131 East - C108_0002.bmp, , 0.00ft
Surface Corrosion Metal Pipe from 12 o'clock to 11 o'clock, Start



C131 East - C108_0000.bmp, , 0.00ft
Water Level



C131 East - C108_0003.bmp, , 0.62ft
Surface Corrosion Metal Pipe from 12 o'clock to 11 o'clock, Finish



Section Pictures - 1/8/2021 - C131 East-C108

City	Street	Date	Pipe Segment Reference	Nr.
Houston	Wallisville Rd	1/8/2021	C131 East-C108	2



C131 East - C108_0004.bmp, , 0.66ft
Survey Abandoned / stuck in mud



Inspection report

Date: 1/8/2021	Work Order: 01	Weather:	Surveyed By: U-1120-70400432	Certificate Number: U-1120-70400432	Pipe Segment Ref.: C108-C131 East
Year laid:	Pre-cleaning: Not Known	Direction: Downstream	Pipe Joint Length:	Total Length: 75.4'	Length Surveyed: 75.4'

City: Houston	Drainage Area:	Upstream MH: C108
Street: Wallisville Rd	Media Label: n/a	Up Rim to Invert: 0.0
Location Code:	Flow Control:	Downstream MH: C131 East
Location Details:	Sheet Number:	Down Rim to Invert: 0.0
Pipe shape: Circular	Sewer Use:	Total gallons used: 0.0
Pipe size: 16"	Sewer Category: SEC	Joints passed: 0
Pipe material: Corrugated Metal Pipe	Purpose:	Joints failed: 0
Lining Method:	Owner:	

Additional Info:

1:569	Distance	Code	Observation	Counter	Photo	Grade		
C108								
	0.00	MWL	Water Level		C108 - C131 East_0000			
	0.00	AOC	Special Chamber					
	0.01	S01 SCP	Surface Corrosion Metal Pipe from 12 o'clock to 11 o'clock, Start		C108 - C131 East_0001	S3		
	16.83	OBZ	Obstacles Other, 10% of cross sectional area from 4 o'clock to 8 o'clock / debris		C108 - C131 East_0002	M2		
	20.90	OBZ	Obstacles Other, 10% of cross sectional area at 7 o'clock / debris		C108 - C131 East_0003	M2		
	32.19	S02 DSGV	Deposits Settled Gravel, 5% of cross sectional area from 4 o'clock to 8 o'clock, Start		C108 - C131 East_0004	M2		
	48.85	D	Deformed, 20% changed		C108 - C131 East_0005	S5		
	74.97	D	Deformed, 5% changed		C108 - C131 East_0006	S4		
	75.36	MSA	Survey Abandoned / stuck in mud		C108 - C131 East_0007			
QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI
5141	2200	5141	9.0	4.0	13.0	4.5	2.0	3.2



Section Pictures - 1/8/2021 - C108-C131 East

City	Street	Date	Pipe Segment Reference	Nr.
Houston	Wallisville Rd	1/8/2021	C108-C131 East	3



C108 - C131 East_0000.bmp, , 0.00ft
Water Level



C108 - C131 East_0001.bmp, , 0.01ft
Surface Corrosion Metal Pipe from 12 o'clock to 11 o'clock, Start



C108 - C131 East_0002.bmp, , 16.83ft
Obstacles Other, 10% of cross sectional area from 4 o'clock to 8 o'clock / debris



C108 - C131 East_0003.bmp, , 20.90ft
Obstacles Other, 10% of cross sectional area at 7 o'clock / debris



Section Pictures - 1/8/2021 - C108-C131 East

City	Street	Date	Pipe Segment Reference	Nr.
Houston	Wallisville Rd	1/8/2021	C108-C131 East	3



C108 - C131 East_0004.bmp, , 32.19ft
Deposits Settled Gravel, 5% of cross sectional area from 4 o'clock to 8 o'clock, Start



C108 - C131 East_0005.bmp, , 48.85ft
Deformed, 20% changed



C108 - C131 East_0006.bmp, , 74.97ft
Deformed, 5% changed



C108 - C131 East_0007.bmp, , 75.36ft
Survey Abandoned / stuck in mud



Inspection report

Date: 1/8/2021	Work Order: 01	Weather:	Surveyed By: U-1120-70400432	Certificate Number: U-1120-70400432	Pipe Segment Ref.: C065 East-C034
Year laid:	Pre-cleaning: Not Known	Direction: Downstream	Pipe Joint Length:	Total Length: 55.5'	Length Surveyed: 55.5'

City: Houston	Drainage Area:	Upstream MH: C065 East
Street: Wallisville Rd	Media Label: n/a	Up Rim to Invert: 0.0
Location Code:	Flow Control:	Downstream MH: C034
Location Details:	Sheet Number:	Down Rim to Invert: 0.0
Pipe shape: Circular	Sewer Use:	Total gallons used: 0.0
Pipe size: 16"	Sewer Category: SEC	Joints passed: 0
Pipe material: Corrugated Metal Pipe	Purpose:	Joints failed: 0
Lining Method:	Owner:	

Additional Info:

1:420	Distance	Code	Observation	Counter	Photo	Grade		
C065 East								
	0.00	MWL	Water Level		C065 East			
	0.00	DSZ	Deposits Settled Other, 10% of cross sectional area from 4 o'clock to 8 o'clock / rocks and more		C034_000 C065 East C034_000	M2		
	16.54	S01 DSGV	Deposits Settled Gravel, 5% of cross sectional area from 5 o'clock to 7 o'clock, Start		C065 East C034_000	M2		
	55.54	MSA	Survey Abandoned / stuck in mud		C065 East C034_000			
QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	2100	2100	0.0	2.0	2.0	0.0	2.0	2.0



Section Pictures - 1/8/2021 - C065 East-C034

City	Street	Date	Pipe Segment Reference	Nr.
Houston	Wallisville Rd	1/8/2021	C065 East-C034	4



C065 East - C034_0000.bmp, , 0.00ft
Water Level



C065 East - C034_0001.bmp, , 0.00ft
Deposits Settled Other, 10% of cross sectional area from 4 o'clock to 8 o'clock / rocks and more



C065 East - C034_0002.bmp, , 16.54ft
Deposits Settled Gravel, 5% of cross sectional area from 5 o'clock to 7 o'clock, Start



C065 East - C034_0003.bmp, , 55.54ft
Survey Abandoned / stuck in mud



Inspection report

Date: 1/8/2021	Work Order: 01	Weather:	Surveyed By: U-1120-70400432	Certificate Number: U-1120-70400432	Pipe Segment Ref.: C021 West-EOR
Year laid:	Pre-cleaning: Not Known	Direction: Downstream	Pipe Joint Length:	Total Length: 9.5'	Length Surveyed: 9.5'

City: Houston	Drainage Area:	Upstream MH: C021 West
Street: Wallisville Rd	Media Label: n/a	Up Rim to Invert: 0.0
Location Code:	Flow Control:	Downstream MH: EOR
Location Details:	Sheet Number:	Down Rim to Invert: 0.0
Pipe shape: Circular	Sewer Use:	Total gallons used: 0.0
Pipe size: 16"	Sewer Category: SEC	Joints passed: 0
Pipe material: Corrugated Metal Pipe	Purpose:	Joints failed: 0
Lining Method:	Owner:	

Additional Info:

1:72	Distance	Code	Observation	Counter	Photo	Grade		
C021 West								
	0.00	MWL	Water Level					
	0.46	C	Remark: ***** Combined *****			C021 West - EOR_0000		
	0.46	C	Remark: Inspection from the other side					
	0.46	C	Remark: Uninspected Length: 0.0					
	0.46	C	Remark: Inspection from the other side					
	0.46	C	Remark: ***** Combined *****					
	0.46	MSA	Survey Abandoned / stuck in mud			C021 West - EOR_0002		
	9.51	MCU	Camera Underwater			C021 West - EOR_0001 M4		
QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	4100	4100	0.0	4.0	4.0	0.0	4.0	4.0



Section Pictures - 1/8/2021 - C021 West-EOR

City Houston	Street Wallisville Rd	Date 1/8/2021	Pipe Segment Reference C021 West-EOR	Nr. 5
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C021 West - EOR_0000.bmp, , 0.00ft
Water Level



C021 West - EOR_0002.bmp, , 0.46ft
Survey Abandoned / stuck in mud



C021 West - EOR_0001.bmp, , 9.51ft
Camera Underwater



Inspection report

Date: 1/8/2021	Work Order: 01	Weather:	Surveyed By: U-1120-70400432	Certificate Number: U-1120-70400432	Pipe Segment Ref.: C021 East-EOR
Year laid:	Pre-cleaning: Not Known	Direction: Downstream	Pipe Joint Length:	Total Length: 209.5'	Length Surveyed: 209.5'

City: Houston	Drainage Area:	Upstream MH: C021 East
Street: Wallisville Rd	Media Label: n/a	Up Rim to Invert: 0.0
Location Code:	Flow Control:	Downstream MH: EOR
Location Details:	Sheet Number:	Down Rim to Invert: 0.0
Pipe shape: Circular	Sewer Use:	Total gallons used: 0.0
Pipe size: 16"	Sewer Category: SEC	Joints passed: 0
Pipe material: Corrugated Metal Pipe	Purpose:	Joints failed: 0
Lining Method:	Owner:	

Additional Info:

1:1582	Distance	Code	Observation	Counter	Photo	Grade		
C021 East								
	0.03	MWL	Water Level		C021 East			
	6.92	MCU	Camera Underwater		EOR_0000			
	30.74	RMJ	Roots Medium Joint from 1 o'clock to 5 o'clock, 5% lost		C021 East	M4		
	81.14	S01 D	Deformed, 10% changed, Start		EOR_0001			
	94.19	F01 D	Deformed, 10% changed, Finish		C021 East	M3		
					EOR_0002			
	209.51	SZZ	Surface Other Unknown at 12 o'clock / unknown		EOR_0003	S4		
					C021 East			
					EOR_0004			
					C021 East			
					EOR_0005			
EOR								
QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI
4300	4131	4431	12.0	7.0	19.0	4.0	3.5	3.8



Section Pictures - 1/8/2021 - C021 East-EOR

City	Street	Date	Pipe Segment Reference	Nr.
Houston	Wallisville Rd	1/8/2021	C021 East-EOR	6



C021 East - EOR_0000.bmp, , 0.03ft
Water Level



C021 East - EOR_0001.bmp, , 6.92ft
Camera Underwater



C021 East - EOR_0002.bmp, , 30.74ft
Roots Medium Joint from 1 o'clock to 5 o'clock, 5% lost



C021 East - EOR_0003.bmp, , 81.14ft
Deformed, 10% changed, Start



Section Pictures - 1/8/2021 - C021 East-EOR

City Houston	Street Wallisville Rd	Date 1/8/2021	Pipe Segment Reference C021 East-EOR	Nr. 6
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C021 East - EOR_0004.bmp, , 94.19ft
Deformed, 10% changed, Finish



C021 East - EOR_0005.bmp, , 209.51ft
Surface Other Unknown at 12 o'clock / unknown



Inspection report

Date: 1/8/2021	Work Order: 01	Weather:	Surveyed By: U-1120-70400432	Certificate Number: U-1120-70400432	Pipe Segment Ref.: A028 North-EOR
Year laid:	Pre-cleaning: Not Known	Direction: Downstream	Pipe Joint Length:	Total Length: 1.9'	Length Surveyed: 1.9'

City: Houston	Drainage Area:	Upstream MH: A028 North
Street: Wallisville Rd	Media Label: n/a	Up Rim to Invert: 0.0
Location Code:	Flow Control:	Downstream MH: EOR
Location Details:	Sheet Number:	Down Rim to Invert: 0.0
Pipe shape: Circular	Sewer Use:	Total gallons used: 0.0
Pipe size: 16"	Sewer Category: SEC	Joints passed: 0
Pipe material: Corrugated Metal Pipe	Purpose:	Joints failed: 0
Lining Method:	Owner:	

Additional Info:

1:50	Distance	Code	Observation	Counter	Photo	Grade		
	0.00	MWL	Water Level		A028 North - EOR_0000			
	0.00	S01 D	Deformed, 10% changed, Start		A028 North - EOR_0001	S4		
	1.87	MSA	Survey Abandoned / stuck in mud		A028 North - EOR_0002			
QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	0000	0000	0.0	0.0	0.0	0.0	0.0	0.0



Section Pictures - 1/8/2021 - A028 North-EOR

City	Street	Date	Pipe Segment Reference	Nr.
Houston	Wallisville Rd	1/8/2021	A028 North-EOR	7



A028 North - EOR_0000.bmp, , 0.00ft
Water Level



A028 North - EOR_0001.bmp, , 0.00ft
Deformed, 10% changed, Start



A028 North - EOR_0002.bmp, , 1.87ft
Survey Abandoned / stuck in mud

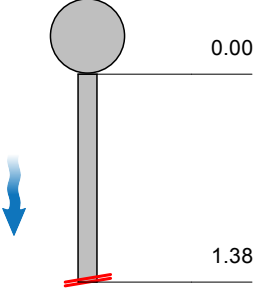


Inspection report

Date: 1/8/2021	Work Order: 01	Weather:	Surveyed By: U-1120-70400432	Certificate Number: U-1120-70400432	Pipe Segment Ref.: A028 WEST-EOR
Year laid:	Pre-cleaning: Not Known	Direction: Downstream	Pipe Joint Length:	Total Length: 1.4'	Length Surveyed: 1.4'

City: Houston	Drainage Area:	Upstream MH: A028 WEST
Street: Wallisville Rd	Media Label: n/a	Up Rim to Invert: 0.0
Location Code:	Flow Control:	Downstream MH: EOR
Location Details:	Sheet Number:	Down Rim to Invert: 0.0
Pipe shape: Circular	Sewer Use:	Total gallons used: 0.0
Pipe size: 16"	Sewer Category: SEC	Joints passed: 0
Pipe material: Corrugated Metal Pipe	Purpose:	Joints failed: 0
Lining Method:	Owner:	

Additional Info:

1:50	Distance	Code	Observation	Counter	Photo	Grade		
A028 WEST								
	0.00	MWL	Water Level		A028 WEST - EOR_0000			
	1.38	MSA	Survey Abandoned / stuck in mud		A028 WEST - EOR_0001			
QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	0000	0000	0.0	0.0	0.0	0.0	0.0	0.0



Section Pictures - 1/8/2021 - A028 WEST-EOR

City Houston	Street Wallisville Rd	Date 1/8/2021	Pipe Segment Reference A028 WEST-EOR	Nr. 8
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A028 WEST - EOR_0000.bmp, , 0.00ft
Water Level



A028 WEST - EOR_0001.bmp, , 1.38ft
Survey Abandoned / stuck in mud



Inspection report

Date: 1/8/2021	Work Order: 01	Weather:	Surveyed By: U-1120-70400432	Certificate Number: U-1120-70400432	Pipe Segment Ref.: C131 SOUTH-COH
Year laid:	Pre-cleaning: Not Known	Direction: Downstream	Pipe Joint Length:	Total Length: 103.0'	Length Surveyed: 103.0'

City: Houston	Drainage Area:	Upstream MH: C131 SOUTH
Street: Wallisville Rd	Media Label: n/a	Up Rim to Invert: 0.0
Location Code:	Flow Control:	Downstream MH: COH
Location Details:	Sheet Number:	Down Rim to Invert: 0.0
Pipe shape: Circular	Sewer Use:	Total gallons used: 0.0
Pipe size: 42"	Sewer Category: SEC	Joints passed: 0
Pipe material: Corrugated Metal Pipe	Purpose:	Joints failed: 0
Lining Method:	Owner:	

Additional Info:

1:778	Distance	Code	Observation	Counter	Photo	Grade		
C131 SOUTH								
	0.00	MWL	Water Level		C131 SOUTH - COH_000			
	0.49	DSC	Deposits Settled Compacted, 10% of cross sectional area from 4 o'clock to 6 o'clock		C131 SOUTH - COH_000	M2		
	66.86	DH	Deformed Horizontal, 5% changed		C131 SOUTH - COH_000	S5		
	102.95	SMWZ	Surface Missing Wall Unknown at 12 o'clock		C131 SOUTH - COH_000	S5		
COH								
QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI
5200	2100	5221	10.0	2.0	12.0	5.0	2.0	4.0



Section Pictures - 1/8/2021 - C131 SOUTH-COH

City	Street	Date	Pipe Segment Reference	Nr.
Houston	Wallisville Rd	1/8/2021	C131 SOUTH-COH	9



C131 SOUTH - COH_0000.bmp, , 0.00ft
Water Level



C131 SOUTH - COH_0001.bmp, , 0.49ft
Deposits Settled Compacted, 10% of cross sectional area from
4 o'clock to 6 o'clock



C131 SOUTH - COH_0003.bmp, , 66.86ft
Deformed Horizontal, 5% changed



C131 SOUTH - COH_0002.bmp, , 102.95ft
Surface Missing Wall Unknown at 12 o'clock






Inspection report

Date: 1/8/2021	Work Order: 01	Weather:	Surveyed By: U-1120-70400432	Certificate Number: U-1120-70400432	Pipe Segment Ref.: C131 North-EOR 2
Year laid:	Pre-cleaning: Not Known	Direction: Downstream	Pipe Joint Length:	Total Length: 68.9'	Length Surveyed: 68.9'

City: Houston	Drainage Area:	Upstream MH: C131 North
Street: Wallisville Rd	Media Label: n/a	Up Rim to Invert: 0.0
Location Code:	Flow Control:	Downstream MH: EOR 2
Location Details:	Sheet Number:	Down Rim to Invert: 0.0
Pipe shape: Circular	Sewer Use:	Total gallons used: 0.0
Pipe size: 42"	Sewer Category: SEC	Joints passed: 0
Pipe material: Corrugated Metal Pipe	Purpose:	Joints failed: 0
Lining Method:	Owner:	

Additional Info:

1:520	Distance	Code	Observation	Counter	Photo	Grade		
C131 North								
	0.00	MWL	Water Level			C131 North - EOR		
								
	68.86	MSA	Survey Abandoned / stuck in mud			C131 North - EOR		
QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	0000	0000	0.0	0.0	0.0	0.0	0.0	0.0



Section Pictures - 1/8/2021 - C131 North-EOR 2

City	Street	Date	Pipe Segment Reference	Nr.
Houston	Wallisville Rd	1/8/2021	C131 North-EOR 2	10



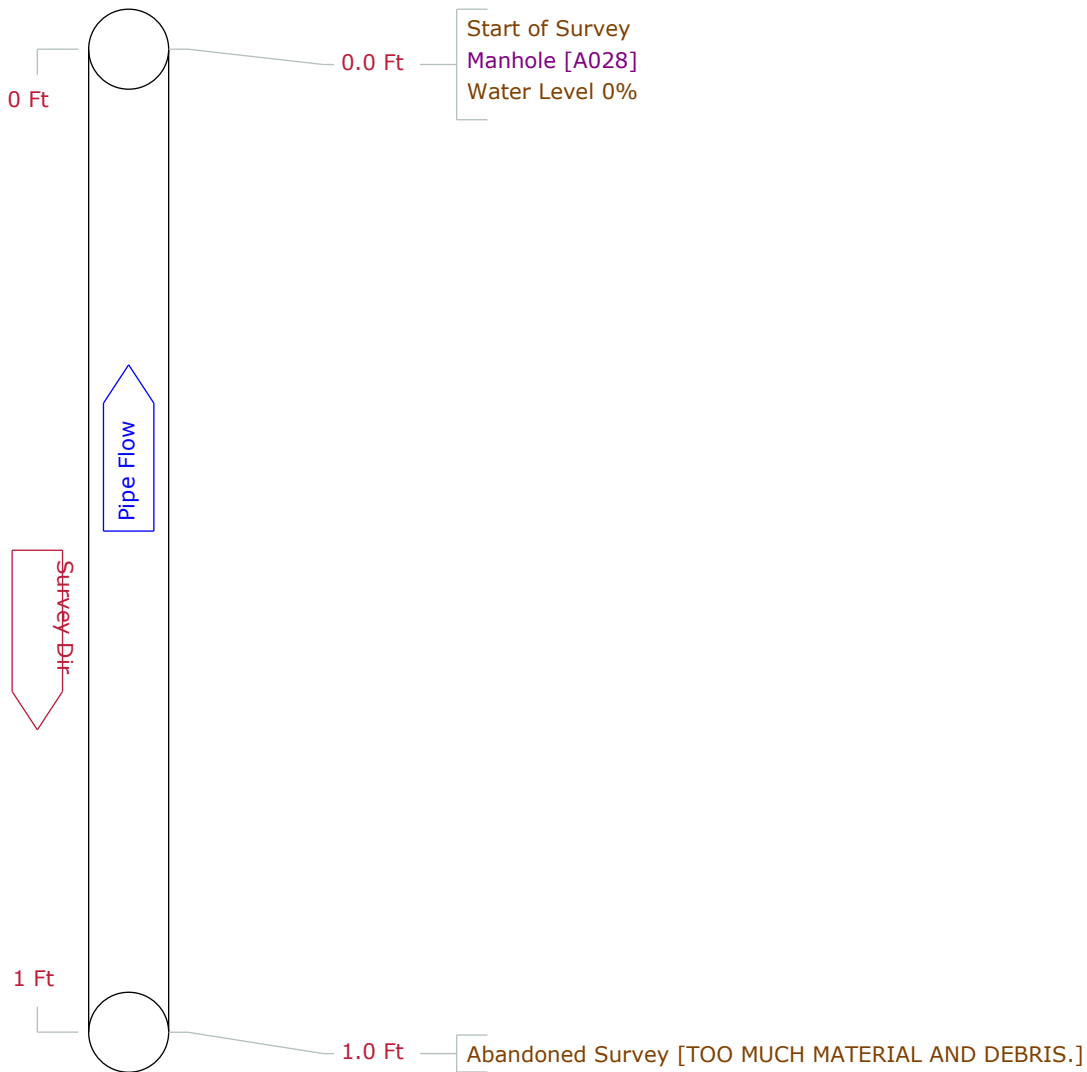
C131 North - EOR 2_0000.bmp, , 0.00ft
Water Level



C131 North - EOR 2_0001.bmp, , 68.86ft
Survey Abandoned / stuck in mud

Pipe Graphic Report of PSR GOING WEST C for USES

Setup	12	Surveyor	JDB	Certificate #	U-913-18231	System Owner
Drainage	Survey Customer					
P/O #	Date	2021/02/26	Time	11:24	Street Lockwood Dr.	
City	Houston	Further location details				
Up	GOING WEST	Rim to invert	Grade to invert	Rim to grade	Ft	
Down	A028	Rim to invert	Grade to invert	Rim to grade	Ft	
Use	Direction	Upstream	Flow control	Media No		
Shape	Circular	Height	15	Width	ins	Preclean J
Material	Corrugated Metal Pipe	Joint length	Ft	Total length	Ft	Date Cleaned
Lining		Year laid		Year rehabilitated		Length Surveyed
Purpose		Cat				01.00 Ft
Additional info				Structural	O & M	Constructional
Location				Miscellaneous	Hydraulic	
Project	Union Pacific Englewood Yard -2/26/2021			Work Order		
Northing				Easting	Elevation	
Coordinate System				GPS Accuracy		



Tabular Report of PSR GOING WEST C for USES

Setup	12	Surveyor	JDB	Certificate #	U-913-18231	System Owner	
Drainage		Survey Customer					
P/O #		Date	2021/02/26	Time	11:24	Street	Lockwood Dr.
City	Houston	Further location details					
Up	GOING WEST	Rim to invert		Grade to invert		Rim to grade	Ft
Down	A028	Rim to invert		Grade to invert		Rim to grade	Ft
Use		Direction	Up	Flow control		Media No	
Shape	Circular	Height	15	Width	ins	Preclean J	Date Cleaned
Material	Corrugated Metal Pipe	Joint length		Ft	Total length	Ft	Length Surveyed
Lining		Year laid		Year rehabilitated		Weather	1.0 Ft
Purpose		Cat				Pressure	
Additional info						Structural	O & M
Location						Miscellaneous	Constructional
Project	Union Pacific Englewood Yard -2/26/2021					Work Order	
Northing		Easting				Elevation	
Coordinate System						GPS Accuracy	

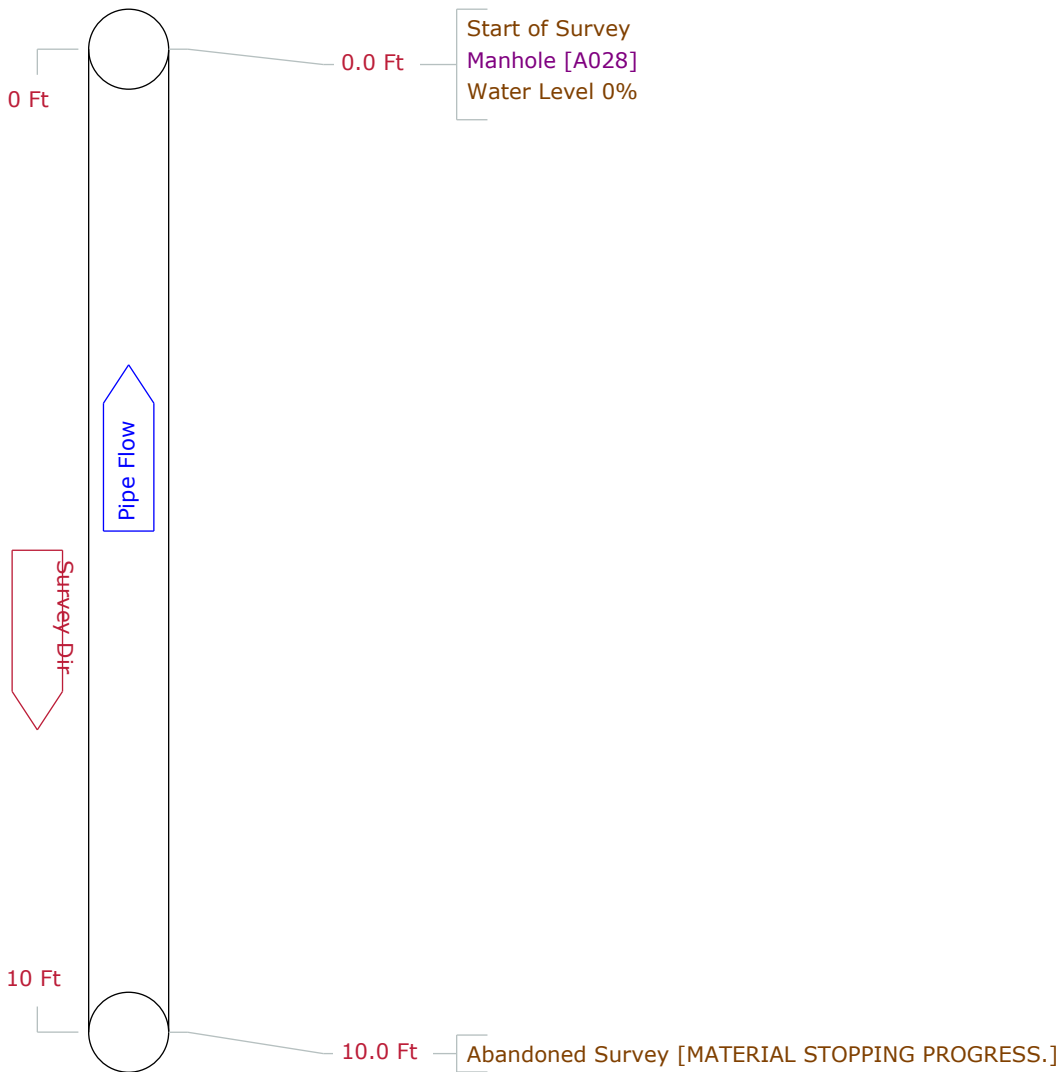
Count	Video	CD	Code	In1	In2	%	JntFr	To	ImRef	Remarks
0.0			ST Start of Survey							
0.0			AMH Manhole							A028
0.0			MWL Water Level			0				
1.0			MSA Abandoned Survey							TOO MUCH MATERIAL AND DEBR

1.0 Ft Total Length Surveyed

Scores	Structural:	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000
	O&M:	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000
	Overall	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000

Pipe Graphic Report of PSR GOING WEST D for USES

Setup	13	Surveyor	JDB	Certificate #	U-913-18231	System Owner	
Drainage	Survey Customer						
P/O #		Date	2021/02/26	Time	12:22	Street	Lockwood Dr.
City	Houston	Further location details					
Up	GOING WEST	Rim to invert		Grade to invert		Rim to grade	Ft
Down	A028	Rim to invert		Grade to invert		Rim to grade	Ft
Use		Direction	Upstream	Flow control		Media No	
Shape	Circular	Height	15	Width	ins	Preclean J	Date Cleaned
Material	Corrugated Metal Pipe	Joint length	Ft	Total length	Ft	Length Surveyed	10.00 Ft
Lining		Year laid		Year rehabilitated		Weather	
Purpose	Cat						
Additional info						Structural	O & M
Location						Miscellaneous	Hydraulic
Project						Union Pacific Englewood Yard -2/26/2021	
Northing						Easting	
Coordinate System						GPS Accuracy	
						Work Order	
						Elevation	



Tabular Report of PSR GOING WEST D for USES

Setup	13	Surveyor	JDB	Certificate #	U-913-18231	System Owner	
Drainage		Survey Customer					
P/O #		Date	2021/02/26	Time	12:22	Street	Lockwood Dr.
City	Houston	Further location details					
Up	GOING WEST	Rim to invert		Grade to invert		Rim to grade	Ft
Down	A028	Rim to invert		Grade to invert		Rim to grade	Ft
Use		Direction	Up	Flow control		Media No	
Shape	Circular	Height	15	Width	ins	Preclean J	Date Cleaned
Material	Corrugated Metal Pipe	Joint length		Ft	Total length	Ft	Length Surveyed
Lining		Year laid		Year rehabilitated		Weather	10.0 Ft
Purpose		Cat				Pressure	
Additional info						Structural	O & M
Location						Miscellaneous	Constructional
Project	Union Pacific Englewood Yard -2/26/2021					Work Order	
Northing		Easting				Elevation	
Coordinate System						GPS Accuracy	

Count	Video	CD	Code	In1	In2	%	JntFr	To	ImRef	Remarks
0.0			ST Start of Survey							
0.0			AMH Manhole							A028
0.0			MWL Water Level			0				
10.0			MSA Abandoned Survey							MATERIAL STOPPING PROGRES

10.0 Ft Total Length Surveyed

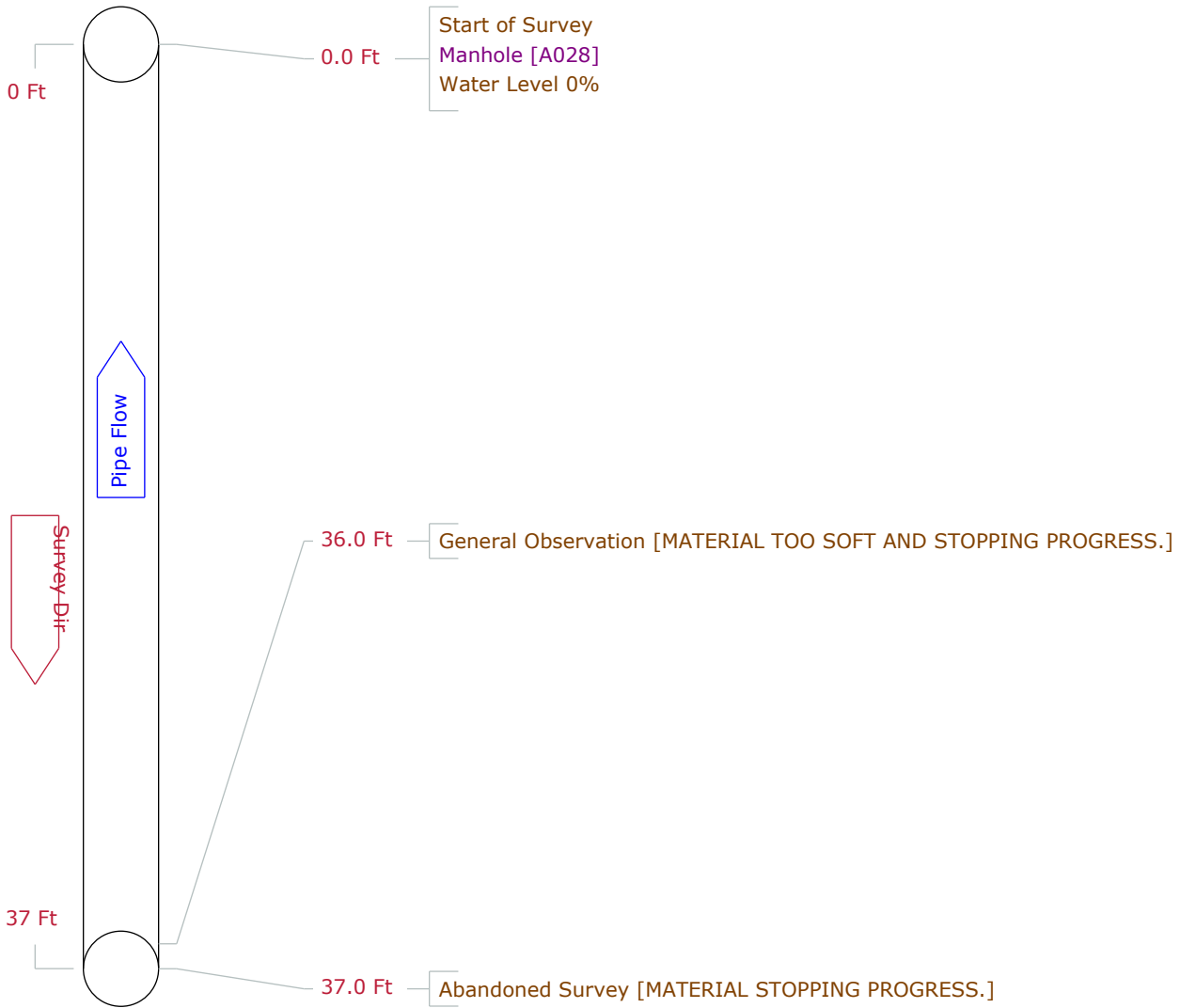
Scores	Structural:	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000
	O&M:	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000
	Overall	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000



Atlas Inspection
Phone: 800-281-0650

Pipe Graphic Report of PSR GOING WEST E for USES

Setup	14	Surveyor	JDB	Certificate #	U-913-18231	System Owner	
Drainage	Survey Customer						
P/O #		Date	2021/02/26	Time	12:35	Street	Lockwood Dr.
City	Houston	Further location details					
Up	GOING WEST	Rim to invert		Grade to invert		Rim to grade	Ft
Down	A028	Rim to invert		Grade to invert		Rim to grade	Ft
Use		Direction	Upstream	Flow control		Media No	
Shape	Circular	Height	15	Width	ins	Preclean	J
Material	Corrugated Metal Pipe	Joint length	Ft	Total length	Ft	Length Surveyed	37.00 Ft
Lining		Year laid		Year rehabilitated		Weather	
Purpose		Cat					
Additional info				Structural	O & M	Constructional	
Location				Miscellaneous	Hydraulic		
Project	Union Pacific Englewood Yard -2/26/2021				Work Order		
Northing				Easting	Elevation		
Coordinate System				GPS Accuracy			



CCTV Picture List of GOING WEST E for USES

Work Order		Setup 14
Video	Survey Date	2021/02/26
Path to picture files	C:\FLEX6\Snapshots\USES\	
Path to video files	C:\FLEX6\Movies\USES\	
Path to media files	C:\FLEX6\Media\USES\	



Video Index Count 36.0 Ft
Code **General Observation**
Remarks MATERIAL TOO SOFT AND STOPPING PROGRESS.
File Name 92.jpg

Tabular Report of PSR GOING WEST E for USES

Setup	14	Surveyor	JDB	Certificate #	U-913-18231	System Owner	
Drainage		Survey Customer					
P/O #		Date	2021/02/26	Time	12:35	Street	Lockwood Dr.
City	Houston	Further location details					
Up	GOING WEST	Rim to invert		Grade to invert		Rim to grade	Ft
Down	A028	Rim to invert		Grade to invert		Rim to grade	Ft
Use		Direction	Up	Flow control		Media No	
Shape	Circular	Height	15	Width	ins	Preclean J	Date Cleaned
Material	Corrugated Metal Pipe	Joint length		Ft	Total length	Ft	Length Surveyed
Lining		Year laid		Year rehabilitated		Weather	37.0 Ft
Purpose		Cat				Pressure	
Additional info						Structural	O & M
Location						Miscellaneous	Constructional
Project	Union Pacific Englewood Yard -2/26/2021					Work Order	
Northing		Easting				Elevation	
Coordinate System						GPS Accuracy	

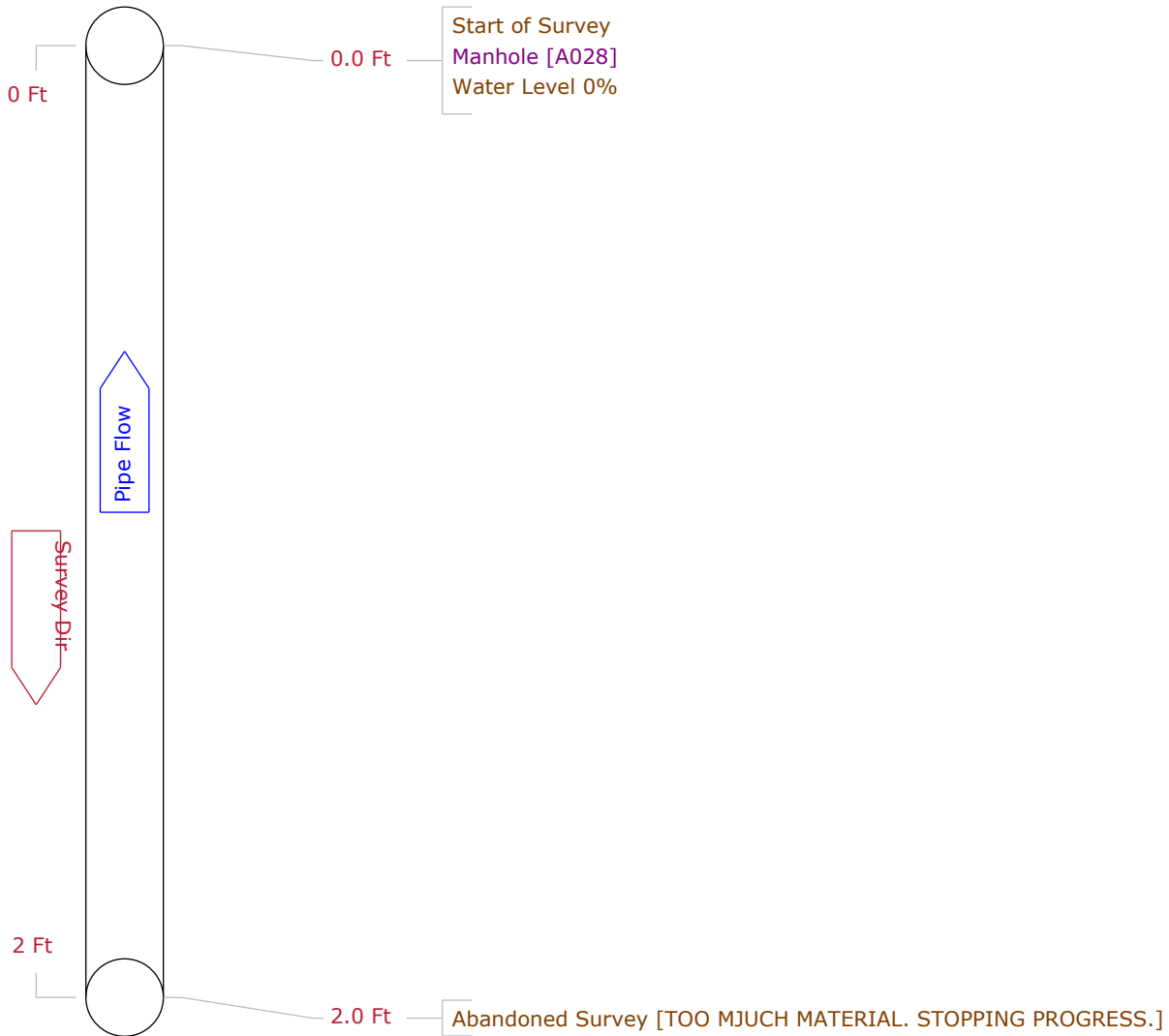
Count	Video	CD	Code	In1	In2	%	JntFr	To	ImRef	Remarks
0.0			ST Start of Survey							
0.0			AMH Manhole							A028
0.0			MWL Water Level			0				
36.0			MGO General Observation							MATERIAL TOO SOFT AND STOP
37.0			MSA Abandoned Survey							MATERIAL STOPPING PROGRES

37.0 Ft Total Length Surveyed

Scores	Structural:	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000
	O&M:	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000
	Overall	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000

Pipe Graphic Report of PSR GOING NORTH B for USES

Setup	10	Surveyor	JDB	Certificate #	U-913-18231	System Owner	
Drainage		Survey Customer					
P/O #		Date	2021/02/26	Time	9:14	Street	Lockwood Dr.
City	Houston	Further location details					
Up	GOING NORTH	Rim to invert		Grade to invert		Rim to grade	Ft
Down	A028	Rim to invert		Grade to invert		Rim to grade	Ft
Use		Direction	Upstream	Flow control		Media No	
Shape	Circular	Height	40	Width	ins	Preclean J	Date Cleaned
Material	Corrugated Metal Pipe	Joint length	Ft	Total length	Ft	Length Surveyed	02.00 Ft
Lining		Year laid		Year rehabilitated		Weather	
Purpose		Cat					
Additional info	GOING NORTH				Structural	O & M	Constructional
Location					Miscellaneous	Hydraulic	
Project	Union Pacific Englewood Yard -2/26/2021				Work Order		
Northing					Easting		
Coordinate System					Elevation		
					GPS Accuracy		



CCTV Picture List of GOING NORTH B for USES

Work Order		Setup 10
Video	Survey Date	2021/02/26
Path to picture files	C:\FLEX6\Snaps\USES\	
Path to video files	C:\FLEX6\Movies\USES\	
Path to media files	C:\FLEX6\Media\USES\	



Video Index Count 2.0 Ft
Code Abandoned Survey
Remarks TOO MJUCH MATERIAL. STOPPING PROGRESS.
File Name 82.jpg

Tabular Report of PSR GOING NORTH B for USES

Setup	10	Surveyor	JDB	Certificate #	U-913-18231	System Owner	
Drainage		Survey Customer					
P/O #		Date	2021/02/26	Time	9:14	Street	Lockwood Dr.
City	Houston	Further location details					
Up	GOING NORTH	Rim to invert		Grade to invert		Rim to grade	Ft
Down	A028	Rim to invert		Grade to invert		Rim to grade	Ft
Use		Direction	Up	Flow control		Media No	
Shape	Circular	Height	40	Width	ins	Preclean J	Date Cleaned
Material	Corrugated Metal Pipe	Joint length		Ft	Total length	Ft	Length Surveyed
Lining		Year laid		Year rehabilitated		Weather	2.0 Ft
Purpose		Cat				Pressure	
Additional info	GOING NORTH					Structural	O & M
Location						Miscellaneous	Constructional
Project	Union Pacific Englewood Yard -2/26/2021					Work Order	
Northing		Easting				Elevation	
Coordinate System						GPS Accuracy	

Count	Video	CD	Code	In1	In2	%	JntFr	To	ImRef	Remarks
0.0			ST Start of Survey							
0.0			AMH Manhole							A028
0.0			MWL Water Level			0				
2.0			MSA Abandoned Survey							TOO MJUCH MATERIAL. STOPPIN

2.0 Ft Total Length Surveyed

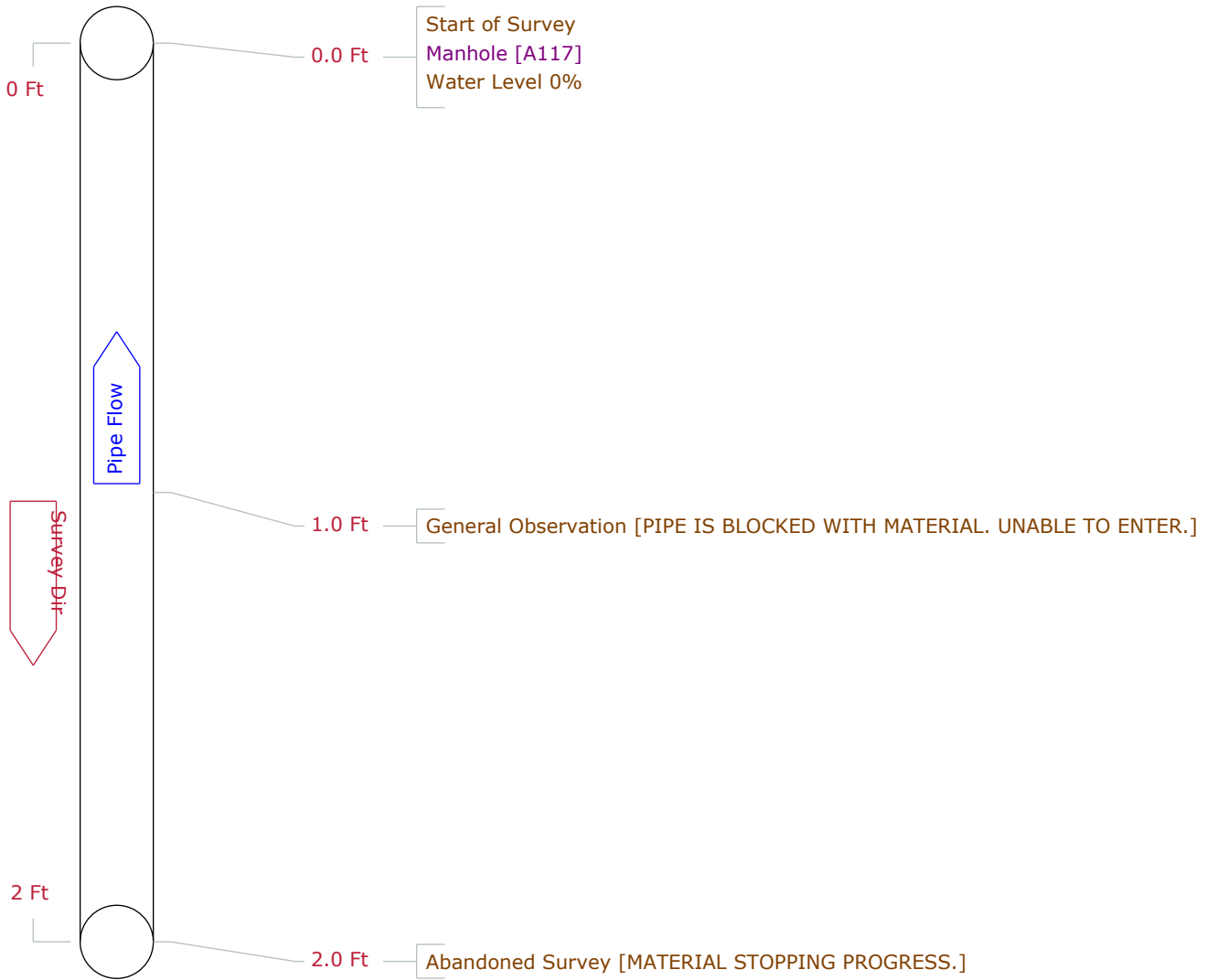
Scores	Structural:	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000
	O&M:	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000
	Overall	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000



Atlas Inspection
Phone: 800-281-0650

Pipe Graphic Report of PSR GOING EAST X for USES

Setup	3	Surveyor	JDB	Certificate #	U-913-18231	System Owner
Drainage	Survey Customer					
P/O #	Date	2021/02/26	Time	6:54	Street Lockwood Dr.	
City	Houston	Further location details				
Up	GOING EAST	Rim to invert	Grade to invert	Rim to grade	Ft	
Down	A117	Rim to invert	Grade to invert	Rim to grade	Ft	
Use	Direction Upstream		Flow control		Media No	
Shape	Circular	Height 40	Width	ins	Preclean J	Date Cleaned
Material	Corrugated Metal Pipe		Joint length	Ft	Total length	Ft
Lining	Year laid		Year rehabilitated		Weather	
Purpose	Cat					
Additional info				Structural	O & M	Constructional
Location				Miscellaneous	Hydraulic	
Project	Union Pacific Englewood Yard -2/26/2021			Work Order		
Northing	Easting			Elevation		
Coordinate System				GPS Accuracy		



CCTV Picture List of GOING EAST X for USES

Work Order		Setup 3
Video	Survey Date	2021/02/26
Path to picture files	C:\FLEX6\Snaps\USES\	
Path to video files	C:\FLEX6\Movies\USES\	
Path to media files	C:\FLEX6\Media\USES\	



Video Index Count 2.0 Ft
 Code Abandoned Survey
 Remarks MATERIAL STOPPING PROGRESS.
 File Name 32.jpg



Video Index Count 2.0 Ft
 Code Abandoned Survey
 Remarks MATERIAL STOPPING PROGRESS.
 File Name 33.jpg

Tabular Report of PSR GOING EAST X for USES

Setup	3	Surveyor	JDB	Certificate #	U-913-18231	System Owner	
Drainage		Survey Customer					
P/O #		Date	2021/02/26	Time	6:54	Street	Lockwood Dr.
City	Houston	Further location details					
Up	GOING EAST	Rim to invert		Grade to invert		Rim to grade	Ft
Down	A117	Rim to invert		Grade to invert		Rim to grade	Ft
Use		Direction	Up	Flow control		Media No	
Shape	Circular	Height	40	Width	ins	Preclean J	Date Cleaned
Material	Corrugated Metal Pipe	Joint length		Ft	Total length	Ft	Length Surveyed 2.0
Lining		Year laid		Year rehabilitated		Weather	
Purpose		Cat				Pressure	
Additional info						Structural	O & M
Location						Miscellaneous	Constructional
Project	Union Pacific Englewood Yard -2/26/2021					Work Order	
Northing		Easting				Elevation	
Coordinate System						GPS Accuracy	

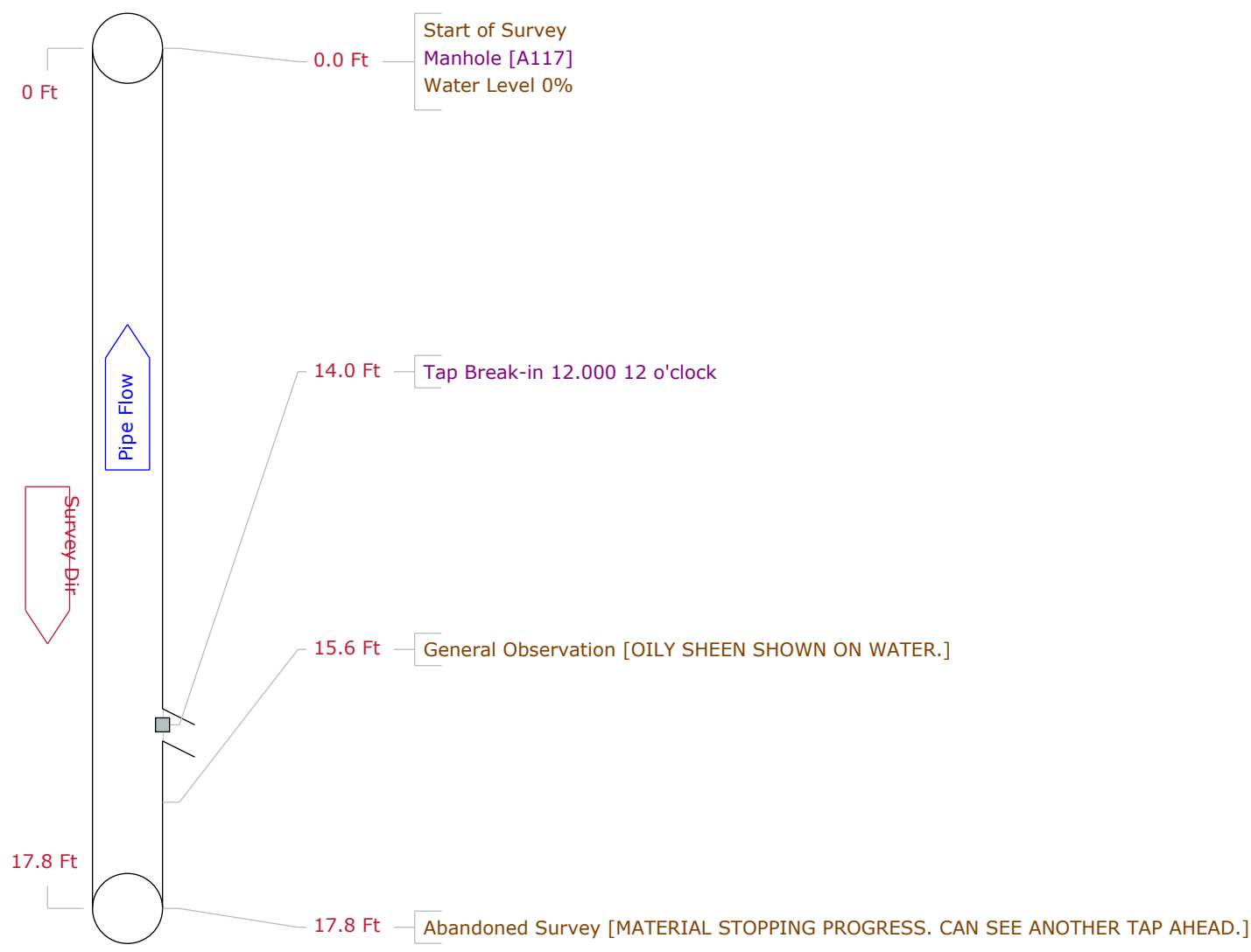
Count	Video	CD	Code	In1	In2	%	JntFr	To	ImRef	Remarks
0.0			ST Start of Survey							
0.0			AMH Manhole							A117
0.0			MWL Water Level			0				
1.0			MGO General Observation							PIPE IS BLOCKED WITH MATERIAL
2.0			MSA Abandoned Survey							MATERIAL STOPPING PROGRESS

2.0 Ft Total Length Surveyed

Scores	Structural:	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000
	O&M:	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000
	Overall	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000

Pipe Graphic Report of PSR GOING NORTH X for USES

Setup	5	Surveyor	JDB	Certificate #	U-913-18231	System Owner
Drainage	Survey Customer					
P/O #	Date	2021/02/26	Time	6:59	Street Lockwood Dr.	
City	Houston	Further location details				
Up	GOING NORTH	Rim to invert	Grade to invert	Rim to grade	Ft	
Down	A117	Rim to invert	Grade to invert	Rim to grade	Ft	
Use	Direction	Upstream	Flow control	Media No		
Shape	Circular	Height	40	Width	ins	Preclean J
Material	Corrugated Metal Pipe	Joint length	Ft	Total length	Ft	Date Cleaned
Lining		Year laid		Year rehabilitated		Length Surveyed
Purpose		Cat				17.80 Ft
Additional info				Structural	O & M	Constructional
Location				Miscellaneous	Hydraulic	
Project	Union Pacific Englewood Yard -2/26/2021			Work Order		
Northing				Easting		
Coordinate System				Elevation		
				GPS Accuracy		



CCTV Picture List of GOING NORTH X for USES

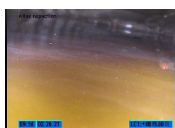
Work Order			Setup 5
Video	Survey Date	2021/02/26	
Path to picture files	C:\FLEX6\Snaps\USES\		
Path to video files	C:\FLEX6\Movies\USES\		
Path to media files	C:\FLEX6\Media\USES\		



Video Index Count 14.0 Ft
 Code Tap Break-in
 Remarks
 File Name 39.jpg



Video Index Count 14.0 Ft
 Code Tap Break-in
 Remarks
 File Name 40.jpg



Video Index Count 15.6 Ft
 Code General Observation
 Remarks OILY SHEEN SHOWN ON WATER.
 File Name 41.jpg



Video Index Count 17.8 Ft
 Code Abandoned Survey
 Remarks MATERIAL STOPPING PROGRESS. CAN SEE ANOTHER TAP AHEAD.
 File Name 42.jpg

Tabular Report of PSR GOING NORTH X for USES

Setup	5	Surveyor	JDB	Certificate #	U-913-18231	System Owner	
Drainage		Survey Customer					
P/O #		Date	2021/02/26	Time	6:59	Street	Lockwood Dr.
City	Houston	Further location details					
Up	GOING NORTH	Rim to invert		Grade to invert		Rim to grade	Ft
Down	A117	Rim to invert		Grade to invert		Rim to grade	Ft
Use		Direction	Up	Flow control		Media No	
Shape	Circular	Height	40	Width	ins	Preclean J	Date Cleaned
Material	Corrugated Metal Pipe	Joint length		Ft	Total length	Ft	Length Surveyed
Lining		Year laid		Year rehabilitated		Weather	17.8 Ft
Purpose		Cat				Pressure	
Additional info						Structural	O & M
Location						Miscellaneous	Constructional
Project	Union Pacific Englewood Yard -2/26/2021					Work Order	
Northing		Easting				Elevation	
Coordinate System						GPS Accuracy	

Count	Video	CD	Code	In1	In2	%	JntFr	To	ImRef	Remarks
0.0			ST Start of Survey							
0.0			AMH Manhole							A117
0.0			MWL Water Level			0				
14.0			TB Tap Break-in	12.000			12			
15.6			MGO General Observation							OILY SHEEN SHOWN ON WATER
17.8			MSA Abandoned Survey							MATERIAL STOPPING PROGRES

17.8 Ft Total Length Surveyed

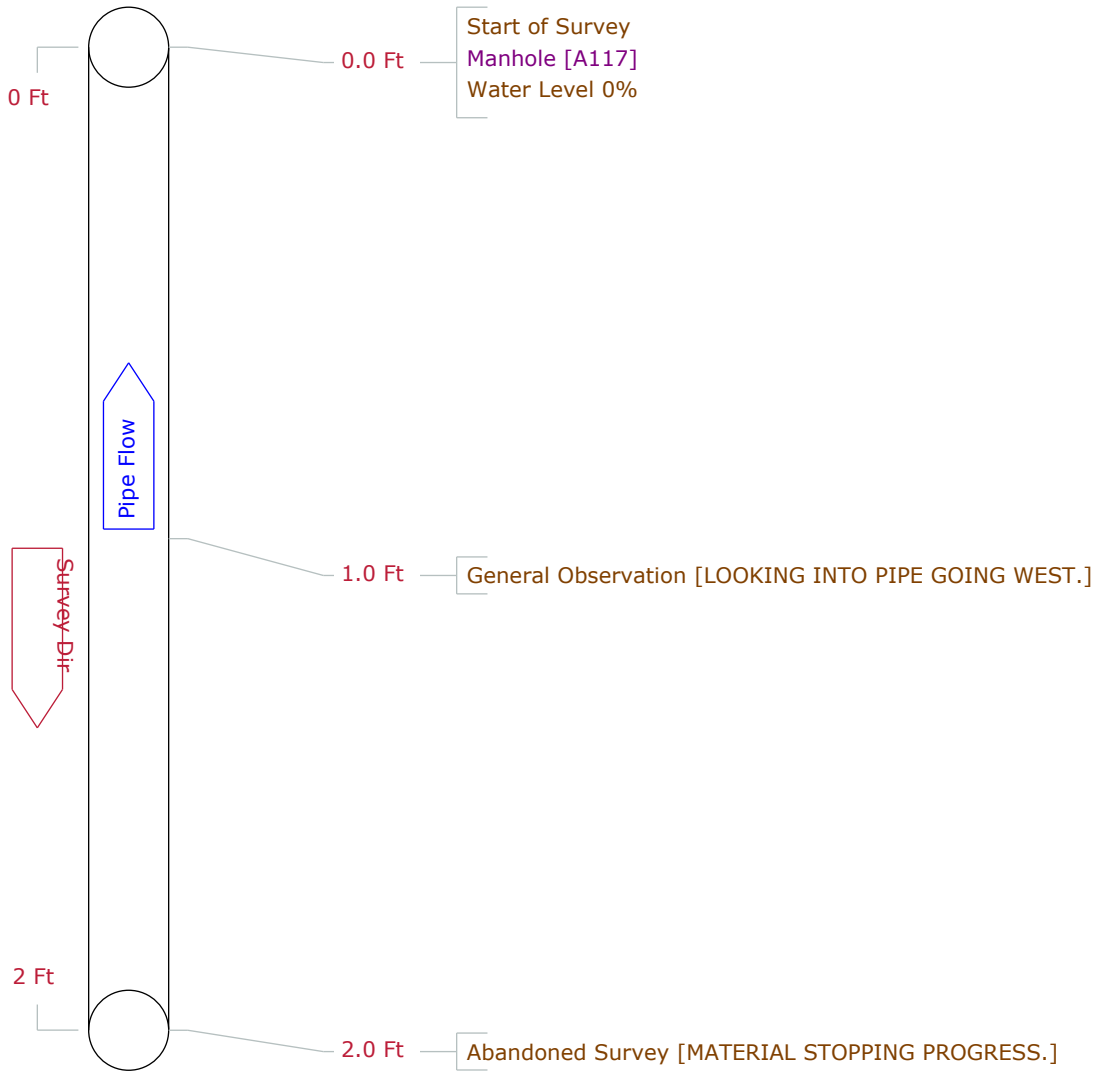
Scores	Structural:	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000
	O&M:	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000
	Overall	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000



Atlas Inspection
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Pipe Graphic Report of PSR GOING WEST X for USES

Setup	4	Surveyor	JDB	Certificate #	U-913-18231	System Owner
Drainage	Survey Customer					
P/O #	Date	2021/02/26	Time	6:57	Street Lockwood Dr.	
City	Houston	Further location details				
Up	GOING WEST	Rim to invert	Grade to invert	Rim to grade	Ft	
Down	A117	Rim to invert	Grade to invert	Rim to grade	Ft	
Use	Direction Upstream		Flow control		Media No	
Shape	Circular	Height 40	Width	ins	Preclean J	Date Cleaned
Material	Corrugated Metal Pipe	Joint length	Ft	Total length	Ft	Length Surveyed 02.00 Ft
Lining		Year laid		Year rehabilitated		Weather
Purpose	Cat					
Additional info				Structural	O & M	Constructional
Location				Miscellaneous	Hydraulic	
Project	Union Pacific Englewood Yard -2/26/2021			Work Order		
Northing				Easting	Elevation	
Coordinate System				GPS Accuracy		



CCTV Picture List of GOING WEST X for USES

Work Order		Setup 4
Video	Survey Date	2021/02/26
Path to picture files	C:\FLEX6\Snaps\USES\	
Path to video files	C:\FLEX6\Movies\USES\	
Path to media files	C:\FLEX6\Media\USES\	



Video Index Count 1.0 Ft
 Code **General Observation**
 Remarks LOOKING INTO PIPE GOING WEST.
 File Name 35.jpg



Video Index Count 1.0 Ft
 Code **General Observation**
 Remarks LOOKING INTO PIPE GOING WEST.
 File Name 36.jpg



Video Index Count 2.0 Ft
 Code **Abandoned Survey**
 Remarks MATERIAL STOPPING PROGRESS.
 File Name 37.jpg

Tabular Report of PSR GOING WEST X for USES

Setup	4	Surveyor	JDB	Certificate #	U-913-18231	System Owner	
Drainage		Survey Customer					
P/O #		Date	2021/02/26	Time	6:57	Street	Lockwood Dr.
City	Houston	Further location details					
Up	GOING WEST	Rim to invert		Grade to invert		Rim to grade	Ft
Down	A117	Rim to invert		Grade to invert		Rim to grade	Ft
Use		Direction	Up	Flow control		Media No	
Shape	Circular	Height	40	Width	ins	Preclean J	Date Cleaned
Material	Corrugated Metal Pipe	Joint length		Ft	Total length	Ft	Length Surveyed 2.0
Lining		Year laid		Year rehabilitated		Weather	
Purpose		Cat				Pressure	
Additional info						Structural	O & M
Location						Miscellaneous	Constructional
Project	Union Pacific Englewood Yard -2/26/2021					Work Order	
Northing		Easting				Elevation	
Coordinate System						GPS Accuracy	

Count	Video	CD	Code	In1	In2	%	JntFr	To	ImRef	Remarks
0.0			ST Start of Survey							
0.0			AMH Manhole							A117
0.0			MWL Water Level			0				
1.0			MGO General Observation							LOOKING INTO PIPE GOING WEST
2.0			MSA Abandoned Survey							MATERIAL STOPPING PROGRESS

2.0 Ft Total Length Surveyed

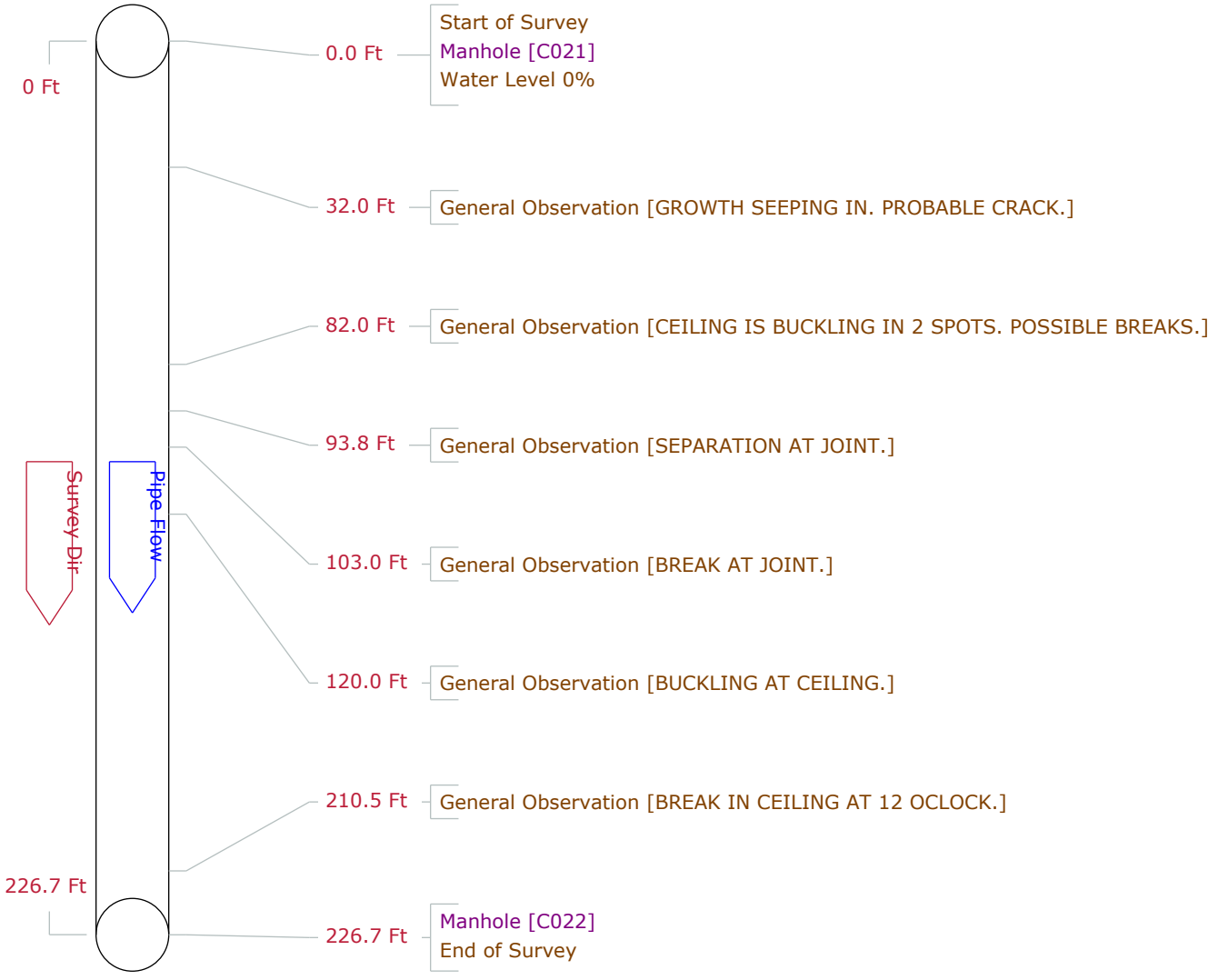
Scores	Structural:	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000
	O&M:	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000
	Overall	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000



Atlas Inspection
Phone: 800-281-0650

Pipe Graphic Report of PSR C021 X for USES

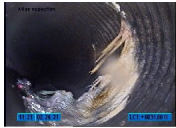
Setup	8	Surveyor	JDB	Certificate #	U-913-18231	System Owner	
Drainage	Survey Customer						
P/O #		Date	2021/02/26	Time	8:25	Street	Lockwood Dr.
City	Houston	Further location details					
Up	C021	Rim to invert		Grade to invert		Rim to grade	Ft
Down	C022	Rim to invert		Grade to invert		Rim to grade	Ft
Use		Direction	Downstream	Flow control		Media No	
Shape	Circular	Height	40	Width	ins	Preclean	J
Material	Corrugated Metal Pipe	Joint length	Ft	Total length	226.7 Ft	Length Surveyed	226.70 Ft
Lining		Year laid		Year rehabilitated		Weather	
Purpose		Cat					
Additional info	GOING EAST			Structural	O & M	Constructional	
Location		Miscellaneous	Hydraulic				
Project	Union Pacific Englewood Yard -2/26/2021			Work Order			
Northing		Easting		Elevation			
Coordinate System		GPS Accuracy					



Work Order			Setup 8
Video	Survey Date	2021/02/26	
Path to picture files	C:\FLEX6\Snaps\USES\		
Path to video files	C:\FLEX6\Movies\USES\		
Path to media files	C:\FLEX6\Media\USES\		



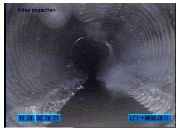
Video Index Count 32.0 Ft
 Code **General Observation**
 Remarks GROWTH SEEPING IN. PROBABLE CRACK.
 File Name 64.jpg



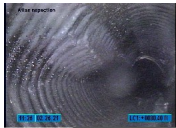
Video Index Count 32.0 Ft
 Code **General Observation**
 Remarks GROWTH SEEPING IN. PROBABLE CRACK.
 File Name 65.jpg



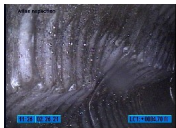
Video Index Count 32.0 Ft
 Code **General Observation**
 Remarks GROWTH SEEPING IN. PROBABLE CRACK.
 File Name 66.jpg



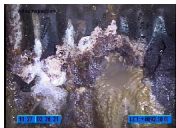
Video Index Count 82.0 Ft
 Code **General Observation**
 Remarks CEILING IS BUCKLING IN 2 SPOTS. POSSIBLE BREAKS.
 File Name 67.jpg



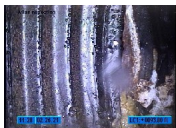
Video Index Count 82.0 Ft
 Code **General Observation**
 Remarks CEILING IS BUCKLING IN 2 SPOTS. POSSIBLE BREAKS.
 File Name 68.jpg



Video Index Count 82.0 Ft
 Code **General Observation**
 Remarks CEILING IS BUCKLING IN 2 SPOTS. POSSIBLE BREAKS.
 File Name 69.jpg

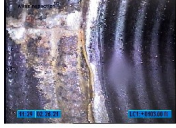


Video Index Count 82.0 Ft
 Code **General Observation**
 Remarks CEILING IS BUCKLING IN 2 SPOTS. POSSIBLE BREAKS.
 File Name 70.jpg

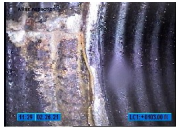


Video Index Count 93.8 Ft
 Code **General Observation**
 Remarks SEPARATION AT JOINT.
 File Name 71.jpg

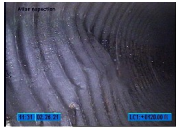
Work Order			Setup 8
Video	Survey Date	2021/02/26	
Path to picture files	C:\FLEX6\Snaps\USES\		
Path to video files	C:\FLEX6\Movies\USES\		
Path to media files	C:\FLEX6\Media\USES\		



Video Index Count 103.0 Ft
 Code **General Observation**
 Remarks BREAK AT JOINT.
 File Name 72.jpg



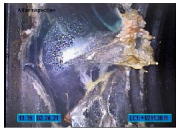
Video Index Count 103.0 Ft
 Code **General Observation**
 Remarks BREAK AT JOINT.
 File Name 73.jpg



Video Index Count 120.0 Ft
 Code **General Observation**
 Remarks BUCKLING AT CEILING.
 File Name 74.jpg



Video Index Count 210.5 Ft
 Code **General Observation**
 Remarks BREAK IN CEILING AT 12 OCLOCK.
 File Name 75.jpg



Video Index Count 210.5 Ft
 Code **General Observation**
 Remarks BREAK IN CEILING AT 12 OCLOCK.
 File Name 76.jpg



Video Index Count 226.7 Ft
 Code **Manhole**
 Remarks C022
 File Name 77.jpg

Tabular Report of PSR C021 X for USES

Setup	8	Surveyor	JDB	Certificate #	U-913-18231	System Owner	
Drainage		Survey Customer					
P/O #		Date	2021/02/26	Time	8:25	Street	Lockwood Dr.
City	Houston	Further location details					
Up	C021	Rim to invert		Grade to invert		Rim to grade	Ft
Down	C022	Rim to invert		Grade to invert		Rim to grade	Ft
Use		Direction	Down	Flow control		Media No	
Shape	Circular	Height	40	Width	ins	Preclean J	Date Cleaned
Material	Corrugated Metal Pipe	Joint length		Ft	Total length	226.7 Ft	Length Surveyed
Lining		Year laid		Year rehabilitated		Weather	
Purpose		Cat				Pressure	
Additional info	GOING EAST					Structural	O & M
Location						Miscellaneous	Constructional
Project	Union Pacific Englewood Yard -2/26/2021					Work Order	
Northing		Easting				Elevation	
Coordinate System						GPS Accuracy	

Count	Video	CD	Code	In1	In2	%	JntFr	To	ImRef	Remarks
0.0			ST Start of Survey							
0.0			AMH Manhole							C021
0.0			MWL Water Level			0				
32.0			MGO General Observation							GROWTH SEEPING IN. PROBABL
82.0			MGO General Observation							CEILING IS BUCKLING IN 2 SPOT.
93.8			MGO General Observation							SEPARATION AT JOINT.
103.0			MGO General Observation							BREAK AT JOINT.
120.0			MGO General Observation							BUCKLING AT CEILING.
210.5			MGO General Observation							BREAK IN CEILING AT 12 OCLOCK
226.7			AMH Manhole							C022
226.7			FH End of Survey							

226.7 Ft Total Length Surveyed

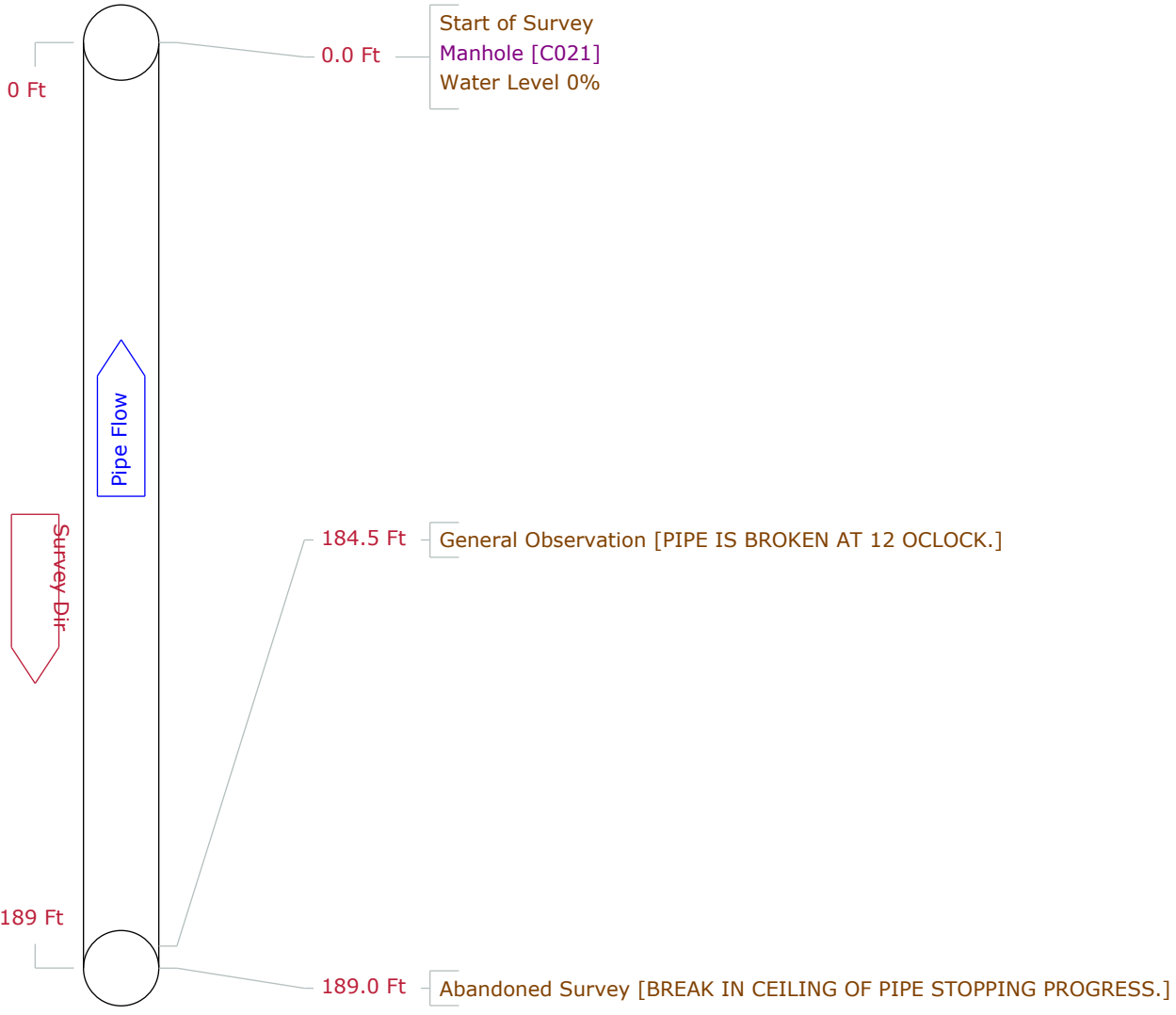
Scores	Structural:	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000
	O&M:	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000
	Overall	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000



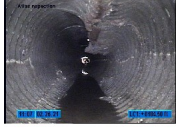
Atlas Inspection
Phone: 800-281-0650

Pipe Graphic Report of PSR C044 X for USES

Setup	7	Surveyor	JDB	Certificate #	U-913-18231	System Owner
Drainage	Survey Customer					
P/O #	Date	2021/02/26	Time	8:00	Street Lockwood Dr.	
City	Houston	Further location details				
Up	C044	Rim to invert	Grade to invert	Rim to grade	Ft	
Down	C021	Rim to invert	Grade to invert	Rim to grade	Ft	
Use	Direction Upstream		Flow control		Media No	
Shape	Circular	Height 40	Width	ins	Preclean J	Date Cleaned
Material	Corrugated Metal Pipe		Joint length	Ft	Total length	Ft
Lining	Year laid		Year rehabilitated		Weather	
Purpose	Cat					
Additional info	GOING WEST			Structural	O & M	Constructional
Location				Miscellaneous	Hydraulic	
Project	Union Pacific Englewood Yard -2/26/2021			Work Order		
Northing	Easting			Elevation		
Coordinate System	GPS Accuracy					



Work Order			Setup 7
Video	Survey Date	2021/02/26	
Path to picture files	C:\FLEX6\Snaps\USES\		
Path to video files	C:\FLEX6\Movies\USES\		
Path to media files	C:\FLEX6\Media\USES\		



Video Index Count 184.5 Ft
 Code **General Observation**
 Remarks PIPE IS BROKEN AT 12 OCLOCK.
 File Name 50.jpg



Video Index Count 184.5 Ft
 Code **General Observation**
 Remarks PIPE IS BROKEN AT 12 OCLOCK.
 File Name 51.jpg



Video Index Count 184.5 Ft
 Code **General Observation**
 Remarks PIPE IS BROKEN AT 12 OCLOCK.
 File Name 52.jpg



Video Index Count 184.5 Ft
 Code **General Observation**
 Remarks PIPE IS BROKEN AT 12 OCLOCK.
 File Name 53.jpg



Video Index Count 184.5 Ft
 Code **General Observation**
 Remarks PIPE IS BROKEN AT 12 OCLOCK.
 File Name 54.jpg



Video Index Count 184.5 Ft
 Code **General Observation**
 Remarks PIPE IS BROKEN AT 12 OCLOCK.
 File Name 55.jpg



Video Index Count 184.5 Ft
 Code **General Observation**
 Remarks PIPE IS BROKEN AT 12 OCLOCK.
 File Name 56.jpg



Video Index Count 184.5 Ft
 Code **General Observation**
 Remarks PIPE IS BROKEN AT 12 OCLOCK.
 File Name 57.jpg

Work Order			Setup 7
Video	Survey Date	2021/02/26	
Path to picture files	C:\FLEX6\Snaps\USES\		
Path to video files	C:\FLEX6\Movies\USES\		
Path to media files	C:\FLEX6\Media\USES\		



Video Index Count 184.5 Ft
 Code **General Observation**
 Remarks PIPE IS BROKEN AT 12 OCLOCK.
 File Name 58.jpg



Video Index Count 184.5 Ft
 Code **General Observation**
 Remarks PIPE IS BROKEN AT 12 OCLOCK.
 File Name 59.jpg



Video Index Count 184.5 Ft
 Code **General Observation**
 Remarks PIPE IS BROKEN AT 12 OCLOCK.
 File Name 60.jpg



Video Index Count 189.0 Ft
 Code **Abandoned Survey**
 Remarks BREAK IN CEILING OF PIPE STOPPING PROGRESS.
 File Name 61.jpg



Video Index Count 189.0 Ft
 Code **Abandoned Survey**
 Remarks BREAK IN CEILING OF PIPE STOPPING PROGRESS.
 File Name 62.jpg

Tabular Report of PSR C044 X for USES

Setup	7	Surveyor	JDB	Certificate #	U-913-18231	System Owner	
Drainage		Survey Customer					
P/O #		Date	2021/02/26	Time	8:00	Street	Lockwood Dr.
City	Houston	Further location details					
Up	C044	Rim to invert		Grade to invert		Rim to grade	Ft
Down	C021	Rim to invert		Grade to invert		Rim to grade	Ft
Use		Direction	Up	Flow control		Media No	
Shape	Circular	Height	40	Width	ins	Preclean J	Date Cleaned
Material	Corrugated Metal Pipe	Joint length		Ft	Total length	Ft	Length Surveyed
Lining		Year laid		Year rehabilitated		Weather	189.0 Ft
Purpose		Cat				Pressure	
Additional info	GOING WEST					Structural	O & M
Location						Miscellaneous	Constructional
Project	Union Pacific Englewood Yard -2/26/2021					Work Order	
Northing		Easting				Elevation	
Coordinate System						GPS Accuracy	

Count	Video	CD	Code	In1	In2	%	JntFr	To	ImRef	Remarks
0.0			ST Start of Survey							
0.0			AMH Manhole							C021
0.0			MWL Water Level			0				
184.5			MGO General Observation							PIPE IS BROKEN AT 12 OCLOCK.
189.0			MSA Abandoned Survey							BREAK IN CEILING OF PIPE STOP

189.0 Ft Total Length Surveyed

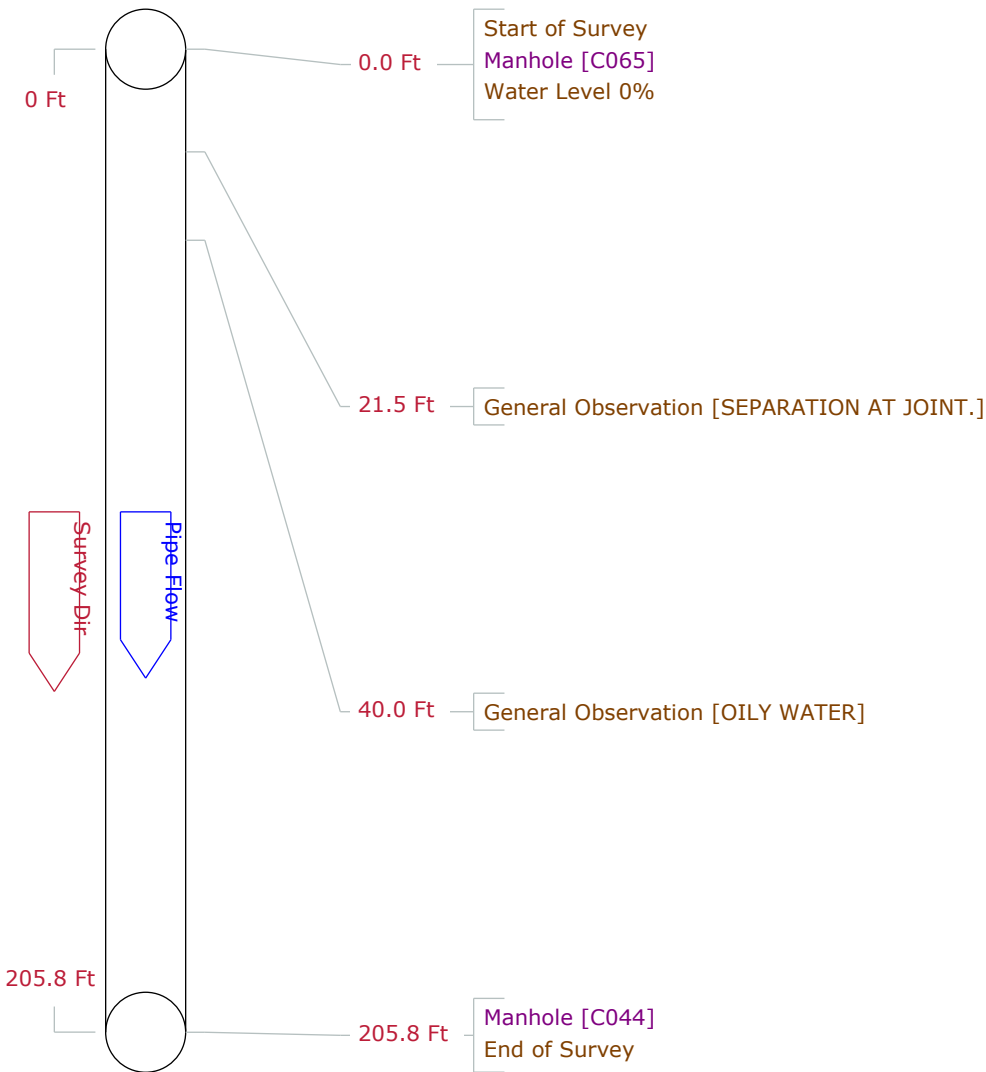
Scores	Structural:	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000
	O&M:	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000
	Overall	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000



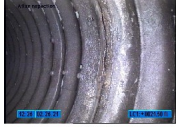
Atlas Inspection
Phone: 800-281-0650

Pipe Graphic Report of PSR C065 B for USES

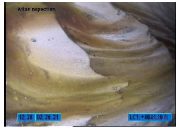
Setup	11	Surveyor	JDB	Certificate #	U-913-18231	System Owner		
Drainage	Survey Customer							
P/O #		Date	2021/02/26	Time	9:29	Street	Lockwood Dr.	
City	Houston	Further location details						
Up	C065	Rim to invert		Grade to invert		Rim to grade	Ft	
Down	C044	Rim to invert		Grade to invert		Rim to grade	Ft	
Use	Direction		Downstream	Flow control		Media No		
Shape	Circular	Height	24	Width	ins	Preclean	J	
Material	Corrugated Metal Pipe		Joint length	Ft	Total length	205.8 Ft	Length Surveyed	205.8 Ft
Lining			Year laid	Year rehabilitated		Weather		
Purpose	Cat							
Additional info				Structural		O & M	Constructional	
Location				Miscellaneous		Hydraulic		
Project	Union Pacific Englewood Yard -2/26/2021				Work Order			
Northing					Easting			
Coordinate System						Elevation		
						GPS Accuracy		



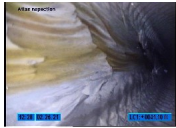
Work Order			Setup 11
Video	Survey Date	2021/02/26	
Path to picture files	C:\FLEX6\Snaps\USES\		
Path to video files	C:\FLEX6\Movies\USES\		
Path to media files	C:\FLEX6\Media\USES\		



Video Index Count 21.5 Ft
 Code **General Observation**
 Remarks SEPARATION AT JOINT.
 File Name 84.jpg



Video Index Count 40.0 Ft
 Code **General Observation**
 Remarks OILY WATER
 File Name 85.jpg



Video Index Count 40.0 Ft
 Code **General Observation**
 Remarks OILY WATER
 File Name 86.jpg



Video Index Count 205.8 Ft
 Code **Manhole**
 Remarks C044
 File Name 87.jpg



Video Index Count 205.8 Ft
 Code **Manhole**
 Remarks C044
 File Name 88.jpg

Tabular Report of PSR C065 B for USES

Setup 11	Surveyor JDB	Certificate # U-913-18231	System Owner
Drainage	Survey Customer		
P/O #	Date 2021/02/26	Time 9:29	Street Lockwood Dr.
City Houston	Further location details		
Up C065	Rim to invert	Grade to invert	Rim to grade Ft
Down C044	Rim to invert	Grade to invert	Rim to grade Ft
Use	Direction Down	Flow control	Media No
Shape Circular	Height 24	Width ins	Preclean J
Material Corrugated Metal Pipe	Joint length	Ft Total length 205.8 Ft	Length Surveyed 205.8 Ft
Lining	Year laid	Year rehabilitated	Weather
Purpose	Cat	Pressure	
Additional info			Structural O & M Constructional
Location			Miscellaneous
Project Union Pacific Englewood Yard -2/26/2021	Work Order		
Northing	Easting	Elevation	
Coordinate System	GPS Accuracy		

Count	Video	CD	Code	In1	In2	%	JntFr	To	ImRef	Remarks
0.0			ST Start of Survey							
0.0			AMH Manhole							C065
0.0			MWL Water Level			0				
21.5			MGO General Observation							SEPARATION AT JOINT.
40.0			MGO General Observation							OILY WATER
205.8			AMH Manhole							C044
205.8			FH End of Survey							

205.8 Ft Total Length Surveyed

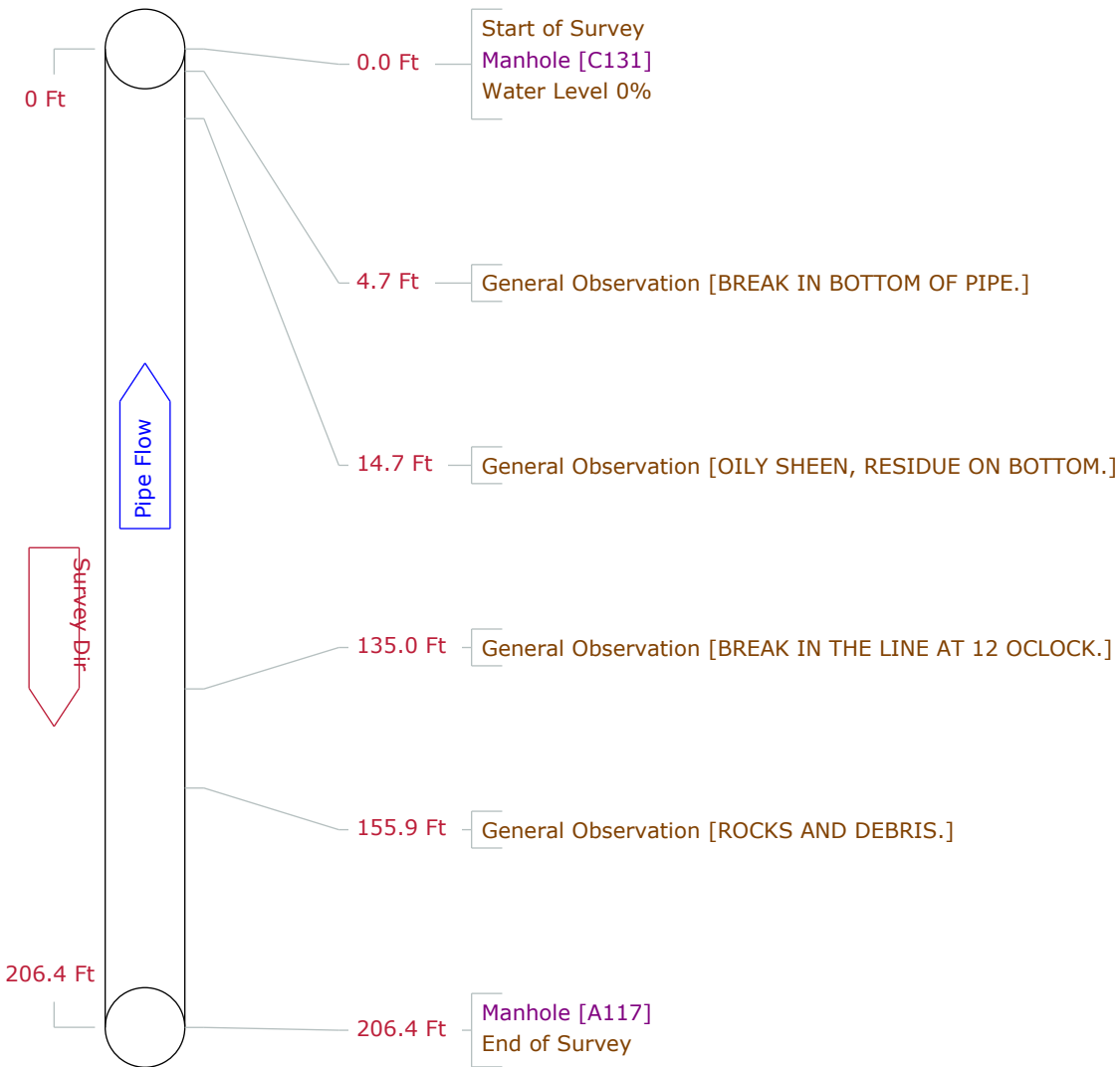
Scores	Structural: Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000
	O&M: Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000
	Overall Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000



Atlas Inspection
Phone: 800-281-0650

Pipe Graphic Report of PSR A117 X for USES

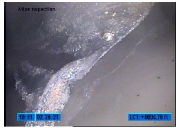
Setup	2	Surveyor	JDB	Certificate #	U-913-18231	System Owner	
Drainage	Survey Customer						
P/O #	Date 2021/02/26		Time 6:38		Street Lockwood Dr.		
City	Houston	Further location details					
Up	A117	Rim to invert		Grade to invert		Rim to grade Ft	
Down	C131	Rim to invert		Grade to invert		Rim to grade Ft	
Use	Direction Upstream		Flow control		Media No		
Shape	Circular	Height 40	Width	ins	Preclean J	Date Cleaned	
Material	Corrugated Metal Pipe		Joint length	Ft	Total length 206.4 Ft	Length Surveyed 206.4 Ft	
Lining	Year laid		Year rehabilitated		Weather		
Purpose	Cat						
Additional info	GOING NORTH				Structural	O & M	Constructional
Location					Miscellaneous	Hydraulic	
Project	Union Pacific Englewood Yard -2/26/2021				Work Order		
Northing	Easting				Elevation		
Coordinate System	GPS Accuracy						



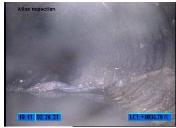
Work Order			Setup 2
Video	Survey Date	2021/02/26	
Path to picture files	C:\FLEX6\Snaps\USES\		
Path to video files	C:\FLEX6\Movies\USES\		
Path to media files	C:\FLEX6\Media\USES\		



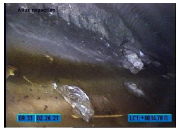
Video Index Count 4.7 Ft
 Code **General Observation**
 Remarks BREAK IN BOTTOM OF PIPE.
 File Name 43.jpg



Video Index Count 4.7 Ft
 Code **General Observation**
 Remarks BREAK IN BOTTOM OF PIPE.
 File Name 44.jpg



Video Index Count 4.7 Ft
 Code **General Observation**
 Remarks BREAK IN BOTTOM OF PIPE.
 File Name 45.jpg



Video Index Count 14.7 Ft
 Code **General Observation**
 Remarks OILY SHEEN, RESIDUE ON BOTTOM.
 File Name 15.jpg



Video Index Count 135.0 Ft
 Code **General Observation**
 Remarks BREAK IN THE LINE AT 12 OCLOCK.
 File Name 16.jpg



Video Index Count 135.0 Ft
 Code **General Observation**
 Remarks BREAK IN THE LINE AT 12 OCLOCK.
 File Name 17.jpg



Video Index Count 135.0 Ft
 Code **General Observation**
 Remarks BREAK IN THE LINE AT 12 OCLOCK.
 File Name 18.jpg

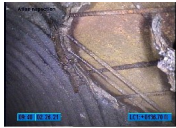


Video Index Count 135.0 Ft
 Code **General Observation**
 Remarks BREAK IN THE LINE AT 12 OCLOCK.
 File Name 19.jpg

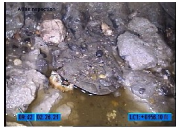
Work Order			Setup 2
Video	Survey Date	2021/02/26	
Path to picture files	C:\FLEX6\Snapshots\USES\		
Path to video files	C:\FLEX6\Movies\USES\		
Path to media files	C:\FLEX6\Media\USES\		



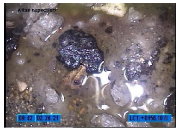
Video Index Count 135.0 Ft
 Code **General Observation**
 Remarks BREAK IN THE LINE AT 12 OCLOCK.
 File Name 20.jpg



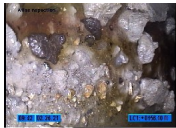
Video Index Count 135.0 Ft
 Code **General Observation**
 Remarks BREAK IN THE LINE AT 12 OCLOCK.
 File Name 21.jpg



Video Index Count 155.9 Ft
 Code **General Observation**
 Remarks ROCKS AND DEBRIS.
 File Name 22.jpg



Video Index Count 155.9 Ft
 Code **General Observation**
 Remarks ROCKS AND DEBRIS.
 File Name 23.jpg



Video Index Count 155.9 Ft
 Code **General Observation**
 Remarks ROCKS AND DEBRIS.
 File Name 24.jpg



Video Index Count 206.4 Ft
 Code **Manhole**
 Remarks A117
 File Name 26.jpg



Video Index Count 206.4 Ft
 Code **Manhole**
 Remarks A117
 File Name 27.jpg



Video Index Count 206.4 Ft
 Code **Manhole**
 Remarks A117
 File Name 28.jpg

CCTV Picture List of A117 X for USES

Work Order			Setup 2
Video	Survey Date	2021/02/26	
Path to picture files	C:\FLEX6\Snapshots\USES\		
Path to video files	C:\FLEX6\Movies\USES\		
Path to media files	C:\FLEX6\Media\USES\		



Video Index Count 206.4 Ft
 Code **Manhole**
 Remarks A117
 File Name 29.jpg



Video Index Count 206.4 Ft
 Code **Manhole**
 Remarks A117
 File Name 30.jpg



Video Index Count 206.4 Ft
 Code **End of Survey**
 Remarks
 File Name 25.jpg

Tabular Report of PSR A117 X for USES

Setup	2	Surveyor	JDB	Certificate #	U-913-18231	System Owner		
Drainage		Survey Customer						
P/O #		Date	2021/02/26	Time	6:38	Street	Lockwood Dr.	
City	Houston	Further location details						
Up	A117	Rim to invert		Grade to invert		Rim to grade	Ft	
Down	C131	Rim to invert		Grade to invert		Rim to grade	Ft	
Use		Direction	Up	Flow control		Media No		
Shape	Circular	Height	40	Width	ins	Preclean J	Date Cleaned	
Material	Corrugated Metal Pipe	Joint length		Ft	Total length	206.4 Ft	Length Surveyed	
Lining		Year laid		Year rehabilitated		Weather		
Purpose		Cat				Pressure		
Additional info	GOING NORTH					Structural	O & M	Constructional
Location						Miscellaneous		
Project	Union Pacific Englewood Yard -2/26/2021					Work Order		
Northing						Easting	Elevation	
Coordinate System						GPS Accuracy		

Count	Video	CD	Code	In1	In2	%	JntFr	To	ImRef	Remarks
0.0			ST Start of Survey							
0.0			AMH Manhole							C131
0.0			MWL Water Level			0				
4.7			MGO General Observation							BREAK IN BOTTOM OF PIPE.
14.7			MGO General Observation							OILY SHEEN, RESIDUE ON BOTTO
135.0			MGO General Observation							BREAK IN THE LINE AT 12 OCLOC
155.9			MGO General Observation							ROCKS AND DEBRIS.
206.4			AMH Manhole							A117
206.4			FH End of Survey							

206.4 Ft Total Length Surveyed

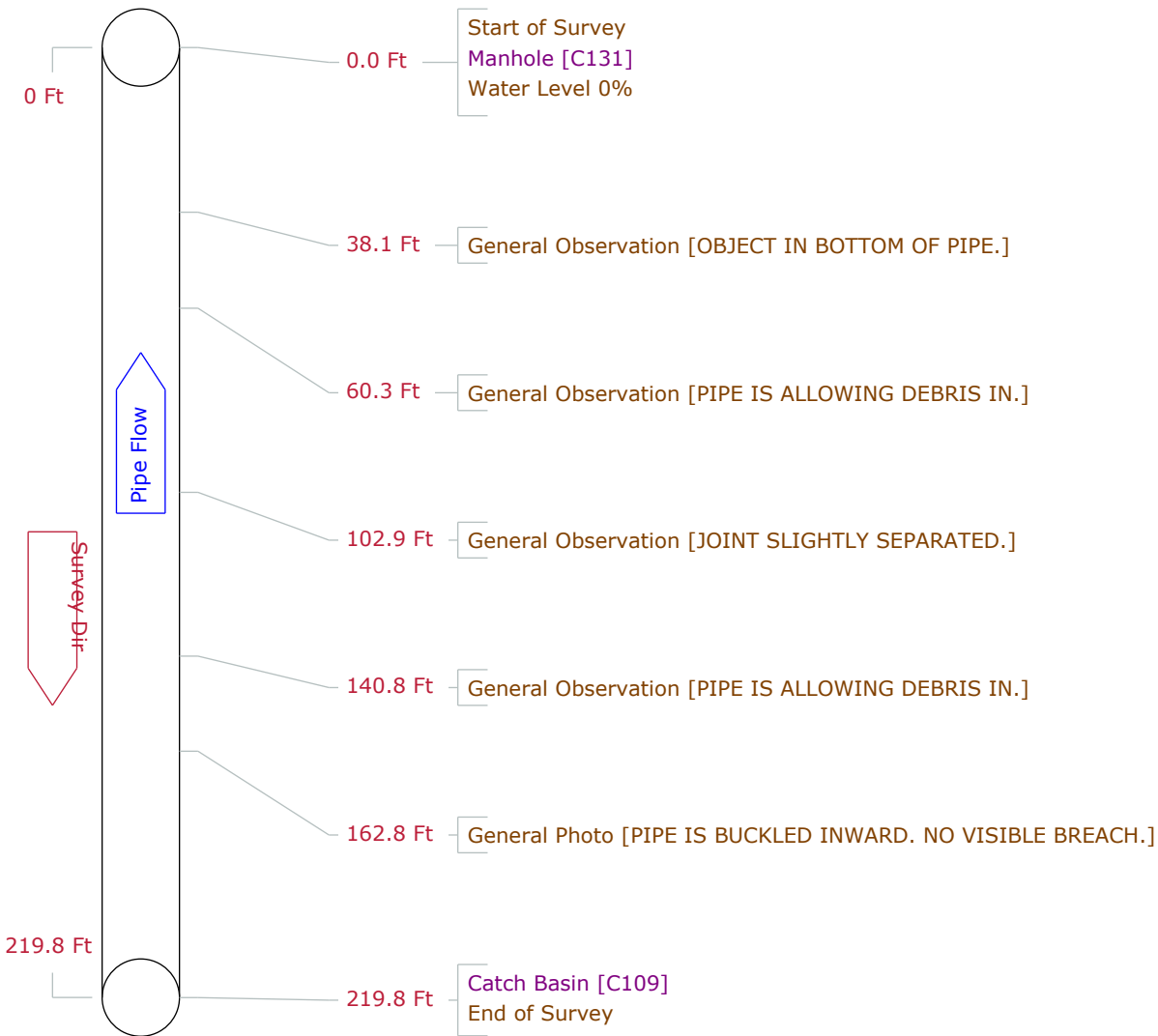
Scores	Structural:	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000
	O&M:	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000
	Overall	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000



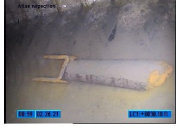
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Phone: 800-281-0650

Pipe Graphic Report of PSR C109 X for USES

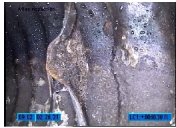
Setup	1	Surveyor	JDB	Certificate #	U-913-18231	System Owner	
Drainage	Survey Customer						
P/O #		Date	2021/02/26	Time	5:55	Street	Lockwood Dr.
City	Houston	Further location details					
Up	C109	Rim to invert		Grade to invert		Rim to grade	Ft
Down	C131	Rim to invert		Grade to invert		Rim to grade	Ft
Use		Direction	Upstream	Flow control		Media No	
Shape	Circular	Height	18	Width	ins	Preclean	J
Material	Corrugated Metal Pipe	Joint length	Ft	Total length	219.8 Ft	Length Surveyed	219.8 Ft
Lining		Year laid		Year rehabilitated		Weather	
Purpose		Cat					
Additional info				Structural		O & M	Constructional
Location				Miscellaneous		Hydraulic	
Project	Union Pacific Englewood Yard -2/26/2021			Work Order			
Northing		Easting		Elevation			
Coordinate System				GPS Accuracy			



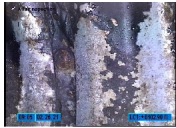
Work Order			Setup 1
Video	Survey Date	2021/02/26	
Path to picture files	C:\FLEX6\Snapshots\USES\		
Path to video files	C:\FLEX6\Movies\USES\		
Path to media files	C:\FLEX6\Media\USES\		



Video Index Count 38.1 Ft
 Code **General Observation**
 Remarks OBJECT IN BOTTOM OF PIPE.
 File Name 2.jpg



Video Index Count 60.3 Ft
 Code **General Observation**
 Remarks PIPE IS ALLOWING DEBRIS IN.
 File Name 3.jpg



Video Index Count 102.9 Ft
 Code **General Observation**
 Remarks JOINT SLIGHTLY SEPARATED.
 File Name 4.jpg



Video Index Count 102.9 Ft
 Code **General Observation**
 Remarks JOINT SLIGHTLY SEPARATED.
 File Name 5.jpg



Video Index Count 140.8 Ft
 Code **General Observation**
 Remarks PIPE IS ALLOWING DEBRIS IN.
 File Name 6.jpg



Video Index Count 140.8 Ft
 Code **General Observation**
 Remarks PIPE IS ALLOWING DEBRIS IN.
 File Name 7.jpg

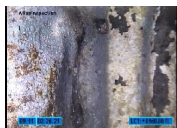


Video Index Count 140.8 Ft
 Code **General Observation**
 Remarks PIPE IS ALLOWING DEBRIS IN.
 File Name 8.jpg

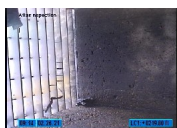


Video Index Count 162.8 Ft
 Code **General Photo**
 Remarks PIPE IS BUCKLED INWARD. NO VISIBLE BREACH.
 File Name 9.jpg

Work Order			Setup 1
Video	Survey Date	2021/02/26	
Path to picture files	C:\FLEX6\Snapshots\USES\		
Path to video files	C:\FLEX6\Movies\USES\		
Path to media files	C:\FLEX6\Media\USES\		



Video Index Count 162.8 Ft
 Code **General Photo**
 Remarks PIPE IS BUCKLED INWARD. NO VISIBLE BREACH.
 File Name 10.jpg



Video Index Count 219.8 Ft
 Code **Catch Basin**
 Remarks C109
 File Name 11.jpg



Video Index Count 219.8 Ft
 Code **Catch Basin**
 Remarks C109
 File Name 12.jpg



Video Index Count 219.8 Ft
 Code **Catch Basin**
 Remarks C109
 File Name 13.jpg

Tabular Report of PSR C109 X for USES

Setup 1	Surveyor JDB	Certificate # U-913-18231	System Owner
Drainage	Survey Customer		
P/O #	Date 2021/02/26	Time 5:55	Street Lockwood Dr.
City Houston	Further location details		
Up C109	Rim to invert	Grade to invert	Rim to grade Ft
Down C131	Rim to invert	Grade to invert	Rim to grade Ft
Use	Direction Up	Flow control	Media No
Shape Circular	Height 18	Width ins	Preclean J
Material Corrugated Metal Pipe	Joint length	Ft	Total length 219.8 Ft
Lining	Year laid	Year rehabilitated	Weather
Purpose	Cat	Pressure	
Additional info			Structural O & M Constructional
Location			Miscellaneous
Project	Union Pacific Englewood Yard -2/26/2021		Work Order
Northing	Easting	Elevation	
Coordinate System	GPS Accuracy		

Count	Video	CD	Code	In1	In2	%	JntFr	To	ImRef	Remarks
0.0			ST Start of Survey							
0.0			AMH Manhole							C131
0.0			MWL Water Level			0				
38.1			MGO General Observation							OBJECT IN BOTTOM OF PIPE.
60.3			MGO General Observation							PIPE IS ALLOWING DEBRIS IN.
102.9			MGO General Observation							JOINT SLIGHTLY SEPARATED.
140.8			MGO General Observation							PIPE IS ALLOWING DEBRIS IN.
162.8			MGP General Photo							PIPE IS BUCKLED INWARD. NO V
219.8			ACB Catch Basin							C109
219.8			FH End of Survey							

219.8 Ft Total Length Surveyed

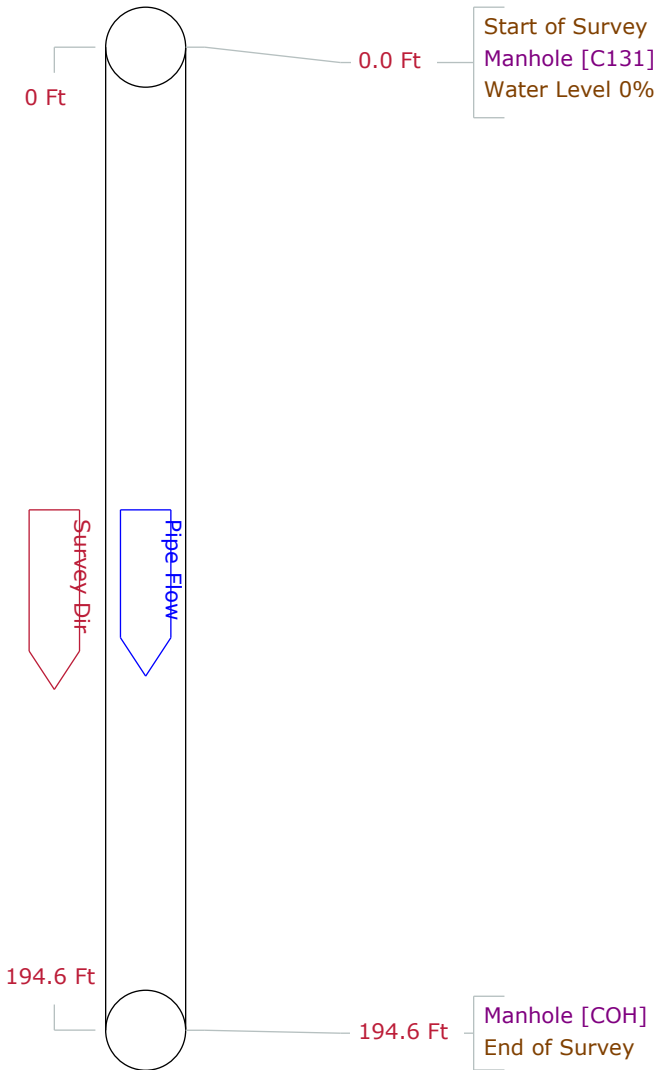
Scores	Structural:	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000
	O&M:	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000
	Overall	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000



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Pipe Graphic Report of PSR C131 X for USES

Setup	6	Surveyor	JDB	Certificate #	U-913-18231	System Owner
Drainage	Survey Customer					
P/O #	Date	2021/02/26	Time	7:26	Street	Lockwood Dr.
City	Houston	Further location details				
Up	C131	Rim to invert	Grade to invert	Rim to grade	Ft	
Down	COH	Rim to invert	Grade to invert	Rim to grade	Ft	
Use	Direction		Downstream	Flow control	Media No	
Shape	Circular	Height	40	Width	ins	Preclean J
Material	Corrugated Metal Pipe	Joint length	Ft	Total length	194.6 Ft	Date Cleaned
Lining		Year laid		Year rehabilitated		Length Surveyed
Purpose		Cat				194.60 Ft
Additional info				Structural	O & M	Constructional
Location				Miscellaneous	Hydraulic	
Project	Union Pacific Englewood Yard -2/26/2021			Work Order		
Northing				Easting		
Coordinate System				Elevation		
				GPS Accuracy		

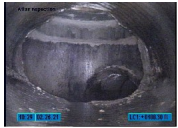


CCTV Picture List of C131 X for USES

Work Order		Setup 6
Video	Survey Date	2021/02/26
Path to picture files	C:\FLEX6\Snaps\USES\	
Path to video files	C:\FLEX6\Movies\USES\	
Path to media files	C:\FLEX6\Media\USES\	



Video Index Count 194.6 Ft
 Code Manhole
 Remarks COH
 File Name 47.jpg



Video Index Count 194.6 Ft
 Code Manhole
 Remarks COH
 File Name 48.jpg

Tabular Report of PSR C131 X for USES

Setup	6	Surveyor	JDB	Certificate #	U-913-18231	System Owner	
Drainage		Survey Customer					
P/O #		Date	2021/02/26	Time	7:26	Street	Lockwood Dr.
City	Houston	Further location details					
Up	C131	Rim to invert		Grade to invert		Rim to grade	Ft
Down	COH	Rim to invert		Grade to invert		Rim to grade	Ft
Use		Direction	Down	Flow control		Media No	
Shape	Circular	Height	40	Width	ins	Preclean J	Date Cleaned
Material	Corrugated Metal Pipe	Joint length		Ft	Total length	194.6 Ft	Length Surveyed
Lining		Year laid		Year rehabilitated		Weather	
Purpose		Cat				Pressure	
Additional info						Structural	O & M
Location						Miscellaneous	Constructional
Project	Union Pacific Englewood Yard -2/26/2021					Work Order	
Northing		Easting				Elevation	
Coordinate System						GPS Accuracy	

Count	Video	CD	Code	In1	In2	%	JntFr	To	ImRef	Remarks
0.0			ST Start of Survey							
0.0			AMH Manhole							C131
0.0			MWL Water Level			0				
194.6			AMH Manhole							COH
194.6			FH End of Survey							

194.6 Ft Total Length Surveyed

Scores	Structural:	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000
	O&M:	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000
	Overall	Pipe Rating 0	Pipe Ratings Index 0	Quick Rating 0000



Atlas Inspection
Phone: 800-281-0650

ATTACHMENT E

**Laboratory Analytical Reports –
Obstruction Removal Events**



10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
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January 05, 2021

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

Work Order: **HS20121076**

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

Dear Eric Matzner,

ALS Environmental received 1 sample(s) on Dec 22, 2020 for the analysis presented in the following report.

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

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

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

Sincerely,

A handwritten signature in black ink, appearing to read 'Dane J. Wacasey'.

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20121076

**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: HS20121076

**TRRP Laboratory Data
Package Cover Page**

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

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



Dane J. Wacasey

Laboratory Review Checklist: Reportable Data

Laboratory Name: ALS Laboratory Group	LRC Date:01/05/2021
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20121076
Reviewer Name: Corey Grandits	Prep Batch Number: 160999,161002,161184,161187,161270,R375328,R375569,R375794,R375858

# 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			3
		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				

Laboratory Review Checklist: Supportin9 Data							
Laboratory Name: ALS Laboratory Group				LRC Date:01/05/2021			
Project Name: Houston TX-Wood Preserving Works				Laboratory Job Number: HS20121076			
Reviewer Name: Corey Grandits				Prep Batch Number: 160999,161002,161184,161187,161270,R375328,R375569,R375794, R375858			
# 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			4
S10	OI	Method detection limit (MDL) studies					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	Proficiency test reports:					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	Standards documentation					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	Compound/analyte identification procedures					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	Demonstration of analyst competency (DOC)					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	Laboratory standard operating procedures (SOPs):					
		Are laboratory SOPs current and on file for each method performed?	X				

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

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

NA = Not Applicable;

NR = Not Reviewed;

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

Laboratory Review Checklist: Exception Reports

Laboratory Name: ALS Laboratory Group	LRC Date:01/05/2021
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20121076
Reviewer Name: Corey Grandits	Prep Batch Number: 160999,161002,161184,161187,161270,R375328,R375569,R375794,R375858

ER# ^s	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 160999, Semivolatle Organics Method SW8270, LCS/LCSD were analyzed and reported in lieu of an MS/MSD for this batch.
3	Batch 161187, Metals Method SW6020, sample HS20120903-01, MS and MSD were performed on unrelated sample. Batch R375858, Volatile Organics Method SW8260, sample HS20121366-01, MS and MSD were performed on unrelated sample.
4	Batch 161187, Metals Method SW6020, sample HS20120903-01, Serial Dilution was performed on unrelated sample.

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: HS20121076

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20121076-01	WW-1620-IDW 003256-20201222	Water		22-Dec-2020 09:15	22-Dec-2020 09:30	<input type="checkbox"/>

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works
 Sample ID: WW-1620-IDW 003256-20201222
 Collection Date: 22-Dec-2020 09:15

ANALYTICAL REPORT
 WorkOrder:HS20121076
 Lab ID:HS20121076-01
 Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: PC			
1,1,1-Trichloroethane	< 0.00020		0.00020	0.0010	mg/L	1	04-Jan-2021 20:23
1,1,2,2-Tetrachloroethane	< 0.00050		0.00050	0.0010	mg/L	1	04-Jan-2021 20:23
1,1,2-Trichloroethane	< 0.00030		0.00030	0.0010	mg/L	1	04-Jan-2021 20:23
1,1-Dichloroethane	< 0.00020		0.00020	0.0010	mg/L	1	04-Jan-2021 20:23
1,1-Dichloroethene	< 0.00020		0.00020	0.0010	mg/L	1	04-Jan-2021 20:23
1,2-Dichlorobenzene	< 0.00050		0.00050	0.0010	mg/L	1	04-Jan-2021 20:23
1,2-Dichloroethane	< 0.00020		0.00020	0.0010	mg/L	1	04-Jan-2021 20:23
1,2-Dichloropropane	< 0.00050		0.00050	0.0010	mg/L	1	04-Jan-2021 20:23
1,3-Dichlorobenzene	< 0.00040		0.00040	0.0010	mg/L	1	04-Jan-2021 20:23
1,4-Dichlorobenzene	< 0.00040		0.00040	0.0010	mg/L	1	04-Jan-2021 20:23
2-Butanone	0.0019	J	0.00050	0.0020	mg/L	1	04-Jan-2021 20:23
2-Hexanone	< 0.0010		0.0010	0.0020	mg/L	1	04-Jan-2021 20:23
4-Methyl-2-pentanone	< 0.00070		0.00070	0.0020	mg/L	1	04-Jan-2021 20:23
Acetone	0.0093		0.0020	0.0020	mg/L	1	04-Jan-2021 20:23
Benzene	< 0.00020		0.00020	0.0010	mg/L	1	04-Jan-2021 20:23
Bromochloromethane	< 0.00020		0.00020	0.0010	mg/L	1	04-Jan-2021 20:23
Bromodichloromethane	< 0.00020		0.00020	0.0010	mg/L	1	04-Jan-2021 20:23
Bromoform	< 0.00040		0.00040	0.0010	mg/L	1	04-Jan-2021 20:23
Bromomethane	< 0.00040		0.00040	0.0010	mg/L	1	04-Jan-2021 20:23
Carbon disulfide	< 0.00060		0.00060	0.0020	mg/L	1	04-Jan-2021 20:23
Carbon tetrachloride	< 0.00050		0.00050	0.0010	mg/L	1	04-Jan-2021 20:23
Chlorobenzene	< 0.00030		0.00030	0.0010	mg/L	1	04-Jan-2021 20:23
Chloroethane	< 0.00030		0.00030	0.0010	mg/L	1	04-Jan-2021 20:23
Chloroform	< 0.00020		0.00020	0.0010	mg/L	1	04-Jan-2021 20:23
Chloromethane	< 0.00020		0.00020	0.0010	mg/L	1	04-Jan-2021 20:23
cis-1,2-Dichloroethene	< 0.00020		0.00020	0.0010	mg/L	1	04-Jan-2021 20:23
cis-1,3-Dichloropropene	< 0.00010		0.00010	0.0010	mg/L	1	04-Jan-2021 20:23
Dibromochloromethane	< 0.00030		0.00030	0.0010	mg/L	1	04-Jan-2021 20:23
Ethylbenzene	< 0.00030		0.00030	0.0010	mg/L	1	04-Jan-2021 20:23
m,p-Xylene	< 0.00050		0.00050	0.0020	mg/L	1	04-Jan-2021 20:23
Methylene chloride	< 0.0010		0.0010	0.0020	mg/L	1	04-Jan-2021 20:23
o-Xylene	< 0.00030		0.00030	0.0010	mg/L	1	04-Jan-2021 20:23
Styrene	< 0.00030		0.00030	0.0010	mg/L	1	04-Jan-2021 20:23
Tetrachloroethene	< 0.00030		0.00030	0.0010	mg/L	1	04-Jan-2021 20:23
Toluene	< 0.00020		0.00020	0.0010	mg/L	1	04-Jan-2021 20:23
trans-1,2-Dichloroethene	< 0.00020		0.00020	0.0010	mg/L	1	04-Jan-2021 20:23
trans-1,3-Dichloropropene	< 0.00020		0.00020	0.0010	mg/L	1	04-Jan-2021 20:23
Trichloroethene	< 0.00020		0.00020	0.0010	mg/L	1	04-Jan-2021 20:23
Vinyl acetate	< 0.00050		0.00050	0.0010	mg/L	1	04-Jan-2021 20:23

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

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works
 Sample ID: WW-1620-IDW 003256-20201222
 Collection Date: 22-Dec-2020 09:15

ANALYTICAL REPORT
 WorkOrder:HS20121076
 Lab ID:HS20121076-01
 Matrix:Water

ANALYSES	RESULT	QUAL	SDL	ML	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: PC			
Vinyl chloride	< 0.00020		0.00020	0.0010	mg/L	1	04-Jan-2021 20:23
Xylenes, Total	< 0.00030		0.00030	0.0010	mg/L	1	04-Jan-2021 20:23
1,2-Dichloroethene, Total	< 0.00020		0.00020	0.0010	mg/L	1	04-Jan-2021 20:23
Surr: 1,2-Dichloroethane-d4	94.5			70-126	%REC	1	04-Jan-2021 20:23
Surr: 4-Bromofluorobenzene	96.1			81-113	%REC	1	04-Jan-2021 20:23
Surr: Dibromofluoromethane	92.8			77-123	%REC	1	04-Jan-2021 20:23
Surr: Toluene-d8	101			82-127	%REC	1	04-Jan-2021 20:23

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

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works
 Sample ID: WW-1620-IDW 003256-20201222
 Collection Date: 22-Dec-2020 09:15

ANALYTICAL REPORT
 WorkOrder:HS20121076
 Lab ID:HS20121076-01
 Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		Method:SW8270		Prep:SW3510 / 23-Dec-2020		Analyst: ACN	
1,2,4-Trichlorobenzene	< 0.000030		0.000030	0.00020	mg/L	1	29-Dec-2020 20:37
2,4,5-Trichlorophenol	< 0.000057		0.000057	0.00020	mg/L	1	29-Dec-2020 20:37
2,4,6-Trichlorophenol	< 0.000048		0.000048	0.00020	mg/L	1	29-Dec-2020 20:37
2,4-Dichlorophenol	< 0.000043		0.000043	0.00020	mg/L	1	29-Dec-2020 20:37
2,4-Dimethylphenol	< 0.000040		0.000040	0.00020	mg/L	1	29-Dec-2020 20:37
2,4-Dinitrophenol	< 0.00010		0.00010	0.0010	mg/L	1	29-Dec-2020 20:37
2,4-Dinitrotoluene	< 0.000058		0.000058	0.00020	mg/L	1	29-Dec-2020 20:37
2,6-Dinitrotoluene	< 0.000042		0.000042	0.00020	mg/L	1	29-Dec-2020 20:37
2-Chloronaphthalene	< 0.000021		0.000021	0.00020	mg/L	1	29-Dec-2020 20:37
2-Chlorophenol	< 0.000036		0.000036	0.00020	mg/L	1	29-Dec-2020 20:37
2-Methylnaphthalene	0.00022		0.000019	0.00010	mg/L	1	29-Dec-2020 20:37
2-Methylphenol	< 0.000045		0.000045	0.00020	mg/L	1	29-Dec-2020 20:37
2-Nitroaniline	< 0.000041		0.000041	0.00020	mg/L	1	29-Dec-2020 20:37
2-Nitrophenol	< 0.000034		0.000034	0.00020	mg/L	1	29-Dec-2020 20:37
3&4-Methylphenol	< 0.000036		0.000036	0.00020	mg/L	1	29-Dec-2020 20:37
3,3'-Dichlorobenzidine	< 0.000044		0.000044	0.00020	mg/L	1	29-Dec-2020 20:37
3-Nitroaniline	< 0.000049		0.000049	0.00020	mg/L	1	29-Dec-2020 20:37
4,6-Dinitro-2-methylphenol	< 0.000020		0.000020	0.00020	mg/L	1	29-Dec-2020 20:37
4-Bromophenyl phenyl ether	< 0.000051		0.000051	0.00020	mg/L	1	29-Dec-2020 20:37
4-Chloro-3-methylphenol	< 0.000032		0.000032	0.00020	mg/L	1	29-Dec-2020 20:37
4-Chloroaniline	< 0.000039		0.000039	0.00020	mg/L	1	29-Dec-2020 20:37
4-Chlorophenyl phenyl ether	< 0.000044		0.000044	0.00020	mg/L	1	29-Dec-2020 20:37
4-Nitroaniline	< 0.000035		0.000035	0.00020	mg/L	1	29-Dec-2020 20:37
4-Nitrophenol	< 0.000047		0.000047	0.0010	mg/L	1	29-Dec-2020 20:37
Acenaphthene	0.0024		0.000027	0.00010	mg/L	1	29-Dec-2020 20:37
Acenaphthylene	0.000030	J	0.000015	0.00010	mg/L	1	29-Dec-2020 20:37
Anthracene	0.00072		0.000014	0.00010	mg/L	1	29-Dec-2020 20:37
Benz(a)anthracene	0.00017		0.000050	0.00010	mg/L	1	29-Dec-2020 20:37
Benzidine	< 0.00010		0.00010	0.00020	mg/L	1	29-Dec-2020 20:37
Benzo(a)pyrene	0.000082	J	0.000020	0.00010	mg/L	1	29-Dec-2020 20:37
Benzo(b)fluoranthene	0.000091	J	0.000023	0.00010	mg/L	1	29-Dec-2020 20:37
Benzo(g,h,i)perylene	0.000024	J	0.000014	0.00010	mg/L	1	29-Dec-2020 20:37
Benzo(k)fluoranthene	0.000045	J	0.000019	0.00010	mg/L	1	29-Dec-2020 20:37
Benzyl alcohol	< 0.000054		0.000054	0.00020	mg/L	1	29-Dec-2020 20:37
Bis(2-chloroethoxy)methane	< 0.000030		0.000030	0.00020	mg/L	1	29-Dec-2020 20:37
Bis(2-chloroethyl)ether	< 0.000026		0.000026	0.00020	mg/L	1	29-Dec-2020 20:37
Bis(2-chloroisopropyl)ether	< 0.000070		0.000070	0.00020	mg/L	1	29-Dec-2020 20:37
Bis(2-ethylhexyl)phthalate	0.00019	J	0.000037	0.00020	mg/L	1	29-Dec-2020 20:37
Butyl benzyl phthalate	< 0.000019		0.000019	0.00020	mg/L	1	29-Dec-2020 20:37

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

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works
 Sample ID: WW-1620-IDW 003256-20201222
 Collection Date: 22-Dec-2020 09:15

ANALYTICAL REPORT
 WorkOrder:HS20121076
 Lab ID:HS20121076-01
 Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D			Method:SW8270		Prep:SW3510 / 23-Dec-2020		Analyst: ACN
Carbazole	0.000077	J	0.000025	0.00020	mg/L	1	29-Dec-2020 20:37
Chrysene	0.00022		0.000021	0.00010	mg/L	1	29-Dec-2020 20:37
Di-n-butyl phthalate	0.000047	J	0.000020	0.00020	mg/L	1	29-Dec-2020 20:37
Di-n-octyl phthalate	< 0.000020		0.000020	0.00020	mg/L	1	29-Dec-2020 20:37
Dibenz(a,h)anthracene	< 0.000024		0.000024	0.00010	mg/L	1	29-Dec-2020 20:37
Dibenzofuran	0.0013		0.000020	0.00010	mg/L	1	29-Dec-2020 20:37
Diethyl phthalate	< 0.000030		0.000030	0.00020	mg/L	1	29-Dec-2020 20:37
Dimethyl phthalate	< 0.000041		0.000041	0.00020	mg/L	1	29-Dec-2020 20:37
Fluoranthene	0.0019		0.000010	0.00010	mg/L	1	29-Dec-2020 20:37
Fluorene	0.0014		0.000030	0.00010	mg/L	1	29-Dec-2020 20:37
Hexachlorobenzene	< 0.000044		0.000044	0.00020	mg/L	1	29-Dec-2020 20:37
Hexachlorobutadiene	< 0.000030		0.000030	0.00020	mg/L	1	29-Dec-2020 20:37
Hexachlorocyclopentadiene	< 0.000030		0.000030	0.00020	mg/L	1	29-Dec-2020 20:37
Hexachloroethane	< 0.000059		0.000059	0.00020	mg/L	1	29-Dec-2020 20:37
Indeno(1,2,3-cd)pyrene	< 0.000022		0.000022	0.00010	mg/L	1	29-Dec-2020 20:37
Isophorone	< 0.000025		0.000025	0.00020	mg/L	1	29-Dec-2020 20:37
N-Nitrosodi-n-propylamine	< 0.000032		0.000032	0.00020	mg/L	1	29-Dec-2020 20:37
N-Nitrosodimethylamine	< 0.00010		0.00010	0.00020	mg/L	1	29-Dec-2020 20:37
N-Nitrosodiphenylamine	< 0.000025		0.000025	0.00020	mg/L	1	29-Dec-2020 20:37
Naphthalene	0.000062	J	0.000020	0.00010	mg/L	1	29-Dec-2020 20:37
Nitrobenzene	< 0.000024		0.000024	0.00020	mg/L	1	29-Dec-2020 20:37
Pentachlorophenol	< 0.000079		0.000079	0.00020	mg/L	1	29-Dec-2020 20:37
Phenanthrene	0.00088		0.000021	0.00010	mg/L	1	29-Dec-2020 20:37
Phenol	< 0.000035		0.000035	0.00020	mg/L	1	29-Dec-2020 20:37
Pyrene	0.0011		0.000019	0.00010	mg/L	1	29-Dec-2020 20:37
Pyridine	< 0.000030		0.000030	0.0010	mg/L	1	29-Dec-2020 20:37
Surr: 2,4,6-Tribromophenol	70.8			34-129	%REC	1	29-Dec-2020 20:37
Surr: 2-Fluorobiphenyl	94.8			40-125	%REC	1	29-Dec-2020 20:37
Surr: 2-Fluorophenol	86.2			20-120	%REC	1	29-Dec-2020 20:37
Surr: 4-Terphenyl-d14	107			40-135	%REC	1	29-Dec-2020 20:37
Surr: Nitrobenzene-d5	108			41-120	%REC	1	29-Dec-2020 20:37
Surr: Phenol-d6	85.1			20-120	%REC	1	29-Dec-2020 20:37
LOW-LEVEL TEXAS TPH BY TX1005			Method:TX1005		Prep:TX1005PR / 23-Dec-2020		Analyst: SAM
nC6 to nC12	< 0.20		0.20	0.51	mg/L	1	24-Dec-2020 01:03
>nC12 to nC28	1.2		0.20	0.51	mg/L	1	24-Dec-2020 01:03
>nC28 to nC35	< 0.20		0.20	0.51	mg/L	1	24-Dec-2020 01:03
Total Petroleum Hydrocarbon	1.20		0.20	0.51	mg/L	1	24-Dec-2020 01:03
Surr: 2-Fluorobiphenyl	84.5			70-130	%REC	1	24-Dec-2020 01:03
Surr: Trifluoromethyl benzene	98.1			70-130	%REC	1	24-Dec-2020 01:03

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

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works
 Sample ID: WW-1620-IDW 003256-20201222
 Collection Date: 22-Dec-2020 09:15

ANALYTICAL REPORT
 WorkOrder:HS20121076
 Lab ID:HS20121076-01
 Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		Method:SW6020		Prep:SW3010A / 30-Dec-2020		Analyst: JHD	
Antimony	0.00616		0.000400	0.00200	mg/L	1	31-Dec-2020 13:20
Arsenic	0.0806		0.000400	0.00200	mg/L	1	31-Dec-2020 13:20
Barium	4.01		0.00950	0.0200	mg/L	5	31-Dec-2020 12:58
Beryllium	0.00785		0.000200	0.00200	mg/L	1	31-Dec-2020 13:20
Cadmium	0.0532		0.000200	0.00200	mg/L	1	31-Dec-2020 13:20
Chromium	0.314		0.000400	0.00400	mg/L	1	31-Dec-2020 13:20
Lead	6.11		0.00300	0.0100	mg/L	5	31-Dec-2020 12:58
Nickel	0.356		0.000600	0.00200	mg/L	1	31-Dec-2020 13:20
Selenium	0.00795		0.00110	0.00200	mg/L	1	31-Dec-2020 13:20
Silver	0.00868		0.000200	0.00200	mg/L	1	31-Dec-2020 13:20
MERCURY BY SW7470A		Method:SW7470		Prep:SW7470 / 04-Jan-2021		Analyst: JC	
Mercury	0.000321		0.0000300	0.000200	mg/L	1	04-Jan-2021 15:15
SULFIDE BY SM4500 S2-F		Method:SM4500 S2-F				Analyst: KVL	
Sulfide	< 1.00		1.00	1.00	mg/L	1	24-Dec-2020 10:30
FLASH POINT BY PENSKY-MARTENS SW1010A		Method:SW1010				Analyst: TH	
Ignitability	> 212		70.0	70.0	°F	1	29-Dec-2020 08:00
CYANIDE - SW9014		Method:SW9014		Prep:SW9010C / 29-Dec-2020		Analyst: KVL	
Cyanide	0.00300	J	0.00200	0.00500	mg/L	1	29-Dec-2020 16:10
PH BY SW9040C		Method:SW9040C				Analyst: JAC	
pH	7.69	H	0.100	0.100	pH Units	1	04-Jan-2021 12:16
Temp Deg C @pH	22.5	H	0	0	DEG C	1	04-Jan-2021 12:16

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

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20121076

Batch ID: 160999 **Start Date:** 23 Dec 2020 09:00 **End Date:** 23 Dec 2020 15:00
Method: SV AQ SEP FUN EXTRACT-LOWLEV - 3510C **Prep Code:** 3510_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20121076-01		1000 (mL)	1 (mL)	0.001

Batch ID: 161002 **Start Date:** 23 Dec 2020 10:59 **End Date:** 23 Dec 2020 12:09
Method: TX 1005 PREP **Prep Code:** TX 1005_W PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20121076-01	1	29.65 (g)	3 (mL)	0.1012

Batch ID: 161184 **Start Date:** 29 Dec 2020 10:30 **End Date:** 29 Dec 2020 12:00
Method: CYANIDE PREP - SW9010C **Prep Code:** CN_TW_PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20121076-01		50 (mL)	50 (mL)	1

Batch ID: 161187 **Start Date:** 30 Dec 2020 09:00 **End Date:** 30 Dec 2020 13:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20121076-01		10 (mL)	10 (mL)	1

Batch ID: 161270 **Start Date:** 04 Jan 2021 09:00 **End Date:** 04 Jan 2021 11:00
Method: MERCURY PREP BY 7470A- WATER **Prep Code:** HG_WPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20121076-01		10 (mL)	10 (mL)	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20121076

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 160999 (0)		Test Name : LOW-LEVEL SEMIVOLATILES BY 8270D			Matrix: Water	
HS20121076-01	WW-1620-IDW 003256-20201222	22 Dec 2020 09:15		23 Dec 2020 10:52	29 Dec 2020 20:37	1
Batch ID: 161002 (0)		Test Name : LOW-LEVEL TEXAS TPH BY TX1005			Matrix: Water	
HS20121076-01	WW-1620-IDW 003256-20201222	22 Dec 2020 09:15		23 Dec 2020 10:59	24 Dec 2020 01:03	1
Batch ID: 161184 (0)		Test Name : CYANIDE - SW9014			Matrix: Water	
HS20121076-01	WW-1620-IDW 003256-20201222	22 Dec 2020 09:15		29 Dec 2020 10:30	29 Dec 2020 16:10	1
Batch ID: 161187 (0)		Test Name : ICP-MS METALS BY SW6020A			Matrix: Water	
HS20121076-01	WW-1620-IDW 003256-20201222	22 Dec 2020 09:15		30 Dec 2020 13:00	31 Dec 2020 13:20	1
HS20121076-01	WW-1620-IDW 003256-20201222	22 Dec 2020 09:15		30 Dec 2020 13:00	31 Dec 2020 12:58	5
Batch ID: 161270 (0)		Test Name : MERCURY BY SW7470A			Matrix: Water	
HS20121076-01	WW-1620-IDW 003256-20201222	22 Dec 2020 09:15		04 Jan 2021 09:20	04 Jan 2021 15:15	1
Batch ID: R375328 (0)		Test Name : SULFIDE BY SM4500 S2-F			Matrix: Water	
HS20121076-01	WW-1620-IDW 003256-20201222	22 Dec 2020 09:15			24 Dec 2020 10:30	1
Batch ID: R375569 (0)		Test Name : FLASH POINT BY PENSKY-MARTENS SW1010A			Matrix: Water	
HS20121076-01	WW-1620-IDW 003256-20201222	22 Dec 2020 09:15			29 Dec 2020 08:00	1
Batch ID: R375794 (0)		Test Name : PH BY SW9040C			Matrix: Water	
HS20121076-01	WW-1620-IDW 003256-20201222	22 Dec 2020 09:15			04 Jan 2021 12:16	1
Batch ID: R375858 (0)		Test Name : LOW LEVEL VOLATILES BY SW8260C			Matrix: Water	
HS20121076-01	WW-1620-IDW 003256-20201222	22 Dec 2020 09:15			04 Jan 2021 20:23	1

WorkOrder: HS20121076
 InstrumentID: FID-12
 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	0.24	0.20	0.50
A	>nC12 to nC28	TPH-1005-2	0.25	0.26	0.20	0.50
A	>nC28 to nC35	TPH-1005-4	0.25	0.24	0.20	0.50
A	Total Petroleum Hydrocarbon	TPH	0.25	0.24	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: HS20121076
InstrumentID: HG03
Test Code: HG_W
Test Number: SW7470
Test Name: Mercury by SW7470A

**METHOD DETECTION /
REPORTING LIMITS**

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

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Mercury	7439-97-6	0.000100	0.000120	0.0000300	0.000200

WorkOrder: HS20121076
 InstrumentID: ICPMS05
 Test Code: ICP_TW
 Test Number: SW6020
 Test Name: ICP-MS Metals by SW6020A

**METHOD DETECTION /
 REPORTING LIMITS**

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

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Antimony	7440-36-0	0.00100	0.000857	0.000400	0.00200
A	Arsenic	7440-38-2	0.00100	0.000837	0.000400	0.00200
A	Barium	7440-39-3	0.00250	0.00210	0.00190	0.00400
A	Beryllium	7440-41-7	0.000500	0.000410	0.000200	0.00200
A	Cadmium	7440-43-9	0.000500	0.000431	0.000200	0.00200
A	Chromium	7440-47-3	0.00100	0.000822	0.000400	0.00400
A	Lead	7439-92-1	0.00100	0.00117	0.000600	0.00200
A	Nickel	7440-02-0	0.00100	0.000925	0.000600	0.00200
A	Selenium	7782-49-2	0.00250	0.00204	0.00110	0.00200
A	Silver	7440-22-4	0.000500	0.000463	0.000200	0.00200

WorkOrder: HS20121076
 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	1,2,4-Trichlorobenzene	120-82-1	0.00010	0.000068	0.000030	0.00020
A	2,4,5-Trichlorophenol	95-95-4	0.00010	0.000077	0.000057	0.00020
A	2,4,6-Trichlorophenol	88-06-2	0.00010	0.00011	0.000048	0.00020
A	2,4-Dichlorophenol	120-83-2	0.00010	0.000075	0.000043	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.000086	0.000040	0.00020
A	2,4-Dinitrophenol	51-28-5	0.00010	0.000050	0.00010	0.0010
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.000095	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.000091	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.000092	0.000021	0.00020
A	2-Chlorophenol	95-57-8	0.00010	0.000088	0.000036	0.00020
A	2-Methylnaphthalene	91-57-6	0.000050	0.000050	0.000019	0.00010
A	2-Methylphenol	95-48-7	0.00010	0.000098	0.000045	0.00020
A	2-Nitroaniline	88-74-4	0.00010	0.00012	0.000041	0.00020
A	2-Nitrophenol	88-75-5	0.00010	0.000078	0.000034	0.00020
A	3&4-Methylphenol	3/4-CRESOL	0.00010	0.000091	0.000036	0.00020
A	3,3'-Dichlorobenzidine	91-94-1	0.00010	0.000078	0.000044	0.00020
A	3-Nitroaniline	99-09-2	0.00010	0.00011	0.000049	0.00020
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000090	0.000020	0.00020
A	4-Bromophenyl phenyl ether	101-55-3	0.00010	0.000082	0.000051	0.00020
A	4-Chloro-3-methylphenol	59-50-7	0.00010	0.000093	0.000032	0.00020
A	4-Chloroaniline	106-47-8	0.00010	0.000079	0.000039	0.00020
A	4-Chlorophenyl phenyl ether	7005-72-3	0.00010	0.000086	0.000044	0.00020
A	4-Nitroaniline	100-01-6	0.00010	0.00010	0.000035	0.00020
A	4-Nitrophenol	100-02-7	0.00010	0.000062	0.000047	0.0010
A	Acenaphthene	83-32-9	0.000050	0.000055	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000054	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.000057	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.000050	0.000056	0.000050	0.00010
A	Benzidine	92-87-5	0.00010	0.000066	0.00010	0.00020
A	Benzo(a)pyrene	50-32-8	0.000050	0.000048	0.000020	0.00010
A	Benzo(b)fluoranthene	205-99-2	0.000050	0.000041	0.000023	0.00010
A	Benzo(g,h,i)perylene	191-24-2	0.000050	0.000044	0.000014	0.00010
A	Benzo(k)fluoranthene	207-08-9	0.000050	0.000050	0.000019	0.00010
A	Benzyl alcohol	100-51-6	0.00010	0.000098	0.000054	0.00020
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.000087	0.000030	0.00020
A	Bis(2-chloroethyl)ether	111-44-4	0.00010	0.000088	0.000026	0.00020
A	Bis(2-chloroisopropyl)ether	108-60-1	0.00010	0.00013	0.000070	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.000058	0.000037	0.00020
A	Butyl benzyl phthalate	85-68-7	0.00010	0.000086	0.000019	0.00020
A	Carbazole	86-74-8	0.00010	0.00011	0.000025	0.00020

WorkOrder: HS20121076
 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	Chrysene	218-01-9	0.000050	0.000064	0.000021	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.000090	0.000020	0.00020
A	Di-n-octyl phthalate	117-84-0	0.00010	0.000061	0.000020	0.00020
A	Dibenz(a,h)anthracene	53-70-3	0.000050	0.000039	0.000024	0.00010
A	Dibenzofuran	132-64-9	0.000050	0.000056	0.000020	0.00010
A	Diethyl phthalate	84-66-2	0.00010	0.00010	0.000030	0.00020
A	Dimethyl phthalate	131-11-3	0.00010	0.000097	0.000041	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000056	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.000055	0.000030	0.00010
A	Hexachlorobenzene	118-74-1	0.00010	0.000085	0.000044	0.00020
A	Hexachlorobutadiene	87-68-3	0.00010	0.000072	0.000030	0.00020
A	Hexachlorocyclopentadiene	77-47-4	0.00010	0.000094	0.000030	0.00020
A	Hexachloroethane	67-72-1	0.00010	0.00010	0.000059	0.00020
A	Indeno(1,2,3-cd)pyrene	193-39-5	0.000050	0.000032	0.000022	0.00010
A	Isophorone	78-59-1	0.00010	0.000097	0.000025	0.00020
A	N-Nitrosodi-n-propylamine	621-64-7	0.00010	0.00011	0.000032	0.00020
A	N-Nitrosodimethylamine	62-75-9	0.00020	0.00030	0.00010	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.000083	0.000025	0.00020
A	Naphthalene	91-20-3	0.000050	0.000053	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.00011	0.000024	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.000068	0.000079	0.00020
A	Phenanthrene	85-01-8	0.000050	0.000061	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.000092	0.000035	0.00020
A	Pyrene	129-00-0	0.000050	0.000052	0.000019	0.00010
A	Pyridine	110-86-1	0.00010	0.00010	0.000030	0.0010
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0.00020
S	2-Fluorobiphenyl	321-60-8	0	0	0	0.00020
S	2-Fluorophenol	367-12-4	0	0	0	0.00020
S	4-Terphenyl-d14	1718-51-0	0	0	0	0.00020
S	Nitrobenzene-d5	4165-60-0	0	0	0	0.00020
S	Phenol-d6	13127-88-3	0	0	0	0.00020

WorkOrder: HS20121076
 InstrumentID: VOA9
 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	1,1,1-Trichloroethane	71-55-6	0.00050	0.00050	0.00020	0.0010
A	1,1,2,2-Tetrachloroethane	79-34-5	0.0010	0.0010	0.00050	0.0010
A	1,1,2-Trichloroethane	79-00-5	0.0010	0.00097	0.00030	0.0010
A	1,1-Dichloroethane	75-34-3	0.00050	0.00055	0.00020	0.0010
A	1,1-Dichloroethene	75-35-4	0.00050	0.00061	0.00020	0.0010
A	1,2-Dichlorobenzene	95-50-1	0.0010	0.0010	0.00050	0.0010
A	1,2-Dichloroethane	107-06-2	0.00050	0.00064	0.00020	0.0010
A	1,2-Dichloropropane	78-87-5	0.0010	0.0010	0.00050	0.0010
A	1,3-Dichlorobenzene	541-73-1	0.0010	0.0011	0.00040	0.0010
A	1,4-Dichlorobenzene	106-46-7	0.0010	0.0012	0.00040	0.0010
A	2-Butanone	78-93-3	0.0010	0.0013	0.00050	0.0020
A	2-Hexanone	591-78-6	0.0020	0.0019	0.0010	0.0020
A	4-Methyl-2-pentanone	108-10-1	0.0020	0.0011	0.00070	0.0020
A	Acetone	67-64-1	0.0020	0.0018	0.0020	0.0020
A	Benzene	71-43-2	0.00050	0.00057	0.00020	0.0010
A	Bromochloromethane	74-97-5	0.00050	0.00055	0.00020	0.0010
A	Bromodichloromethane	75-27-4	0.00050	0.00048	0.00020	0.0010
A	Bromoform	75-25-2	0.0010	0.00082	0.00040	0.0010
A	Bromomethane	74-83-9	0.0010	0.0014	0.00040	0.0010
A	Carbon disulfide	75-15-0	0.0020	0.0023	0.00060	0.0020
A	Carbon tetrachloride	56-23-5	0.0010	0.00087	0.00050	0.0010
A	Chlorobenzene	108-90-7	0.0010	0.0010	0.00030	0.0010
A	Chloroethane	75-00-3	0.0010	0.00087	0.00030	0.0010
A	Chloroform	67-66-3	0.00050	0.00053	0.00020	0.0010
A	Chloromethane	74-87-3	0.00050	0.0011	0.00020	0.0010
A	cis-1,2-Dichloroethene	156-59-2	0.00050	0.00056	0.00020	0.0010
A	cis-1,3-Dichloropropene	10061-01-5	0.00040	0.00048	0.00010	0.0010
A	Dibromochloromethane	124-48-1	0.0010	0.00086	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.0010	0.0010	0.00030	0.0010
A	m,p-Xylene	179601-23-1	0.0010	0.0011	0.00050	0.0020
A	Methylene chloride	75-09-2	0.0020	0.0030	0.0010	0.0020
A	o-Xylene	95-47-6	0.0010	0.00093	0.00030	0.0010
A	Styrene	100-42-5	0.0010	0.00092	0.00030	0.0010
A	Tetrachloroethene	127-18-4	0.0010	0.0013	0.00030	0.0010
A	Toluene	108-88-3	0.00050	0.00058	0.00020	0.0010
A	trans-1,2-Dichloroethene	156-60-5	0.00050	0.00065	0.00020	0.0010
A	trans-1,3-Dichloropropene	10061-02-6	0.00050	0.00048	0.00020	0.0010
A	Trichloroethene	79-01-6	0.00050	0.00061	0.00020	0.0010
A	Vinyl acetate	108-05-4	0.0010	0.0011	0.00050	0.0010
A	Vinyl chloride	75-01-4	0.00050	0.00061	0.00020	0.0010

WorkOrder: HS20121076
 InstrumentID: VOA9
 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	Xylenes, Total	1330-20-7	0.0010	0.0030	0.00030	0.0010
A	1,2-Dichloroethene, Total	540-59-0	0.00050	0.0012	0.00020	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

WorkOrder: HS20121076
InstrumentID: UV-2450
Test Code: CN_TW_9014
Test Number: SW9014
Test Name: Cyanide - SW9014

**METHOD DETECTION /
REPORTING LIMITS**

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

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Cyanide	57-12-5	0.00500	0.00600	0.00200	0.00500

WorkOrder: HS20121076 **METHOD DETECTION /**
 InstrumentID: WetChem_HS **REPORTING LIMITS**
 Test Code: IGN_W
 Test Number: SW1010
 Test Name: Flash Point by Pensky-Martens **Matrix:** Aqueous **Units:** °F

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Ignitability	IGNIT	70.0	70.0	70.0	70.0

WorkOrder: HS20121076
 InstrumentID: WetChem_HS
 Test Code: pH_W_9040C
 Test Number: SW9040C
 Test Name: pH by SW9040C

**METHOD DETECTION /
 REPORTING LIMITS**

Matrix: Aqueous

Units: pH Units

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	pH	PH	0.100	0.100	0.100	0.100
A	Temp Deg C @pH	TEMP	0	0	0	0

WorkOrder: HS20121076
 InstrumentID: WetChem_HS
 Test Code: SULFD_4500S F
 Test Number: SM4500 S2-F
 Test Name: Sulfide by SM4500 S2-F

**METHOD DETECTION /
 REPORTING LIMITS**

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

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Sulfide	18496-25-8	1.00	1.00	1.00	1.00

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20121076

QC BATCH REPORT

Batch ID: 161002 (0) **Instrument:** FID-12 **Method:** LOW-LEVEL TEXAS TPH BY TX1005

MBLK		Sample ID: MBLK-161002		Units: mg/L		Analysis Date: 23-Dec-2020 15:13				
Client ID:		Run ID: FID-12_375294		SeqNo: 5896464		PrepDate: 23-Dec-2020		DF: 1		
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	< 0.20	0.50								
>nC12 to nC28	< 0.20	0.50								
>nC28 to nC35	< 0.20	0.50								
Total Petroleum Hydrocarbon	< 0.20	0.50								
Surr: 2-Fluorobiphenyl	2.414	0	2.5	0	96.6	70 - 130				
Surr: Trifluoromethyl benzene	2.709	0	2.5	0	108	70 - 130				

LCS		Sample ID: LCS-161002		Units: mg/L		Analysis Date: 23-Dec-2020 15:43				
Client ID:		Run ID: FID-12_375294		SeqNo: 5896465		PrepDate: 23-Dec-2020		DF: 1		
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	24.23	0.50	25	0	96.9	75 - 125				
>nC12 to nC28	29.12	0.50	25	0	116	75 - 125				
Surr: 2-Fluorobiphenyl	2.869	0	2.5	0	115	70 - 130				
Surr: Trifluoromethyl benzene	2.745	0	2.5	0	110	70 - 130				

LCSD		Sample ID: LCSD-161002		Units: mg/L		Analysis Date: 23-Dec-2020 16:12				
Client ID:		Run ID: FID-12_375294		SeqNo: 5896466		PrepDate: 23-Dec-2020		DF: 1		
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	23.28	0.50	25	0	93.1	75 - 125	24.23	3.99	20	
>nC12 to nC28	28.63	0.50	25	0	115	75 - 125	29.12	1.69	20	
Surr: 2-Fluorobiphenyl	2.754	0	2.5	0	110	70 - 130	2.869	4.08	20	
Surr: Trifluoromethyl benzene	2.661	0	2.5	0	106	70 - 130	2.745	3.09	20	

MS		Sample ID: HS20121124-01MS		Units: mg/L		Analysis Date: 23-Dec-2020 17:12				
Client ID:		Run ID: FID-12_375294		SeqNo: 5896468		PrepDate: 23-Dec-2020		DF: 1		
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	23.43	0.51	25.42	0	92.2	75 - 125				
>nC12 to nC28	28.78	0.51	25.42	0	113	75 - 125				
Surr: 2-Fluorobiphenyl	2.757	0	2.542	0	108	70 - 130				
Surr: Trifluoromethyl benzene	2.659	0	2.542	0	105	70 - 130				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20121076

QC BATCH REPORT

Batch ID: 161002 (0)		Instrument: FID-12		Method: LOW-LEVEL TEXAS TPH BY TX1005					
MSD	Sample ID: HS20121124-01MSD	Units: mg/L			Analysis Date: 23-Dec-2020 17:41				
Client ID:	Run ID: FID-12_375294	SeqNo: 5896469		PrepDate: 23-Dec-2020		DF: 1			
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

nC6 to nC12	23.96	0.50	25.18	0	95.2	75 - 125	23.43	2.24	20
>nC12 to nC28	31.19	0.50	25.18	0	124	75 - 125	28.78	8.02	20
<i>Surr: 2-Fluorobiphenyl</i>	2.85	0	2.518	0	113	70 - 130	2.757	3.33	20
<i>Surr: Trifluoromethyl benzene</i>	2.693	0	2.518	0	107	70 - 130	2.659	1.26	20

The following samples were analyzed in this batch: HS20121076-01

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20121076

QC BATCH REPORT

Batch ID: 161187 (0) **Instrument:** ICPMS05 **Method:** ICP-MS METALS BY SW6020A

MBLK		Sample ID: MBLK-161187		Units: mg/L		Analysis Date: 31-Dec-2020 12:20			
Client ID:		Run ID: ICPMS05_375725		SeqNo: 5906596		PrepDate: 30-Dec-2020		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Antimony	< 0.000400	0.00200							
Arsenic	< 0.000400	0.00200							
Barium	< 0.00190	0.00400							
Beryllium	< 0.000200	0.00200							
Cadmium	< 0.000200	0.00200							
Chromium	< 0.000400	0.00400							
Lead	< 0.000600	0.00200							
Nickel	< 0.000600	0.00200							
Selenium	< 0.00110	0.00200							
Silver	< 0.000200	0.00200							

LCS		Sample ID: LCS-161187		Units: mg/L		Analysis Date: 31-Dec-2020 12:22			
Client ID:		Run ID: ICPMS05_375725		SeqNo: 5906597		PrepDate: 30-Dec-2020		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Antimony	0.04796	0.00200	0.05	0	95.9	80 - 120			
Arsenic	0.05006	0.00200	0.05	0	100	80 - 120			
Barium	0.04521	0.00400	0.05	0	90.4	80 - 120			
Beryllium	0.04833	0.00200	0.05	0	96.7	80 - 120			
Cadmium	0.04781	0.00200	0.05	0	95.6	80 - 120			
Chromium	0.04618	0.00400	0.05	0	92.4	80 - 120			
Lead	0.04366	0.00200	0.05	0	87.3	80 - 120			
Nickel	0.04746	0.00200	0.05	0	94.9	80 - 120			
Selenium	0.05597	0.00200	0.05	0	112	80 - 120			
Silver	0.04623	0.00200	0.05	0	92.5	80 - 120			

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20121076

QC BATCH REPORT

Batch ID: 161187 (0)		Instrument: ICPMS05			Method: ICP-MS METALS BY SW6020A					
MS	Sample ID: HS20120903-01MS	Units: mg/L			Analysis Date: 31-Dec-2020 12:50					
Client ID:	Run ID: ICPMS05_375725	SeqNo: 5906603		PrepDate: 30-Dec-2020		DF: 1				
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.04984	0.00200	0.05	-0.000094	99.9	80 - 120				
Arsenic	0.05228	0.00200	0.05	0.002538	99.5	80 - 120				
Barium	0.5528	0.00400	0.05	0.5439	17.7	80 - 120				SO
Beryllium	0.05062	0.00200	0.05	-0.000002	101	80 - 120				
Cadmium	0.04705	0.00200	0.05	0.000001	94.1	80 - 120				
Chromium	0.04852	0.00400	0.05	0.00221	92.6	80 - 120				
Lead	0.0453	0.00200	0.05	0.000016	90.6	80 - 120				
Nickel	0.04728	0.00200	0.05	0.000626	93.3	80 - 120				
Selenium	0.05927	0.00200	0.05	0.006395	106	80 - 120				
Silver	0.04532	0.00200	0.05	-0.000007	90.7	80 - 120				

MSD	Sample ID: HS20120903-01MSD	Units: mg/L			Analysis Date: 31-Dec-2020 12:52					
Client ID:	Run ID: ICPMS05_375725	SeqNo: 5906604		PrepDate: 30-Dec-2020		DF: 1				
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.04977	0.00200	0.05	-0.000094	99.7	80 - 120	0.04984	0.126	20	
Arsenic	0.05237	0.00200	0.05	0.002538	99.7	80 - 120	0.05228	0.17	20	
Barium	0.5577	0.00400	0.05	0.5439	27.5	80 - 120	0.5528	0.877	20	SO
Beryllium	0.05109	0.00200	0.05	-0.000002	102	80 - 120	0.05062	0.928	20	
Cadmium	0.04808	0.00200	0.05	0.000001	96.2	80 - 120	0.04705	2.17	20	
Chromium	0.0483	0.00400	0.05	0.00221	92.2	80 - 120	0.04852	0.463	20	
Lead	0.04464	0.00200	0.05	0.000016	89.2	80 - 120	0.0453	1.47	20	
Nickel	0.04656	0.00200	0.05	0.000626	91.9	80 - 120	0.04728	1.53	20	
Selenium	0.05791	0.00200	0.05	0.006395	103	80 - 120	0.05927	2.33	20	
Silver	0.04623	0.00200	0.05	-0.000007	92.5	80 - 120	0.04532	1.98	20	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20121076

QC BATCH REPORT

Batch ID: 161187 (0)		Instrument: ICPMS05		Method: ICP-MS METALS BY SW6020A					
PDS	Sample ID: HS20120903-01PDS	Units: mg/L			Analysis Date: 31-Dec-2020 12:54				
Client ID:	Run ID: ICPMS05_375725	SeqNo: 5906605	PrepDate: 30-Dec-2020	DF: 1					
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

Antimony	0.09775	0.00200	0.1	-0.000094	97.8	75 - 125			
Arsenic	0.1101	0.00200	0.1	0.002538	108	75 - 125			
Barium	0.6491	0.00400	0.1	0.5439	105	75 - 125			O
Beryllium	0.1053	0.00200	0.1	-0.000002	105	75 - 125			
Cadmium	0.1049	0.00200	0.1	0.000001	105	75 - 125			
Chromium	0.1014	0.00400	0.1	0.00221	99.2	75 - 125			
Lead	0.09588	0.00200	0.1	0.000016	95.9	75 - 125			
Nickel	0.09908	0.00200	0.1	0.000626	98.5	75 - 125			
Selenium	0.1223	0.00200	0.1	0.006395	116	75 - 125			
Silver	0.1	0.00200	0.1	-0.000007	100	75 - 125			

SD	Sample ID: HS20120903-01SD	Units: mg/L			Analysis Date: 31-Dec-2020 12:48				
Client ID:	Run ID: ICPMS05_375725	SeqNo: 5906602	PrepDate: 30-Dec-2020	DF: 5					
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit Qual
Antimony	< 0.00200	0.0100					-0.000094	0	10
Arsenic	0.002867	0.0100					0.002538	0	10 J
Barium	0.4745	0.0200					0.5439	12.8	10 R
Beryllium	< 0.00100	0.0100					-0.000002	0	10
Cadmium	< 0.00100	0.0100					0.000001	0	10
Chromium	0.002197	0.0200					0.00221	0	10 J
Lead	< 0.00300	0.0100					0.000016	0	10
Nickel	< 0.00300	0.0100					0.000626	0	10
Selenium	< 0.00550	0.0100					0.006395	0	10
Silver	< 0.00100	0.0100					-0.000007	0	10

The following samples were analyzed in this batch: HS20121076-01

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20121076

QC BATCH REPORT

Batch ID: 161270 (0)	Instrument: HG03	Method: MERCURY BY SW7470A
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MBLK	Sample ID: MBLK-161270	Units: mg/L	Analysis Date: 04-Jan-2021 13:57							
Client ID:	Run ID: HG03_375805	SeqNo: 5908245	PrepDate: 04-Jan-2021 DF: 1							
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Mercury < 0.0000300 0.000200

LCS	Sample ID: LCS-161270	Units: mg/L	Analysis Date: 04-Jan-2021 14:01							
Client ID:	Run ID: HG03_375805	SeqNo: 5908246	PrepDate: 04-Jan-2021 DF: 1							
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Mercury 0.00504 0.000200 0.005 0 101 80 - 120

MS	Sample ID: HS20121017-05MS	Units: mg/L	Analysis Date: 04-Jan-2021 14:29							
Client ID:	Run ID: HG03_375805	SeqNo: 5908303	PrepDate: 04-Jan-2021 DF: 1							
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Mercury 0.00404 0.000200 0.005 0 80.8 75 - 125

MSD	Sample ID: HS20121017-05MSD	Units: mg/L	Analysis Date: 04-Jan-2021 14:09							
Client ID:	Run ID: HG03_375805	SeqNo: 5908249	PrepDate: 04-Jan-2021 DF: 1							
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Mercury 0.00393 0.000200 0.005 0 78.6 75 - 125 0.00404 2.76 20

The following samples were analyzed in this batch: HS20121076-01

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20121076

QC BATCH REPORT

Batch ID: 160999 (0)		Instrument: SV-8		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
MBLK	Sample ID: MBLK-160999	Units: ug/L			Analysis Date: 28-Dec-2020 10:21					
Client ID:	Run ID: SV-8_375463	SeqNo: 5900305	PrepDate: 23-Dec-2020	DF: 1						
Analyte	Result	SQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	< 0.030	0.20								
2,4,5-Trichlorophenol	< 0.057	0.20								
2,4,6-Trichlorophenol	< 0.048	0.20								
2,4-Dichlorophenol	< 0.043	0.20								
2,4-Dimethylphenol	< 0.040	0.20								
2,4-Dinitrophenol	< 0.10	1.0								
2,4-Dinitrotoluene	< 0.058	0.20								
2,6-Dinitrotoluene	< 0.042	0.20								
2-Chloronaphthalene	< 0.021	0.20								
2-Chlorophenol	< 0.036	0.20								
2-Methylnaphthalene	< 0.019	0.10								
2-Methylphenol	< 0.045	0.20								
2-Nitroaniline	< 0.041	0.20								
2-Nitrophenol	< 0.034	0.20								
3&4-Methylphenol	< 0.036	0.20								
3,3'-Dichlorobenzidine	< 0.044	0.20								
3-Nitroaniline	< 0.049	0.20								
4,6-Dinitro-2-methylphenol	< 0.020	0.20								
4-Bromophenyl phenyl ether	< 0.051	0.20								
4-Chloro-3-methylphenol	< 0.032	0.20								
4-Chloroaniline	< 0.039	0.20								
4-Chlorophenyl phenyl ether	< 0.044	0.20								
4-Nitroaniline	< 0.035	0.20								
4-Nitrophenol	< 0.047	1.0								
Acenaphthene	< 0.027	0.10								
Acenaphthylene	< 0.015	0.10								
Anthracene	< 0.014	0.10								
Benz(a)anthracene	< 0.050	0.10								
Benzidine	< 0.10	0.20								
Benzo(a)pyrene	< 0.020	0.10								
Benzo(b)fluoranthene	< 0.023	0.10								
Benzo(g,h,i)perylene	< 0.014	0.10								
Benzo(k)fluoranthene	< 0.019	0.10								
Benzyl alcohol	< 0.054	0.20								

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20121076

QC BATCH REPORT

Batch ID: 160999 (0)		Instrument: SV-8		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
MBLK	Sample ID: MBLK-160999	Units: ug/L			Analysis Date: 28-Dec-2020 10:21					
Client ID:	Run ID: SV-8_375463	SeqNo: 5900305		PrepDate: 23-Dec-2020		DF: 1				
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual	
Bis(2-chloroethoxy)methane	< 0.030	0.20								
Bis(2-chloroethyl)ether	< 0.026	0.20								
Bis(2-chloroisopropyl)ether	< 0.070	0.20								
Bis(2-ethylhexyl)phthalate	< 0.037	0.20								
Butyl benzyl phthalate	< 0.019	0.20								
Carbazole	< 0.025	0.20								
Chrysene	< 0.021	0.10								
Dibenz(a,h)anthracene	< 0.024	0.10								
Dibenzofuran	< 0.020	0.10								
Diethyl phthalate	< 0.030	0.20								
Dimethyl phthalate	< 0.041	0.20								
Di-n-butyl phthalate	< 0.020	0.20								
Di-n-octyl phthalate	< 0.020	0.20								
Fluoranthene	< 0.010	0.10								
Fluorene	< 0.030	0.10								
Hexachlorobenzene	< 0.044	0.20								
Hexachlorobutadiene	< 0.030	0.20								
Hexachlorocyclopentadiene	< 0.030	0.20								
Hexachloroethane	< 0.059	0.20								
Indeno(1,2,3-cd)pyrene	< 0.022	0.10								
Isophorone	< 0.025	0.20								
Naphthalene	< 0.020	0.10								
Nitrobenzene	< 0.024	0.20								
N-Nitrosodimethylamine	< 0.10	0.20								
N-Nitrosodi-n-propylamine	< 0.032	0.20								
N-Nitrosodiphenylamine	< 0.025	0.20								
Pentachlorophenol	< 0.079	0.20								
Phenanthrene	< 0.021	0.10								
Phenol	< 0.035	0.20								
Pyrene	< 0.019	0.10								
Pyridine	< 0.030	1.0								
<i>Surr: 2,4,6-Tribromophenol</i>	<i>2.771</i>	<i>0.20</i>	<i>5</i>	<i>0</i>	<i>55.4</i>	<i>34 - 129</i>				
<i>Surr: 2-Fluorobiphenyl</i>	<i>3.95</i>	<i>0.20</i>	<i>5</i>	<i>0</i>	<i>79.0</i>	<i>40 - 125</i>				
<i>Surr: 2-Fluorophenol</i>	<i>4.172</i>	<i>0.20</i>	<i>5</i>	<i>0</i>	<i>83.4</i>	<i>20 - 120</i>				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20121076

QC BATCH REPORT

Batch ID: 160999 (0)		Instrument: SV-8		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
MBLK	Sample ID: MBLK-160999	Units: ug/L			Analysis Date: 28-Dec-2020 10:21					
Client ID:	Run ID: SV-8_375463	SeqNo: 5900305		PrepDate: 23-Dec-2020		DF: 1				
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	
<i>Surr: 4-Terphenyl-d14</i>	4.123	0.20	5	0	82.5	40 - 135				
<i>Surr: Nitrobenzene-d5</i>	4.253	0.20	5	0	85.1	41 - 120				
<i>Surr: Phenol-d6</i>	4.182	0.20	5	0	83.6	20 - 120				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20121076

QC BATCH REPORT

Batch ID: 160999 (0)		Instrument: SV-8		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
LCS	Sample ID: LCS-160999	Units: ug/L			Analysis Date: 28-Dec-2020 10:40					
Client ID:	Run ID: SV-8_375463	SeqNo: 5900306		PrepDate: 23-Dec-2020		DF: 1				
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	
1,2,4-Trichlorobenzene	2.832	0.20	5	0	56.6	45 - 120				
2,4,5-Trichlorophenol	3.429	0.20	5	0	68.6	46 - 120				
2,4,6-Trichlorophenol	3.332	0.20	5	0	66.6	42 - 120				
2,4-Dichlorophenol	3.137	0.20	5	0	62.7	49 - 120				
2,4-Dimethylphenol	3.634	0.20	5	0	72.7	35 - 120				
2,4-Dinitrophenol	3.744	1.0	5	0	74.9	15 - 120				
2,4-Dinitrotoluene	3.939	0.20	5	0	78.8	50 - 122				
2,6-Dinitrotoluene	4.08	0.20	5	0	81.6	50 - 120				
2-Chloronaphthalene	3.8	0.20	5	0	76.0	50 - 120				
2-Chlorophenol	4.15	0.20	5	0	83.0	40 - 120				
2-Methylnaphthalene	3.422	0.10	5	0	68.4	50 - 120				
2-Methylphenol	4.34	0.20	5	0	86.8	45 - 120				
2-Nitroaniline	5.894	0.20	5	0	118	28 - 139				
2-Nitrophenol	3.665	0.20	5	0	73.3	40 - 120				
3&4-Methylphenol	4.388	0.20	5	0	87.8	35 - 120				
3,3'-Dichlorobenzidine	3.391	0.20	5	0	67.8	15 - 120				
3-Nitroaniline	4.505	0.20	5	0	90.1	30 - 120				
4,6-Dinitro-2-methylphenol	3.764	0.20	5	0	75.3	25 - 121				
4-Bromophenyl phenyl ether	3.255	0.20	5	0	65.1	45 - 120				
4-Chloro-3-methylphenol	3.762	0.20	5	0	75.2	47 - 120				
4-Chloroaniline	3.777	0.20	5	0	75.5	20 - 120				
4-Chlorophenyl phenyl ether	3.233	0.20	5	0	64.7	50 - 120				
4-Nitroaniline	4.571	0.20	5	0	91.4	30 - 133				
4-Nitrophenol	3.769	1.0	5	0	75.4	30 - 130				
Acenaphthene	3.918	0.10	5	0	78.4	45 - 120				
Acenaphthylene	3.923	0.10	5	0	78.5	47 - 120				
Anthracene	3.836	0.10	5	0	76.7	45 - 120				
Benz(a)anthracene	3.596	0.10	5	0	71.9	40 - 120				
Benzidine	2.192	0.20	5	0	43.8	10 - 120				
Benzo(a)pyrene	3.96	0.10	5	0	79.2	45 - 120				
Benzo(b)fluoranthene	4.126	0.10	5	0	82.5	50 - 120				
Benzo(g,h,i)perylene	3.578	0.10	5	0	71.6	42 - 127				
Benzo(k)fluoranthene	3.911	0.10	5	0	78.2	45 - 127				
Benzyl alcohol	4.203	0.20	5	0	84.1	35 - 122				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20121076

QC BATCH REPORT

Batch ID: 160999 (0)		Instrument: SV-8		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
LCS	Sample ID: LCS-160999	Units: ug/L			Analysis Date: 28-Dec-2020 10:40					
Client ID:	Run ID: SV-8_375463	SeqNo: 5900306		PrepDate: 23-Dec-2020		DF: 1				
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bis(2-chloroethoxy)methane	4.187	0.20	5	0	83.7	45 - 120				
Bis(2-chloroethyl)ether	4.716	0.20	5	0	94.3	37 - 121				
Bis(2-chloroisopropyl)ether	4.642	0.20	5	0	92.8	40 - 120				
Bis(2-ethylhexyl)phthalate	5.091	0.20	5	0	102	40 - 139				
Butyl benzyl phthalate	5.033	0.20	5	0	101	47 - 123				
Carbazole	4.192	0.20	5	0	83.8	42 - 128				
Chrysene	4.098	0.10	5	0	82.0	43 - 120				
Dibenz(a,h)anthracene	3.519	0.10	5	0	70.4	45 - 125				
Dibenzofuran	3.706	0.10	5	0	74.1	50 - 120				
Diethyl phthalate	4.103	0.20	5	0	82.1	41 - 120				
Dimethyl phthalate	3.782	0.20	5	0	75.6	40 - 122				
Di-n-butyl phthalate	4.942	0.20	5	0	98.8	45 - 123				
Di-n-octyl phthalate	5.339	0.20	5	0	107	45 - 129				
Fluoranthene	3.755	0.10	5	0	75.1	45 - 125				
Fluorene	3.764	0.10	5	0	75.3	49 - 120				
Hexachlorobenzene	3.244	0.20	5	0	64.9	48 - 120				
Hexachlorobutadiene	2.504	0.20	5	0	50.1	40 - 120				
Hexachlorocyclopentadiene	2.73	0.20	5	0	54.6	34 - 136				
Hexachloroethane	4.126	0.20	5	0	82.5	40 - 120				
Indeno(1,2,3-cd)pyrene	3.645	0.10	5	0	72.9	41 - 128				
Isophorone	3.899	0.20	5	0	78.0	40 - 121				
Naphthalene	3.576	0.10	5	0	71.5	45 - 120				
Nitrobenzene	3.715	0.20	5	0	74.3	44 - 120				
N-Nitrosodimethylamine	4.601	0.20	5	0	92.0	30 - 121				
N-Nitrosodi-n-propylamine	4.41	0.20	5	0	88.2	40 - 120				
N-Nitrosodiphenylamine	3.93	0.20	5	0	78.6	40 - 125				
Pentachlorophenol	3.598	0.20	5	0	72.0	19 - 121				
Phenanthrene	3.786	0.10	5	0	75.7	45 - 121				
Phenol	4.47	0.20	5	0	89.4	20 - 124				
Pyrene	4.077	0.10	5	0	81.5	40 - 130				
Pyridine	3.683	1.0	5	0	73.7	15 - 120				
Surr: 2,4,6-Tribromophenol	2.967	0.20	5	0	59.3	34 - 129				
Surr: 2-Fluorobiphenyl	3.84	0.20	5	0	76.8	40 - 125				
Surr: 2-Fluorophenol	3.966	0.20	5	0	79.3	20 - 120				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20121076

QC BATCH REPORT

Batch ID: 160999 (0)		Instrument: SV-8		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
LCS	Sample ID: LCS-160999	Units: ug/L			Analysis Date: 28-Dec-2020 10:40					
Client ID:	Run ID: SV-8_375463	SeqNo: 5900306		PrepDate: 23-Dec-2020		DF: 1				
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual	
<i>Surr: 4-Terphenyl-d14</i>	4.225	0.20	5	0	84.5	40 - 135				
<i>Surr: Nitrobenzene-d5</i>	4.186	0.20	5	0	83.7	41 - 120				
<i>Surr: Phenol-d6</i>	4.246	0.20	5	0	84.9	20 - 120				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20121076

QC BATCH REPORT

Batch ID: 160999 (0)		Instrument: SV-8		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
LCSD	Sample ID: LCSD-160999	Units: ug/L			Analysis Date: 28-Dec-2020 11:00					
Client ID:	Run ID: SV-8_375463	SeqNo: 5900307		PrepDate: 23-Dec-2020		DF: 1				
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	2.79	0.20	5	0	55.8	45 - 120	2.832	1.48	20	
2,4,5-Trichlorophenol	3.227	0.20	5	0	64.5	46 - 120	3.429	6.08	20	
2,4,6-Trichlorophenol	3.401	0.20	5	0	68.0	42 - 120	3.332	2.04	20	
2,4-Dichlorophenol	3.142	0.20	5	0	62.8	49 - 120	3.137	0.166	20	
2,4-Dimethylphenol	3.567	0.20	5	0	71.3	35 - 120	3.634	1.85	20	
2,4-Dinitrophenol	3.85	1.0	5	0	77.0	15 - 120	3.744	2.79	50	
2,4-Dinitrotoluene	3.858	0.20	5	0	77.2	50 - 122	3.939	2.07	20	
2,6-Dinitrotoluene	3.905	0.20	5	0	78.1	50 - 120	4.08	4.39	20	
2-Chloronaphthalene	3.743	0.20	5	0	74.9	50 - 120	3.8	1.52	20	
2-Chlorophenol	3.985	0.20	5	0	79.7	40 - 120	4.15	4.06	20	
2-Methylnaphthalene	3.461	0.10	5	0	69.2	50 - 120	3.422	1.13	20	
2-Methylphenol	4.303	0.20	5	0	86.1	45 - 120	4.34	0.843	20	
2-Nitroaniline	5.781	0.20	5	0	116	28 - 139	5.894	1.94	20	
2-Nitrophenol	3.601	0.20	5	0	72.0	40 - 120	3.665	1.76	20	
3&4-Methylphenol	4.397	0.20	5	0	87.9	35 - 120	4.388	0.185	20	
3,3'-Dichlorobenzidine	3.444	0.20	5	0	68.9	15 - 120	3.391	1.54	20	
3-Nitroaniline	4.352	0.20	5	0	87.0	30 - 120	4.505	3.46	20	
4,6-Dinitro-2-methylphenol	3.92	0.20	5	0	78.4	25 - 121	3.764	4.06	30	
4-Bromophenyl phenyl ether	3.085	0.20	5	0	61.7	45 - 120	3.255	5.35	20	
4-Chloro-3-methylphenol	3.891	0.20	5	0	77.8	47 - 120	3.762	3.39	20	
4-Chloroaniline	3.73	0.20	5	0	74.6	20 - 120	3.777	1.26	20	
4-Chlorophenyl phenyl ether	3.192	0.20	5	0	63.8	50 - 120	3.233	1.29	20	
4-Nitroaniline	4.399	0.20	5	0	88.0	30 - 133	4.571	3.84	20	
4-Nitrophenol	3.786	1.0	5	0	75.7	30 - 130	3.769	0.453	20	
Acenaphthene	3.534	0.10	5	0	70.7	45 - 120	3.918	10.3	20	
Acenaphthylene	3.797	0.10	5	0	75.9	47 - 120	3.923	3.26	20	
Anthracene	3.84	0.10	5	0	76.8	45 - 120	3.836	0.109	20	
Benz(a)anthracene	3.768	0.10	5	0	75.4	40 - 120	3.596	4.65	20	
Benzidine	2.197	0.20	5	0	43.9	10 - 120	2.192	0.245	30	
Benzo(a)pyrene	3.945	0.10	5	0	78.9	45 - 120	3.96	0.369	20	
Benzo(b)fluoranthene	4.146	0.10	5	0	82.9	50 - 120	4.126	0.482	20	
Benzo(g,h,i)perylene	3.65	0.10	5	0	73.0	42 - 127	3.578	1.98	20	
Benzo(k)fluoranthene	3.972	0.10	5	0	79.4	45 - 127	3.911	1.55	20	
Benzyl alcohol	4.314	0.20	5	0	86.3	35 - 122	4.203	2.61	20	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20121076

QC BATCH REPORT

Batch ID: 160999 (0)		Instrument: SV-8		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
LCSD		Sample ID: LCSD-160999		Units: ug/L		Analysis Date: 28-Dec-2020 11:00				
Client ID:		Run ID: SV-8_375463		SeqNo: 5900307		PrepDate: 23-Dec-2020		DF: 1		
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bis(2-chloroethoxy)methane	4.198	0.20	5	0	84.0	45 - 120	4.187	0.27	20	
Bis(2-chloroethyl)ether	4.724	0.20	5	0	94.5	37 - 121	4.716	0.168	20	
Bis(2-chloroisopropyl)ether	4.583	0.20	5	0	91.7	40 - 120	4.642	1.28	20	
Bis(2-ethylhexyl)phthalate	5.163	0.20	5	0	103	40 - 139	5.091	1.4	20	
Butyl benzyl phthalate	4.999	0.20	5	0	100.0	47 - 123	5.033	0.678	20	
Carbazole	4.254	0.20	5	0	85.1	42 - 128	4.192	1.48	20	
Chrysene	4	0.10	5	0	80.0	43 - 120	4.098	2.42	20	
Dibenz(a,h)anthracene	3.625	0.10	5	0	72.5	45 - 125	3.519	2.96	20	
Dibenzofuran	3.597	0.10	5	0	71.9	50 - 120	3.706	3	20	
Diethyl phthalate	4.023	0.20	5	0	80.5	41 - 120	4.103	1.97	20	
Dimethyl phthalate	3.712	0.20	5	0	74.2	40 - 122	3.782	1.87	20	
Di-n-butyl phthalate	5.019	0.20	5	0	100	45 - 123	4.942	1.54	20	
Di-n-octyl phthalate	5.406	0.20	5	0	108	45 - 129	5.339	1.25	20	
Fluoranthene	3.756	0.10	5	0	75.1	45 - 125	3.755	0.00514	20	
Fluorene	3.665	0.10	5	0	73.3	49 - 120	3.764	2.68	20	
Hexachlorobenzene	3.272	0.20	5	0	65.4	48 - 120	3.244	0.857	20	
Hexachlorobutadiene	2.568	0.20	5	0	51.4	40 - 120	2.504	2.55	20	
Hexachlorocyclopentadiene	2.533	0.20	5	0	50.7	34 - 136	2.73	7.47	20	
Hexachloroethane	3.984	0.20	5	0	79.7	40 - 120	4.126	3.5	20	
Indeno(1,2,3-cd)pyrene	3.724	0.10	5	0	74.5	41 - 128	3.645	2.15	20	
Isophorone	3.891	0.20	5	0	77.8	40 - 121	3.899	0.212	20	
Naphthalene	3.605	0.10	5	0	72.1	45 - 120	3.576	0.817	20	
Nitrobenzene	3.755	0.20	5	0	75.1	44 - 120	3.715	1.07	20	
N-Nitrosodimethylamine	4.689	0.20	5	0	93.8	30 - 121	4.601	1.89	20	
N-Nitrosodi-n-propylamine	4.49	0.20	5	0	89.8	40 - 120	4.41	1.8	20	
N-Nitrosodiphenylamine	3.965	0.20	5	0	79.3	40 - 125	3.93	0.899	20	
Pentachlorophenol	3.64	0.20	5	0	72.8	19 - 121	3.598	1.16	20	
Phenanthrene	3.887	0.10	5	0	77.7	45 - 121	3.786	2.65	20	
Phenol	4.479	0.20	5	0	89.6	20 - 124	4.47	0.212	20	
Pyrene	4.109	0.10	5	0	82.2	40 - 130	4.077	0.765	20	
Pyridine	3.851	1.0	5	0	77.0	15 - 120	3.683	4.48	20	
Surr: 2,4,6-Tribromophenol	2.948	0.20	5	0	59.0	34 - 129	2.967	0.662	20	
Surr: 2-Fluorobiphenyl	3.699	0.20	5	0	74.0	40 - 125	3.84	3.74	20	
Surr: 2-Fluorophenol	3.932	0.20	5	0	78.6	20 - 120	3.966	0.859	20	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20121076

QC BATCH REPORT

Batch ID: 160999 (0) **Instrument:** SV-8 **Method:** LOW-LEVEL SEMIVOLATILES BY 8270D

LCSD		Sample ID: LCSD-160999			Units: ug/L		Analysis Date: 28-Dec-2020 11:00			
Client ID:		Run ID: SV-8_375463			SeqNo: 5900307		PrepDate: 23-Dec-2020		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: 4-Terphenyl-d14	4.199	0.20	5	0	84.0	40 - 135	4.225	0.628	20	
Surr: Nitrobenzene-d5	4.07	0.20	5	0	81.4	41 - 120	4.186	2.81	20	
Surr: Phenol-d6	4.186	0.20	5	0	83.7	20 - 120	4.246	1.41	20	

The following samples were analyzed in this batch: HS20121076-01

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20121076

QC BATCH REPORT

Batch ID: R375858 (0)		Instrument: VOA9		Method: LOW LEVEL VOLATILES BY SW8260C						
MBLK	Sample ID: VBLKW-210104	Units: ug/L			Analysis Date: 04-Jan-2021 14:24					
Client ID:	Run ID: VOA9_375858	SeqNo: 5909650	PrepDate:	DF: 1						
Analyte	Result	SQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	< 0.20	1.0								
1,1,2,2-Tetrachloroethane	< 0.50	1.0								
1,1,2-Trichlor-1,2,2-trifluoroethane	< 0.50	1.0								
1,1,2-Trichloroethane	< 0.30	1.0								
1,1-Dichloroethane	< 0.20	1.0								
1,1-Dichloroethene	< 0.20	1.0								
1,2,4-Trichlorobenzene	< 0.50	1.0								
1,2-Dibromo-3-chloropropane	< 1.0	1.0								
1,2-Dibromoethane	< 0.20	1.0								
1,2-Dichlorobenzene	< 0.50	1.0								
1,2-Dichloroethane	< 0.20	1.0								
1,2-Dichloropropane	< 0.50	1.0								
1,3-Dichlorobenzene	< 0.40	1.0								
1,4-Dichlorobenzene	< 0.40	1.0								
2-Butanone	< 0.50	2.0								
2-Hexanone	< 1.0	2.0								
4-Methyl-2-pentanone	< 0.70	2.0								
Acetone	< 2.0	2.0								
Benzene	< 0.20	1.0								
Bromochloromethane	< 0.20	1.0								
Bromodichloromethane	< 0.20	1.0								
Bromoform	< 0.40	1.0								
Bromomethane	< 0.40	1.0								
Carbon disulfide	< 0.60	2.0								
Carbon tetrachloride	< 0.50	1.0								
Chlorobenzene	< 0.30	1.0								
Chloroethane	< 0.30	1.0								
Chloroform	< 0.20	1.0								
Chloromethane	< 0.20	1.0								
cis-1,2-Dichloroethene	< 0.20	1.0								
cis-1,3-Dichloropropene	< 0.10	1.0								
Cyclohexane	< 0.30	1.0								
Dibromochloromethane	< 0.30	1.0								
Dichlorodifluoromethane	< 0.30	1.0								

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20121076

QC BATCH REPORT

Batch ID: R375858 (0) **Instrument:** VOA9 **Method:** LOW LEVEL VOLATILES BY SW8260C

MBLK Sample ID: **VBLKW-210104** Units: **ug/L** Analysis Date: **04-Jan-2021 14:24**
 Client ID: Run ID: **VOA9_375858** SeqNo: **5909650** PrepDate: DF: **1**
 Analyte Result MQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %RPD RPD Limit Qual

Ethylbenzene	< 0.30	1.0								
Isopropylbenzene	< 0.30	1.0								
m,p-Xylene	< 0.50	2.0								
Methyl acetate	< 1.0	1.0								
Methyl tert-butyl ether	< 0.20	1.0								
Methylcyclohexane	< 0.30	1.0								
Methylene chloride	< 1.0	2.0								
o-Xylene	< 0.30	1.0								
Styrene	< 0.30	1.0								
Tetrachloroethene	< 0.30	1.0								
Toluene	< 0.20	1.0								
trans-1,2-Dichloroethene	< 0.20	1.0								
trans-1,3-Dichloropropene	< 0.20	1.0								
Trichloroethene	< 0.20	1.0								
Trichlorofluoromethane	< 0.30	1.0								
Vinyl acetate	< 0.50	1.0								
Vinyl chloride	< 0.20	1.0								
Xylenes, Total	< 0.30	1.0								
1,2-Dichloroethene, Total	< 0.20	1.0								
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>45.73</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>91.5</i>	<i>70 - 123</i>				
<i>Surr: 4-Bromofluorobenzene</i>	<i>47.77</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>95.5</i>	<i>82 - 115</i>				
<i>Surr: Dibromofluoromethane</i>	<i>46.63</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>93.3</i>	<i>73 - 126</i>				
<i>Surr: Toluene-d8</i>	<i>50.34</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>101</i>	<i>81 - 120</i>				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20121076

QC BATCH REPORT

Batch ID: R375858 (0)		Instrument: VOA9		Method: LOW LEVEL VOLATILES BY SW8260C						
LCS	Sample ID: VLCSW-210104	Units: ug/L			Analysis Date: 04-Jan-2021 13:42					
Client ID:	Run ID: VOA9_375858	SeqNo: 5909649	PrepDate:	DF: 1						
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	18.38	1.0	20	0	91.9	70 - 130				
1,1,2,2-Tetrachloroethane	19.45	1.0	20	0	97.2	70 - 120				
1,1,2-Trichlor-1,2,2-trifluoroethane	23.8	1.0	20	0	119	70 - 130				
1,1,2-Trichloroethane	18.84	1.0	20	0	94.2	77 - 113				
1,1-Dichloroethane	17.78	1.0	20	0	88.9	71 - 122				
1,1-Dichloroethene	20.2	1.0	20	0	101	70 - 130				
1,2,4-Trichlorobenzene	22.76	1.0	20	0	114	77 - 126				
1,2-Dibromo-3-chloropropane	21.52	1.0	20	0	108	70 - 130				
1,2-Dibromoethane	20.19	1.0	20	0	101	76 - 123				
1,2-Dichlorobenzene	19.69	1.0	20	0	98.5	77 - 113				
1,2-Dichloroethane	18.03	1.0	20	0	90.2	70 - 124				
1,2-Dichloropropane	18.6	1.0	20	0	93.0	72 - 119				
1,3-Dichlorobenzene	19.81	1.0	20	0	99.0	78 - 118				
1,4-Dichlorobenzene	19.54	1.0	20	0	97.7	79 - 113				
2-Butanone	38.7	2.0	40	0	96.8	70 - 130				
2-Hexanone	43.76	2.0	40	0	109	70 - 130				
4-Methyl-2-pentanone	41.04	2.0	40	0	103	70 - 130				
Acetone	49.01	2.0	40	0	123	70 - 130				
Benzene	18.79	1.0	20	0	93.9	74 - 120				
Bromochloromethane	18.14	1.0	20	0	90.7	76 - 124				
Bromodichloromethane	19.38	1.0	20	0	96.9	74 - 122				
Bromoform	20.03	1.0	20	0	100	73 - 128				
Bromomethane	20.63	1.0	20	0	103	70 - 130				
Carbon disulfide	41.05	2.0	40	0	103	70 - 130				
Carbon tetrachloride	19.26	1.0	20	0	96.3	71 - 125				
Chlorobenzene	19.41	1.0	20	0	97.1	76 - 113				
Chloroethane	17.32	1.0	20	0	86.6	70 - 130				
Chloroform	17.81	1.0	20	0	89.0	71 - 121				
Chloromethane	18.91	1.0	20	0	94.6	70 - 129				
cis-1,2-Dichloroethene	18.16	1.0	20	0	90.8	75 - 122				
cis-1,3-Dichloropropene	18.89	1.0	20	0	94.5	73 - 127				
Cyclohexane	21.31	1.0	20	0	107	70 - 130				
Dibromochloromethane	20.83	1.0	20	0	104	77 - 122				
Dichlorodifluoromethane	15.88	1.0	20	0	79.4	70 - 130				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20121076

QC BATCH REPORT

Batch ID: R375858 (0)		Instrument: VOA9		Method: LOW LEVEL VOLATILES BY SW8260C						
LCS	Sample ID: VLCSW-210104	Units: ug/L			Analysis Date: 04-Jan-2021 13:42					
Client ID:	Run ID: VOA9_375858	SeqNo: 5909649	PrepDate:	DF: 1						
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethylbenzene	20.42	1.0	20	0	102	77 - 117				
Isopropylbenzene	21.02	1.0	20	0	105	73 - 127				
m,p-Xylene	41.35	2.0	40	0	103	77 - 122				
Methyl acetate	17.86	1.0	20	0	89.3	76 - 122				
Methyl tert-butyl ether	20.88	1.0	20	0	104	70 - 130				
Methylcyclohexane	19.69	1.0	20	0	98.4	61 - 157				
Methylene chloride	18.37	2.0	20	0	91.9	70 - 127				
o-Xylene	20.42	1.0	20	0	102	75 - 119				
Styrene	20.14	1.0	20	0	101	72 - 126				
Tetrachloroethene	20.46	1.0	20	0	102	76 - 119				
Toluene	19.62	1.0	20	0	98.1	77 - 118				
trans-1,2-Dichloroethene	19.63	1.0	20	0	98.1	72 - 127				
trans-1,3-Dichloropropene	18.36	1.0	20	0	91.8	77 - 119				
Trichloroethene	19.91	1.0	20	0	99.6	77 - 121				
Trichlorofluoromethane	20.36	1.0	20	0	102	70 - 130				
Vinyl acetate	38.22	1.0	40	0	95.5	70 - 130				
Vinyl chloride	16.94	1.0	20	0	84.7	70 - 130				
Xylenes, Total	61.77	1.0	60	0	103	75 - 122				
1,2-Dichloroethene, Total	37.79	1.0	40	0	94.5	72 - 127				
Surr: 1,2-Dichloroethane-d4	45.07	1.0	50	0	90.1	70 - 130				
Surr: 4-Bromofluorobenzene	49.05	1.0	50	0	98.1	82 - 115				
Surr: Dibromofluoromethane	46.73	1.0	50	0	93.5	73 - 126				
Surr: Toluene-d8	50.38	1.0	50	0	101	81 - 120				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20121076

QC BATCH REPORT

Batch ID: R375858 (0)		Instrument: VOA9		Method: LOW LEVEL VOLATILES BY SW8260C						
MS	Sample ID: HS20121366-01MS	Units: ug/L			Analysis Date: 04-Jan-2021 16:52					
Client ID:	Run ID: VOA9_375858	SeqNo: 5909657	PrepDate:	DF: 1						
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	23.4	1.0	20	0	117	70 - 130				
1,1,2,2-Tetrachloroethane	23.07	1.0	20	0	115	70 - 123				
1,1,2-Trichlor-1,2,2-trifluoroethane	31.8	1.0	20	0	159	70 - 130				S
1,1,2-Trichloroethane	23.04	1.0	20	0	115	70 - 117				
1,1-Dichloroethane	21.36	1.0	20	0	107	70 - 127				
1,1-Dichloroethene	25.77	1.0	20	0	129	70 - 130				
1,2,4-Trichlorobenzene	26.16	1.0	20	0	131	70 - 125				S
1,2-Dibromo-3-chloropropane	24.8	1.0	20	0	124	70 - 130				
1,2-Dibromoethane	23.91	1.0	20	0	120	70 - 124				
1,2-Dichlorobenzene	23.86	1.0	20	0	119	70 - 115				S
1,2-Dichloroethane	21.39	1.0	20	0.5172	104	70 - 127				
1,2-Dichloropropane	22.09	1.0	20	0	110	70 - 122				
1,3-Dichlorobenzene	23.26	1.0	20	0	116	70 - 119				
1,4-Dichlorobenzene	23.03	1.0	20	0	115	70 - 114				S
2-Butanone	44.1	2.0	40	0	110	70 - 130				
2-Hexanone	49.91	2.0	40	0	125	70 - 130				
4-Methyl-2-pentanone	49.22	2.0	40	0	123	70 - 130				
Acetone	57.08	2.0	40	3.169	135	70 - 130				S
Benzene	24.66	1.0	20	1.842	114	70 - 127				
Bromochloromethane	21.94	1.0	20	0	110	70 - 127				
Bromodichloromethane	22.63	1.0	20	0	113	70 - 124				
Bromoform	22.84	1.0	20	0	114	70 - 129				
Bromomethane	23.67	1.0	20	0	118	70 - 130				
Carbon disulfide	50.76	2.0	40	0	127	70 - 130				
Carbon tetrachloride	25.82	1.0	20	0	129	70 - 130				
Chlorobenzene	22.65	1.0	20	0	113	70 - 114				
Chloroethane	20.76	1.0	20	0	104	70 - 130				
Chloroform	21.31	1.0	20	0	107	70 - 125				
Chloromethane	20.35	1.0	20	0	102	70 - 130				
cis-1,2-Dichloroethene	24.88	1.0	20	3.227	108	70 - 128				
cis-1,3-Dichloropropene	21.03	1.0	20	0	105	70 - 125				
Cyclohexane	28.83	1.0	20	0	144	70 - 130				S
Dibromochloromethane	24.33	1.0	20	0	122	70 - 124				
Dichlorodifluoromethane	16.39	1.0	20	0	82.0	70 - 130				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20121076

QC BATCH REPORT

Batch ID: R375858 (0)		Instrument: VOA9		Method: LOW LEVEL VOLATILES BY SW8260C						
MS		Sample ID: HS20121366-01MS		Units: ug/L		Analysis Date: 04-Jan-2021 16:52				
Client ID:		Run ID: VOA9_375858		SeqNo: 5909657		PrepDate:		DF: 1		
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	
Ethylbenzene	25.41	1.0	20	0	127	70 - 124			S	
Isopropylbenzene	26.02	1.0	20	0	130	70 - 130			S	
m,p-Xylene	50.96	2.0	40	0.7627	125	70 - 130				
Methyl acetate	18.4	1.0	20	0	92.0	76 - 122				
Methyl tert-butyl ether	16.75	1.0	20	0.766	79.9	70 - 130				
Methylcyclohexane	20.81	1.0	20	1.82	94.9	61 - 158				
Methylene chloride	20.34	2.0	20	0	102	70 - 128				
o-Xylene	25.21	1.0	20	0	126	70 - 124			S	
Styrene	24.73	1.0	20	0	124	70 - 130				
Tetrachloroethene	28.29	1.0	20	2.753	128	70 - 130				
Toluene	23.65	1.0	20	0	118	70 - 123				
trans-1,2-Dichloroethene	22.26	1.0	20	0	111	70 - 130				
trans-1,3-Dichloropropene	20.98	1.0	20	0	105	70 - 121				
Trichloroethene	25.23	1.0	20	1.258	120	70 - 129				
Trichlorofluoromethane	27.81	1.0	20	0	139	70 - 130			S	
Vinyl acetate	40.28	1.0	40	0	101	70 - 130				
Vinyl chloride	21.99	1.0	20	1.225	104	70 - 130				
Xylenes, Total	76.17	1.0	60	0.7627	126	70 - 130				
1,2-Dichloroethene, Total	47.14	1.0	40	3.227	110	70 - 130				
Surr: 1,2-Dichloroethane-d4	46.37	1.0	50	0	92.7	70 - 126				
Surr: 4-Bromofluorobenzene	49.28	1.0	50	0	98.6	81 - 113				
Surr: Dibromofluoromethane	48.64	1.0	50	0	97.3	77 - 123				
Surr: Toluene-d8	50.85	1.0	50	0	102	82 - 127				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20121076

QC BATCH REPORT

Batch ID: R375858 (0)		Instrument: VOA9		Method: LOW LEVEL VOLATILES BY SW8260C						
MSD	Sample ID: HS20121366-01MSD	Units: ug/L			Analysis Date: 04-Jan-2021 17:13					
Client ID:	Run ID: VOA9_375858	SeqNo: 5909658	PrepDate:	DF: 1						
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	23.04	1.0	20	0	115	70 - 130	23.4	1.53	20	
1,1,2,2-Tetrachloroethane	22.25	1.0	20	0	111	70 - 123	23.07	3.62	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	30.95	1.0	20	0	155	70 - 130	31.8	2.68	20	S
1,1,2-Trichloroethane	21.62	1.0	20	0	108	70 - 117	23.04	6.38	20	
1,1-Dichloroethane	20.89	1.0	20	0	104	70 - 127	21.36	2.23	20	
1,1-Dichloroethene	25.13	1.0	20	0	126	70 - 130	25.77	2.5	20	
1,2,4-Trichlorobenzene	26.79	1.0	20	0	134	70 - 125	26.16	2.4	20	S
1,2-Dibromo-3-chloropropane	24.19	1.0	20	0	121	70 - 130	24.8	2.51	20	
1,2-Dibromoethane	22.92	1.0	20	0	115	70 - 124	23.91	4.23	20	
1,2-Dichlorobenzene	23.45	1.0	20	0	117	70 - 115	23.86	1.73	20	S
1,2-Dichloroethane	21.3	1.0	20	0.5172	104	70 - 127	21.39	0.453	20	
1,2-Dichloropropane	21.57	1.0	20	0	108	70 - 122	22.09	2.37	20	
1,3-Dichlorobenzene	23.01	1.0	20	0	115	70 - 119	23.26	1.08	20	
1,4-Dichlorobenzene	22.51	1.0	20	0	113	70 - 114	23.03	2.27	20	
2-Butanone	45.11	2.0	40	0	113	70 - 130	44.1	2.27	20	
2-Hexanone	49.24	2.0	40	0	123	70 - 130	49.91	1.33	20	
4-Methyl-2-pentanone	48.82	2.0	40	0	122	70 - 130	49.22	0.831	20	
Acetone	49.65	2.0	40	3.169	116	70 - 130	57.08	13.9	20	
Benzene	23.82	1.0	20	1.842	110	70 - 127	24.66	3.48	20	
Bromochloromethane	21.71	1.0	20	0	109	70 - 127	21.94	1.07	20	
Bromodichloromethane	22.18	1.0	20	0	111	70 - 124	22.63	2.04	20	
Bromoform	21.95	1.0	20	0	110	70 - 129	22.84	3.96	20	
Bromomethane	22.98	1.0	20	0	115	70 - 130	23.67	2.93	20	
Carbon disulfide	45.62	2.0	40	0	114	70 - 130	50.76	10.7	20	
Carbon tetrachloride	24.5	1.0	20	0	123	70 - 130	25.82	5.24	20	
Chlorobenzene	22.16	1.0	20	0	111	70 - 114	22.65	2.21	20	
Chloroethane	20.77	1.0	20	0	104	70 - 130	20.76	0.0659	20	
Chloroform	20.86	1.0	20	0	104	70 - 125	21.31	2.13	20	
Chloromethane	19.38	1.0	20	0	96.9	70 - 130	20.35	4.92	20	
cis-1,2-Dichloroethene	24.48	1.0	20	3.227	106	70 - 128	24.88	1.63	20	
cis-1,3-Dichloropropene	21.31	1.0	20	0	107	70 - 125	21.03	1.33	20	
Cyclohexane	27.62	1.0	20	0	138	70 - 130	28.83	4.29	20	S
Dibromochloromethane	23.26	1.0	20	0	116	70 - 124	24.33	4.48	20	
Dichlorodifluoromethane	15.81	1.0	20	0	79.0	70 - 130	16.39	3.63	20	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20121076

QC BATCH REPORT

Batch ID: R375858 (0) **Instrument:** VOA9 **Method:** LOW LEVEL VOLATILES BY SW8260C

MSD		Sample ID: HS20121366-01MSD			Units: ug/L		Analysis Date: 04-Jan-2021 17:13			
Client ID:		Run ID: VOA9_375858			SeqNo: 5909658		PrepDate:		DF: 1	
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethylbenzene	24.4	1.0	20	0	122	70 - 124	25.41	4.03	20	
Isopropylbenzene	25.35	1.0	20	0	127	70 - 130	26.02	2.63	20	
m,p-Xylene	48.59	2.0	40	0.7627	120	70 - 130	50.96	4.76	20	
Methyl acetate	18.63	1.0	20	0	93.1	76 - 122	18.4	1.26	20	
Methyl tert-butyl ether	17.07	1.0	20	0.766	81.5	70 - 130	16.75	1.92	20	
Methylcyclohexane	20.71	1.0	20	1.82	94.4	61 - 158	20.81	0.497	20	
Methylene chloride	19.35	2.0	20	0	96.8	70 - 128	20.34	5.01	20	
o-Xylene	24.35	1.0	20	0	122	70 - 124	25.21	3.48	20	
Styrene	23.45	1.0	20	0	117	70 - 130	24.73	5.32	20	
Tetrachloroethene	27.28	1.0	20	2.753	123	70 - 130	28.29	3.63	20	
Toluene	22.78	1.0	20	0	114	70 - 123	23.65	3.74	20	
trans-1,2-Dichloroethene	21.33	1.0	20	0	107	70 - 130	22.26	4.27	20	
trans-1,3-Dichloropropene	20.44	1.0	20	0	102	70 - 121	20.98	2.61	20	
Trichloroethene	24.69	1.0	20	1.258	117	70 - 129	25.23	2.16	20	
Trichlorofluoromethane	25.97	1.0	20	0	130	70 - 130	27.81	6.86	20	
Vinyl acetate	40.03	1.0	40	0	100	70 - 130	40.28	0.641	20	
Vinyl chloride	20.64	1.0	20	1.225	97.1	70 - 130	21.99	6.33	20	
Xylenes, Total	72.94	1.0	60	0.7627	120	70 - 130	76.17	4.33	20	
1,2-Dichloroethene, Total	45.81	1.0	40	3.227	106	70 - 130	47.14	2.87	20	
Surr: 1,2-Dichloroethane-d4	46.2	1.0	50	0	92.4	70 - 126	46.37	0.358	20	
Surr: 4-Bromofluorobenzene	48.86	1.0	50	0	97.7	81 - 113	49.28	0.857	20	
Surr: Dibromofluoromethane	47.22	1.0	50	0	94.4	77 - 123	48.64	2.97	20	
Surr: Toluene-d8	49.7	1.0	50	0	99.4	82 - 127	50.85	2.3	20	

The following samples were analyzed in this batch: HS20121076-01

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20121076

QC BATCH REPORT

Batch ID: 161184 (0)	Instrument: UV-2450	Method: CYANIDE - SW9014
-------------------------------	----------------------------	---------------------------------

MBLK	Sample ID: MBLK-161184	Units: mg/L	Analysis Date: 29-Dec-2020 16:10							
Client ID:	Run ID: UV-2450_375567	SeqNo: 5902549	PrepDate: 29-Dec-2020 DF: 1							
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Cyanide < 0.00200 0.00500

LCS	Sample ID: LCS-161184	Units: mg/L	Analysis Date: 29-Dec-2020 16:10							
Client ID:	Run ID: UV-2450_375567	SeqNo: 5902548	PrepDate: 29-Dec-2020 DF: 1							
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Cyanide 0.192 0.00500 0.2 0 96.0 80 - 120

MS	Sample ID: HS20121188-04MS	Units: mg/L	Analysis Date: 29-Dec-2020 16:10							
Client ID:	Run ID: UV-2450_375567	SeqNo: 5902546	PrepDate: 29-Dec-2020 DF: 1							
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Cyanide 0.179 0.00500 0.2 0 89.5 80 - 120

MSD	Sample ID: HS20121188-04MSD	Units: mg/L	Analysis Date: 29-Dec-2020 16:10							
Client ID:	Run ID: UV-2450_375567	SeqNo: 5902547	PrepDate: 29-Dec-2020 DF: 1							
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Cyanide 0.161 0.00500 0.2 0 80.5 80 - 120 0.179 10.6 20

The following samples were analyzed in this batch: HS20121076-01

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20121076

QC BATCH REPORT

Batch ID: R375328 (0) **Instrument:** WetChem_HS **Method:** SULFIDE BY SM4500 S2-F

MBLK Sample ID: **MBLK-R375328** Units: **mg/L** Analysis Date: **24-Dec-2020 10:30**
 Client ID: Run ID: **WetChem_HS_375328** SeqNo: **5897169** PrepDate: DF: **1**
 Analyte Result MQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %RPD RPD Limit Qual

Sulfide < 1.00 1.00

LCS Sample ID: **LCS-R375328** Units: **mg/L** Analysis Date: **24-Dec-2020 10:30**
 Client ID: Run ID: **WetChem_HS_375328** SeqNo: **5897168** PrepDate: DF: **1**
 Analyte Result MQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %RPD RPD Limit Qual

Sulfide 23.4 1.00 25 0 93.6 85 - 115

LCSD Sample ID: **LCSD-R375328** Units: **mg/L** Analysis Date: **24-Dec-2020 10:30**
 Client ID: Run ID: **WetChem_HS_375328** SeqNo: **5897167** PrepDate: DF: **1**
 Analyte Result MQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %RPD RPD Limit Qual

Sulfide 23.2 1.00 25 0 92.8 85 - 115 23.4 0.858 20

MS Sample ID: **HS20121155-01MS** Units: **mg/L** Analysis Date: **24-Dec-2020 10:30**
 Client ID: Run ID: **WetChem_HS_375328** SeqNo: **5897170** PrepDate: DF: **1**
 Analyte Result MQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %RPD RPD Limit Qual

Sulfide 20 1.00 25 -0.2 80.8 80 - 120

The following samples were analyzed in this batch: HS20121076-01

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20121076

QC BATCH REPORT

Batch ID: R375569 (0) Instrument: WetChem_HS Method: FLASH POINT BY PENSKY-MARTENS SW1010A

LCS	Sample ID: LCS-R375569	Units: °F			Analysis Date: 29-Dec-2020 08:00					
Client ID:	Run ID: WetChem_HS_375569	SeqNo: 5902601	PrepDate:	DF: 1						
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Ignitability 80.25 70.0 81 0 99.1 95 - 105

DUP	Sample ID: HS20121127-01DUP	Units: °F			Analysis Date: 29-Dec-2020 08:00					
Client ID:	Run ID: WetChem_HS_375569	SeqNo: 5902602	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:

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20121076

QC BATCH REPORT

Batch ID: R375794 (0) **Instrument:** WetChem_HS **Method:** PH BY SM4500H+ B

DUP Sample ID: **HS20120872-01DUP** Units: **pH Units** Analysis Date: **04-Jan-2021 12:16**
Client ID: Run ID: **WetChem_HS_375794** SeqNo: **5908002** PrepDate: DF: **1**
Analyte Result MQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %RPD RPD Limit Qual

pH	7.75	0.100						7.7	0.647	10
Temp Deg C @pH	23.7	0						23.8	0.421	10

The following samples were analyzed in this batch:

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20121076

**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	20-030-0	26-Mar-2021
California	2919, 2020-2021	30-Apr-2021
Dept of Defense	PJLA L20-507	22-Dec-2021
Florida	E87611-30-07/01/2020	30-Jun-2021
Illinois	2000322020-4	09-May-2021
Kansas	E-10352 2020-2021	31-Jul-2021
Kentucky	123043, 2020-2021	30-Apr-2021
Louisiana	03087, 2020-2021	30-Jun-2021
North Dakota	R-193 2020-2021	30-Apr-2021
Oklahoma	2020-165	31-Aug-2021
Texas	T104704231-20-26	30-Apr-2021



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Chain of Custody Form

HS20121076

W

Page 1 of 1

COC ID: 232007

Golder Associates Inc.
Houston TX-Wood Preserving Works



ALS Project Manager:

Customer Information		Project Information		
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A 8260_LL_W (5632528 Volatile Organics)
Work Order	# 003256	Project Number	1620-21-Rev0 SR 92683	B TX1005_W_Low (5643233 TPH TX1005)
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P	C 8270_LOW_W (5632532 SemiVolatiles (w/pyridine))
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D ICP_TW (5652643 5652646 RCRA 8+3 Metals)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E CN_TW_9014 (5656268 Cyanide - RCI IDVW)
				F SULFD_4500S F (5656263 Sulfide - RCI)
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G pH_W_9040C (5632436 pH - RCI)
Phone	(512) 671-3434	Phone		H IGN_W (5652637 Ignitability - RCI)
Fax	(512) 671-3446	Fax		I
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address		J

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	WW-1620-IDW003256-20201222	12/22/20	9:15	W		12	X	X	X	X	X	X	X	X			
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign <i>Tim McSpaulde</i>		Shipment Method <i>Wall Carter</i>		Required Turnaround Time: (Check Box) <input checked="" type="checkbox"/> 7 Wk Days <input type="checkbox"/> STD 10 Wk Days <input type="checkbox"/> 5 Wk Days <input type="checkbox"/> 2 Wk Days <input type="checkbox"/> 24 Hour				Results Due Date:			
Relinquished by: <i>Tim McSpaulde</i>	Date: 12/22/20	Time: 9:30	Received by: <i>D.S.</i>	Notes: UPRR HWPIW 1620-21						QC Package: (Check One Box Below) <input checked="" type="checkbox"/> Level II Std QC	
Relinquished by: <i>D.S.</i>	Date: 12/23/20	Time: 1256	Received by (Laboratory): <i>D.S.</i>	Cooler ID <i>Red</i>	Cooler Temp. <i>11.1</i>						
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):								
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											

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.



10450 Stancliff Rd. Suite 210
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January 31, 2021

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

Work Order: **HS21010962**

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

Dear Eric Matzner,

ALS Environmental received 1 sample(s) on Jan 25, 2021 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,

A handwritten signature in black ink, appearing to read 'Dane J. Wacasey'.

Generated By: DANE.WACASEY
Dane J. Wacasey

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works SPLP
Work Order: HS21010962

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS21010962-01	WW-1620-IDW 003256-20201222	Water	HS2012107 6-01C	22-Dec-2020 09:15	22-Dec-2020 12:56	<input type="checkbox"/>

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works SPLP
Work Order: HS21010962

CASE NARRATIVE

Work Order Comments

- This report contains additional analyses per your request on January 26, 2021 via email. The laboratory analyzed your sample WW-1620-IDW003256-20201222 for TCLP lead by method 1311/6020. The sample was originally reported in ALS work order number HS20121076.

Metals by Method SW1311/6020

Batch ID: 162038

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works SPLP
 Sample ID: WW-1620-IDW 003256-20201222
 Collection Date: 22-Dec-2020 09:15

ANALYTICAL REPORT

WorkOrder:HS21010962
 Lab ID:HS21010962-01
 Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TCLP METALS BY SW6020A	Method:SW1311/6020		Leache:SW1311 / 26-Jan-2021	Prep:SW3010A / 29-Jan-2021	Analyst: JC		
Lead	0.128		0.00600	0.0500	mg/L	1	29-Jan-2021 22:00

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

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works SPLP
WorkOrder: HS21010962

Batch ID: 161887 **Start Date:** 26 Jan 2021 12:00 **End Date:** 26 Jan 2021 13:00
Method: TCLP METALS EXTRACTION BY SW1311 **Prep Code:** 1311LM EXT

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21010962-01		100 (grams)	2000 (mL)	20	1-liter amber glass, Neat

Batch ID: 162038 **Start Date:** 29 Jan 2021 12:00 **End Date:** 29 Jan 2021 16:00
Method: TCLP LEACHATE DIGESTION BY SW3010A **Prep Code:** 3010A_TCLP

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21010962-01		1 (mL)	10 (mL)	10	1-liter amber glass, Neat

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works SPLP
WorkOrder: HS21010962

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 162038 (0)		Test Name : TCLP METALS BY SW6020A			Matrix: Water	
HS21010962-01	WW-1620-IDW 003256-20201222	22 Dec 2020 09:15	26 Jan 2021 13:00	29 Jan 2021 16:00	29 Jan 2021 22:00	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works SPLP
WorkOrder: HS21010962

QC BATCH REPORT

Batch ID: 162038 (0)		Instrument: ICPMS05			Method: TCLP METALS BY SW6020A					
MBLK	Sample ID: MBLKT2-162038	Units: mg/L			Analysis Date: 29-Jan-2021 21:56					
Client ID:		Run ID: ICPMS05_377163			SeqNo: 5937128		PrepDate: 29-Jan-2021		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	< 0.00600	0.0500								
MBLK	Sample ID: MBLKT1-162038	Units: mg/L			Analysis Date: 29-Jan-2021 21:54					
Client ID:		Run ID: ICPMS05_377163			SeqNo: 5937127		PrepDate: 29-Jan-2021		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	< 0.00600	0.0500								
MBLK	Sample ID: MBLK-162038	Units: mg/L			Analysis Date: 29-Jan-2021 21:51					
Client ID:		Run ID: ICPMS05_377163			SeqNo: 5937126		PrepDate: 29-Jan-2021		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	< 0.00600	0.00500								
LCS	Sample ID: LCS-162038	Units: mg/L			Analysis Date: 29-Jan-2021 21:58					
Client ID:		Run ID: ICPMS05_377163			SeqNo: 5937129		PrepDate: 29-Jan-2021		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.04436	0.00500	0.05	0	88.7	80 - 120				
MS	Sample ID: HS21011046-02MS	Units: mg/L			Analysis Date: 29-Jan-2021 22:11					
Client ID:		Run ID: ICPMS05_377163			SeqNo: 5937132		PrepDate: 29-Jan-2021		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.4664	0.0500	0.5	0.00031	93.2	80 - 120				
MSD	Sample ID: HS21011046-02MSD	Units: mg/L			Analysis Date: 29-Jan-2021 22:13					
Client ID:		Run ID: ICPMS05_377163			SeqNo: 5937133		PrepDate: 29-Jan-2021		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.4534	0.0500	0.5	0.00031	90.6	80 - 120	0.4664	2.82	20	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works SPLP
WorkOrder: HS21010962

QC BATCH REPORT

Batch ID: 162038 (0)		Instrument: ICPMS05		Method: TCLP METALS BY SW6020A					
PDS	Sample ID: HS21011046-02PDS	Units: mg/L			Analysis Date: 29-Jan-2021 22:15				
Client ID:	Run ID: ICPMS05_377163	SeqNo: 5937134		PrepDate: 29-Jan-2021		DF: 1			
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual

Lead	1.02	0.0500	1	0.00031	102	75 - 125			
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SD	Sample ID: HS21011046-02SD	Units: mg/L			Analysis Date: 29-Jan-2021 22:09				
Client ID:	Run ID: ICPMS05_377163	SeqNo: 5937131		PrepDate: 29-Jan-2021		DF: 5			
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit Qual

Lead	< 0.0300	0.250					0.00031	0	10
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The following samples were analyzed in this batch: HS21010962-01

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works SPLP
WorkOrder: HS21010962

**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
Date	
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	20-030-0	26-Mar-2021
California	2919, 2020-2021	30-Apr-2021
Dept of Defense	PJLA L20-507	22-Dec-2021
Florida	E87611-30-07/01/2020	30-Jun-2021
Illinois	2000322020-4	09-May-2021
Kansas	E-10352 2020-2021	31-Jul-2021
Kentucky	123043, 2020-2021	30-Apr-2021
Louisiana	03087, 2020-2021	30-Jun-2021
North Carolina	624-2021	31-Dec-2021
North Dakota	R-193 2020-2021	30-Apr-2021
Oklahoma	2020-165	31-Aug-2021
Texas	T104704231-20-26	30-Apr-2021

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works SPLP
Work Order: HS21010962

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS21010962-01	WW-1620-IDW 003256-20201222	Login	1/26/2021 10:33:12 AM	JRM	MET018
HS21010962-01	WW-1620-IDW 003256-20201222	Login	1/26/2021 10:33:12 AM	JRM	EXT181
HS21010962-01	WW-1620-IDW 003256-20201222	Login	1/26/2021 10:33:12 AM	JRM	WET078
HS21010962-01	WW-1620-IDW 003256-20201222	Login	1/26/2021 10:33:12 AM	JRM	WET078
HS21010962-01	WW-1620-IDW 003256-20201222	Login	1/26/2021 10:33:12 AM	JRM	WET078
HS21010962-01	WW-1620-IDW 003256-20201222	Login	1/26/2021 10:33:12 AM	JRM	VOA073
HS21010962-01	WW-1620-IDW 003256-20201222	Login	1/26/2021 10:33:12 AM	JRM	TPH052

Sample Receipt Checklist

Work Order ID: HS21010962

Date/Time Received: 25-Jan-2021 12:00

Client Name: PBW

Received by: Donald Gilmore

Completed By: <u>/S/ Corey Grandits</u>	26-Jan-2021 10:14	Reviewed by: <u>/S/ Corey Grandits</u>	26-Jan-2021 17:42
eSignature	Date/Time	eSignature	Date/Time

Matrices: **Water**

Carrier name: **ALS.HS**

- | | | | |
|---|---|-----------------------------|---|
| Shipping container/cooler in good condition? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Not Present <input type="checkbox"/> |
| Custody seals intact on shipping container/cooler? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | Not Present <input checked="" type="checkbox"/> |
| Custody seals intact on sample bottles? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | Not Present <input checked="" type="checkbox"/> |
| VOA/TX1005/TX1006 Solids in hermetically sealed vials? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | Not Present <input checked="" type="checkbox"/> |
| Chain of custody present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | 1 Page(s) |
| Chain of custody signed when relinquished and received? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | COC IDs:232007 |
| Samplers name present on COC? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Chain of custody agrees with sample labels? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Samples in proper container/bottle? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Sample containers intact? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Sufficient sample volume for indicated test? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| All samples received within holding time? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Container/Temp Blank temperature in compliance? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |

Temperature(s)/Thermometer(s):	0.9°C UC/C	IR # 31
Cooler(s)/Kit(s):	RED	
Date/Time sample(s) sent to storage:	12/22/2020 14:00	
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/> No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/>	No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>
pH adjusted by:	<input type="text"/>	

Login Notes: 1/26/2021: SRC for relog of HS20121076-01 for TCLP Pb analysis.

Client Contacted:	Date Contacted:	Person Contacted:
Contacted By:	Regarding:	
Comments:	<input style="width:100%" type="text"/>	
Corrective Action:	<input style="width:100%" type="text"/>	



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Chain of Custody Form

Page 1 of 1

COC ID: 232007

HS21010962

Golder Associates Inc.
Houston TX-Wood Preserving Works



ALS Project Manager:

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order	# 003256	Project Number	1620-21-Rev0 SR 92688
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive	Address	1400 Douglas Street
	Suite 4004		Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address	

REVISED
1-25-2021 (OB)

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	WW-1620-IDW 003256-20201222	12-22-20	9:15	W		12	X	X	X	X	X	X	X	X	X		
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign <i>Tim McSpauld</i>		Shipment Method <i>Will Carter</i>	Required Turnaround Time: (Check Box) <input checked="" type="checkbox"/> 7 Wk Days <input type="checkbox"/> STD 10 Wk Days <input type="checkbox"/> 5 Wk Days <input type="checkbox"/> 2 Wk Days <input type="checkbox"/> 24 Hour	Results Due Date:
Relinquished by: <i>Tim McSpauld</i>	Date: 12-22-20	Time: 9:30	Received by: <i>D.S.</i>	Notes: UPRR HWPW 1620-21
Relinquished by: <i>D.S.</i>	Date: 12-23-20	Time: 1256	Received by (Laboratory): <i>D.S.</i>	Cooler ID: <i>Rec</i>
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	Cooler Temp: <i>0-9</i>
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				QC Package: (Check One Box Below) <input checked="" type="checkbox"/> Level II Std QC

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.



10450 Stancliff Rd. Suite 210
Houston, TX 77099
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January 12, 2021

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

Work Order: **HS21010226**

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

Dear Eric Matzner,

ALS Environmental received 2 sample(s) on Jan 07, 2021 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 IDW
Work Order: HS21010226

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS21010226-01	WW-1620-IDW-V427-20210107	Water		07-Jan-2021 12:35	07-Jan-2021 14:35	<input type="checkbox"/>
HS21010226-02	WW-1620-IDW-V714-20210107	Water		07-Jan-2021 12:50	07-Jan-2021 14:35	<input type="checkbox"/>

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
Work Order: HS21010226

CASE NARRATIVE

Work Order Comments

- 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 °C.
-

GC Semivolatiles by Method TX1005**Batch ID: 161430**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

GCMS Volatiles by Method SW8260**Batch ID: R376058**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

Metals by Method SW1311/6020**Batch ID: 161445**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

Metals by Method SW6020**Batch ID: 161403****Sample ID: HS21010060-08MS**

- MS and MSD are for an unrelated sample (Barium)

Batch ID: 161454

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

Metals by Method SW7470**Batch ID: 161400****Sample ID: HS21010125-01MS**

- MS and MSD are for an unrelated sample
-

WetChemistry by Method SM4500 S2-F**Batch ID: R376126**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

WetChemistry by Method SW9040C**Batch ID: R376121**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

WetChemistry by Method SW1010**Batch ID: R376018**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
Work Order: HS21010226

CASE NARRATIVE

WetChemistry by Method SW1010

WetChemistry by Method SW9014

Batch ID: 161428

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works IDW
 Sample ID: WW-1620-IDW-V427-20210107
 Collection Date: 07-Jan-2021 12:35

ANALYTICAL REPORT
 WorkOrder:HS21010226
 Lab ID:HS21010226-01
 Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
TCLP METALS BY SW6020A	Method:SW1311/6020		Leache:SW1311 / 08-Jan-2021		Prep:SW3010A / 09-Jan-2021		Analyst: JHD
Lead	0.179		0.00600	0.0500	mg/L	1	11-Jan-2021 17:50
ICP-MS METALS BY SW6020A	Method:SW6020				Prep:SW3010A / 08-Jan-2021		Analyst: JHD
Arsenic	0.0107		0.000400	0.00200	mg/L	1	08-Jan-2021 14:28
Barium	0.280		0.00190	0.00400	mg/L	1	08-Jan-2021 14:28
Cadmium	0.00463		0.000200	0.00200	mg/L	1	08-Jan-2021 14:28
Chromium	0.00857		0.000400	0.00400	mg/L	1	08-Jan-2021 14:28
Lead	0.645		0.000600	0.00200	mg/L	1	08-Jan-2021 14:28
Selenium	< 0.00110		0.00110	0.00200	mg/L	1	08-Jan-2021 14:28
Silver	< 0.000200		0.000200	0.00200	mg/L	1	08-Jan-2021 14:28
DISSOLVED METALS BY SW6020A	Method:SW6020 (dissolved)				Prep:SW3010A / 11-Jan-2021		Analyst: JHD
Lead	0.0278		0.000600	0.00200	mg/L	1	11-Jan-2021 15:34
MERCURY BY SW7470A	Method:SW7470				Prep:SW7470 / 08-Jan-2021		Analyst: JC
Mercury	0.000294		0.0000300	0.000200	mg/L	1	08-Jan-2021 16:03

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

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works IDW
 Sample ID: WW-1620-IDW-V714-20210107
 Collection Date: 07-Jan-2021 12:50

ANALYTICAL REPORT
 WorkOrder:HS21010226
 Lab ID:HS21010226-02
 Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260					Analyst: AKP
Benzene	< 0.00020		0.00020	0.0010	mg/L	1	07-Jan-2021 20:43
Ethylbenzene	< 0.00030		0.00030	0.0010	mg/L	1	07-Jan-2021 20:43
Toluene	< 0.00020		0.00020	0.0010	mg/L	1	07-Jan-2021 20:43
Xylenes, Total	< 0.00030		0.00030	0.0010	mg/L	1	07-Jan-2021 20:43
Surr: 1,2-Dichloroethane-d4	103			70-126	%REC	1	07-Jan-2021 20:43
Surr: 4-Bromofluorobenzene	102			81-113	%REC	1	07-Jan-2021 20:43
Surr: Dibromofluoromethane	102			77-123	%REC	1	07-Jan-2021 20:43
Surr: Toluene-d8	98.2			82-127	%REC	1	07-Jan-2021 20:43
LOW-LEVEL TEXAS TPH BY TX1005		Method:TX1005				Prep:TX1005PR / 08-Jan-2021	Analyst: SAM
nC6 to nC12	< 0.20		0.20	0.50	mg/L	1	08-Jan-2021 18:20
>nC12 to nC28	< 0.20		0.20	0.50	mg/L	1	08-Jan-2021 18:20
>nC28 to nC35	< 0.20		0.20	0.50	mg/L	1	08-Jan-2021 18:20
Total Petroleum Hydrocarbon	< 0.20		0.20	0.50	mg/L	1	08-Jan-2021 18:20
Surr: 2-Fluorobiphenyl	88.3			70-130	%REC	1	08-Jan-2021 18:20
Surr: Trifluoromethyl benzene	97.9			70-130	%REC	1	08-Jan-2021 18:20
TCLP METALS BY SW6020A		Method:SW1311/6020		Leache:SW1311 / 08-Jan-2021		Prep:SW3010A / 09-Jan-2021	Analyst: JHD
Lead	0.136		0.00600	0.0500	mg/L	1	11-Jan-2021 17:52
ICP-MS METALS BY SW6020A		Method:SW6020				Prep:SW3010A / 08-Jan-2021	Analyst: JHD
Arsenic	0.0175		0.000400	0.00200	mg/L	1	12-Jan-2021 14:41
Barium	0.903		0.00190	0.00400	mg/L	1	12-Jan-2021 14:41
Cadmium	0.0178		0.000200	0.00200	mg/L	1	12-Jan-2021 14:41
Chromium	0.0609		0.000400	0.00400	mg/L	1	12-Jan-2021 14:41
Lead	1.65		0.00600	0.0200	mg/L	10	12-Jan-2021 15:52
Selenium	0.00150	J	0.00110	0.00200	mg/L	1	12-Jan-2021 14:41
Silver	0.000930	J	0.000200	0.00200	mg/L	1	12-Jan-2021 14:41
DISSOLVED METALS BY SW6020A		Method:SW6020 (dissolved)				Prep:SW3010A / 11-Jan-2021	Analyst: JHD
Lead	0.0194		0.000600	0.00200	mg/L	1	11-Jan-2021 15:44
MERCURY BY SW7470A		Method:SW7470				Prep:SW7470 / 08-Jan-2021	Analyst: JC
Mercury	0.000561		0.0000300	0.000200	mg/L	1	08-Jan-2021 16:04
SULFIDE BY SM4500 S2-F		Method:SM4500 S2-F					Analyst: KVL
Sulfide	< 1.00		1.00	1.00	mg/L	1	11-Jan-2021 13:00
FLASH POINT BY PENSKY-MARTENS SW1010A		Method:SW1010					Analyst: TH
Ignitability	> 212		70.0	70.0	°F	1	07-Jan-2021 15:00
CYANIDE - SW9014		Method:SW9014				Prep:SW9010C / 08-Jan-2021	Analyst: KVL
Cyanide	0.00500		0.00200	0.00500	mg/L	1	08-Jan-2021 13:00
PH BY SW9040C		Method:SW9040C					Analyst: JAC
pH	8.27	H	0.100	0.100	pH Units	1	11-Jan-2021 13:58
Temp Deg C @pH	19.6	H	0	0	DEG C	1	11-Jan-2021 13:58

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

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21010226

Batch ID: 161400 **Start Date:** 08 Jan 2021 12:00 **End Date:** 08 Jan 2021 14:00
Method: MERCURY PREP BY 7470A- WATER **Prep Code:** HG_WPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21010226-01		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21010226-02		10 (mL)	10 (mL)	1	120 plastic HNO3

Batch ID: 161403 **Start Date:** 08 Jan 2021 09:00 **End Date:** 08 Jan 2021 13:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21010226-01		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21010226-02		10 (mL)	10 (mL)	1	120 plastic HNO3

Batch ID: 161428 **Start Date:** 08 Jan 2021 11:00 **End Date:** 08 Jan 2021 12:30
Method: CYANIDE PREP - SW9010C **Prep Code:** CN_TW_PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21010226-02		50 (mL)	50 (mL)	1	250 mL plastic, NaOH/ASE

Batch ID: 161430 **Start Date:** 08 Jan 2021 12:30 **End Date:** 08 Jan 2021 14:30
Method: TX 1005 PREP **Prep Code:** TX 1005_W PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21010226-02		30.17 (g)	3 (mL)	0.09944	40 mL VOA w/ HCL

Batch ID: 161434 **Start Date:** 08 Jan 2021 14:30 **End Date:** 08 Jan 2021 15:30
Method: TCLP METALS EXTRACTION BY SW1311 **Prep Code:** 1311LM EXT

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21010226-01		100 (grams)	2000 (mL)	20	250 mL plastic, Neat
HS21010226-02		100 (grams)	2000 (mL)	20	250 mL plastic, Neat

Batch ID: 161445 **Start Date:** 09 Jan 2021 09:00 **End Date:** 09 Jan 2021 13:00
Method: TCLP LEACHATE DIGESTION BY SW3010A **Prep Code:** 3010A_TCLP

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21010226-01		1 (mL)	10 (mL)	10	250 mL plastic, Neat
HS21010226-02		1 (mL)	10 (mL)	10	250 mL plastic, Neat

Batch ID: 161454 **Start Date:** 11 Jan 2021 10:26 **End Date:** 11 Jan 2021 14:00
Method: DISS METALS PREP - WATER - SW3010A **Prep Code:** 3010A DISS

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21010226-01		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21010226-02		10 (mL)	10 (mL)	1	120 plastic HNO3

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21010226

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 161400 (0)		Test Name : MERCURY BY SW7470A			Matrix: Water	
HS21010226-01	WW-1620-IDW-V427-20210107	07 Jan 2021 12:35		08 Jan 2021 08:37	08 Jan 2021 16:03	1
HS21010226-02	WW-1620-IDW-V714-20210107	07 Jan 2021 12:50		08 Jan 2021 08:37	08 Jan 2021 16:04	1
Batch ID: 161403 (0)		Test Name : ICP-MS METALS BY SW6020A			Matrix: Water	
HS21010226-01	WW-1620-IDW-V427-20210107	07 Jan 2021 12:35		08 Jan 2021 13:00	08 Jan 2021 14:28	1
HS21010226-02	WW-1620-IDW-V714-20210107	07 Jan 2021 12:50		08 Jan 2021 13:00	12 Jan 2021 15:52	10
HS21010226-02	WW-1620-IDW-V714-20210107	07 Jan 2021 12:50		08 Jan 2021 13:00	12 Jan 2021 14:41	1
Batch ID: 161428 (0)		Test Name : CYANIDE - SW9014			Matrix: Water	
HS21010226-02	WW-1620-IDW-V714-20210107	07 Jan 2021 12:50		08 Jan 2021 11:00	08 Jan 2021 13:00	1
Batch ID: 161430 (0)		Test Name : LOW-LEVEL TEXAS TPH BY TX1005			Matrix: Water	
HS21010226-02	WW-1620-IDW-V714-20210107	07 Jan 2021 12:50		08 Jan 2021 12:30	08 Jan 2021 18:20	1
Batch ID: 161445 (0)		Test Name : TCLP METALS BY SW6020A			Matrix: Water	
HS21010226-01	WW-1620-IDW-V427-20210107	07 Jan 2021 12:35	08 Jan 2021 15:30	09 Jan 2021 13:00	11 Jan 2021 17:50	1
HS21010226-02	WW-1620-IDW-V714-20210107	07 Jan 2021 12:50	08 Jan 2021 15:30	09 Jan 2021 13:00	11 Jan 2021 17:52	1
Batch ID: 161454 (0)		Test Name : DISSOLVED METALS BY SW6020A			Matrix: Water	
HS21010226-01	WW-1620-IDW-V427-20210107	07 Jan 2021 12:35		11 Jan 2021 14:00	11 Jan 2021 15:34	1
HS21010226-02	WW-1620-IDW-V714-20210107	07 Jan 2021 12:50		11 Jan 2021 14:00	11 Jan 2021 15:44	1
Batch ID: R376018 (0)		Test Name : FLASH POINT BY PENSKY-MARTENS SW1010A			Matrix: Water	
HS21010226-02	WW-1620-IDW-V714-20210107	07 Jan 2021 12:50			07 Jan 2021 15:00	1
Batch ID: R376058 (0)		Test Name : LOW LEVEL VOLATILES BY SW8260C			Matrix: Water	
HS21010226-02	WW-1620-IDW-V714-20210107	07 Jan 2021 12:50			07 Jan 2021 20:43	1
Batch ID: R376121 (0)		Test Name : PH BY SW9040C			Matrix: Water	
HS21010226-02	WW-1620-IDW-V714-20210107	07 Jan 2021 12:50			11 Jan 2021 13:58	1
Batch ID: R376126 (0)		Test Name : SULFIDE BY SM4500 S2-F			Matrix: Water	
HS21010226-02	WW-1620-IDW-V714-20210107	07 Jan 2021 12:50			11 Jan 2021 13:00	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21010226

QC BATCH REPORT

Batch ID: 161430 (0) **Instrument:** FID-13 **Method:** LOW-LEVEL TEXAS TPH BY TX1005

MBLK		Sample ID: MBLK-161430		Units: mg/L		Analysis Date: 08-Jan-2021 16:53				
Client ID:		Run ID: FID-13_376093		SeqNo: 5914474		PrepDate: 08-Jan-2021		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	< 0.20	0.50								
>nC12 to nC28	< 0.20	0.50								
>nC28 to nC35	< 0.20	0.50								
Total Petroleum Hydrocarbon	< 0.20	0.50								
Surr: 2-Fluorobiphenyl	2.38	0	2.5	0	95.2	70 - 130				
Surr: Trifluoromethyl benzene	2.583	0	2.5	0	103	70 - 130				

LCS		Sample ID: LCS-161430		Units: mg/L		Analysis Date: 08-Jan-2021 17:22				
Client ID:		Run ID: FID-13_376093		SeqNo: 5914475		PrepDate: 08-Jan-2021		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	25.19	0.50	25	0	101	75 - 125				
>nC12 to nC28	28.38	0.50	25	0	114	75 - 125				
Surr: 2-Fluorobiphenyl	2.97	0	2.5	0	119	70 - 130				
Surr: Trifluoromethyl benzene	2.636	0	2.5	0	105	70 - 130				

LCSD		Sample ID: LCSD-161430		Units: mg/L		Analysis Date: 08-Jan-2021 17:51				
Client ID:		Run ID: FID-13_376093		SeqNo: 5914476		PrepDate: 08-Jan-2021		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	23.46	0.50	25	0	93.8	75 - 125	25.19	7.12	20	
>nC12 to nC28	29.59	0.50	25	0	118	75 - 125	28.38	4.2	20	
Surr: 2-Fluorobiphenyl	2.908	0	2.5	0	116	70 - 130	2.97	2.1	20	
Surr: Trifluoromethyl benzene	2.657	0	2.5	0	106	70 - 130	2.636	0.823	20	

MS		Sample ID: HS21010226-02MS		Units: mg/L		Analysis Date: 08-Jan-2021 18:49				
Client ID: WW-1620-IDW-V714-20210107		Run ID: FID-13_376093		SeqNo: 5914478		PrepDate: 08-Jan-2021		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	26.31	0.48	24.01	0	110	75 - 125				
>nC12 to nC28	29.65	0.48	24.01	0	123	75 - 125				
Surr: 2-Fluorobiphenyl	2.783	0	2.401	0	116	70 - 130				
Surr: Trifluoromethyl benzene	2.743	0	2.401	0	114	70 - 130				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21010226

QC BATCH REPORT

Batch ID: 161430 (0) **Instrument:** FID-13 **Method:** LOW-LEVEL TEXAS TPH BY TX1005

MSD Sample ID: **HS21010226-02MSD** Units: **mg/L** Analysis Date: **08-Jan-2021 19:18**
 Client ID: **WW-1620-IDW-V714-20210107** Run ID: **FID-13_376093** SeqNo: **5914479** PrepDate: **08-Jan-2021** DF: **1**
 Analyte Result PQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %RPD RPD Limit Qual

nC6 to nC12	25.2	0.49	24.53	0	103	75 - 125	26.31	4.32	20
>nC12 to nC28	29.71	0.49	24.53	0	121	75 - 125	29.65	0.203	20
Surr: 2-Fluorobiphenyl	2.431	0	2.453	0	99.1	70 - 130	2.783	13.5	20
Surr: Trifluoromethyl benzene	2.531	0	2.453	0	103	70 - 130	2.743	8.03	20

The following samples were analyzed in this batch: HS21010226-02

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21010226

QC BATCH REPORT

Batch ID: 161400 (0)		Instrument: HG03		Method: MERCURY BY SW7470A						
MBLK	Sample ID: MBLK-161400	Units: mg/L		Analysis Date: 08-Jan-2021 14:50						
Client ID:	Run ID: HG03_376074	SeqNo: 5914158		PrepDate: 08-Jan-2021		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual	
Mercury	< 0.0000300	0.000200								
LCS	Sample ID: LCS-161400	Units: mg/L		Analysis Date: 08-Jan-2021 14:54						
Client ID:	Run ID: HG03_376074	SeqNo: 5914159		PrepDate: 08-Jan-2021		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual	
Mercury	0.00536	0.000200	0.005	0	107	80 - 120				
MS	Sample ID: HS21010125-01MS	Units: mg/L		Analysis Date: 08-Jan-2021 15:12						
Client ID:	Run ID: HG03_376074	SeqNo: 5914163		PrepDate: 08-Jan-2021		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual	
Mercury	0.00333	0.000200	0.005	0.000193	62.7	75 - 125			S	
MSD	Sample ID: HS21010125-01MSD	Units: mg/L		Analysis Date: 08-Jan-2021 15:06						
Client ID:	Run ID: HG03_376074	SeqNo: 5914162		PrepDate: 08-Jan-2021		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual	
Mercury	0.00356	0.000200	0.005	0.000193	67.3	75 - 125	0.00333	6.68 20	S	

The following samples were analyzed in this batch: HS21010226-01 HS21010226-02

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21010226

QC BATCH REPORT

Batch ID: 161403 (0)	Instrument: ICPMS05	Method: ICP-MS METALS BY SW6020A
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MBLK	Sample ID: MBLK-161403	Units: mg/L	Analysis Date: 08-Jan-2021 13:55							
Client ID:	Run ID: ICPMS05_376081	SeqNo: 5914171	PrepDate: 08-Jan-2021 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Arsenic	< 0.000400	0.00200								
Barium	< 0.00190	0.00400								
Cadmium	< 0.000200	0.00200								
Chromium	< 0.000400	0.00400								
Lead	< 0.000600	0.00200								
Selenium	< 0.00110	0.00200								
Silver	< 0.000200	0.00200								

LCS	Sample ID: LCS-161403	Units: mg/L	Analysis Date: 08-Jan-2021 13:57							
Client ID:	Run ID: ICPMS05_376081	SeqNo: 5914172	PrepDate: 08-Jan-2021 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Arsenic	0.05454	0.00200	0.05	0	109	80 - 120				
Barium	0.04644	0.00400	0.05	0	92.9	80 - 120				
Cadmium	0.05046	0.00200	0.05	0	101	80 - 120				
Chromium	0.04937	0.00400	0.05	0	98.7	80 - 120				
Lead	0.04573	0.00200	0.05	0	91.5	80 - 120				
Silver	0.05191	0.00200	0.05	0	104	80 - 120				

LCS	Sample ID: LCS-161403	Units: mg/L	Analysis Date: 08-Jan-2021 14:30							
Client ID:	Run ID: ICPMS05_376081	SeqNo: 5914185	PrepDate: 08-Jan-2021 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Selenium	0.04451	0.00200	0.05	0	89.0	80 - 120				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21010226

QC BATCH REPORT

Batch ID: 161403 (0)		Instrument: ICPMS05			Method: ICP-MS METALS BY SW6020A					
MS		Sample ID: HS21010060-08MS			Units: mg/L		Analysis Date: 08-Jan-2021 14:18			
Client ID:		Run ID: ICPMS05_376081			SeqNo: 5914179		PrepDate: 08-Jan-2021		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0584	0.00200	0.05	0.001729	113	80 - 120				
Barium	0.68	0.00400	0.05	0.5449	270	80 - 120				SO
Cadmium	0.05178	0.00200	0.05	0.000028	104	80 - 120				
Chromium	0.05255	0.00400	0.05	-0.000018	105	80 - 120				
Lead	0.05299	0.00200	0.05	0.000034	106	80 - 120				
Selenium	0.05749	0.00200	0.05	0.000038	115	80 - 120				
Silver	0.05293	0.00200	0.05	0.000002	106	80 - 120				
MSD		Sample ID: HS21010060-08MSD			Units: mg/L		Analysis Date: 08-Jan-2021 14:20			
Client ID:		Run ID: ICPMS05_376081			SeqNo: 5914180		PrepDate: 08-Jan-2021		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05853	0.00200	0.05	0.001729	114	80 - 120	0.0584	0.217	20	
Barium	0.6763	0.00400	0.05	0.5449	263	80 - 120	0.68	0.538	20	SO
Cadmium	0.05295	0.00200	0.05	0.000028	106	80 - 120	0.05178	2.23	20	
Chromium	0.05227	0.00400	0.05	-0.000018	105	80 - 120	0.05255	0.527	20	
Lead	0.05386	0.00200	0.05	0.000034	108	80 - 120	0.05299	1.62	20	
Selenium	0.0576	0.00200	0.05	0.000038	115	80 - 120	0.05749	0.191	20	
Silver	0.05755	0.00200	0.05	0.000002	115	80 - 120	0.05293	8.37	20	
PDS		Sample ID: HS21010060-08PDS			Units: mg/L		Analysis Date: 08-Jan-2021 14:22			
Client ID:		Run ID: ICPMS05_376081			SeqNo: 5914181		PrepDate: 08-Jan-2021		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.087	0.00200	0.1	0.001729	85.3	75 - 125				
Barium	0.6483	0.00400	0.1	0.5449	103	75 - 125				O
Cadmium	0.08658	0.00200	0.1	0.000028	86.6	75 - 125				
Chromium	0.08279	0.00400	0.1	-0.000018	82.8	75 - 125				
Lead	0.08997	0.00200	0.1	0.000034	89.9	75 - 125				
Selenium	0.0878	0.00200	0.1	0.000038	87.8	75 - 125				
Silver	0.08522	0.00200	0.1	0.000002	85.2	75 - 125				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21010226

QC BATCH REPORT

Batch ID: 161403 (0) **Instrument:** ICPMS05 **Method:** ICP-MS METALS BY SW6020A

SD	Sample ID: HS21010060-08SD	Units: mg/L			Analysis Date: 08-Jan-2021 20:19					
Client ID:	Run ID: ICPMS05_376081	SeqNo: 5914356	PrepDate: 08-Jan-2021	DF: 5						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	Limit	Qual
Arsenic	< 0.00200	0.0100					0.001729	0	10	
Barium	0.5206	0.0200					0.5449	4.46	10	
Cadmium	< 0.00100	0.0100					0	0	10	
Chromium	< 0.00200	0.0200					0	0	10	
Lead	< 0.00300	0.0100					0	0	10	
Selenium	< 0.00550	0.0100					0	0	10	
Silver	< 0.00100	0.0100					0	0	10	

The following samples were analyzed in this batch: HS21010226-01 HS21010226-02

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21010226

QC BATCH REPORT

Batch ID: 161445 (0)		Instrument: ICPMS05		Method: TCLP METALS BY SW6020A					
MBLK	Sample ID: MBLKT2-161445	Units: mg/L		Analysis Date: 11-Jan-2021 16:48					
Client ID:	Run ID: ICPMS05_376125	SeqNo: 5915560	PrepDate: 09-Jan-2021	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Lead	< 0.00600	0.0500							
MBLK	Sample ID: MBLKT4-161445	Units: mg/L		Analysis Date: 11-Jan-2021 16:52					
Client ID:	Run ID: ICPMS05_376125	SeqNo: 5915562	PrepDate: 09-Jan-2021	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Lead	< 0.00600	0.0500							
MBLK	Sample ID: MBLKT3-161445	Units: mg/L		Analysis Date: 11-Jan-2021 16:50					
Client ID:	Run ID: ICPMS05_376125	SeqNo: 5915561	PrepDate: 09-Jan-2021	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Lead	< 0.00600	0.0500							
MBLK	Sample ID: MBLKT1-161445	Units: mg/L		Analysis Date: 11-Jan-2021 16:39					
Client ID:	Run ID: ICPMS05_376125	SeqNo: 5915557	PrepDate: 09-Jan-2021	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Lead	< 0.00600	0.0500							
MBLK	Sample ID: MBLK-161445	Units: mg/L		Analysis Date: 11-Jan-2021 16:37					
Client ID:	Run ID: ICPMS05_376125	SeqNo: 5915556	PrepDate: 09-Jan-2021	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Lead	< 0.00600	0.0500							
LCS	Sample ID: LCS-161445	Units: mg/L		Analysis Date: 11-Jan-2021 16:54					
Client ID:	Run ID: ICPMS05_376125	SeqNo: 5915563	PrepDate: 09-Jan-2021	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Lead	0.0412	0.00500	0.05	0	82.4	80 - 120			

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21010226

QC BATCH REPORT

Batch ID: 161445 (0)	Instrument: ICPMS05	Method: TCLP METALS BY SW6020A
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MS	Sample ID: HS21010069-01MS	Units: mg/L	Analysis Date: 11-Jan-2021 17:00							
Client ID:	Run ID: ICPMS05_376125	SeqNo: 5915566	PrepDate: 09-Jan-2021 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Lead 0.4387 0.0500 0.5 0.00099 87.5 80 - 120

MSD	Sample ID: HS21010069-01MSD	Units: mg/L	Analysis Date: 11-Jan-2021 17:02							
Client ID:	Run ID: ICPMS05_376125	SeqNo: 5915567	PrepDate: 09-Jan-2021 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Lead 0.4526 0.0500 0.5 0.00099 90.3 80 - 120 0.4387 3.13 20

PDS	Sample ID: HS21010069-01PDS	Units: mg/L	Analysis Date: 11-Jan-2021 17:04							
Client ID:	Run ID: ICPMS05_376125	SeqNo: 5915568	PrepDate: 09-Jan-2021 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Lead 1.003 0.0500 1 0.00099 100 75 - 125

SD	Sample ID: HS21010069-01SD	Units: mg/L	Analysis Date: 11-Jan-2021 16:58							
Client ID:	Run ID: ICPMS05_376125	SeqNo: 5915565	PrepDate: 09-Jan-2021 DF: 5							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual

Lead < 0.0300 0.250 0.00099 0 10

The following samples were analyzed in this batch: HS21010226-01 HS21010226-02

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21010226

QC BATCH REPORT

Batch ID: 161454 (0)		Instrument: ICPMS05		Method: DISSOLVED METALS BY SW6020A (DISSOLVED)						
MBLK	Sample ID: MBLK-161454	Units: mg/L		Analysis Date: 11-Jan-2021 15:30						
Client ID:		Run ID: ICPMS05_376125	SeqNo: 5915423	PrepDate: 11-Jan-2021	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual	
Lead	< 0.000600	0.00200								
LCS	Sample ID: LCS-161454	Units: mg/L		Analysis Date: 11-Jan-2021 15:32						
Client ID:		Run ID: ICPMS05_376125	SeqNo: 5915424	PrepDate: 11-Jan-2021	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual	
Lead	0.04134	0.00200	0.05	0	82.7	80 - 120				
MS	Sample ID: HS21010226-01MS	Units: mg/L		Analysis Date: 11-Jan-2021 15:38						
Client ID: WW-1620-IDW-V427-20210107		Run ID: ICPMS05_376125	SeqNo: 5915427	PrepDate: 11-Jan-2021	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual	
Lead	0.07418	0.00200	0.05	0.02783	92.7	75 - 125				
MSD	Sample ID: HS21010226-01MSD	Units: mg/L		Analysis Date: 11-Jan-2021 15:40						
Client ID: WW-1620-IDW-V427-20210107		Run ID: ICPMS05_376125	SeqNo: 5915428	PrepDate: 11-Jan-2021	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual	
Lead	0.07029	0.00200	0.05	0.02783	84.9	75 - 125	0.07418	5.38	20	
PDS	Sample ID: HS21010226-01PDS	Units: mg/L		Analysis Date: 11-Jan-2021 15:42						
Client ID: WW-1620-IDW-V427-20210107		Run ID: ICPMS05_376125	SeqNo: 5915429	PrepDate: 11-Jan-2021	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual	
Lead	0.1266	0.00200	0.1	0.02783	98.8	75 - 125				
SD	Sample ID: HS21010226-01SD	Units: mg/L		Analysis Date: 11-Jan-2021 15:36						
Client ID: WW-1620-IDW-V427-20210107		Run ID: ICPMS05_376125	SeqNo: 5915426	PrepDate: 11-Jan-2021	DF: 5					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	RPD Limit Qual	
Lead	0.02764	0.0100					0.02783	0.668	10	

The following samples were analyzed in this batch:

HS21010226-01	HS21010226-02
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Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21010226

QC BATCH REPORT

Batch ID: R376058 (0)		Instrument: VOA4		Method: LOW LEVEL VOLATILES BY SW8260C						
MBLK	Sample ID: VBLKW-210107	Units: ug/L			Analysis Date: 07-Jan-2021 16:35					
Client ID:	Run ID: VOA4_376058	SeqNo: 5913772		PrepDate:		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	
Benzene	< 0.20	1.0								
Ethylbenzene	< 0.30	1.0								
Toluene	< 0.20	1.0								
Xylenes, Total	< 0.30	1.0								
<i>Surr: 1,2-Dichloroethane-d4</i>	53.31	1.0	50	0	107	70 - 123				
<i>Surr: 4-Bromofluorobenzene</i>	49.3	1.0	50	0	98.6	82 - 115				
<i>Surr: Dibromofluoromethane</i>	49.33	1.0	50	0	98.7	73 - 126				
<i>Surr: Toluene-d8</i>	49.1	1.0	50	0	98.2	81 - 120				
LCS	Sample ID: VLCSW-210107	Units: ug/L			Analysis Date: 07-Jan-2021 15:53					
Client ID:	Run ID: VOA4_376058	SeqNo: 5913771		PrepDate:		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	
Benzene	19.55	1.0	20	0	97.7	74 - 120				
Ethylbenzene	19.49	1.0	20	0	97.5	77 - 117				
Toluene	19.82	1.0	20	0	99.1	77 - 118				
Xylenes, Total	61.59	1.0	60	0	103	75 - 122				
<i>Surr: 1,2-Dichloroethane-d4</i>	50.6	1.0	50	0	101	70 - 130				
<i>Surr: 4-Bromofluorobenzene</i>	51.36	1.0	50	0	103	82 - 115				
<i>Surr: Dibromofluoromethane</i>	49.19	1.0	50	0	98.4	73 - 126				
<i>Surr: Toluene-d8</i>	50.32	1.0	50	0	101	81 - 120				
MS	Sample ID: HS21010113-01MS	Units: ug/L			Analysis Date: 07-Jan-2021 21:04					
Client ID:	Run ID: VOA4_376058	SeqNo: 5913785		PrepDate:		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	
Benzene	17.23	1.0	20	0	86.1	70 - 127				
Ethylbenzene	16.33	1.0	20	0	81.7	70 - 124				
Toluene	17.03	1.0	20	0	85.2	70 - 123				
Xylenes, Total	49.44	1.0	60	0	82.4	70 - 130				
<i>Surr: 1,2-Dichloroethane-d4</i>	51.05	1.0	50	0	102	70 - 126				
<i>Surr: 4-Bromofluorobenzene</i>	49.53	1.0	50	0	99.1	81 - 113				
<i>Surr: Dibromofluoromethane</i>	50.17	1.0	50	0	100	77 - 123				
<i>Surr: Toluene-d8</i>	48.87	1.0	50	0	97.7	82 - 127				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21010226

QC BATCH REPORT

Batch ID: R376058 (0) **Instrument:** VOA4 **Method:** LOW LEVEL VOLATILES BY SW8260C

MSD		Sample ID: HS21010113-01MSD			Units: ug/L		Analysis Date: 07-Jan-2021 21:25			
Client ID:		Run ID: VOA4_376058			SeqNo: 5913786		PrepDate:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	16.32	1.0	20	0	81.6	70 - 127	17.23	5.41	20	
Ethylbenzene	15.1	1.0	20	0	75.5	70 - 124	16.33	7.83	20	
Toluene	16.04	1.0	20	0	80.2	70 - 123	17.03	6	20	
Xylenes, Total	48.7	1.0	60	0	81.2	70 - 130	49.44	1.5	20	
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>50.02</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>100</i>	<i>70 - 126</i>	<i>51.05</i>	<i>2.04</i>	<i>20</i>	
<i>Surr: 4-Bromofluorobenzene</i>	<i>49.32</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>98.6</i>	<i>81 - 113</i>	<i>49.53</i>	<i>0.431</i>	<i>20</i>	
<i>Surr: Dibromofluoromethane</i>	<i>49.7</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>99.4</i>	<i>77 - 123</i>	<i>50.17</i>	<i>0.956</i>	<i>20</i>	
<i>Surr: Toluene-d8</i>	<i>49.11</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>98.2</i>	<i>82 - 127</i>	<i>48.87</i>	<i>0.502</i>	<i>20</i>	

The following samples were analyzed in this batch: HS21010226-02

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21010226

QC BATCH REPORT

Batch ID: 161428 (0)	Instrument: UV-2450	Method: CYANIDE - SW9014
-------------------------------	----------------------------	---------------------------------

MBLK	Sample ID: MBLK-161428	Units: mg/L	Analysis Date: 08-Jan-2021 13:00							
Client ID:	Run ID: UV-2450_376076	SeqNo: 5914020	PrepDate: 08-Jan-2021 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Cyanide < 0.00200 0.00500

LCS	Sample ID: LCS-161428	Units: mg/L	Analysis Date: 08-Jan-2021 13:00							
Client ID:	Run ID: UV-2450_376076	SeqNo: 5914019	PrepDate: 08-Jan-2021 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Cyanide 0.195 0.00500 0.2 0 97.5 80 - 120

MS	Sample ID: HS21010083-01MS	Units: mg/L	Analysis Date: 08-Jan-2021 13:00							
Client ID:	Run ID: UV-2450_376076	SeqNo: 5914017	PrepDate: 08-Jan-2021 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Cyanide 0.186 0.00500 0.2 0.002 92.0 80 - 120

MSD	Sample ID: HS21010083-01MSD	Units: mg/L	Analysis Date: 08-Jan-2021 13:00							
Client ID:	Run ID: UV-2450_376076	SeqNo: 5914018	PrepDate: 08-Jan-2021 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Cyanide 0.177 0.00500 0.2 0.002 87.5 80 - 120 0.186 4.96 20

The following samples were analyzed in this batch: HS21010226-02

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21010226

QC BATCH REPORT

Batch ID: R376018 (0) **Instrument:** WetChem_HS **Method:** FLASH POINT BY PENSKY-MARTENS SW1010A

LCS Sample ID: **LCS-R376018** Units: °F Analysis Date: **07-Jan-2021 09:30**
 Client ID: Run ID: **WetChem_HS_376018** SeqNo: **5912903** PrepDate: DF: 1
 Analyte Result PQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %RPD RPD Limit Qual

Ignitability 80.3 70.0 81 0 99.1 95 - 105

DUP Sample ID: **HS20121419-03DUP** Units: °F Analysis Date: **07-Jan-2021 09:30**
 Client ID: Run ID: **WetChem_HS_376018** SeqNo: **5912904** PrepDate: DF: 1
 Analyte Result PQL 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:

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21010226

QC BATCH REPORT

Batch ID: R376121 (0)		Instrument: WetChem_HS		Method: PH BY SW9040C						
DUP	Sample ID: HS21010217-05DUP	Units: pH Units			Analysis Date: 11-Jan-2021 13:58					
Client ID:	Run ID: WetChem_HS_376121	SeqNo: 5914982		PrepDate:		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

pH	6.85	0.100					6.88	0.437	10	
Temp Deg C @pH	18.8	0					18.9	0.531	10	

The following samples were analyzed in this batch: HS21010226-02

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21010226

QC BATCH REPORT

Batch ID: R376126 (0)	Instrument: WetChem_HS	Method: SULFIDE BY SM4500 S2-F
--------------------------------	-------------------------------	---------------------------------------

MBLK	Sample ID: MBLK-R376126	Units: mg/L	Analysis Date: 11-Jan-2021 13:00							
Client ID:	Run ID: WetChem_HS_376126	SeqNo: 5915055	PrepDate: DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual

Sulfide < 1.00 1.00

LCS	Sample ID: LCS-R376126	Units: mg/L	Analysis Date: 11-Jan-2021 13:00							
Client ID:	Run ID: WetChem_HS_376126	SeqNo: 5915054	PrepDate: DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual

Sulfide 21.88 1.00 25 0 87.5 85 - 115

LCSD	Sample ID: LCSD-R376126	Units: mg/L	Analysis Date: 11-Jan-2021 13:00							
Client ID:	Run ID: WetChem_HS_376126	SeqNo: 5915053	PrepDate: DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual

Sulfide 21.68 1.00 25 0 86.7 85 - 115 21.88 0.918 20

MS	Sample ID: HS21010144-01MS	Units: mg/L	Analysis Date: 11-Jan-2021 13:00							
Client ID:	Run ID: WetChem_HS_376126	SeqNo: 5915056	PrepDate: DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual

Sulfide 24.48 1.00 25 -1.32 103 80 - 120

The following samples were analyzed in this batch: HS21010226-02

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21010226

**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
Date	
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	20-030-0	26-Mar-2021
California	2919, 2020-2021	30-Apr-2021
Dept of Defense	PJLA L20-507	22-Dec-2021
Florida	E87611-30-07/01/2020	30-Jun-2021
Illinois	2000322020-4	09-May-2021
Kansas	E-10352 2020-2021	31-Jul-2021
Kentucky	123043, 2020-2021	30-Apr-2021
Louisiana	03087, 2020-2021	30-Jun-2021
North Carolina	624-2021	31-Dec-2021
North Dakota	R-193 2020-2021	30-Apr-2021
Oklahoma	2020-165	31-Aug-2021
Texas	T104704231-20-26	30-Apr-2021

Sample Receipt Checklist

Work Order ID: HS21010226

Date/Time Received: 07-Jan-2021 14:35

Client Name: PBW

Received by: Pablo Martinez

Completed By: /S/ Pablo Martinez

07-Jan-2021 15:11

Reviewed by: /S/ Dane J. Wacasey

12-Jan-2021 12:30

eSignature

Date/Time

eSignature

Date/Time

Matrices: **WATER**

Carrier name: **Client**

- Shipping container/cooler in good condition? Yes No Not Present
- Custody seals intact on shipping container/cooler? Yes No Not Present
- Custody seals intact on sample bottles? Yes No Not Present
- VOA/TX1005/TX1006 Solids in hermetically sealed vials? Yes No Not Present
- Chain of custody present? Yes No 1 Page(s)
- Chain of custody signed when relinquished and received? Yes No COC IDs:236494
- Samplers name present on COC? Yes No
- Chain of custody agrees with sample labels? Yes No
- Samples in proper container/bottle? Yes No
- Sample containers intact? Yes No
- Sufficient sample volume for indicated test? Yes No
- All samples received within holding time? Yes No
- Container/Temp Blank temperature in compliance? Yes No

Temperature(s)/Thermometer(s):

Cooler(s)/Kit(s):

Date/Time sample(s) sent to storage:

Water - VOA vials have zero headspace? Yes No No VOA vials submitted

Water - pH acceptable upon receipt? Yes No N/A

pH adjusted? Yes No N/A

pH adjusted by:

Login Notes:

Client Contacted: _____ Date Contacted: _____ Person Contacted: _____

Contacted By: _____ Regarding: _____

Comments:

Corrective Action:



Cincinnati, OH
+1 513 733 5336

Everett, WA
+1 425 356 2600

Fort Collins, CO
+1 970 490 1511

Holland, MI
+1 616 399 6070

Chain of Custody Form

Page 1 of 1

COC ID: 236494

HS21010226

Golder Associates Inc.
Houston TX-Wood Preserving Works IDW



ALS Project Manager:

Customer Information		Project Information		ALS Project Manager:											
Purchase Order	UPRR/Kevin Petarburs 1620-23	Project Name	Houston TX-Wood Preserving Works IDW	A	8260_LL_W (5652652 BTEX)										
Work Order		Project Number	1620-23-Rev0 SR 92688	B	TX1005_W_Low (5643233 TPH TX1005)										
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P	C	RCRA 8 Waters (5652643 RCRA 8 Metals)										
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	CN_TW_9014 (5632370 Cyanide - RCI)										
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	SULFD_4500S F (5636267 Sulfide - RCI)										
				F	pH_W_9040C (5635957 pH - RCI)										
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	IGN_W (5652637 Ignitability - RCI)										
Phone	(512) 671-3434	Phone		H	1311_TCLP ICP Metals (5640672 5636002 TCLP Pb)										
Fax	(512) 671-3445	Fax		I	ICP_DISS (5636002 6020 DISS Lead (Fld Fitr 0.45um))										
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	WW-1620-IDW-V427-20210107	1-7-21	1235						X					X	X		
2	WW-1620-IDW-V714-20210107	1-7-21	1250				X	X	X	X	X	X	X	X	X		
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign JOHN BRAYTON		Shipment Method HAND DELIVERED		Required Turnaround Time: (Check Box) <input checked="" type="checkbox"/> 3 <input type="checkbox"/> STD 10 Wk Days <input type="checkbox"/> 5 Wk Days <input type="checkbox"/> 2 Wk Days <input type="checkbox"/> 24 Hrs				Results Due Date:			
Relinquished by: <i>[Signature]</i>	Date: 1-7-2021	Time: 14:35	Received by: <i>[Signature]</i>	Notes: UPRR HWPIW 1620-23 WR# 003256							
Relinquished by:	Date:	Time:	Received by (Laboratory): <i>[Signature]</i>	Cooler ID: 46844	Cooler Temp.: 0.2C	QC Package: (Check One Box Below) <input checked="" type="checkbox"/> Level II Std QC <input type="checkbox"/> Level III Std QC/Raw Data <input type="checkbox"/> Level IV SW/848/CLP <input type="checkbox"/> Other					
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory): 1-7-21 14:35	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							

- 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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March 15, 2021

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

Work Order: **HS21030092**

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

Dear Eric Matzner,

ALS Environmental received 3 sample(s) on Mar 02, 2021 for the analysis presented in the following report.

This is a REVISED REPORT. Please see the Case Narrative for discussion concerning this revision.

Regards,

Generated By: DANE.WACASEY
Dane J. Wacasey

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
Work Order: HS21030092

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS21030092-01	WW-1620-IDW01-20210302	Water		02-Mar-2021 11:00	02-Mar-2021 13:35	<input type="checkbox"/>
HS21030092-02	WW-1620-IDW02-20210302	Water		02-Mar-2021 11:30	02-Mar-2021 13:35	<input type="checkbox"/>
HS21030092-03	SO-1620-IDW02-20210302	Sludge		02-Mar-2021 12:00	02-Mar-2021 13:35	<input type="checkbox"/>

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
Work Order: HS21030092

CASE NARRATIVE**Work Order Comments**

- This report was revised March 15, 2021 to include TCLP Chromium result for sample SO-1620-IDW02-20210302 which was not included in the original report and the removal of TCLP Chromium for sample WW-1620-IDW02-20210302 which was not requested. Additionally, the request to include TCLP Barium was received March 15, 2021 via email and results for this analyte are contained in this report revision.
- 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 °C.

GC Semivolatiles by Method TX1005**Batch ID: 163117****Sample ID: SO-1620-IDW02-20210302 (HS21030092-03MS)**

- The recovery of the Matrix Spike (MS) and/or Matrix Spike Duplicate (MSD) associated with this analyte was outside of the established control limits. However, the LCS was within control limits. The recovery of the MS/MSD may be due to sample matrix interference. (>nC12 to nC28)

Sample ID: SO-1620-IDW02-20210302 (HS21030092-03MSD)

- The recovery of the Matrix Spike (MS) and/or Matrix Spike Duplicate (MSD) associated with this analyte was outside of the established control limits. However, the LCS was within control limits. The recovery of the MS/MSD may be due to sample matrix interference. (>nC12 to nC28)

Batch ID: 163198**Sample ID: WW-1620-IDW02-20210302 (HS21030092-02)**

- Surrogates were spiked 2x normal amount. Calculations were adjusted accordingly

GCMS Volatiles by Method SW8260**Batch ID: R378961**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: R379169**Sample ID: HS21030124-23MS**

- MS and MSD are for an unrelated sample

Metals by Method SW1311/6020**Batch ID: 163382****Sample ID: HS21030303-01MS**

- MS and MSD are for an unrelated sample

Metals by Method SW7470A**Batch ID: 163211**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method SW6020**Batch ID: 163176**

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
Work Order: HS21030092

CASE NARRATIVE

Metals by Method SW6020

Batch ID: 163176

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: 163195

Sample ID: HS21030183-39MS

- MS and MSD are for an unrelated sample
-

Metals by Method SW7471B

Batch ID: 163081

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

WetChemistry by Method SW1010

Batch ID: R379197

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

WetChemistry by Method SW9040C

Batch ID: R378987

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

WetChemistry by Method SM4500 S2-F

Batch ID: R378900

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

WetChemistry by Method SW9014

Batch ID: 163103

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works IDW
 Sample ID: WW-1620-IDW01-20210302
 Collection Date: 02-Mar-2021 11:00

ANALYTICAL REPORT
 WorkOrder:HS21030092
 Lab ID:HS21030092-01
 Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP			
Benzene	< 0.00020		0.00020	0.0010	mg/L	1	04-Mar-2021 03:15
Ethylbenzene	< 0.00030		0.00030	0.0010	mg/L	1	04-Mar-2021 03:15
Naphthalene	< 0.00030		0.00030	0.0010	mg/L	1	04-Mar-2021 03:15
Toluene	< 0.00020		0.00020	0.0010	mg/L	1	04-Mar-2021 03:15
Xylenes, Total	< 0.00030		0.00030	0.0010	mg/L	1	04-Mar-2021 03:15
Surr: 1,2-Dichloroethane-d4	105			70-126	%REC	1	04-Mar-2021 03:15
Surr: 4-Bromofluorobenzene	98.7			81-113	%REC	1	04-Mar-2021 03:15
Surr: Dibromofluoromethane	104			77-123	%REC	1	04-Mar-2021 03:15
Surr: Toluene-d8	102			82-127	%REC	1	04-Mar-2021 03:15
LOW-LEVEL TEXAS TPH BY TX1005		Method:TX1005		Prep:TX1005PR / 08-Mar-2021		Analyst: MBG	
nC6 to nC12	< 0.19		0.19	0.48	mg/L	1	08-Mar-2021 20:18
>nC12 to nC28	< 0.19		0.19	0.48	mg/L	1	08-Mar-2021 20:18
>nC28 to nC35	< 0.19		0.19	0.48	mg/L	1	08-Mar-2021 20:18
Total Petroleum Hydrocarbon	< 0.19		0.19	0.48	mg/L	1	08-Mar-2021 20:18
Surr: 2-Fluorobiphenyl	118			70-130	%REC	1	08-Mar-2021 20:18
Surr: Trifluoromethyl benzene	120			70-130	%REC	1	08-Mar-2021 20:18
ICP-MS METALS BY SW6020A		Method:SW6020		Prep:SW3010A / 05-Mar-2021		Analyst: JHD	
Arsenic	0.00410		0.000400	0.00200	mg/L	1	06-Mar-2021 00:16
Barium	0.264		0.00190	0.00400	mg/L	1	06-Mar-2021 00:16
Cadmium	0.00124	J	0.000200	0.00200	mg/L	1	06-Mar-2021 00:16
Chromium	0.00403		0.000400	0.00400	mg/L	1	06-Mar-2021 00:16
Lead	0.0686		0.000600	0.00200	mg/L	1	06-Mar-2021 00:16
Selenium	< 0.00110		0.00110	0.00200	mg/L	1	06-Mar-2021 00:16
Silver	< 0.000200		0.000200	0.00200	mg/L	1	06-Mar-2021 00:16
MERCURY BY SW7470A		Method:SW7470A		Prep:SW7470A / 08-Mar-2021		Analyst: MSC	
Mercury	< 0.0000300		0.0000300	0.000200	mg/L	1	08-Mar-2021 15:08
SULFIDE BY SM4500 S2-F		Method:SM4500 S2-F		Analyst: KVL			
Sulfide	< 1.00		1.00	1.00	mg/L	1	03-Mar-2021 10:00
FLASH POINT BY PENSKEY-MARTENS SW1010A		Method:SW1010		Analyst: TH			
Ignitability	> 212		70.0	70.0	°F	1	08-Mar-2021 08:00
CYANIDE - SW9014		Method:SW9014		Prep:SW9010C / 04-Mar-2021		Analyst: KVL	
Cyanide	< 0.00200		0.00200	0.00500	mg/L	1	04-Mar-2021 15:40
PH BY SW9040C		Method:SW9040C		Analyst: JAC			
pH	7.86	H	0.100	0.100	pH Units	1	04-Mar-2021 12:17
Temp Deg C @pH	22.8	H	0	0	DEG C	1	04-Mar-2021 12:17

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

Revision: 1

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works IDW
 Sample ID: WW-1620-IDW02-20210302
 Collection Date: 02-Mar-2021 11:30

ANALYTICAL REPORT
 WorkOrder:HS21030092
 Lab ID:HS21030092-02
 Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C			Method:SW8260			Analyst: AKP	
Benzene	< 0.00020		0.00020	0.0010	mg/L	1	04-Mar-2021 03:57
Ethylbenzene	< 0.00030		0.00030	0.0010	mg/L	1	04-Mar-2021 03:57
Naphthalene	< 0.00030		0.00030	0.0010	mg/L	1	04-Mar-2021 03:57
Toluene	0.00055	J	0.00020	0.0010	mg/L	1	04-Mar-2021 03:57
Xylenes, Total	< 0.00030		0.00030	0.0010	mg/L	1	04-Mar-2021 03:57
Surr: 1,2-Dichloroethane-d4	102			70-126	%REC	1	04-Mar-2021 03:57
Surr: 4-Bromofluorobenzene	99.6			81-113	%REC	1	04-Mar-2021 03:57
Surr: Dibromofluoromethane	102			77-123	%REC	1	04-Mar-2021 03:57
Surr: Toluene-d8	99.0			82-127	%REC	1	04-Mar-2021 03:57
LOW-LEVEL TEXAS TPH BY TX1005			Method:TX1005			Prep:TX1005PR / 08-Mar-2021 Analyst: MBG	
nC6 to nC12	< 0.20		0.20	0.51	mg/L	1	08-Mar-2021 20:48
>nC12 to nC28	< 0.20		0.20	0.51	mg/L	1	08-Mar-2021 20:48
>nC28 to nC35	< 0.20		0.20	0.51	mg/L	1	08-Mar-2021 20:48
Total Petroleum Hydrocarbon	< 0.20		0.20	0.51	mg/L	1	08-Mar-2021 20:48
Surr: 2-Fluorobiphenyl	86.8			70-130	%REC	1	08-Mar-2021 20:48
Surr: Trifluoromethyl benzene	88.0			70-130	%REC	1	08-Mar-2021 20:48
TCLP METALS BY SW6020A			Method:SW1311/6020			Leache:SW1311 / 10-Mar-2021 Prep:SW3010A / 05-Mar-2021 Analyst: JHD	
Lead	1.08		0.00600	0.0500	mg/L	1	12-Mar-2021 12:57
ICP-MS METALS BY SW6020A			Method:SW6020			Prep:SW3010A / 05-Mar-2021 Analyst: JHD	
Arsenic	0.0773		0.00400	0.0200	mg/L	1	06-Mar-2021 00:18
Barium	2.23		0.0190	0.0400	mg/L	1	06-Mar-2021 00:18
Cadmium	0.0703		0.00200	0.0200	mg/L	1	06-Mar-2021 00:18
Chromium	0.310		0.00400	0.0400	mg/L	1	06-Mar-2021 00:18
Lead	4.45		0.00600	0.0200	mg/L	1	06-Mar-2021 00:18
Selenium	< 0.0110		0.0110	0.0200	mg/L	1	06-Mar-2021 00:18
Silver	0.00621	J	0.00200	0.0200	mg/L	1	06-Mar-2021 00:18
MERCURY BY SW7470A			Method:SW7470A			Prep:SW7470A / 08-Mar-2021 Analyst: MSC	
Mercury	< 0.0000300		0.0000300	0.000200	mg/L	1	08-Mar-2021 15:09
SULFIDE BY SM4500 S2-F			Method:SM4500 S2-F			Analyst: KVL	
Sulfide	3.20		1.00	1.00	mg/L	1	03-Mar-2021 10:00
FLASH POINT BY PENSKY-MARTENS SW1010A			Method:SW1010			Analyst: TH	
Ignitability	> 212		70.0	70.0	°F	1	08-Mar-2021 08:00
CYANIDE - SW9014			Method:SW9014			Prep:SW9010C / 04-Mar-2021 Analyst: KVL	
Cyanide	0.0140		0.00200	0.00500	mg/L	1	04-Mar-2021 15:40
PH BY SW9040C			Method:SW9040C			Analyst: JAC	
pH	9.06	H	0.100	0.100	pH Units	1	04-Mar-2021 12:17
Temp Deg C @pH	22.9	H	0	0	DEG C	1	04-Mar-2021 12:17

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

Revision: 1

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works IDW
 Sample ID: SO-1620-IDW02-20210302
 Collection Date: 02-Mar-2021 12:00

ANALYTICAL REPORT
 WorkOrder:HS21030092
 Lab ID:HS21030092-03
 Matrix:Sludge

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED	
VOLATILES BY SW8260C		Method:SW8260			Analyst: WLR			
Benzene	< 0.00053		0.00053	0.0053	mg/Kg	1	08-Mar-2021 21:39	
Ethylbenzene	< 0.00074		0.00074	0.0053	mg/Kg	1	08-Mar-2021 21:39	
Naphthalene	0.0074		0.00085	0.0053	mg/Kg	1	08-Mar-2021 21:39	
Toluene	< 0.00064		0.00064	0.0053	mg/Kg	1	08-Mar-2021 21:39	
Xylenes, Total	< 0.0011		0.0011	0.0053	mg/Kg	1	08-Mar-2021 21:39	
<i>Surr: 1,2-Dichloroethane-d4</i>	94.3			70-126	%REC	1	08-Mar-2021 21:39	
<i>Surr: 4-Bromofluorobenzene</i>	96.0			70-130	%REC	1	08-Mar-2021 21:39	
<i>Surr: Dibromofluoromethane</i>	99.2			70-130	%REC	1	08-Mar-2021 21:39	
<i>Surr: Toluene-d8</i>	102			70-130	%REC	1	08-Mar-2021 21:39	
TEXAS TPH BY TX1005		Method:TX1005			Prep:TX1005PR / 04-Mar-2021		Analyst: MBG	
nC6 to nC12	< 15		15	99	mg/Kg	2	07-Mar-2021 08:41	
>nC12 to nC28	1,300		19	99	mg/Kg	2	07-Mar-2021 08:41	
>nC28 to nC35	860		19	99	mg/Kg	2	07-Mar-2021 08:41	
Total Petroleum Hydrocarbon	2,160		15	99	mg/Kg	2	07-Mar-2021 08:41	
<i>Surr: 2-Fluorobiphenyl</i>	116			70-130	%REC	2	07-Mar-2021 08:41	
<i>Surr: Trifluoromethyl benzene</i>	119			70-130	%REC	2	07-Mar-2021 08:41	
TCLP METALS BY SW6020A		Method:SW1311/6020			Leache:SW1311 / 11-Mar-2021		Prep:SW3010A / 11-Mar-2021	Analyst: JHD
Barium	1.67		0.0190	0.200	mg/L	1	12-Mar-2021 12:59	
Chromium	< 0.00400		0.00400	0.0500	mg/L	1	12-Mar-2021 12:59	
Lead	0.0185	J	0.00600	0.0500	mg/L	1	12-Mar-2021 12:59	
METALS BY SW6020A		Method:SW6020			Prep:SW3050B / 09-Mar-2021		Analyst: JHD	
Arsenic	3.23		0.0656	0.468	mg/Kg	1	09-Mar-2021 16:21	
Barium	253		0.562	9.37	mg/Kg	20	09-Mar-2021 16:29	
Cadmium	0.798		0.0253	0.468	mg/Kg	1	09-Mar-2021 16:21	
Chromium	236		0.431	9.37	mg/Kg	20	09-Mar-2021 16:29	
Lead	66.2		0.0122	0.468	mg/Kg	1	09-Mar-2021 16:21	
Selenium	< 0.0852		0.0852	0.468	mg/Kg	1	09-Mar-2021 16:21	
Silver	0.0770	J	0.0140	0.468	mg/Kg	1	09-Mar-2021 16:21	
MERCURY BY SW7471B		Method:SW7471B			Prep:SW7471B / 05-Mar-2021		Analyst: MSC	
Mercury	0.208		0.000484	0.00342	mg/Kg	1	05-Mar-2021 09:47	

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21030092

Batch ID: 4156 **Start Date:** 04 Mar 2021 09:29 **End Date:** 04 Mar 2021 09:29
Method: VOLATILES BY SW8260C

Sample ID	Container	Sample Wt/Vol	Final Volume	Weight Factor	Container Type
HS21030092-03	1	4.718 (g)	5 (mL)	1.06	TerraCore (5035A)

Batch ID: 163081 **Start Date:** 05 Mar 2021 07:11 **End Date:** 05 Mar 2021 09:00
Method: MERCURY PREP - SOLID - 7471B **Prep Code:** HG_S_LOWPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21030092-03		0.5829 (grams)	40 (mL)	68.62	4-oz glass, Neat

Batch ID: 163103 **Start Date:** 04 Mar 2021 10:30 **End Date:** 04 Mar 2021 12:00
Method: CYANIDE PREP - SW9010C **Prep Code:** CN_TW_PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21030092-01		50 (mL)	50 (mL)	1	250 mL plastic, NaOH/ASE
HS21030092-02		50 (mL)	50 (mL)	1	250 mL plastic, NaOH/ASE

Batch ID: 163117 **Start Date:** 04 Mar 2021 13:32 **End Date:** 04 Mar 2021 14:19
Method: TX 1005 PREP **Prep Code:** TX 1005_S PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21030092-03	1	10.15 (g)	10 (mL)	0.9852	4-oz glass, Neat

Batch ID: 163176 **Start Date:** 05 Mar 2021 14:00 **End Date:** 05 Mar 2021 18:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21030092-01		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21030092-02		1 (mL)	10 (mL)	10	120 plastic HNO3

Batch ID: 163195 **Start Date:** 09 Mar 2021 08:30 **End Date:** 09 Mar 2021 14:30
Method: METALS PREP - SOLIDS - SW3050B **Prep Code:** 3050_I_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21030092-03		0.5339 (g)	50 (mL)	93.65	4-oz glass, Neat

Batch ID: 163198 **Start Date:** 08 Mar 2021 09:43 **End Date:** 08 Mar 2021 15:28
Method: TX 1005 PREP **Prep Code:** TX 1005_W PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21030092-01	1	31.35 (g)	3 (mL)	0.09569	40 mL VOA w/ HCL
HS21030092-02	1	29.48 (g)	3 (mL)	0.1018	40 mL VOA w/ HCL

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21030092

Batch ID: 163211 **Start Date:** 08 Mar 2021 09:00 **End Date:** 08 Mar 2021 11:00
Method: MERCURY PREP BY 7470A- WATER **Prep Code:** HG_WPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21030092-01		10 (mL)	10 (mL)	1	120 plastic HNO3
HS21030092-02		10 (mL)	10 (mL)	1	120 plastic HNO3

Batch ID: 163311 **Start Date:** 10 Mar 2021 11:30 **End Date:** 10 Mar 2021 12:00
Method: TCLP METALS EXTRACTION BY SW1311 **Prep Code:** 1311LM EXT

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21030092-02		100 (grams)	2000 (mL)	20	250 mL plastic, Neat

Batch ID: 163319 **Start Date:** 10 Mar 2021 17:00 **End Date:** 11 Mar 2021 10:00
Method: TCLP METALS EXTRACTION BY SW1311 **Prep Code:** 1311LM EXT

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21030092-03		100 (grams)	2000 (mL)	20	8-oz glass, Neat

Batch ID: 163382 **Start Date:** 11 Mar 2021 13:00 **End Date:** 11 Mar 2021 17:00
Method: TCLP LEACHATE DIGESTION BY SW3010A **Prep Code:** 3010A_TCLP

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21030092-02		1 (mL)	10 (mL)	10	250 mL plastic, Neat
HS21030092-03		1 (mL)	10 (mL)	10	8-oz glass, Neat

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21030092

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 163081 (0)		Test Name : MERCURY BY SW7471B			Matrix: Sludge	
HS21030092-03	SO-1620-IDW02-20210302	02 Mar 2021 12:00		05 Mar 2021 09:00	05 Mar 2021 09:47	1
Batch ID: 163103 (0)		Test Name : CYANIDE - SW9014			Matrix: Water	
HS21030092-01	WW-1620-IDW01-20210302	02 Mar 2021 11:00		04 Mar 2021 10:30	04 Mar 2021 15:40	1
HS21030092-02	WW-1620-IDW02-20210302	02 Mar 2021 11:30		04 Mar 2021 10:30	04 Mar 2021 15:40	1
Batch ID: 163117 (0)		Test Name : TEXAS TPH BY TX1005			Matrix: Sludge	
HS21030092-03	SO-1620-IDW02-20210302	02 Mar 2021 12:00		04 Mar 2021 13:32	07 Mar 2021 08:41	2
Batch ID: 163176 (0)		Test Name : ICP-MS METALS BY SW6020A			Matrix: Water	
HS21030092-01	WW-1620-IDW01-20210302	02 Mar 2021 11:00		05 Mar 2021 18:00	06 Mar 2021 00:16	1
HS21030092-02	WW-1620-IDW02-20210302	02 Mar 2021 11:30	10 Mar 2021 11:42	05 Mar 2021 18:00	12 Mar 2021 12:57	1
HS21030092-02	WW-1620-IDW02-20210302	02 Mar 2021 11:30		05 Mar 2021 18:00	06 Mar 2021 00:18	1
Batch ID: 163195 (0)		Test Name : METALS BY SW6020A			Matrix: Sludge	
HS21030092-03	SO-1620-IDW02-20210302	02 Mar 2021 12:00		09 Mar 2021 14:30	09 Mar 2021 16:29	20
HS21030092-03	SO-1620-IDW02-20210302	02 Mar 2021 12:00		09 Mar 2021 14:30	09 Mar 2021 16:21	1
Batch ID: 163198 (0)		Test Name : LOW-LEVEL TEXAS TPH BY TX1005			Matrix: Water	
HS21030092-01	WW-1620-IDW01-20210302	02 Mar 2021 11:00		08 Mar 2021 09:43	08 Mar 2021 20:18	1
HS21030092-02	WW-1620-IDW02-20210302	02 Mar 2021 11:30		08 Mar 2021 09:43	08 Mar 2021 20:48	1
Batch ID: 163211 (0)		Test Name : MERCURY BY SW7470A			Matrix: Water	
HS21030092-01	WW-1620-IDW01-20210302	02 Mar 2021 11:00		08 Mar 2021 09:00	08 Mar 2021 15:08	1
HS21030092-02	WW-1620-IDW02-20210302	02 Mar 2021 11:30		08 Mar 2021 09:00	08 Mar 2021 15:09	1
Batch ID: 163382 (0)		Test Name : TCLP METALS BY SW6020A			Matrix: Sludge	
HS21030092-03	SO-1620-IDW02-20210302	02 Mar 2021 12:00	11 Mar 2021 10:00	11 Mar 2021 17:00	12 Mar 2021 12:59	1
Batch ID: R378900 (0)		Test Name : SULFIDE BY SM4500 S2-F			Matrix: Water	
HS21030092-01	WW-1620-IDW01-20210302	02 Mar 2021 11:00			03 Mar 2021 10:00	1
HS21030092-02	WW-1620-IDW02-20210302	02 Mar 2021 11:30			03 Mar 2021 10:00	1
Batch ID: R378961 (0)		Test Name : LOW LEVEL VOLATILES BY SW8260C			Matrix: Water	
HS21030092-01	WW-1620-IDW01-20210302	02 Mar 2021 11:00			04 Mar 2021 03:15	1
HS21030092-02	WW-1620-IDW02-20210302	02 Mar 2021 11:30			04 Mar 2021 03:57	1
Batch ID: R378987 (0)		Test Name : PH BY SW9040C			Matrix: Water	
HS21030092-01	WW-1620-IDW01-20210302	02 Mar 2021 11:00			04 Mar 2021 12:17	1
HS21030092-02	WW-1620-IDW02-20210302	02 Mar 2021 11:30			04 Mar 2021 12:17	1
Batch ID: R379169 (0)		Test Name : VOLATILES BY SW8260C			Matrix: Sludge	
HS21030092-03	SO-1620-IDW02-20210302	02 Mar 2021 12:00			08 Mar 2021 21:39	1
Batch ID: R379197 (0)		Test Name : FLASH POINT BY PENSKEY-MARTENS SW1010A			Matrix: Water	
HS21030092-01	WW-1620-IDW01-20210302	02 Mar 2021 11:00			08 Mar 2021 08:00	1
HS21030092-02	WW-1620-IDW02-20210302	02 Mar 2021 11:30			08 Mar 2021 08:00	1

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21030092

QC BATCH REPORT

Batch ID: 163117 (0)		Instrument: FID-11		Method: TEXAS TPH BY TX1005					
MBLK	Sample ID: MBLK-163117	Units: mg/Kg			Analysis Date: 05-Mar-2021 14:29				
Client ID:	Run ID: FID-11_379177	SeqNo: 5983731		PrepDate: 04-Mar-2021		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual

nC6 to nC12	< 7.4	50							
>nC12 to nC28	< 9.8	50							
>nC28 to nC35	< 9.8	50							
Total Petroleum Hydrocarbon	< 7.4	50							
Surr: 2-Fluorobiphenyl	30.06	0	25	0	120	70 - 130			
Surr: Trifluoromethyl benzene	29.1	0	25	0	116	70 - 130			

LCS	Sample ID: LCS-163117	Units: mg/Kg			Analysis Date: 05-Mar-2021 14:59				
Client ID:	Run ID: FID-11_379177	SeqNo: 5983732		PrepDate: 04-Mar-2021		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual

nC6 to nC12	226.9	50	250	0	90.8	75 - 125			
>nC12 to nC28	247.3	50	250	0	98.9	75 - 125			
Surr: 2-Fluorobiphenyl	26.44	0	25	0	106	70 - 130			
Surr: Trifluoromethyl benzene	26.34	0	25	0	105	70 - 130			

LCSD	Sample ID: LCSD-163117	Units: mg/Kg			Analysis Date: 05-Mar-2021 15:29				
Client ID:	Run ID: FID-11_379177	SeqNo: 5983733		PrepDate: 04-Mar-2021		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual

nC6 to nC12	234.7	50	250	0	93.9	75 - 125	226.9	3.38	20
>nC12 to nC28	258.8	50	250	0	104	75 - 125	247.3	4.54	20
Surr: 2-Fluorobiphenyl	26.44	0	25	0	106	70 - 130	26.44	0	20
Surr: Trifluoromethyl benzene	26.52	0	25	0	106	70 - 130	26.34	0.671	20

MS	Sample ID: HS21030092-03MS	Units: mg/Kg			Analysis Date: 07-Mar-2021 09:10				
Client ID: SO-1620-IDW02-20210302	Run ID: FID-11_379177	SeqNo: 5983855		PrepDate: 04-Mar-2021		DF: 2			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual

nC6 to nC12	250.5	97	242.5	6.541	101	75 - 125			
>nC12 to nC28	1245	97	242.5	1346	-41.4	75 - 125			SO
Surr: 2-Fluorobiphenyl	30.09	0	24.25	0	124	70 - 130			
Surr: Trifluoromethyl benzene	29.14	0	24.25	0	120	70 - 130			

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21030092

QC BATCH REPORT

Batch ID: 163117 (0)		Instrument: FID-11		Method: TEXAS TPH BY TX1005					
MSD	Sample ID: HS21030092-03MSD	Units: mg/Kg			Analysis Date: 07-Mar-2021 09:39				
Client ID: SO-1620-IDW02-20210302	Run ID: FID-11_379177	SeqNo: 5983856		PrepDate: 04-Mar-2021		DF: 2			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

nC6 to nC12	254.3	98	243.9	6.541	102	75 - 125	250.5	1.51	20
>nC12 to nC28	1182	98	243.9	1346	-67.1	75 - 125	1245	5.22	20 SO
<i>Surr: 2-Fluorobiphenyl</i>	29.77	0	24.39	0	122	70 - 130	30.09	1.1	20
<i>Surr: Trifluoromethyl benzene</i>	29.44	0	24.39	0	121	70 - 130	29.14	1.02	20

The following samples were analyzed in this batch: HS21030092-03

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21030092

QC BATCH REPORT

Batch ID: 163198 (0) **Instrument:** FID-11 **Method:** LOW-LEVEL TEXAS TPH BY TX1005

MBLK		Sample ID: MBLK-163198		Units: mg/L		Analysis Date: 08-Mar-2021 17:22				
Client ID:		Run ID: FID-11_379257		SeqNo: 5985855		PrepDate: 08-Mar-2021		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	< 0.20	0.50								
>nC12 to nC28	< 0.20	0.50								
>nC28 to nC35	< 0.20	0.50								
Total Petroleum Hydrocarbon	< 0.20	0.50								
<i>Surr: 2-Fluorobiphenyl</i>	2.897	0	2.5	0	116	70 - 130				
<i>Surr: Trifluoromethyl benzene</i>	3.004	0	2.5	0	120	70 - 130				

LCS		Sample ID: LCS-163198		Units: mg/L		Analysis Date: 08-Mar-2021 17:51				
Client ID:		Run ID: FID-11_379257		SeqNo: 5985856		PrepDate: 08-Mar-2021		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	25.83	0.50	25	0	103	75 - 125				
>nC12 to nC28	28.11	0.50	25	0	112	75 - 125				
<i>Surr: 2-Fluorobiphenyl</i>	3.033	0	2.5	0	121	70 - 130				
<i>Surr: Trifluoromethyl benzene</i>	3.103	0	2.5	0	124	70 - 130				

LCSD		Sample ID: LCSD-163198		Units: mg/L		Analysis Date: 08-Mar-2021 18:21				
Client ID:		Run ID: FID-11_379257		SeqNo: 5985857		PrepDate: 08-Mar-2021		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	21.34	0.50	25	0	85.4	75 - 125	25.83	19.1	20	
>nC12 to nC28	23.71	0.50	25	0	94.9	75 - 125	28.11	17	20	
<i>Surr: 2-Fluorobiphenyl</i>	2.588	0	2.5	0	104	70 - 130	3.033	15.8	20	
<i>Surr: Trifluoromethyl benzene</i>	2.604	0	2.5	0	104	70 - 130	3.103	17.5	20	

MS		Sample ID: HS21030215-01MS		Units: mg/L		Analysis Date: 08-Mar-2021 19:20				
Client ID:		Run ID: FID-11_379257		SeqNo: 5985859		PrepDate: 08-Mar-2021		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	25.81	0.50	24.77	0	104	75 - 125				
>nC12 to nC28	29.34	0.50	24.77	0	118	75 - 125				
<i>Surr: 2-Fluorobiphenyl</i>	3.09	0	2.477	0	125	70 - 130				
<i>Surr: Trifluoromethyl benzene</i>	3.089	0	2.477	0	125	70 - 130				

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21030092

QC BATCH REPORT

Batch ID: 163198 (0) Instrument: FID-11 Method: LOW-LEVEL TEXAS TPH BY TX1005

MSD Sample ID: HS21030215-01MSD Units: mg/L Analysis Date: 08-Mar-2021 19:49
Client ID: Run ID: FID-11_379257 SeqNo: 5985860 PrepDate: 08-Mar-2021 DF: 1
Analyte Result PQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %RPD RPD Limit Qual

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	23.86	0.50	24.75	0	96.4	75 - 125	25.81	7.85	20	
>nC12 to nC28	30.69	0.50	24.75	0	124	75 - 125	29.34	4.51	20	
Surr: 2-Fluorobiphenyl	2.792	0	2.475	0	113	70 - 130	3.09	10.2	20	
Surr: Trifluoromethyl benzene	2.801	0	2.475	0	113	70 - 130	3.089	9.77	20	

The following samples were analyzed in this batch: HS21030092-01 HS21030092-02

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21030092

QC BATCH REPORT

Batch ID: 163081 (0)	Instrument: HG03	Method: MERCURY BY SW7471B
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MBLK	Sample ID: MBLK-163081	Units: ug/Kg	Analysis Date: 05-Mar-2021 09:22							
Client ID:	Run ID: HG03_379036	SeqNo: 5980120	PrepDate: 05-Mar-2021 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual

Mercury < 0.470 3.32

LCS	Sample ID: LCS-163081	Units: ug/Kg	Analysis Date: 05-Mar-2021 09:04							
Client ID:	Run ID: HG03_379036	SeqNo: 5980113	PrepDate: 05-Mar-2021 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual

Mercury 366 3.32 333.3 0 110 80 - 120

MS	Sample ID: HS21030086-03MS	Units: ug/Kg	Analysis Date: 05-Mar-2021 09:09							
Client ID:	Run ID: HG03_379036	SeqNo: 5980115	PrepDate: 05-Mar-2021 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual

Mercury 360.8 3.40 340.4 8.273 104 80 - 120

MSD	Sample ID: HS21030086-03MSD	Units: ug/Kg	Analysis Date: 05-Mar-2021 09:12							
Client ID:	Run ID: HG03_379036	SeqNo: 5980116	PrepDate: 05-Mar-2021 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual

Mercury 359.5 3.43 344.4 8.273 102 80 - 120 360.8 0.357 20

The following samples were analyzed in this batch: HS21030092-03

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21030092

QC BATCH REPORT

Batch ID: 163176 (0) **Instrument:** ICPMS05 **Method:** ICP-MS METALS BY SW6020A

MBLK		Sample ID: MBLK-163176		Units: mg/L		Analysis Date: 05-Mar-2021 21:16			
Client ID:		Run ID: ICPMS05_379095		SeqNo: 5983042		PrepDate: 05-Mar-2021		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Arsenic	< 0.000400	0.00200							
Barium	< 0.00190	0.00400							
Cadmium	< 0.000200	0.00200							
Chromium	< 0.000400	0.00400							
Lead	< 0.000600	0.00200							
Selenium	< 0.00110	0.00200							
Silver	< 0.000200	0.00200							

LCS		Sample ID: LCS-163176		Units: mg/L		Analysis Date: 05-Mar-2021 21:18			
Client ID:		Run ID: ICPMS05_379095		SeqNo: 5983043		PrepDate: 05-Mar-2021		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Arsenic	0.05154	0.00200	0.05	0	103	80 - 120			
Barium	0.04782	0.00400	0.05	0	95.6	80 - 120			
Cadmium	0.04997	0.00200	0.05	0	99.9	80 - 120			
Chromium	0.04626	0.00400	0.05	0	92.5	80 - 120			
Lead	0.04174	0.00200	0.05	0	83.5	80 - 120			
Selenium	0.05556	0.00200	0.05	0	111	80 - 120			
Silver	0.04601	0.00200	0.05	0	92.0	80 - 120			

MS		Sample ID: HS21021093-01MS		Units: mg/L		Analysis Date: 08-Mar-2021 15:50			
Client ID:		Run ID: ICPMS05_379207		SeqNo: 5984460		PrepDate: 05-Mar-2021		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Arsenic	0.05845	0.00200	0.05	0.001725	113	80 - 120			
Barium	0.1155	0.00400	0.05	0.06958	91.7	80 - 120			
Cadmium	0.04469	0.00200	0.05	0	89.4	80 - 120			
Chromium	0.04824	0.00400	0.05	0	96.5	80 - 120			
Lead	0.04166	0.00200	0.05	0	83.3	80 - 120			
Selenium	0.06095	0.00200	0.05	0.001842	118	80 - 120			

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21030092

QC BATCH REPORT

Batch ID: 163176 (0)		Instrument: ICPMS05			Method: ICP-MS METALS BY SW6020A					
MS		Sample ID: HS21021093-01MS			Units: mg/L		Analysis Date: 05-Mar-2021 21:24			
Client ID:		Run ID: ICPMS05_379095			SeqNo: 5983046		PrepDate: 05-Mar-2021		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Silver	0.04338	0.00200	0.05	0.000048	86.7	80 - 120				
MSD		Sample ID: HS21021093-01MSD			Units: mg/L		Analysis Date: 05-Mar-2021 21:26			
Client ID:		Run ID: ICPMS05_379095			SeqNo: 5983047		PrepDate: 05-Mar-2021		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0572	0.00200	0.05	0.001725	111	80 - 120	0.06412	11.4	20	
Barium	0.1217	0.00400	0.05	0.06958	104	80 - 120	0.1232	1.25	20	
Cadmium	0.04822	0.00200	0.05	0.000052	96.3	80 - 120	0.04816	0.122	20	
Chromium	0.0489	0.00400	0.05	0.000107	97.6	80 - 120	0.05337	8.73	20	
Lead	0.04634	0.00200	0.05	0.000057	92.6	80 - 120	0.04571	1.37	20	
Silver	0.04305	0.00200	0.05	0.000048	86.0	80 - 120	0.04338	0.764	20	
MSD		Sample ID: HS21021093-01MSD			Units: mg/L		Analysis Date: 08-Mar-2021 16:52			
Client ID:		Run ID: ICPMS05_379207			SeqNo: 5984472		PrepDate: 05-Mar-2021		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Selenium	0.05971	0.00200	0.05	0.001842	116	80 - 120	0.06944	15.1	20	
PDS		Sample ID: HS21021093-01PDS			Units: mg/L		Analysis Date: 05-Mar-2021 21:30			
Client ID:		Run ID: ICPMS05_379095			SeqNo: 5983049		PrepDate: 05-Mar-2021		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1141	0.00200	0.1	0.001725	112	75 - 125				
Barium	0.1648	0.00400	0.1	0.06958	95.2	75 - 125				
Cadmium	0.09122	0.00200	0.1	0.000052	91.2	75 - 125				
Chromium	0.1032	0.00400	0.1	0.000107	103	75 - 125				
Lead	0.09391	0.00200	0.1	0.000057	93.9	75 - 125				
Selenium	0.1261	0.00200	0.1	0.001842	124	75 - 125				
Silver	0.09134	0.00200	0.1	0.000048	91.3	75 - 125				

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21030092

QC BATCH REPORT

Batch ID: 163176 (0) **Instrument:** ICPMS05 **Method:** ICP-MS METALS BY SW6020A

SD		Sample ID: HS21021093-01SD		Units: mg/L		Analysis Date: 05-Mar-2021 21:22				
Client ID:		Run ID: ICPMS05_379095		SeqNo: 5983045		PrepDate: 05-Mar-2021		DF: 5		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	Limit	Qual
Arsenic	< 0.00200	0.0100					0.001725	0	10	
Barium	0.06854	0.0200					0.06958	1.49	10	
Cadmium	< 0.00100	0.0100					0.000052	0	10	
Chromium	< 0.00200	0.0200					0.000107	0	10	
Lead	< 0.00300	0.0100					0.000057	0	10	
Selenium	< 0.00550	0.0100					0.001842	0	10	
Silver	< 0.00100	0.0100					0.000048	0	10	

The following samples were analyzed in this batch: HS21030092-01 HS21030092-02

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21030092

QC BATCH REPORT

Batch ID: 163195 (0)		Instrument: ICPMS06		Method: METALS BY SW6020A						
MBLK	Sample ID: MBLK-163195	Units: mg/Kg			Analysis Date: 09-Mar-2021 15:35					
Client ID:	Run ID: ICPMS06_379285	SeqNo: 5986454		PrepDate: 09-Mar-2021		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual	
Arsenic	< 0.0700	0.500								
Barium	< 0.0300	0.500								
Cadmium	< 0.0270	0.500								
Chromium	< 0.0230	0.500								
Lead	< 0.0130	0.500								
Selenium	< 0.0910	0.500								
Silver	< 0.0150	0.500								
LCS	Sample ID: LCS-163195	Units: mg/Kg			Analysis Date: 09-Mar-2021 15:37					
Client ID:	Run ID: ICPMS06_379285	SeqNo: 5986455		PrepDate: 09-Mar-2021		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual	
Arsenic	8.673	0.500	10	0	86.7	80 - 120				
Barium	8.423	0.500	10	0	84.2	80 - 120				
Cadmium	8.65	0.500	10	0	86.5	80 - 120				
Chromium	8.981	0.500	10	0	89.8	80 - 120				
Lead	8.271	0.500	10	0	82.7	80 - 120				
Selenium	8.713	0.500	10	0	87.1	80 - 120				
Silver	9.259	0.500	10	0	92.6	80 - 120				
MS	Sample ID: HS21030183-39MS	Units: mg/Kg			Analysis Date: 09-Mar-2021 15:43					
Client ID:	Run ID: ICPMS06_379285	SeqNo: 5986458		PrepDate: 09-Mar-2021		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual	
Arsenic	8.762	0.497	9.932	0.5087	83.1	75 - 125				
Barium	226.7	0.497	9.932	228.8	-21.6	75 - 125			SEO	
Cadmium	8.579	0.497	9.932	0.01807	86.2	75 - 125				
Chromium	13.83	0.497	9.932	4.881	90.1	75 - 125				
Lead	10.48	0.497	9.932	1.829	87.1	75 - 125				
Selenium	8.457	0.497	9.932	0.07756	84.4	75 - 125				
Silver	9.278	0.497	9.932	0.01148	93.3	75 - 125				

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21030092

QC BATCH REPORT

Batch ID: 163195 (0)		Instrument: ICPMS06			Method: METALS BY SW6020A					
MSD		Sample ID: HS21030183-39MSD			Units: mg/Kg		Analysis Date: 09-Mar-2021 15:45			
Client ID:		Run ID: ICPMS06_379285			SeqNo: 5986459		PrepDate: 09-Mar-2021		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	8.527	0.494	9.889	0.5087	81.1	75 - 125	8.762	2.72	20	
Barium	227.5	0.494	9.889	228.8	-13.2	75 - 125	226.7	0.372	20	SEO
Cadmium	8.496	0.494	9.889	0.01807	85.7	75 - 125	8.579	0.971	20	
Chromium	13.51	0.494	9.889	4.881	87.3	75 - 125	13.83	2.33	20	
Lead	10.54	0.494	9.889	1.829	88.1	75 - 125	10.48	0.641	20	
Selenium	8.422	0.494	9.889	0.07756	84.4	75 - 125	8.457	0.41	20	
Silver	9.144	0.494	9.889	0.01148	92.4	75 - 125	9.278	1.45	20	
PDS		Sample ID: HS21030183-39PDS			Units: mg/Kg		Analysis Date: 09-Mar-2021 15:47			
Client ID:		Run ID: ICPMS06_379285			SeqNo: 5986460		PrepDate: 09-Mar-2021		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	8.207	0.499	9.982	0.5087	77.1	75 - 125				
Cadmium	7.964	0.499	9.982	0.01807	79.6	75 - 125				
Chromium	12.8	0.499	9.982	4.881	79.3	75 - 125				
Lead	10.08	0.499	9.982	1.829	82.6	75 - 125				
Selenium	8.071	0.499	9.982	0.07756	80.1	75 - 125				
Silver	8.552	0.499	9.982	0.01148	85.6	75 - 125				
PDS		Sample ID: HS21030183-39PDS			Units: mg/Kg		Analysis Date: 09-Mar-2021 16:37			
Client ID:		Run ID: ICPMS06_379285			SeqNo: 5986472		PrepDate: 09-Mar-2021		DF: 20	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	421.4	9.98	199.6	233.6	94.1	75 - 125				

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21030092

QC BATCH REPORT

Batch ID: 163195 (0)		Instrument: ICPMS06		Method: METALS BY SW6020A						
SD	Sample ID: HS21030183-39SD	Units: mg/Kg		Analysis Date: 09-Mar-2021 15:41						
Client ID:	Run ID: ICPMS06_379285	SeqNo: 5986457		PrepDate: 09-Mar-2021		DF: 5				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.5278	2.50					0.5087	0	10	J
Cadmium	< 0.135	2.50					0.01807	0	10	
Chromium	4.902	2.50					4.881	0.444	10	
Lead	1.866	2.50					1.829	0	10	J
Selenium	< 0.454	2.50					0.07756	0	10	
Silver	< 0.0749	2.50					0.01148	0	10	
SD	Sample ID: HS21030183-39SD	Units: mg/Kg		Analysis Date: 09-Mar-2021 16:35						
Client ID:	Run ID: ICPMS06_379285	SeqNo: 5986471		PrepDate: 09-Mar-2021		DF: 100				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Barium	231.4	49.9					233.6	0.927	10	

The following samples were analyzed in this batch: HS21030092-03

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21030092

QC BATCH REPORT

Batch ID: 163211 (0)	Instrument: HG03	Method: MERCURY BY SW7470A
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MBLK	Sample ID: MBLK-163211	Units: mg/L	Analysis Date: 08-Mar-2021 14:34							
Client ID:	Run ID: HG03_379179	SeqNo: 5983857	PrepDate: 08-Mar-2021 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Mercury < 0.0000300 0.000200

LCS	Sample ID: LCS-163211	Units: mg/L	Analysis Date: 08-Mar-2021 14:38							
Client ID:	Run ID: HG03_379179	SeqNo: 5983858	PrepDate: 08-Mar-2021 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Mercury 0.00502 0.000200 0.005 0 100 80 - 120

MS	Sample ID: HS21030097-01MS	Units: mg/L	Analysis Date: 08-Mar-2021 14:42							
Client ID:	Run ID: HG03_379179	SeqNo: 5983860	PrepDate: 08-Mar-2021 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Mercury 0.00553 0.000200 0.005 0.00028 105 75 - 125

MSD	Sample ID: HS21030097-01MSD	Units: mg/L	Analysis Date: 08-Mar-2021 14:45							
Client ID:	Run ID: HG03_379179	SeqNo: 5983861	PrepDate: 08-Mar-2021 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Mercury 0.00534 0.000200 0.005 0.00028 101 75 - 125 0.00553 3.5 20

The following samples were analyzed in this batch: HS21030092-01 HS21030092-02

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21030092

QC BATCH REPORT

Batch ID: 163382 (0)	Instrument: ICPMS06	Method: TCLP METALS BY SW6020A
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MBLK	Sample ID: MBLKT2-163382	Units: mg/L	Analysis Date: 12-Mar-2021 12:49							
Client ID:	Run ID: ICPMS06_379555	SeqNo: 5992556	PrepDate: 11-Mar-2021 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	< 0.0190	0.200								
Chromium	< 0.00400	0.0500								
Lead	< 0.00600	0.0500								

MBLK	Sample ID: MBLKT1-163382	Units: mg/L	Analysis Date: 12-Mar-2021 12:47							
Client ID:	Run ID: ICPMS06_379555	SeqNo: 5992555	PrepDate: 11-Mar-2021 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	< 0.0190	0.200								
Chromium	< 0.00400	0.0500								
Lead	< 0.00600	0.0500								

MBLK	Sample ID: MBLK-163382	Units: mg/L	Analysis Date: 12-Mar-2021 12:45							
Client ID:	Run ID: ICPMS06_379555	SeqNo: 5992554	PrepDate: 11-Mar-2021 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	< 0.00190	0.0200								
Chromium	< 0.000400	0.00500								
Lead	< 0.000600	0.00500								

LCS	Sample ID: LCS-163382	Units: mg/L	Analysis Date: 12-Mar-2021 12:51							
Client ID:	Run ID: ICPMS06_379555	SeqNo: 5992557	PrepDate: 11-Mar-2021 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	0.05276	0.0200	0.05	0	106	80 - 120				
Chromium	0.04952	0.00500	0.05	0	99.0	80 - 120				
Lead	0.05078	0.00500	0.05	0	102	80 - 120				

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21030092

QC BATCH REPORT

Batch ID: 163382 (0)		Instrument: ICPMS06			Method: TCLP METALS BY SW6020A					
MS		Sample ID: HS21030303-01MS			Units: mg/L		Analysis Date: 12-Mar-2021 13:05			
Client ID:		Run ID: ICPMS06_379555			SeqNo: 5992546		PrepDate: 11-Mar-2021		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	0.949	0.200	0.5	0.4494	99.9	80 - 120				
Chromium	0.4923	0.0500	0.5	0.02996	92.5	80 - 120				
Lead	25.07	0.0500	0.5	24.85	44.4	80 - 120				SEO
MSD		Sample ID: HS21030303-01MSD			Units: mg/L		Analysis Date: 12-Mar-2021 13:07			
Client ID:		Run ID: ICPMS06_379555			SeqNo: 5992547		PrepDate: 11-Mar-2021		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	0.9316	0.200	0.5	0.4494	96.4	80 - 120	0.949	1.85	20	
Chromium	0.4767	0.0500	0.5	0.02996	89.4	80 - 120	0.4923	3.22	20	
Lead	24.03	0.0500	0.5	24.85	-165	80 - 120	25.07	4.26	20	SEO
PDS		Sample ID: HS21030303-01PDS			Units: mg/L		Analysis Date: 12-Mar-2021 13:09			
Client ID:		Run ID: ICPMS06_379555			SeqNo: 5992548		PrepDate: 11-Mar-2021		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium	1.199	0.0500	1	0.02996	117	75 - 125				
PDS		Sample ID: HS21030303-01PDS			Units: mg/L		Analysis Date: 12-Mar-2021 14:55			
Client ID:		Run ID: ICPMS06_379555			SeqNo: 5992837		PrepDate: 11-Mar-2021		DF: 20	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	44.17	1.00	20	22.95	106	75 - 125				
SD		Sample ID: HS21030303-01SD			Units: mg/L		Analysis Date: 12-Mar-2021 13:03			
Client ID:		Run ID: ICPMS06_379555			SeqNo: 5992545		PrepDate: 11-Mar-2021		DF: 5	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Barium	0.4445	1.00					0.4494	0	10	J
Chromium	< 0.0200	0.250					0.02996	0	10	

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21030092

QC BATCH REPORT

Batch ID: 163382 (0) **Instrument:** ICPMS06 **Method:** TCLP METALS BY SW6020A

SD	Sample ID: HS21030303-01SD	Units: mg/L	Analysis Date: 12-Mar-2021 14:52							
Client ID:	Run ID: ICPMS06_379555	SeqNo: 5992836	PrepDate: 11-Mar-2021	DF: 100						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	Limit	Qual

Lead	22.96	5.00					22.95	0.0655	10
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The following samples were analyzed in this batch:

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21030092

QC BATCH REPORT

Batch ID: R378961 (0) **Instrument:** VOA4 **Method:** LOW LEVEL VOLATILES BY SW8260C

MBLK		Sample ID: VBLKW-210303		Units: ug/L		Analysis Date: 03-Mar-2021 23:03			
Client ID:		Run ID: VOA4_378961		SeqNo: 5978138		PrepDate:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	< 0.20	1.0							
Ethylbenzene	< 0.30	1.0							
Naphthalene	< 0.30	1.0							
Toluene	< 0.20	1.0							
Xylenes, Total	< 0.30	1.0							
<i>Surr: 1,2-Dichloroethane-d4</i>	52.14	1.0	50	0	104	70 - 123			
<i>Surr: 4-Bromofluorobenzene</i>	47.9	1.0	50	0	95.8	82 - 115			
<i>Surr: Dibromofluoromethane</i>	50.39	1.0	50	0	101	73 - 126			
<i>Surr: Toluene-d8</i>	49.04	1.0	50	0	98.1	81 - 120			

LCS		Sample ID: VLCSW-210303		Units: ug/L		Analysis Date: 03-Mar-2021 22:21			
Client ID:		Run ID: VOA4_378961		SeqNo: 5978137		PrepDate:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	18.53	1.0	20	0	92.7	74 - 120			
Ethylbenzene	15.69	1.0	20	0	78.5	77 - 117			
Naphthalene	17.95	1.0	20	0	89.8	70 - 130			
Toluene	17.52	1.0	20	0	87.6	77 - 118			
Xylenes, Total	49.33	1.0	60	0	82.2	75 - 122			
<i>Surr: 1,2-Dichloroethane-d4</i>	49.95	1.0	50	0	99.9	70 - 123			
<i>Surr: 4-Bromofluorobenzene</i>	49.96	1.0	50	0	99.9	82 - 115			
<i>Surr: Dibromofluoromethane</i>	48.21	1.0	50	0	96.4	73 - 126			
<i>Surr: Toluene-d8</i>	49.62	1.0	50	0	99.2	81 - 120			

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21030092

QC BATCH REPORT

Batch ID: R378961 (0) **Instrument:** VOA4 **Method:** LOW LEVEL VOLATILES BY SW8260C

MS		Sample ID: HS21030096-09MS			Units: ug/L		Analysis Date: 04-Mar-2021 00:27			
Client ID:		Run ID: VOA4_378961			SeqNo: 5978142		PrepDate:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	20.76	1.0	20	0.621	101	70 - 127				
Ethylbenzene	21.05	1.0	20	0	105	70 - 124				
Naphthalene	18.46	1.0	20	0	92.3	70 - 130				
Toluene	21.29	1.0	20	0	106	70 - 123				
Xylenes, Total	63.77	1.0	60	0	106	70 - 130				
Surr: 1,2-Dichloroethane-d4	49.87	1.0	50	0	99.7	70 - 126				
Surr: 4-Bromofluorobenzene	49.65	1.0	50	0	99.3	81 - 113				
Surr: Dibromofluoromethane	50.78	1.0	50	0	102	77 - 123				
Surr: Toluene-d8	49.93	1.0	50	0	99.9	82 - 127				

MSD		Sample ID: HS21030096-09MSD			Units: ug/L		Analysis Date: 04-Mar-2021 00:47			
Client ID:		Run ID: VOA4_378961			SeqNo: 5978143		PrepDate:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.88	1.0	20	0.621	96.3	70 - 127	20.76	4.38	20	
Ethylbenzene	20.42	1.0	20	0	102	70 - 124	21.05	3.05	20	
Naphthalene	20.73	1.0	20	0	104	70 - 130	18.46	11.5	20	
Toluene	20.19	1.0	20	0	101	70 - 123	21.29	5.31	20	
Xylenes, Total	60.15	1.0	60	0	100	70 - 130	63.77	5.85	20	
Surr: 1,2-Dichloroethane-d4	51.42	1.0	50	0	103	70 - 126	49.87	3.05	20	
Surr: 4-Bromofluorobenzene	48.87	1.0	50	0	97.7	81 - 113	49.65	1.59	20	
Surr: Dibromofluoromethane	50.6	1.0	50	0	101	77 - 123	50.78	0.363	20	
Surr: Toluene-d8	49.33	1.0	50	0	98.7	82 - 127	49.93	1.2	20	

The following samples were analyzed in this batch: HS21030092-01 HS21030092-02

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21030092

QC BATCH REPORT

Batch ID: R379169 (0) **Instrument:** VOA8 **Method:** VOLATILES BY SW8260C

MBLK		Sample ID: VBLKS1-030821		Units: ug/Kg		Analysis Date: 08-Mar-2021 12:54			
Client ID:		Run ID: VOA8_379169		SeqNo: 5983601		PrepDate:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	< 0.50	5.0							
Ethylbenzene	< 0.70	5.0							
Naphthalene	< 0.80	5.0							
Toluene	< 0.60	5.0							
Xylenes, Total	< 1.0	5.0							
<i>Surr: 1,2-Dichloroethane-d4</i>	47.62	0	50	0	95.2	76 - 125			
<i>Surr: 4-Bromofluorobenzene</i>	48.97	0	50	0	97.9	80 - 120			
<i>Surr: Dibromofluoromethane</i>	49.52	0	50	0	99.0	80 - 119			
<i>Surr: Toluene-d8</i>	50.62	0	50	0	101	81 - 118			

LCS		Sample ID: VLCSS1-030821		Units: ug/Kg		Analysis Date: 08-Mar-2021 12:08			
Client ID:		Run ID: VOA8_379169		SeqNo: 5983600		PrepDate:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	49.5	5.0	50	0	99.0	75 - 124			
Ethylbenzene	50.38	5.0	50	0	101	70 - 123			
Naphthalene	45.88	5.0	50	0	91.8	71 - 128			
Toluene	49.4	5.0	50	0	98.8	76 - 122			
Xylenes, Total	152.4	5.0	150	0	102	77 - 128			
<i>Surr: 1,2-Dichloroethane-d4</i>	50.38	0	50	0	101	76 - 125			
<i>Surr: 4-Bromofluorobenzene</i>	52.33	0	50	0	105	80 - 120			
<i>Surr: Dibromofluoromethane</i>	51.1	0	50	0	102	80 - 119			
<i>Surr: Toluene-d8</i>	50.48	0	50	0	101	81 - 118			

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21030092

QC BATCH REPORT

Batch ID: R379169 (0)		Instrument: VOA8		Method: VOLATILES BY SW8260C						
MS	Sample ID: HS21030124-23MS	Units: ug/Kg			Analysis Date: 08-Mar-2021 15:57					
Client ID:	Run ID: VOA8_379169	SeqNo: 5984703		PrepDate:		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Benzene	29.83	3.7	37	0	80.6	70 - 130				
Ethylbenzene	27.89	3.7	37	0	75.4	70 - 130				
Naphthalene	25.23	3.7	37	0	68.2	70 - 130				S
Toluene	28.18	3.7	37	0	76.2	70 - 130				
Xylenes, Total	83.28	3.7	111	0	75.0	70 - 130				
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>39.31</i>	<i>0</i>	<i>37</i>	<i>0</i>	<i>106</i>	<i>70 - 126</i>				
<i>Surr: 4-Bromofluorobenzene</i>	<i>37.88</i>	<i>0</i>	<i>37</i>	<i>0</i>	<i>102</i>	<i>70 - 130</i>				
<i>Surr: Dibromofluoromethane</i>	<i>38.62</i>	<i>0</i>	<i>37</i>	<i>0</i>	<i>104</i>	<i>70 - 130</i>				
<i>Surr: Toluene-d8</i>	<i>36.69</i>	<i>0</i>	<i>37</i>	<i>0</i>	<i>99.2</i>	<i>70 - 130</i>				

MSD	Sample ID: HS21030124-23MSD	Units: ug/Kg			Analysis Date: 08-Mar-2021 16:19					
Client ID:	Run ID: VOA8_379169	SeqNo: 5984704		PrepDate:		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	42.13	4.0	39.5	0	107	70 - 130	29.83	34.2	30	R
Ethylbenzene	39.28	4.0	39.5	0	99.4	70 - 130	27.89	33.9	30	R
Naphthalene	38.48	4.0	39.5	0	97.4	70 - 130	25.23	41.6	30	R
Toluene	39.71	4.0	39.5	0	101	70 - 130	28.18	34	30	R
Xylenes, Total	119	4.0	118.5	0	100	70 - 130	83.28	35.3	30	R
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>41.96</i>	<i>0</i>	<i>39.5</i>	<i>0</i>	<i>106</i>	<i>70 - 126</i>	<i>39.31</i>	<i>6.51</i>	<i>30</i>	
<i>Surr: 4-Bromofluorobenzene</i>	<i>40.01</i>	<i>0</i>	<i>39.5</i>	<i>0</i>	<i>101</i>	<i>70 - 130</i>	<i>37.88</i>	<i>5.47</i>	<i>30</i>	
<i>Surr: Dibromofluoromethane</i>	<i>41.16</i>	<i>0</i>	<i>39.5</i>	<i>0</i>	<i>104</i>	<i>70 - 130</i>	<i>38.62</i>	<i>6.36</i>	<i>30</i>	
<i>Surr: Toluene-d8</i>	<i>38.28</i>	<i>0</i>	<i>39.5</i>	<i>0</i>	<i>96.9</i>	<i>70 - 130</i>	<i>36.69</i>	<i>4.22</i>	<i>30</i>	

The following samples were analyzed in this batch: HS21030092-03

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21030092

QC BATCH REPORT

Batch ID: 163103 (0)	Instrument: UV-2450	Method: CYANIDE - SW9014
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MBLK	Sample ID: MBLK-163103	Units: mg/L	Analysis Date: 04-Mar-2021 15:40							
Client ID:	Run ID: UV-2450_379046	SeqNo: 5980205	PrepDate: 04-Mar-2021 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual

Cyanide < 0.00200 0.00500

LCS	Sample ID: LCS-163103	Units: mg/L	Analysis Date: 04-Mar-2021 15:40							
Client ID:	Run ID: UV-2450_379046	SeqNo: 5980204	PrepDate: 04-Mar-2021 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual

Cyanide 0.196 0.00500 0.2 0 98.0 80 - 120

MS	Sample ID: HS21030088-01MS	Units: mg/L	Analysis Date: 04-Mar-2021 15:40							
Client ID:	Run ID: UV-2450_379046	SeqNo: 5980202	PrepDate: 04-Mar-2021 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual

Cyanide 0.194 0.00500 0.2 0.007 93.5 80 - 120

MSD	Sample ID: HS21030088-01MSD	Units: mg/L	Analysis Date: 04-Mar-2021 15:40							
Client ID:	Run ID: UV-2450_379046	SeqNo: 5980203	PrepDate: 04-Mar-2021 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual

Cyanide 0.178 0.00500 0.2 0.007 85.5 80 - 120 0.194 8.6 20

The following samples were analyzed in this batch:

HS21030092-01	HS21030092-02
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Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21030092

QC BATCH REPORT

Batch ID: R378900 (0)	Instrument: WetChem_HS	Method: SULFIDE BY SM4500 S2-F
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MBLK	Sample ID: MBLK-R378900	Units: mg/L	Analysis Date: 03-Mar-2021 10:00							
Client ID:	Run ID: WetChem_HS_378900	SeqNo: 5976438	PrepDate: DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual

Sulfide < 1.00 1.00

LCS	Sample ID: LCS-R378900	Units: mg/L	Analysis Date: 03-Mar-2021 10:00							
Client ID:	Run ID: WetChem_HS_378900	SeqNo: 5976437	PrepDate: DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual

Sulfide 23.08 1.00 25 0 92.3 85 - 115

LCSD	Sample ID: LCSD-R378900	Units: mg/L	Analysis Date: 03-Mar-2021 10:00							
Client ID:	Run ID: WetChem_HS_378900	SeqNo: 5976436	PrepDate: DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual

Sulfide 23.28 1.00 25 0 93.1 85 - 115 23.08 0.863 20

MS	Sample ID: HS21030092-01MS	Units: mg/L	Analysis Date: 03-Mar-2021 10:00							
Client ID: WW-1620-IDW01-20210302	Run ID: WetChem_HS_378900	SeqNo: 5976439	PrepDate: DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual

Sulfide 23.28 1.00 25 -1.32 98.4 80 - 120

The following samples were analyzed in this batch: HS21030092-01 HS21030092-02

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21030092

QC BATCH REPORT

Batch ID: R378987 (0) **Instrument:** WetChem_HS **Method:** PH BY SM4500H+ B

DUP Sample ID: **HS21020899-01DUP** Units: **pH Units** Analysis Date: **04-Mar-2021 12:17**
Client ID: Run ID: **WetChem_HS_378987** SeqNo: **5978713** PrepDate: DF: **1**
Analyte Result PQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %RPD RPD Limit Qual

pH	7.28	0.100						7.21	0.966	10
Temp Deg C @pH	22.8	0						22.8	0	10

The following samples were analyzed in this batch: HS21030092-01 HS21030092-02

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21030092

QC BATCH REPORT

Batch ID: R379197 (0) **Instrument:** WetChem_HS **Method:** FLASH POINT BY PENSKY-MARTENS SW1010A

LCS Sample ID: **LCS-R379197** Units: °F Analysis Date: **08-Mar-2021 08:00**
 Client ID: Run ID: **WetChem_HS_379197** SeqNo: **5984234** PrepDate: DF: **1**
 Analyte Result PQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %RPD RPD Limit Qual

Ignitability 79.99 70.0 81 0 98.8 95 - 105

DUP Sample ID: **HS21030332-01DUP** Units: °F Analysis Date: **08-Mar-2021 08:00**
 Client ID: Run ID: **WetChem_HS_379197** SeqNo: **5984235** PrepDate: DF: **1**
 Analyte Result PQL 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: HS21030092-01 HS21030092-02

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21030092

**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
Date	
mg/Kg	Milligrams per Kilogram
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	20-030-0	26-Mar-2021
California	2919, 2020-2021	30-Apr-2021
Dept of Defense	PJLA L20-507-R2	22-Dec-2021
Florida	E87611-30-07/01/2020	30-Jun-2021
Illinois	2000322020-4	09-May-2021
Kansas	E-10352 2020-2021	31-Jul-2021
Kentucky	123043, 2020-2021	30-Apr-2021
Louisiana	03087, 2020-2021	30-Jun-2021
North Carolina	624-2021	31-Dec-2021
North Dakota	R-193 2020-2021	30-Apr-2021
Oklahoma	2020-165	31-Aug-2021
Texas	T104704231-20-26	30-Apr-2021

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
Work Order: HS21030092

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS21030092-01	WW-1620-IDW01-20210302	Login	3/2/2021 4:05:38 PM	JRM	MET023
HS21030092-01	WW-1620-IDW01-20210302	Login	3/2/2021 4:05:38 PM	JRM	EXT129
HS21030092-01	WW-1620-IDW01-20210302	Login	3/2/2021 4:05:38 PM	JRM	WET245
HS21030092-01	WW-1620-IDW01-20210302	Login	3/2/2021 4:05:38 PM	JRM	WET245
HS21030092-01	WW-1620-IDW01-20210302	Login	3/2/2021 4:05:38 PM	JRM	WET245
HS21030092-01	WW-1620-IDW01-20210302	Login	3/2/2021 4:05:38 PM	JRM	VOA235
HS21030092-01	WW-1620-IDW01-20210302	Login	3/2/2021 4:05:38 PM	JRM	TPH029

Sample Receipt Checklist

Work Order ID: HS21030092

Date/Time Received: **02-Mar-2021 13:35**

Client Name: PBW

Received by: **Jared R. Makan**

Completed By: <u>/S/ Jared R. Makan</u>	02-Mar-2021 16:13	Reviewed by: <u>/S/ Dane J. Wacasey</u>	04-Mar-2021 08:28
eSignature	Date/Time	eSignature	Date/Time

Matrices: **Water, Sludge** Carrier name: **Client**

- | | | | |
|---|---|-----------------------------|---|
| Shipping container/cooler in good condition? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Not Present <input type="checkbox"/> |
| Custody seals intact on shipping container/cooler? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | Not Present <input checked="" type="checkbox"/> |
| Custody seals intact on sample bottles? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | Not Present <input checked="" type="checkbox"/> |
| VOA/TX1005/TX1006 Solids in hermetically sealed vials? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | Not Present <input checked="" type="checkbox"/> |
| Chain of custody present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | 1 Page(s) |
| Chain of custody signed when relinquished and received? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | COC IDs:234162 |
| Samplers name present on COC? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Chain of custody agrees with sample labels? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Samples in proper container/bottle? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Sample containers intact? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Sufficient sample volume for indicated test? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| All samples received within holding time? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Container/Temp Blank temperature in compliance? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |

Temperature(s)/Thermometer(s):	4.4°C UC/C	IR25
Cooler(s)/Kit(s):	45907	
Date/Time sample(s) sent to storage:	03/02/2021 16:15	

- | | | | |
|--|---|--|---|
| Water - VOA vials have zero headspace? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | No VOA vials submitted <input type="checkbox"/> |
| Water - pH acceptable upon receipt? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> |
| pH adjusted? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | N/A <input type="checkbox"/> |

pH adjusted by:

Login Notes:

Client Contacted: Golder Assocaites	Date Contacted: 4-Mar-2021	Person Contacted: Michelle Hermiston
Contacted By: 369	Regarding: Turnarond time	

Comments:

Corrective Action:



Cincinnati, OH
+1 513 733 5336

Everett, WA
+1 425 356 2600

Fort Collins, CO
+1 970 490 1511

Holland, MI
+1 616 399 6070

Chain of Custody Form

Page ____ of ____

COC ID: 234162

HS21030092

Golder Associates Inc.
Houston TX-Wood Preserving Works IDW



ALS Project Manager:

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs 1620-23	Project Name	Houston TX-Wood Preserving Works IDW
Work Order		Project Number	1620-23-Rev0 SR 92683
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive	Address	1400 Douglas Street
	Suite 4004		Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3445	Fax	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	WW 1620 IDW 01 20210302	3-2-21	11:00	W		11	X	X	X	X	X	X	X				
2	WW 1620 IDW 02 20210302	3-2-21	11:30	W		11	X	X	X	X	X	X	X				
3	SO 1620 IDW 02 20210302	3-2-21	12:00	S		4								X	X	X	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

ADD TCLP

Sampler(s) Please Print & Sign <i>[Signature]</i>		Shipment Method		Required Turnaround Time: (Check Box) <input checked="" type="checkbox"/> 7				Results Due Date:	
Relinquished by: <i>[Signature]</i>		Date: 3-2-21	Time: 13:35	Received by:		Notes: UPRR HWPW 1620-23		WR# 003866	
Relinquished by: <i>[Signature]</i>		Date: 3/2/21	Time: 13:35	Received by (Laboratory): J. WACHEN		Cooler ID: 45907		Cooler Temp: 4.4°C	
Logged by (Laboratory):		Date:	Time:	Checked by (Laboratory):		QC Package: (Check One Box Below)			
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 checked="" type="checkbox"/> Level II Std QC		<input type="checkbox"/> TRRP Checklist	
						<input type="checkbox"/> Level III Std QC/Faw 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.

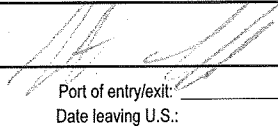
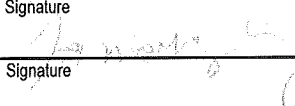

1025 CFO

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ATTACHMENT F

**Manifests –
Obstruction Removal Events**

Please print or type.

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number 31547 /TX/D0000820266	2. Page 1 of 1	3. Emergency Response Phone (800)424-9300	4. Manifest Tracking Number 022087796 JJK	
5. Generator's Name and Mailing Address Union Pacific Railroad 4910 Liberty Road Houston TX 77029 Generator's Phone: (414)267-4164				Generator's Site Address (if different than mailing address) (SAME)		
6. Transporter 1 Company Name USFS				U.S. EPA ID Number TXL 0000 79534 8597		
7. Transporter 2 Company Name				U.S. EPA ID Number		
8. Designated Facility Name and Site Address COASTAL PLAINS RDF 21000 E. HWY 6 ALVIN TX 77511 Facility's Phone: (281)388-1708				U.S. EPA ID Number TX 1721A/TXR000084637		
9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
		No.	Type			
1.	Non RCRA, Non DOT Regulated Liquids (Stormwater WR#003256)	01	TA	8	Y	1460 1191
2.						
3.						
4.						
14. Special Handling Instructions and Additional Information 9B1: PROFILE: 989356TX Transporter Address: _____ phone: _____						
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.						
Generator's/Offeror's Printed/Typed Name JAMES TERRY AS AUSTIN TX USFS				Signature 		Month Day Year 7 11 21
16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: _____ Date leaving U.S.: _____						
17. Transporter Acknowledgment of Receipt of Materials						
Transporter 1 Printed/Typed Name James G Hill				Signature 		Month Day Year 7 12 21
Transporter 2 Printed/Typed Name				Signature		Month Day Year
18. Discrepancy						
18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection						
Manifest Reference Number: _____						
18b. Alternate Facility (or Generator)				U.S. EPA ID Number		
Facility's Phone: _____						
18c. Signature of Alternate Facility (or Generator)						Month Day Year
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)						
1. H132		2.		3.		4.
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a						
Printed/Typed Name D Tingle				Signature 		Month Day Year 7 12 21

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Please print or type.

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number 31547 /TXD000820286	2. Page 1 of	3. Emergency Response Phone (800)424-9300	4. Manifest Tracking Number 022087797 JJK			
5. Generator's Name and Mailing Address Union Pacific Railroad 4910 Liberty Road Houston, TX 77026 Generator's Phone: (414)267-4164			Generator's Site Address (if different than mailing address) (SAME)					
6. Transporter 1 Company Name DSEC			U.S. EPA ID Number TXR 0000 79934					
7. Transporter 2 Company Name			U.S. EPA ID Number					
8. Designated Facility Name and Site Address COASTAL PLAINS RDF 21000 E. HWY 6 ALVIN TX 77511 Facility's Phone: (281)388-1708			U.S. EPA ID Number 41721A/TXR000084637					
GENERATOR	9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes	
		1. Non RCRA, Non DOT Regulated Liquids (Stormwater - WR#003256)	01		8	Y	1489 1191	
		2.						
		3.						
		4.						
14. Special Handling Instructions and Additional Information 981 PROFILE: 989356TX Transporter Address: _____ phone: _____								
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.								
Generator's/Offorer's Printed/Typed Name			Signature		Month	Day	Year	
TRANSPORTER INT'L	16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: _____ Date leaving U.S.: _____							
	17. Transporter Acknowledgment of Receipt of Materials							
TRANSPORTER	Transporter 1 Printed/Typed Name			Signature		Month	Day	Year
	Transporter 2 Printed/Typed Name			Signature		Month	Day	Year
DESIGNATED FACILITY	18. Discrepancy							
	18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection							
	18b. Alternate Facility (or Generator) Manifest Reference Number: _____ U.S. EPA ID Number _____							
	18c. Signature of Alternate Facility (or Generator)						Month	Day
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)								
1. 11B2		2.		3.		4.		
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a								
Printed/Typed Name			Signature		Month	Day	Year	
S. Gutierrez			S. Gutierrez		2	12	21	

Please print or type.

Form Approved. OMB No. 2050-0039

Solidify *HV01921*

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number 31547 / TXD000820286	2. Page 1 of 1	3. Emergency Response Phone (800)424-9300	4. Manifest Tracking Number 022939142 JJK		
5. Generator's Name and Mailing Address USES C/O UPRR 2250 Pasadena Fwy Pasadena TX 77506 Generator's Phone: (414)287-4164				Generator's Site Address (if different than mailing address) Union Pacific Railroad 4910 Liberty Rd Houston TX 77026			
6. Transporter 1 Company Name UNITED STATES ENVIRONMENTAL SERVICES				U.S. EPA ID Number TXR 000 95467			
7. Transporter 2 Company Name				U.S. EPA ID Number			
8. Designated Facility Name and Site Address COASTAL PLAINS RDF 21000 E. HWY 6 ALVIN TX 77511 Facility's Phone: (281)388-1708				U.S. EPA ID Number H 1721 / TXR000084837			
9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes	
		No.	Type				
1.	Non RCRA, Non DOT Regulated Liquids (Water and Soil)	1	CM	15	Y	1489	1191
2.							
3.							
4.							
14. Special Handling Instructions and Additional Information PROFILE #: 990323TX Work order WR#003866							
Transporter Address:				Phone:			
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.							
Generator's/Offeror's Printed/Typed Name WALTER TRAMER AS BEST FOR				Signature <i>[Signature]</i>		Month Day Year 01 16 21	
16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: _____ Date leaving U.S.: _____							
17. Transporter Acknowledgment of Receipt of Materials							
Transporter 1 Printed/Typed Name SARACE Kulan				Signature <i>[Signature]</i>		Month Day Year 04 16 21	
Transporter 2 Printed/Typed Name				Signature		Month Day Year	
18. Discrepancy							
18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection							
18b. Alternate Facility (or Generator)				Manifest Reference Number: _____ U.S. EPA ID Number _____			
Facility's Phone: _____							
18c. Signature of Alternate Facility (or Generator)						Month Day Year	
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)							
1. 4132		2.		3.		4.	
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a							
Printed/Typed Name Clayton				Signature <i>[Signature]</i>		Month Day Year 4 16 21	

HV-01927

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Please print or type.

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number 31547 / TXD000820288	2. Page 1 of 1	3. Emergency Response Phone (800)424-9300	4. Manifest Tracking Number 022939147 JJK		
5. Generator's Name and Mailing Address USES C/O UPRR 2250 Pasadena Fwy Pasadena TX 77506 Generator's Phone: (414)267-4164				Generator's Site Address (if different than mailing address) Union Pacific Railroad 4910 Liberty Rd. Houston TX 77028			
6. Transporter 1 Company Name HCS				U.S. EPA ID Number TXR000085967			
7. Transporter 2 Company Name				U.S. EPA ID Number			
8. Designated Facility Name and Site Address COASTAL PLAINS RDF 21000 E. HWY 6 ALVIN TX 77511 Facility's Phone: (281)388-1708				U.S. EPA ID Number H1721/TX R000084637			
9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes	
		No.	Type				
1.	Non RCRA, Non DOT Regulated Liquids (Water and Soil)	1	CM	25	Y	1489	1191
2.							
3.							
4.							
14. Special Handling Instructions and Additional Information 951 PROFILE #: 990323TX Work order WR#003868 Transporter Address: Phone:							
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.							
Generator's/Offeror's Printed/Typed Name JUSTIN TRAMELI ASAGRA FOR UPRR				Signature <i>[Signature]</i>		Month Day Year 04 19 21	
16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: Date leaving U.S.:							
17. Transporter Acknowledgment of Receipt of Materials							
Transporter 1 Printed/Typed Name Savage, Kylan				Signature <i>[Signature]</i>		Month Day Year 4 19 21	
Transporter 2 Printed/Typed Name				Signature		Month Day Year	
18. Discrepancy							
18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection							
Manifest Reference Number:							
18b. Alternate Facility (or Generator)				U.S. EPA ID Number			
Facility's Phone:							
18c. Signature of Alternate Facility (or Generator)						Month Day Year	
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)							
1. 4132		2.		3.		4.	
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a							
Printed/Typed Name Beaudry				Signature <i>[Signature]</i>		Month Day Year 4 19 21	

GENERATOR

TRANSPORTER INT'L

DESIGNATED FACILITY

Please print or type.

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number 31547 / TXD000820288	2. Page 1 of 1	3. Emergency Response Phone (800)424-9300	4. Manifest Tracking Number 022939145 JJK		
5. Generator's Name and Mailing Address USES C/O UPRR 2250 Pasadena Fwy Pasadena TX 77506 Generator's Phone: (414)287-4164				Generator's Site Address (if different than mailing address) Union Pacific Railroad 4910 Liberty Rd. Houston TX 77026			
6. Transporter 1 Company Name				U.S. EPA ID Number 97842 TXR00085467			
7. Transporter 2 Company Name				U.S. EPA ID Number			
8. Designated Facility Name and Site Address COASTAL PLAINS RDF 21000 E. HWY 6 ALVIN TX 77511 Facility's Phone: (281)388-1708				U.S. EPA ID Number 11721 TXR00084637			
9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes	
		No.	Type				
1.	Non RCRA, Non DOT Regulated Liquids (Water and Soil)	1	CM	25	Y	1489	1191
2.							
3.							
4.							
14. Special Handling Instructions and Additional Information PROFILE #: 990323TX Work order WR#003866							
Transporter Address:				Phone:			
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.							
Generator's/Offeror's Printed/Typed Name JUSTIN TRAMER AS AGENT FOR UPRR				Signature 		Month Day Year 09 19 21	
16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: Date leaving U.S.:							
17. Transporter Acknowledgment of Receipt of Materials							
Transporter 1 Printed/Typed Name				Signature		Month Day Year	
Transporter 2 Printed/Typed Name				Signature		Month Day Year	
18. Discrepancy							
18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection							
Manifest Reference Number:							
18b. Alternate Facility (or Generator)				U.S. EPA ID Number			
Facility's Phone:							
18c. Signature of Alternate Facility (or Generator)						Month Day Year	
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)							
1. 1132		2.		3.		4.	
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a							
Printed/Typed Name BT				Signature 		Month Day Year 14 00 21	

GENERATOR

INT'L

TRANSPORTER

DESIGNATED FACILITY

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Please print or type.

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number 31547 / TXD000820286	2. Page 1 of 1	3. Emergency Response Phone (800)424-9300	4. Manifest Tracking Number 022939146 JJK		
5. Generator's Name and Mailing Address USES C/O UPRR 2250 Pasadena Fwy Pasadena TX 77508 Generator's Phone: (414)267-4164		Generator's Site Address (if different than mailing address) Union Pacific Railroad 4910 Liberty Rd Houston TX 77026					
6. Transporter 1 Company Name WES		U.S. EPA ID Number 97842 TXA 0000 85467					
7. Transporter 2 Company Name		U.S. EPA ID Number					
8. Designated Facility Name and Site Address COASTAL PLAINS RDF 21000 E. HWY 6 ALVIN TX 77511 Facility's Phone: (281)388-1708		U.S. EPA ID Number 41721A TXR000084637					
9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes	
		No.	Type				
1.	Non RCRA, Non DOT Regulated Liquids (Water and Soil)	1	CM	25	Y	1489	1191
2.							
3.							
4.							
14. Special Handling Instructions and Additional Information OBT: PROFILE #: 990323TX Work order WR#003866							
Transporter Address:		Phone:					
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.							
Generator's/Offeror's Printed/Typed Name JUSTIN TRAMER AS AGENT FOR UPRR		Signature			Month Day Year 04 19 21		
16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: Date leaving U.S.:							
17. Transporter Acknowledgment of Receipt of Materials							
Transporter 1 Printed/Typed Name		Signature			Month Day Year		
Transporter 2 Printed/Typed Name		Signature			Month Day Year		
18. Discrepancy							
18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection Manifest Reference Number:							
18b. Alternate Facility (or Generator)		U.S. EPA ID Number					
Facility's Phone:							
18c. Signature of Alternate Facility (or Generator)					Month Day Year		
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)							
1.	2.	3.	4.				
1.	H130						
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a							
Printed/Typed Name Felipe Ramos		Signature			Month Day Year 04 30 21		

GENERATOR

TRANSPORTER INTL

DESIGNATED FACILITY

Solidify

HV01927

CMR

Please print or type.

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number 31547 / TXD000820286	2. Page 1 of 1	3. Emergency Response Phone (800)424-9300	4. Manifest Tracking Number 022939141 JJK		
5. Generator's Name and Mailing Address USES C/O UPRR 2250 Pasadena Fwy Pasadena TX 77506 Generator's Phone: (414)267-4164				Generator's Site Address (if different than mailing address) Union Pacific Railroad 4910 Liberty Rd. Houston TX 77026			
6. Transporter 1 Company Name UNITED STATES ENVIRONMENTAL SERVICES				U.S. EPA ID Number TXD00085467			
7. Transporter 2 Company Name				U.S. EPA ID Number			
8. Designated Facility Name and Site Address COASTAL PLAINS RDF 21000 E. HWY 6 ALVIN TX 77511 Facility's Phone: (281)388-1708				U.S. EPA ID Number 1721 / TXR000084637			
9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes	
		No.	Type				
	1. Non RCRA, Non DOT Regulated Liquids (Water and Soil)	1	CM	15	Y	1489	1191
	2.						
	3.						
	4.						
14. Special Handling Instructions and Additional Information PROFILE #: 990323TX Work order WR#003866							
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.							
Generator's/Offoror's Printed/Typed Name JUSTIN TRAMER vs ARBITRATOR				Signature <i>[Signature]</i>		Month Day Year 04 15 21	
16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: Date leaving U.S.:							
17. Transporter Acknowledgment of Receipt of Materials							
Transporter 1 Printed/Typed Name Savage, Kylan				Signature <i>[Signature]</i>		Month Day Year 4 15 21	
Transporter 2 Printed/Typed Name				Signature		Month Day Year	
18. Discrepancy							
18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection							
18b. Alternate Facility (or Generator) Manifest Reference Number: U.S. EPA ID Number							
18c. Signature of Alternate Facility (or Generator) Month Day Year							
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)							
1. H132		2.		3.		4.	
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a							
Printed/Typed Name S. Gutierrez				Signature <i>[Signature]</i>		Month Day Year 4 15 21	

GENERATOR

TRANSPORTER

DESIGNATED FACILITY